

May 1956

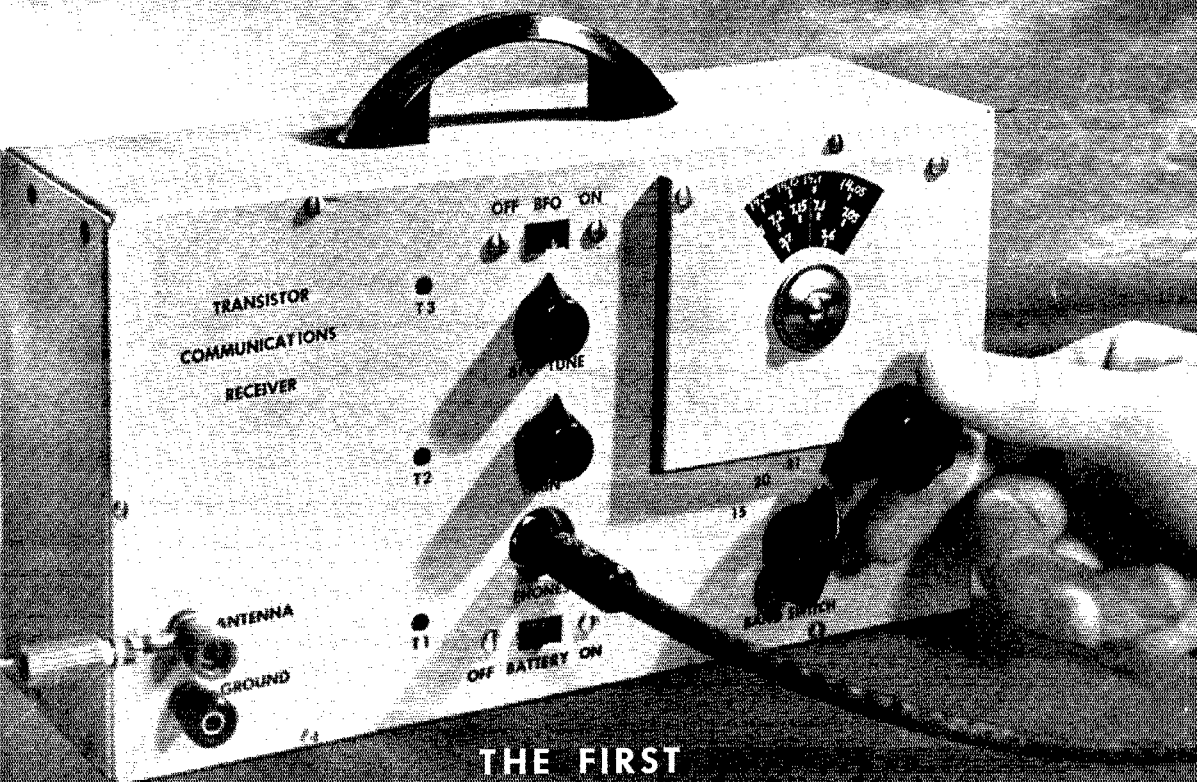
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amateur radio



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AMATEUR-BAND
RECEIVER

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4300
RECEIVER



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

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

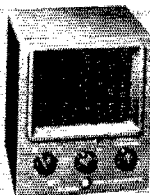
Large, evenly graduated, illuminated dial covers all six amateur bands from 1.76 mc to 29.8 mc (160 thru 10 meters). Unique differential 75:1 or 1:1 ratio tuning control. Plates in tuning condenser are triple-spaced to reduce drift and microphonics. Selectivity control with four positions. IF curve is 2.8 kc wide without crystal filter, attenuation 60 db down at 7 kc above or below the desired frequency. Crystal filter has phasing control for variable rejection of unwanted adjacent signals. Excellent image rejection. High sensitivity of 2 microvolts for 10 db signal-to-noise ratio. Temperature-compensated. Drift is negligible after 20-minute warm-up. Extreme stability permits single sideband reception with or without adapter. ANL. Antenna trimmer permits peak adjustment. 4-position function switch. Two coaxial jacks for SSB adapter. 4-ohm speaker terminals. Transmitter relay control.

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SELECTOR**



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Model 4302—Matching Speaker in enclosure. Net \$17.50

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Popularity of Aluminized Picture Tube rewards many years' development work by W2RDC!

RADIO amateur Von C. Campbell of General Electric helped develop the first successful aluminized picture tube more than a dozen years ago. Viewers owe much of their enjoyment of day-light-bright TV to W2RDC.

Over a span of many busy years, Campbell has worked to make the aluminum-backed screen grow from idea to universally accepted means of improving picture brightness and contrast.

When he isn't serving in his dual General Electric capacity of C-R Tube product planning manager and advanced-process engineering executive, Campbell goes on the air to keep warm his contacts with hams from coast to coast and overseas. 10-meter phone transmission gives him a wide-ranging

signal, though in the past he also has worked 40 meters CW and 2 meters phone. TV in his ham shack? Well, muses Campbell, the day may come . . . !

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QST

MAY 1956

VOLUME XL • NUMBER 5

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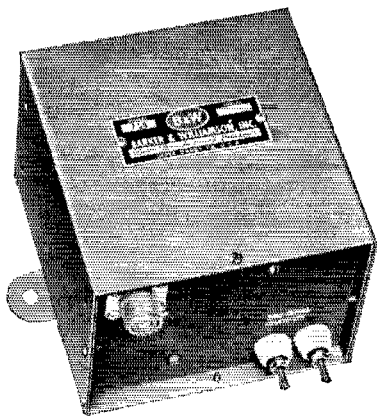
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BY **B&W**

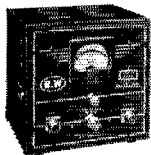


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Husky B&W 1 KW baluns fill the gap between unbalanced feed lines and balanced antenna loads by accurately matching low impedance unbalanced transmitter outputs to rotary beam or folded dipole antennas. These baluns provide maximum transfer of power, low line radiation on transmission, and high signal-to-noise ratio on reception.

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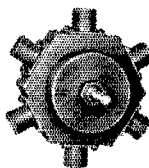


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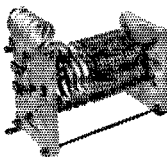
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Model 550-A permits instant selection of any one of five 52 or 75 ohm lines. Model 551-A is a 2-pole, 2-position type used for switching various devices in or out of series connection with coax lines.

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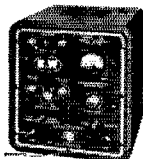
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WATCH FOR the big value announcement on B&W's new L-1000A 1 KW Single Sideband Linear Amplifier!

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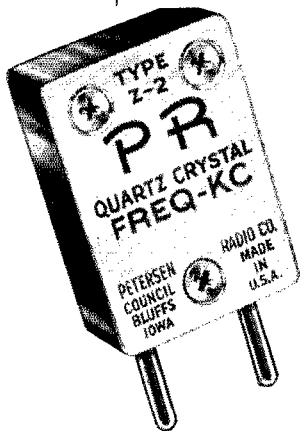
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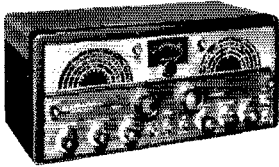
EXPORT SALES: Royal National Company, Inc., 8 West 40th Street, New York 18, N. Y., U. S. A.

Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (or 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).

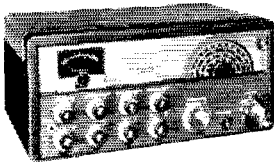
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Manitoba	VE5HR	Harold R. Horn	1044 King St. Saskatoon

* Official appointed to act temporarily in the absence of a regular official.



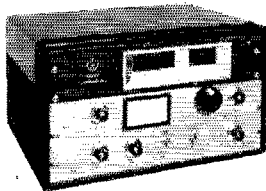
*model SX-100
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receiver
\$295.00*

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AM-CW-SSB
transmitter/
exciter
\$495.00*

Built in V.F.O. reads directly in kilocycles. V.F.O. stability is equal to most crystals—.009%. There are also provisions for 1 crystal for fixed frequency operation. Selective filter system is same used by commercial communications companies for reliable sideband selection to assure continued suppression of unwanted side band energy (down 40 db or more) and distortion products. New 50 db range meter for constant monitoring of r-f output and carrier suppression. Voice control system built in with adjustable delay and anti-trip features. Front panel controls allow selection of AM, CW, and upper or lower side band.

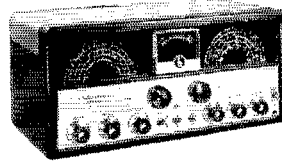


*model HT-31
AM-CW-SSB
linear power
amplifier
\$395.00*

Continuous frequency coverage from 3.5 mc to 30 mc. Pi-network output for efficient harmonic and T.V.I. suppression. Major T.V.I. suppression built in. Does not require an antenna tuner as will feed loads from 50 to 600 ohms. Full metering of all important circuits, including input in watts. Employs two 811-A zero bias triodes in parallel. The input system is designed to be fed from a 50-70 ohm unbalanced line and requires a maximum of 10 watts drive on 80 meters. The grid tank circuit is balanced to provide all band neutralization.

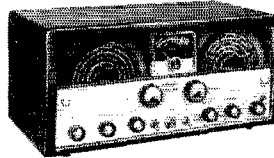
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**22 years experience
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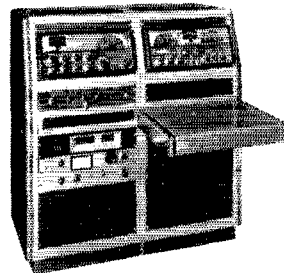
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AM-CW-SSB
double conversion
selectable
side band receiver
\$249.95*

Precision gear drives are used on both main tuning and band spread dials. Double conversion with selectable crystal controlled second oscillators. Selectable side band reception of both suppressed carrier and full carrier transmissions by front panel switch, delayed AVC, CW operation with AVC on or off. Has calibrated bandspread. Double conversion superheterodyne over the entire frequency range. Automatic noise limiter operated from front panel. Carrier level indicator calibrated in "S" units from 1 to 9, decibels to 90 db over S9, microvolts from 1 to 1000 K.



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*model SR-500
complete amateur
radio station
\$1495.00*

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THE AMERICAN RADIO RELAY LEAGUE, INC.,

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.

All general correspondence should be addressed to the administrative headquarters at West Hartford, Connecticut.



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"It Seems to Us..."

BOARD MEETING

Again this year, the ARRL Board of Directors has selected the month of May for its meeting, and the dates are the 11th and 12th. This is simply advance notice so that interested individual amateurs and radio clubs may convey to their directors any views they may have on current League and amateur affairs.

Especially for the information of newer League members — numbering a good many thousands in the last year alone — let us briefly review the system through which control of basic ARRL policies lies fundamentally in the hands of members. First of all, each director is selected by the Full Members in his division; these members nominate candidates of their choice, who must meet long-established requirements of at least four years' continuous League membership, holding of an amateur license, and freedom from commercial radio affiliations; subsequently, by secret mail ballots, Full Members of the division choose one of the candidates. This amateur of their choice becomes director of the division, a member of the Board of Directors of the American Radio Relay League, and thereby represents the members of his division in the conduct of ARRL affairs.

Liaison between individual directors and ARRL headquarters is maintained by a constant flow of correspondence and bulletins. Various minor matters which might arise during the year are settled by such liaison, or through action of the Executive Committee, which consists of seven officers and members of the Board of Directors chosen by the Board. But basic questions are reserved to be taken up at the annual meeting of the Board, where all directors are present and therefore all divisions are represented. Here, in a full two days of meetings, the Board examines the progress of the League through the numerous reports it requires of its committees on special matters; of its General Manager on membership matters, legislative and regulatory subjects, and business operations; of its Communications Manager on all phases of the League's field operating organization, contests, awards, etc.; of its Treasurer on the status of

the League's finances and investments; and of each individual director on the status of affairs in his division. With the situation as concerns amateur radio thus brought into focus on a nationwide scope by elected representatives of individual amateurs, the Board is enabled to come to decisions of policy and to instruct the League's officers accordingly for the coming year. A considerable number of subjects brought before the meeting are those which have been raised by affiliated clubs or individual members with their directors.

And that's where you — the individual member — come in. In matters of League policy, the director can guide his actions at the meeting by the expressions he has received from the members in his division. If you have views on amateur matters of the day, therefore, now is the time to express them to your own division director. You will find his address on page 8 of every issue of *QST*.

Some of the items to be discussed at this year's meeting, according to notice supplied the Secretary by directors in advance, are: change of Board meeting date to make it official in May each year; expansion of Section Emergency Coordinator travel reimbursement items, but limitation to five organizational trips per year; obliging the Executive Committee to refer all FCC proposals to the Board for opinion; provision for the vice-director temporarily acting as director when the latter is unable to perform his duties.

Many of the above items came to our attention early because they are proposed administrative changes which may require amendment of the League's Articles of Association and By-Laws. But the agenda is wide open — no subject is barred, and at the meeting undoubtedly some dozens of new problems and proposals will be discussed. If you have views on amateur matters of the day, then, or what you think is a good idea to improve the status of amateur radio, convey the information to your director.

Without the slightest intention of discouraging you from participating in this ideal system of "grass roots in action," we would be unrealistic were we not to point out that to receive favorable action by the Board of Di-

rectors, any proposal must have majority approval by representatives of the other divisions as well as yours. You may have an idea, and may have sold your director on proposing it; indeed, in the viewpoint of the majority of amateurs in your division it may appear to be the best idea to come down the pike in a long time. But for adoption there must be agreement among the other divisions as well, as it would become an action taken for *national* amateur radio. That is the truly democratic concept, of course, and is, we think, the reason why throughout the League's history the ARRL Board of Directors has been able to furnish wise and competent guidance for the future of our avocation.

A.R.R.L. ROCKY MOUNTAIN DIVISION CONVENTION

Estes Park, Colorado—June 9-10

The Denver Radio Club is sponsoring the 1956 Rocky Mountain Division Convention to be held at Elkhorn Lodge, Estes Park, Colorado, on June 9-10.

Elkhorn Lodge is situated near some of the most scenic parts of the Colorado Rockies and can be reached by excellent paved highways. Near-by is the Rocky Mountain National Park with its wildlife, fishing, and high peaks. Arrange your summer vacation to include the convention and the hospitality of cool, colorful Colorado, and be sure to bring your camera.

There will be activities for all, including technical talks, transmitter hunt, an on-the-air station, YL & XYL program, entertainment, fishing, and mountain trips. There will be fun for the entire family.

Registration fee is \$3.50 per person. Special rate of \$2.50, if registration is postmarked no later than June 3. For registration blanks, hotel and meal rates, write to Taylor Shreve, W0CXW, 1230 Valentia Street, Denver 20, Colorado.

OREGON STATE CONVENTION

Eugene, Oregon — May 5-6

The Valley Radio Club of Eugene will be host to the Oregon Amateur Radio Association's 19th Annual Convention, May 5 and 6.

Five hundred amateurs and their families are expected to attend from all over the northwest.

There will be featured speakers, demonstrations, contests, mobile hunts, special group breakfasts, swap-fest, banquet, and lots of fun for all.

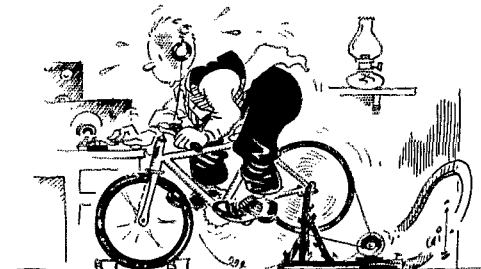
Admission includes main banquet and will be as follows: Pre-registration (before April 15), \$7.50; at the door, \$8.00; and non-hams, \$4.50.

Many prominent speakers are scheduled.

Everyone, regardless of interest, is cordially invited to attend. For reservations and registrations, contact OARA Convention Headquarters, 828 Olive Street, Eugene, Oregon.

Strays

During a QSO with an unidentified Nebraska station and as the signals became steadily worse, K2OUW reports receiving this reply when he asked whether or not the operator was having difficulty: "No ele etric ow erlin e shere. Gen erat or ho oked to bik eso am win ded." Translation: "No electric power lines here. Generator hooked to bike, so am winded." Good exercise, nevertheless.



WISAD points out that Boy Scout SWLs, working for certificate awards offered by the Boys' Life Radio Club, have to submit QSLs from the appropriate areas. Bill goes on to say, "It would be greatly appreciated by those of us in Scouting (I'm a Neighborhood Commissioner) if the amateurs would be kind enough to send along QSL cards to these SWLs as it's very discouraging for them if their cards go unanswered. It might also be pointed out that these SWLs of today are our brother amateurs of tomorrow."

Bill should know — he's working with his third beginners' class now. The first graduated 36 out of 42, the second 39 out of 44, and he now has 92 students. Thirty-five hams from his earlier groups are General Class already!

OUR COVER

W0MCN has produced another first for amateur radio — an all-transistor amateur-band receiver. W1CUT of the Headquarter's staff is also working on a transistor receiver, and we may soon be able to report a QSO in which all equipment on each end was completely transistorized.

COMING A.R.R.L. CONVENTIONS

May 5-6 — Oregon State, Eugene, Oregon

June 9-10 — Rocky Mountain Division, Estes Park, Colorado

June 15-16-17 — West Gulf Division, Galveston, Texas

July 6-7-8 — ARRL National Convention, San Francisco, Calif.

July 20-21-22 — Northwestern Division (Alaskan Territorial), Anchorage, Alaska

An Experimental All-Transistor Communications Receiver

15 Through 80 Meters in a Seven-Transistor Superhet

BY CARL J. HEINEN,* WØMCN

• To WØMCN go the honors for being first under the wire with an all-semiconductor amateur-band communications receiver. It isn't a toy, but a set that compares favorably in performance with the lower-priced communications receivers using tubes. Six volts from flashlight cells will power it indefinitely.

OF ALL THE PHASES of amateur radio activity, the design and construction of communications receivers has always had the greatest appeal to me. Consequently, when transistors made their appearance I hopefully awaited the day when they would be applicable to and available for amateur receiver construction. My big opportunity came when the company by which I am employed received a small shipment of surface-barrier transistors for use on a digital computer project to which I was assigned. After some explaining of motives, I was granted permission to borrow a couple of these transistors for home experimentation.

About two years earlier, I had constructed a simple bandswitching converter to try out some mixer-oscillator circuits involving gate-type tubes. I hastily tacked the two transistors into this converter, hooked on an antenna and two dry cells and ran the output into an a.c.-d.c. receiver. It was with a feeling of "this'll never work" that I applied the power. But it did work. The converter performed as well as it did with tubes. The upper limit of the converter coils was about 18 Mc. and the transistors were still performing well at this frequency.

Several evenings were then spent trying to obtain satisfactory 10-meter operation. By using the common-base oscillator configuration it was possible to obtain excellent oscillator action

up to 40 Mc. Unfortunately, mixer performance seemed to fall off sharply between 24 and 27 Mc. A signal had to be S8 or better to be readable on 10 meters. It was with a great deal of regret that I finally decided to leave 10 meters out of my planned receiver. Possibly with more transistors to select from or with some special circuitry, good 10-meter performance could have been obtained.

Leaving 10 meters out of the receiver made it possible to use single conversion and band-pass coupling to simplify front-end design. This was something I'd wanted to try for a long time. The 31-meter band was included to make use of the switch contacts formerly intended for 10 meters and to provide a source of Latin American music for which I've always had a weakness. Due to the high cost of the surface-barrier transistors (\$6.00 apiece), my wallet dictated that the rest of the receiver would have to use low-priced transistors and components.

The R.F. Section

The r.f. section was constructed on a 4 × 5-inch piece of bakelite. The coils were wound on 9/16-inch diameter plastic "pill bottles" which were drilled and tapped to mount with a single bolt. Small holes were drilled in the sides as needed to lace the lead wires through. The trimmer capacitors were fastened to two strips of bakelite mounted above the coils on long spacers.

Making the movable coils for the band-pass couplers was an easier job than expected. The base of a pill bottle was sawed off and a slot sawed through the bottle lengthwise. A piece of paper was folded several times until it would expand the form when forced into it. Then a strip of 3/4-inch-wide tape was wrapped around the form, sticky side out. I used black plastic electrician's tape, but believe paper masking tape might result in a better-looking job. With

* 4208 Monroe St. N.E., Minneapolis 21, Minn.

A homemade tuning dial features the panel of WØMCN's all-transistor communications receiver. Controls are readily identified in this view. The set measures 10 by 5½ by 3 inches.



this in place, two strips of tape about $\frac{1}{8}$ inch wide and 2 inches long were centralized, sticky side out, on opposite sides of the tape band at right angles to it. The required number of turns was then wound on and the two strips were folded over the winding to hold the turns in place while the winding was coated with cement and allowed to dry. The paper expander was then removed and the coil slipped off the form easily. Like many construction practices this coil winding is easier to do than to tell about it. The other coil combination of the band-pass coupler is wound as close to the base end of its coil form as possible and of course is not movable.

Each tuned coil and its associated low-impedance winding are placed close to each other. In the case of the 15-meter oscillator coil, it was found necessary to interwind 2 turns of the base winding into the collector winding. The coil data in Table I give satisfactory results although the values probably could be improved upon. Numerous experiments with different-size low-impedance windings disclosed that equipment better than the ear and a leaky signal

generator were needed to determine the optimum.

On all bands except 80 meters the oscillator operates below the incoming signal. This seemed to give the best image rejection.

The I.F. Section

After completion of the converter section, I spent a few evenings playing it through the b.c. receiver and marveling at its performance. Plenty of commercial circuits and parts were available for i.f. application so I figured the rest of the receiver would be a fairly simple matter. Following a commercial circuit using regular transistor i.f. transformers, an i.f. section was hurriedly constructed and connected to the converter. It was an almost complete failure. The three single-tuned i.f. transformers didn't begin to supply enough selectivity for amateur use. In fact, it was possible to hear half of a phone band all talking at once. Also, the gain was far from adequate unless expensive transistors were used, and the circuit seemed to require a lot of unnecessary parts.

To my knowledge no communications-quality

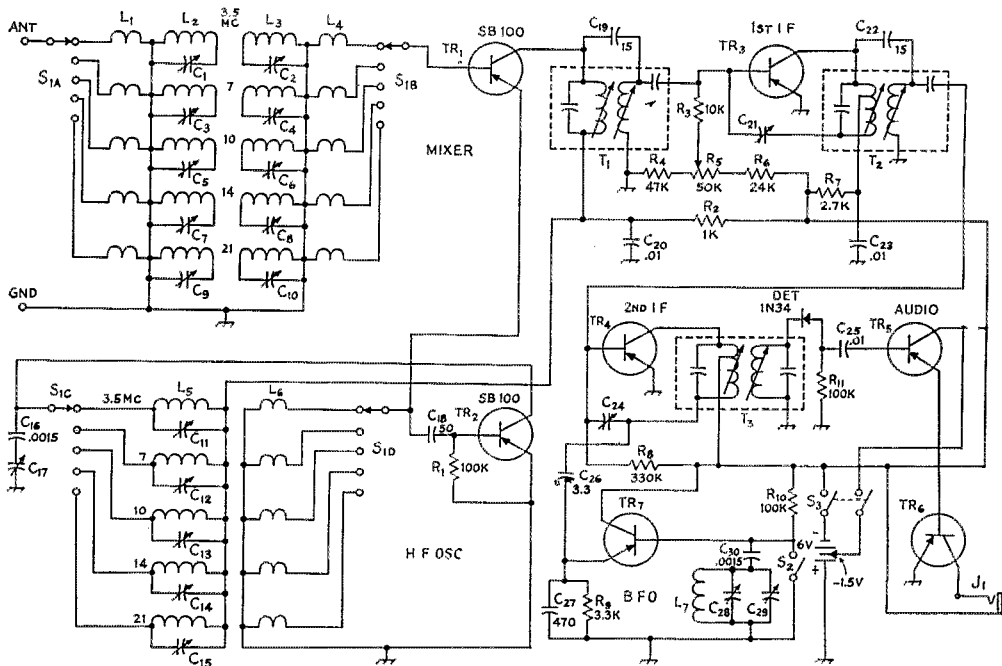


Fig. 1 — Circuit diagram of the transistor communications receiver. All fixed resistors $\frac{1}{2}$ -watt composition.

- C₁-C₁₅, inc. — 20-200- μ f. mica trimmer capacitors (100- μ f. ceramic fixed in parallel with C₁₄ only).
- C₁₆, C₃₀ — 0.0015- μ f. ceramic.
- C₁₇ — 15- μ f. variable (tuning).
- C₁₈ — 50- μ f. ceramic.
- C₁₉, C₂₂ — 15- μ f. ceramic.
- C₂₀, C₂₃, C₂₅ — 0.01- μ f. ceramic.
- C₂₁, C₂₄ — 5-50- μ f. mica trimmer.
- C₂₆ — 3.3- μ f. ceramic.
- C₂₇ — 470- μ f. ceramic.
- C₂₈ — 25-100- μ f. mica trimmer.
- C₂₉ — 20- μ f. variable (pitch control).

- J₁ — Open-circuit phone jack.
- L₁-L₆, inc. — See Table I.
- L₇ — Approx. 300 μ h. (TV peaking coil).
- R₅ — 50,000-ohm potentiometer (gain control).
- S₁ — 4-circuit 5-position rotary switch.
- S₂ — S.p.s.t. slide switch.
- S₃ — D.p.s.t. slide switch.
- T₁, T₂, T₃ — 455-ke. i.f. transformers modified as described in text.
- TR₁, TR₂ — Type SB-100 surface-barrier transistor.
- TR₃, TR₄ — 2N76 or 2N107.
- TR₅, TR₆, TR₇ — 2N76, 2N107 or 4K722.

transistor i.f. transformers were available. The only thing to do was to convert tube-type transformers to transistor use. Several different methods were tried and at least two transformers ruined before establishing the system described here.

The output impedance of a surface-barrier transistor is quite high so it matches into a standard i.f. transformer primary quite well. It was discovered that the 1000-ohm input impedance of the next transistor could be matched to a satisfactory degree by changing the secondary from parallel to series tuning. The conversion of T_1 consisted of making this simple modification.

It was necessary to tap the primary of T_2 in order to obtain the proper match. This was accomplished by removing approximately 75 turns from one of the windings, making a tap and scramble-winding the wire back on again. The 75-turn portion is between the collector connection and the tap. Like T_1 , the secondary of T_2 was changed from parallel to series tuning.

In the course of experimenting with the i.f. section, it was discovered that an emitter follower (i.e., grounded-collector amplifier) could be connected directly to a high-impedance i.f. transformer secondary. This worked so well that it was incorporated in the receiver. The modification of T_3 consisted of tapping the primary as previously outlined and leaving the secondary as it was. The emitter follower takes care of the impedance matching to the base of the a.f. amplifier transistor and provides considerable power gain.

Apparently any standard double-tuned i.f. transformer can be converted to transistor use. It is desirable to utilize transformers that are well made mechanically. Aligning requires considerable adjustment and readjustment, placing abnormal strain on the slug- or trimmer-adjusting system. The transformers used in this receiver were purchased at a local surplus outlet for fifty cents apiece. Only the number E 7056 appears on them so the manufacturer is unknown. They are tuned by a rather finely-threaded slug inside a fiber tube and have withstood countless alignments in the course of experimenting. In

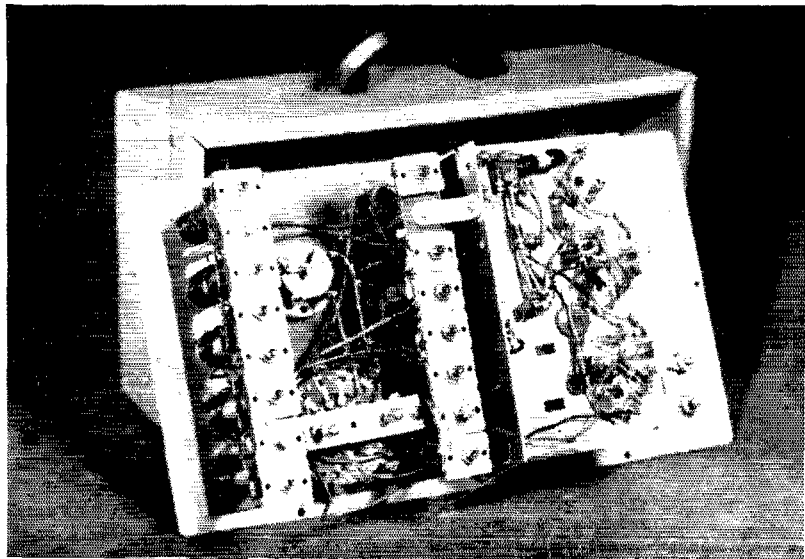
the case of some i.f. transformers it may be necessary to parallel the capacitor in the series-tuned circuit with an external capacitor, to substitute for the capacitance that ordinarily shunts the secondary when a tube amplifier is used. Neither of these measures was necessary with the transformers used.

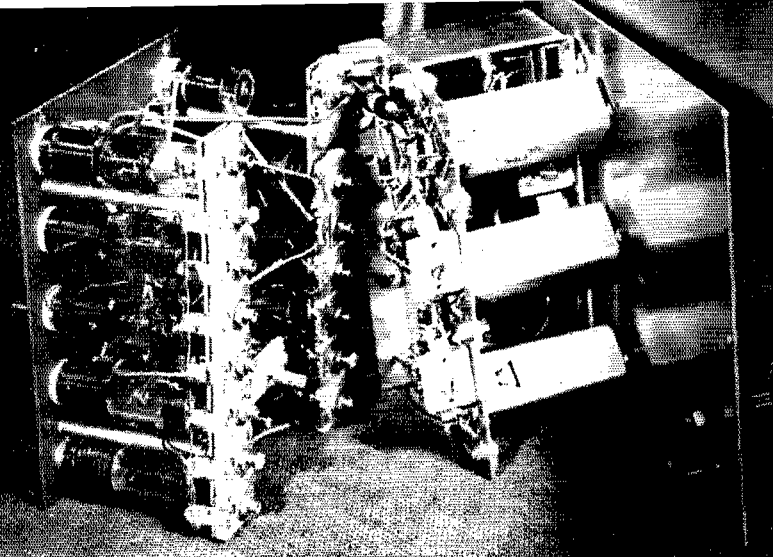
At one time during the early stages of experimenting it was discovered that the circuit had a preference in regard to the polarizing of windings. If the connections to any one winding were reversed, the gain of the i.f. amplifier would fall off disastrously. To bring the gain back to normal it was only necessary to reverse the connections to the other winding of the same transformer. (I have observed this same phenomenon in two cases of vacuum-tube i.f. amplifiers. In each case the connections to one of the windings of each i.f. transformer had to be reversed from what was specified by the manufacturer. Otherwise the gain was practically nil. I have pondered about this and made many inquiries but have never obtained a satisfactory explanation. In all other cases where I've tried it, reversing the polarity had no noticeable effect on gain.) In the case of the transistor amplifier, this condition occurred while I was trying to run the collector directly to the high-impedance winding. After providing a tap for the collector no polarity preference was noted.

Providing tie points inside the transformer can for the tap and the coil lead formerly attached to the padding capacitor presented somewhat of a problem. In the case of the transformers used in this receiver, soldering lugs were trimmed down to fit two unused slots in the phenolic base. During earlier experimenting an air-core trimmer-type transformer was equipped with additional leads by drilling small holes in the cardboard core and running the leads inside the core and out the holes. Wax from an old tubular condenser was melted by soldering iron and dripped where needed to hold leads in place.

Stripping the insulation off Litz wire used to be a dreaded job until I discovered the following trick. Coat the end of the lead wire with soldering paste, then slowly pass it through a hot blob of solder. Suddenly the enamel disintegrates and

◆
General layout of parts. The surface-barrier transistors are mounted above the handswitch. The r.f. trimmer capacitors are mounted on bakelite strips supported on long spacers above the coils.
◆





The r.f. and i.f.-a.f. sections are easily removed from the panel for changes and experimenting. Notice the spacing of the coils in the foreground. These constitute the band-pass couplers. The trimmer capacitors directly under the i.f. transformers are the "gain-maximizer" adjustments. The coarse b.f.o. tuning trimmer can be seen between the top and middle i.f. transformers.

the wire comes out all tinned. This seems to work with any type of enameled wire — even with tough insulation like Formvar. It helps to back up small-size wire with a piece of bakelite or wood while applying the hot solder.

The i.f. section was built on a 3×5 -inch aluminum plate. The controls, switches, phone jack and b.f.o. components were mounted on a bracket formed from a strip of aluminum. The gain maximizing capacitors, C_{21} and C_{24} , were soldered in place on stiff lead wires. Neither parts layout, wire dress nor grounding technique seemed critical. Some of the experimental circuits were indeed sad, hairy-looking affairs with long leads and unshielded i.f. transformers. As long as the transformers were adequately spaced or at right angles to each other, there were no oscillation troubles. Decoupling was unnecessary. Resistor R_2 is not there for decoupling. It's there to act as a current limiter to protect the expensive surface-barrier transistors from accidental overloads and should not be omitted. Nor is resistor R_7 included for decoupling. Without it the gain control will not function because the collector voltage will be unable to change. The $15\text{-}\mu\text{f.}$ capacitors C_{19} and C_{22} seemed to help the gain slightly. Actually, the receiver works fine without them.

B.F.O. Details

The b.f.o. circuit selected is a carry-over from the early 10-meter experiments of the r.f. section. This same circuit with 20 instead of $470\ \mu\text{f.}$ in the emitter return oscillated up to 40 Mc. with surface-barrier transistors. Once in a moment of weakness I purchased a bargain assortment of TV peaking coils. This was my first opportunity to use one of the funny-looking things. The coil I finally wired into the circuit permanently required no modification to tune 455 kc. with a $.0004\text{-}\mu\text{f.}$ trimmer. About 75 turns were removed from another peaking coil before it tuned with the desired amount of capacitance. No doubt a coil from an i.f. transformer or a pie

from an r.f. choke could be substituted for the peaking coil. I was surprised to discover that the maximum r.f. voltage was present on the emitter, not across the coil as one normally expects.

The b.f.o. is disabled by switching to ground the base of the transistor. This biases the transistor to cutoff. There's nothing wrong with turning off the b.f.o. by switching off the minus voltage. In my layout a better wiring job resulted by cutting off the transistor.

It would be advisable to shield the b.f.o. tuned circuit, since b.f.o. harmonics may be bothersome even at frequencies as high as 7 Mc.

Alignment of the I.F. Section

After making the relatively large investment in surface-barrier transistors for the r.f. section, I decided the rest of the receiver must perform well using only low-priced transistors. A small amount of regeneration was found necessary to attain this goal. Except for complicating the aligning procedure, the use of regeneration had no objectionable features.

A signal generator is an essential requirement. If only one circuit is badly out of resonance, the i.f. amplifier is dead indeed. Also, if one of the i.f. stages is oscillating the amplifier will not function. Consequently, the gain-maximizing capacitors C_{21} and C_{24} should be almost completely open when beginning alignment. A low-value capacitor, $50\ \mu\text{f.}$ or so, should be used to isolate the signal generator from the circuit. A modulated i.f. signal is first fed into the base of TR_1 and a signal should be heard in the headset. The tuned circuits of T_2 are then resonated. It is very important that the output of the signal generator be kept as low as possible. An overloaded transistor will detune a circuit drastically. With T_2 peaked, the signal source is transferred to the base of TR_2 and T_2 peaked. The gain control should be set for maximum gain (arm of the potentiometer on the 47K side). Next, a very small capacitor, 5 or $10\ \mu\text{f.}$, is used for isolation and attached to the collector

connection of T_1 . A signal is fed in and T_1 peaked. The gain of the i.f. amplifier should now be so high that the signal generator should furnish adequate signal when clipped to a piece of insulated wire looped a couple of times around the lead between the collector of TR_1 and T_1 . Avoid connecting the signal generator directly to the collector of TR_1 . Under some conditions this transistor could be ruined due to voltage induced from the power line.

Now comes the messy part. The second gain-maximizing capacitor, C_{s2} , is tightened slightly and the gain should rise somewhat. All circuits are then realigned. This process is repeated until the amplifier goes into oscillation. Normally this will be easily recognized. The signal from the generator will sound like the b.f.o. is on. The capacitor is backed off until oscillation stops. The whole object is to use as much capacitance as possible and still have all circuits peaked and stable. After C_{s2} seems properly adjusted, this whole process is repeated to peak up C_{s1} . The temptation to adjust the gain-maximizing capacitors to the "spill over" point is hard for a normal ham to resist. This is to be avoided, however. The gain should be adequate with only a moderate amount of regeneration, and it is rather annoying to have the receiver go into oscillation after being installed in its case.

R.F. Alignment

To start out, the band-pass coupler coils are separated as far as the coil forms allow. The tuning capacitor is set at about half scale, the signal generator is set to the center of the band to be found and connected to the antenna input. The appropriate oscillator trimmer is slowly tightened from a rather loose position until the signal from the generator is heard. On every band except 80 meters the tightening procedure is continued until the signal is heard again.

The appropriate band-pass coupler trimmers are then peaked. This adjustment pulls slightly on the oscillator, making it necessary to keep the signal tuned in. At this point I discontinued using my signal generator, hooked on the antenna and used airborne signals for the final touches. It would be preferable to continue to use a signal generator; however, mine leaked a signal of blocking intensity even with its output shorted. After the band-pass coupler is tuned as well as possible, the movable coil is slid toward the fixed one until signals fall off only slightly at the band edges. This procedure is repeated on the other bands and completes the alignment of the r.f. section.

Choice of Transistors

The original concept of using only lower-priced transistors was adhered to. Consequently three popular types, the CK722, 2N107 and 2N76, were tried. All three types were satisfactory in the a.f. and h.f.o. stages. The 2N107 and 2N76 were definitely superior to the CK722 for i.f. amplifier use; this was to be expected since the specified cut-off frequency of the CK722 is

600 kc. compared with 1 Mc. for the other types.

The simple transistor tester shown in Fig. 2 was of assistance in selecting transistors. The 15K resistor establishes a base current of 100 microamperes. The indication on the meter in the collector circuit is multiplied by 10 to obtain the approximate transistor current gain. It was found desirable to use transistors with current gains of 30 or more in the emitter follower and a.f. stages. This simple test unfortunately doesn't predict how a transistor will perform at intermediate frequencies. As an i.f. amplifier one transistor with a gain of only 15 outperformed all the others I had available, some of which had current gains of 50 and 60. Comparing transistors as i.f. amplifiers was complicated by the fact that some realignment was necessary every time a transistor was changed.

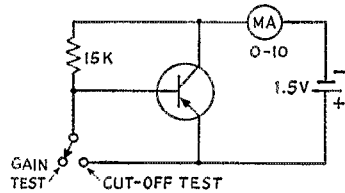


Fig. 2 — Simple tester for approximate measurement of transistor current gain. The 15K resistor establishes a base current of 100 μ amp. The collector current is multiplied by 10 to determine gain. Thus an indication of 2 ma. shows that the transistor under test has a current gain of 20. The collector current should go to near zero when the base is switched to the emitter. If it doesn't, the gain measurement will not be accurate.

Considerably higher gain can be realized from the i.f. amplifier by using transistors designed for the purpose. A 2N136 substituted for the 2N76 I was using in the first i.f. amplifier resulted in more gain than could be used. This condition existed with a different type of gain control circuit than was finally used. Recent price decreases of several types of high-frequency transistors make it worth while to consider using one in the receiver.

Precautions To Be Observed with Surface-Barrier Transistors

In addition to being expensive surface-barrier transistors are easily ruined by voltages induced from the power line. Test equipment and even soldering irons are the principal offenders in this respect. An earth ground should be attached to all power-line-operated equipment likely to be connected to the transistor circuit. I attached a ground lead to my soldering iron with a battery clip.

During experimental work it is advisable to meter the supply current to the s.b. transistors constantly. No receiver application should require the transistor to draw more than 2 ma. at $4\frac{1}{2}$ volts. An unexpected breakdown could occur while grid-dipping the coils. I once noticed the supply current rise to 15 ma. while resonating one of the mixer coils to the grid dipper. (This

TABLE I
Coil Data

Band	L_1	L_2	L_3	L_4	L_5	L_6
21 Mc.	2 t. #24 closewound over L_2	8 t. #20 closewound	9 t. #20 spaced to $\frac{1}{16}$ "	5 t. #24 closewound	5 t. #18 spaced to $\frac{1}{8}$ "	4 t. #24, 2 t. wound into L_5
14 Mc.	4 t. #24 closewound	10 t. #24 closewound	12 t. #24 spaced to $\frac{1}{16}$ "	5 t. #24 closewound	7 t. #20 spaced to $\frac{1}{8}$ "	4 t. #24 closewound
10 Mc.	8 t. #28 closewound	20 t. #28 closewound	18 t. #24 closewound	7 t. #28 closewound	19 t. #24 spaced to $\frac{1}{4}$ "	6 t. #24 closewound
7 Mc.	11 t. #28 closewound	22 t. #28 closewound	18 t. #24 closewound	9 t. #28 closewound	32 t. #24 closewound	8 t. #24 closewound
3.5 Mc.	15 t. #32 closewound	35 t. #32 closewound	55 t. #32 closewound	11 t. #32 closewound	50 t. #32 closewound	12 t. #32 closewound

All coils wound on $\frac{1}{16}$ -inch diameter plastic "pill bottles." L_1 and L_2 are the movable coils of the band-pass couplers.

was before I realized the desirability of incorporating a current-limiting resistor in the supply line.) The transistor was not damaged but it convinced me of the value of metering during experimental work. Surface-barrier transistors, by the way, are available direct from the manufacturer. I sent for mine at the following address: Philco Corp., Industrial Division, 445 Tioga St., Philadelphia, Pa. The current price is \$6.00 each, f.o.b. Allow 2 weeks for shipment.

Construction Features

Like most experimental devices, many compromises and changes of mind entered into the construction of this receiver. Its dimensions are approximately 10 by $5\frac{1}{2}$ by 3 inches — small by communications receiver standards but huge by transistor standards. The original intention of incorporating a 4-inch speaker and push-pull output stage evaporated when the necessity for larger i.f. transformers became apparent.

The dial consists of a 3-inch diameter black bakelite disk attached to the threaded bushing taken from a burnt-out potentiometer. A small washer was soldered to the threaded end of the bushing and the tuning capacitor shaft drilled and tapped. This made it possible to bolt the disk to the shaft. The disk engages a $\frac{3}{8}$ -inch rubber grommet pushed over the shaft of the bearing assembly removed from another defunct potentiometer. A cover for the dial was fashioned from a piece of thin aluminum. A scribe line on a piece of thin plastic formed the tuning hairline. The calibration was done with white ink, three bands on one half of the disk and two bands on the other half.

Observations and Possibilities

The novelty of having a communications receiver so small, self-contained and economical to operate doesn't seem to wear off. I still marvel every time I listen to the end result. If connected to a decent antenna, it seems capable of pulling in anything that can be heard on any of the

lower-priced amateur receivers. Due to the extra tuned circuit afforded by the band-pass couplers, the image rejection is superior to receivers lacking a t.r.f. stage. The audio output is sufficient to "rattle the cans" but not quite enough for good loud-speaker operation. The output circuit seems capable of adjusting itself to a fairly wide range of impedances, 2000-ohm and 500-ohm phones giving equivalent results.

Some experimenting was done using a single SB-100 as a combination oscillator-mixer in a circuit similar to that used in the "Regency." Good sensitivity and high-frequency response were obtainable. Unfortunately, the circuit suffered from bad pulling and spurious responses and was awkward to band-switch.

The cost of operation is practically nil. The total current drain is only 8 to 10 ma. Consequently a battery life of better than 500 hours may be expected from four size-C flashlight cells. All commercial transistor receivers have a high-value capacitor, 50–100 μ f. across the battery. No difference in operation was noted when a 100- μ f. unit was placed across the supply so it was not included. As the battery ages, a need for the capacitor may develop.

If squelch operation is desired, it is only necessary to omit C_{85} and R_{11} , and connect the anode of the detector diode directly to the base of the emitter follower TR_5 . The emitter follower will be cut off because the self bias that allows it to conduct is shorted to ground. Any signal likely to be readable creates enough negative bias to make the emitter follower operate.

I believe the development of this little receiver has furnished me with the most fascinating experimentation I have ever had in ham radio. I recommend a similar undertaking to anyone experimentally inclined.

I would like to express my thanks to Marlo Larson, WØKUV, for assistance given in the design of the i.f. section, and to Art Mundy, WØYFZ, whose suggestion and encouragement caused me to undertake this article.

Radio Astronomy

A New Tool for Studying the Universe

BY BYRON GOODMAN, WIDX

AMATEURS have been conditioned to think of radio as basically a medium for two-way communication, although the broad-minded ones will admit that radio can also be used for broadcasting, TV, telemetering, radar, navigational aids, remote control and a few other things far removed from amateur radio. There is still another use of radio, one that isn't too widely known, that should certainly stir the imagination of any amateur who has been thrilled by DX on any ham band. It's called "radio astronomy."

Most people think of astronomy as the study of the universe by optical means, with equipment ranging from unaided keen eyes to telescopes and cameras of the magnitude used at Palomar. Radio astronomy began with some observations by Karl G. Jansky of the Bell Telephone Laboratories back in 1931, when he built a rotating directive antenna system for studying the direction of arrival of static on the short waves. In the absence of all static Jansky found some residual noise coming from the direction of the center of our galaxy. In the late 30s, Grote Reber, W9GFZ, of Wheaton, Ill., built a parabolic reflector in his backyard for the systematic study of what he called "cosmic static."

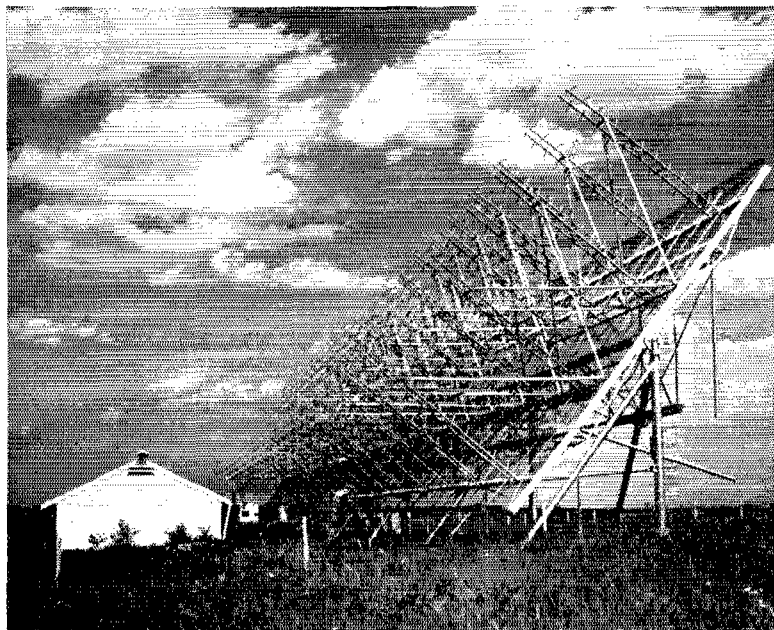
Radio astronomy came into its own directly after World War II. Developments in microwave receiving equipment and antennas had moved ahead in great strides during the war, and it had

been observed (but kept secret) that at least two types of radio noise come from the sun. One is an intense and variable component associated with sunspots and occurring at meter wavelengths, and the other is a steady emission at centimeter wavelengths. Since our sun is a star, it was reasonable to expect that radio signals from other stars might be received, and radio astronomy gained new impetus.

Before describing what is currently being done in radio astronomy, it might be well to mention two things. Some readers may wonder why anyone should bother to try to detect weak radio noise from extraterrestrial sources when we have big telescopes available for visual observation. The answer to that is simply that radio is another tool, one that can be used during the day and night without regard to optical "seeing" conditions. Further, it has the ability to "see" through dust clouds in space. And, as we will mention later, additional information on the universe has already been obtained that is impossible to collect by optical means. The second point is that two "local" types of radio astronomy that will just be mentioned in passing are (1) using radar to observe and study meteors regardless of light conditions, and (2) moon radar experiments.¹

¹ Kauffman, "A DX Record: To the Moon and Back," *QST*, May, 1946.

"Lunar DX on 144 Mc.!", *QST*, March, 1953.



◆
This bank of 96 (4 by 24) helical beam antennas is the largest radio telescope antenna at Ohio State University at the present time. The helices are backed up by a steel-mesh ground plane measuring 22 by 160 feet, and the coaxial line feed is arranged so that the antenna can be operated with all helices in phase (for the sharpest beam) or with the two halves of the array in phase opposition (split-lobe pattern). (Photograph courtesy Department of Photography, Ohio State University.)
◆

Real DX

Two discoveries in radio astronomy spurred the present high interest in the subject. The first was the discovery in 1946 of discrete noise sources, or "radio stars," that couldn't be associated with any visual object. The first in this category was a noise source in the constellation of Cygnus, and it wasn't until 1953 that this was identified as two distant galaxies in collision. The identification of this strong source, approaching the intensity of the undisturbed sun, carried with it an astonishing implication. Since the distance from the earth of this source is 200 million light years (s), it can be shown that similar sources, if they exist, could be detected by radio at a distance beyond the reach of the largest optical telescope. To an astronomer, demonstrating a tool that will reach beyond the largest optical telescope is like leaving a kilowatt rig on the doorstep of a brand-new General Class licensee — the event will be noticed!

The second discovery was that the atomic hydrogen spectral line at 21 cm. (1420.405 Mc.), predicted by theory and confirmed in the laboratory, could be observed by radio means. Consequently, it is possible by radio astronomy to detect concentrations of hydrogen gas and determine their directions from us. A clue to the speed of movement can be obtained by the shift in frequency, or Doppler effect, and a map of our galaxy is being made from these observations.

Radio Astronomy in the U. S.

Work in radio astronomy is being carried on in many parts of the world. In England a 250-foot diameter parabolic reflector is being completed that will be used for the observation of radio sources. The Netherlands, Australia, France, and Canada have already contributed to the knowledge of radio astronomy, and research is in progress in other countries such as Russia, India, Japan and Sweden. In the United States, most of the work is being carried on at universities, although the Naval Research Laboratory in Washington, D. C., has a 50-foot parabolic reflector of cast aluminum, the National Bureau of Standards has a 25-foot dish at Boulder, Colo., and the Carnegie Institution of Washington, D. C. a

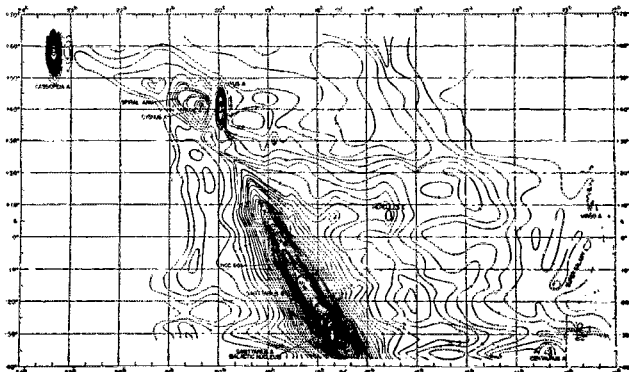
large fixed dipole array called a "Mills Cross."

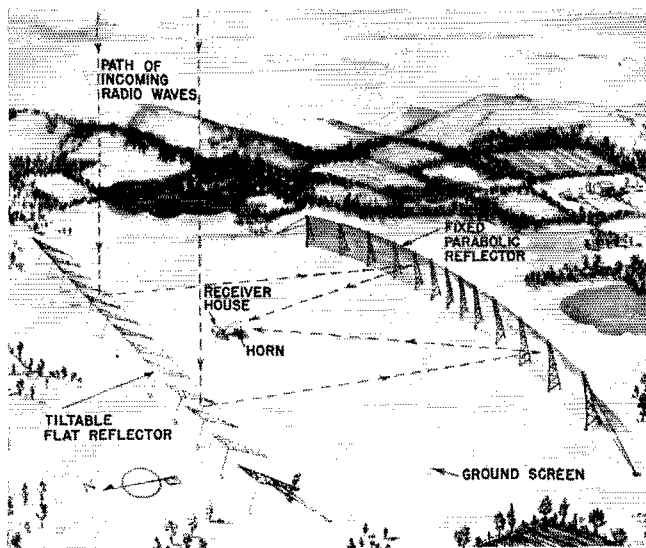
The antennas used for radio astronomy run all the way from stacks of Yagis through rhombics and parabolas to the bank of 96 helical antennas used at Ohio State University. The radio astronomy projects at O.S.U. are headed by Dr. John Kraus, Professor of Electrical Engineering, whom pre-war amateurs will remember as W8JK of the "close-spaced beam" and other antenna fame. Dr. Kraus was kind enough to furnish the writer with the illustrations and information contained in this article, and to arrange for a guided tour of the telescope site several miles from the campus in Columbus, Ohio. From a few remarks dropped at the conclusion of the interview, we wouldn't be too surprised to hear W8JK back on the air some day, but restricting his operations to terrestrial limits after exploring the universe will undoubtedly seem rather confining. (Yes, the word "mundane" fits, but we resisted the temptation.)

The radio astronomy work at O.S.U. began in the fall of 1951 with a small array of helical antennas that grew to the present beam by the fall of 1952. With this antenna system, and with the 250-Mc. receiving system built under the supervision of Donn Van Stoutenburg, a radio map of the sky was obtained. This is the way the sky would appear to our eyes if our eyes were sensitive only to a "radio color" of 250 Mc. The detailed mapping of the sky was carried out and is continuing under Dr. H. C. Ko.

Although the 96-element helical antenna is a beautiful sight to behold, with its beam width of 1° by 8°, plans are going ahead for a still more ambitious antenna with higher gain and narrower bandwidth. As shown in the sketch, this antenna will use a tiltable plane reflector working into a fixed paraboloid that will in turn reflect the signals into a horn antenna at the focus of the paraboloid. Present plans call for a 70-foot high paraboloid 700 feet long, although the ultimate objective is a paraboloid 2000 feet long. At 1 meter this latter system would have a half-power beam-width of 0.1° by 1°! The object of these huge systems is, of course, to increase the gain and the resolution (ability to separate sources). The design principles have already been confirmed by a 12-foot model working at a wave-

◆
Radio map of the summer sky, made at 250 Mc. with the 96-helix antenna. The lines represent equal "brightness" contours of radio radiation.
◆





This super radio telescope, designed by Dr. Kraus, is soon to be built at O.S.U. When completed, the parabolic reflector will measure 700 feet in length by 70 feet in height.

length of about 1 centimeter and used for celestial observations.

Receivers used for radio-astronomy observations must, of course, be built with the lowest practical noise figure, since the sensitivity of the system depends upon the gain of the antenna and the noise figure of the receiver. The bandwidth of the receiver may be a few kc., as when studying the 21-cm. hydrogen signals, or up to several Mc. when observing radio stars. The receiver must be very "gain-stable" if the measurements over a period of time are to be compared, and a common practice is to provide for periodic comparison with a standard noise source.

Amateur Radio Astronomy

Somewhat overwhelmed by the large antennas we learned about, we assumed that Dr. Kraus wouldn't hold out much hope for amateur radio astronomy. To the contrary, he explained that amateurs could make observations with relatively simple equipment and might be able to contribute something, in the same way that amateur astronomers have done useful work in the field of optical astronomy. As examples, he pointed out that radio noise from the sun can be observed at meter wavelengths, and that many of the better-equipped 10-, 6- and 2-meter stations should be able to observe the solar signals. He also pointed out that recently at O.S.U. they have been getting signals from the planet Jupiter. We did a double take on this one, because we had assumed that the only extraterrestrial sources were hot stars and not cold planets. Dr. Kraus explained that with a "radio telescope" consisting of 12 half-wave dipoles pointed at Jupiter they occasionally receive relatively strong signals on 11 meters that sound more like static than the usual hiss-type noise received from thermal sources. It is also observed that these signals are obtained when the "white spot" of Jupiter is facing the earth, although they aren't observed

every time the white spot comes around to our side of Jupiter. One of the theories that has been advanced, and probably the most acceptable one to date, is that the signals they hear are generated by violent lightning storms on Jupiter. The Jupiter signals were first detected last year, by Drs. B. F. Burke and K. I. Franklin of the Carnegie Institution.

And that's the very brief story of radio astronomy, just enough to whet the appetite of the readers who have come this far with us. If you want to read more about it, a bibliography is included at the end of this article. If you want a crack at a science that is not yet too cut-and-dried, here is your opportunity. It isn't ham radio as it is generally known, and we can't promise your SWL cards to the sun and Jupiter will be acknowledged for some time, but you will have to admit that it's *real* DX!

Bibliography

Books: Lovell and Clegg, *Radio Astronomy*, published by John Wiley and Sons, N. Y. C., 1952.

A good general book on the subject, with some elementary treatment of both radio and astronomy. Considerable space is devoted to meteor observations, but the entire field is covered.

Pawsey and Bracewell, *Radio Astronomy*, published by Oxford Univ. Press, London, 1955.

Somewhat more technical than Lovell and Clegg.

Articles: Hagen, McClain and Hepburn, "Discrete Radio Sources at 21 Cm.," *Proc. IRE*, 42, 1811, 1954.

Kraus, "Radio Telescopes," *Scientific American*, March, 1955.

Wild, "Radio Waves from the Sun," *Scientific American*, June, 1955.

Many articles have appeared in other issues of *Proc. IRE* and *Scientific American*, as well as in *Nature* and *Sky and Telescope*.

Reception with Product Detectors

Improved Detection of Single-Sideband and Other Types of Signals

BY MURRAY G. CROSBY,* W2CSY

• In contrast with the ordinary diode detector, the product detector gives no output from a modulated signal until a carrier is locally injected. It overcomes many of the defects of rectifier-type detectors, particularly the demodulation effect exercised by the stronger of two modulated signals on the weaker one. The triple-triode form of product detector described here is simple in circuit design and easily set up for optimum performance.

THE AVERAGE communications-type receiver was originally designed mainly for ordinary double-sideband amplitude-modulation reception. No provision was made for single-sideband reception since that type of transmission was commonly used only for specially-directed circuits used by communication companies. The receivers used in such service were designed for the particular usage only and were usually highly complicated. Now, as single-sideband reception becomes more commonplace, the communications receiver owner must cast about to try to find a method of receiving single-sideband transmissions on his receiver.

The detector in the ordinary communications receiver usually is of the diode type, its design requirements being those of amplitude modulation. The beat frequency oscillator has been somewhat of an afterthought so that c.w. telegraph reception could be included in the features of the receiver. The usual design with respect to the beat frequency oscillator was to couple a small amount of oscillator voltage into the i.f. circuits so that the oscillator and incoming signal together formed a beat note in the detector. In many cases the amount of beat frequency oscillator voltage injected into the detector was very low. Such an arrangement functioned fairly satisfactorily for c.w. telegraph reception since that

type of reception may be accomplished when the signal at the detector is stronger than the local beat frequency oscillator. This type of oscillator injection produces a certain amount of limiting, which does not distort c.w. telegraph signals and may tend to smooth out fading.

When suppressed-carrier single-sideband signals are being received, the b.f.o. must be used to supply the carrier. However, when this is done under detection circumstances which were set up to receive c.w. telegraph, distortion may result. When such a diode detector is used for single-sideband reception the only possible adjustment is to turn the audio gain control as high as possible and turn the i.f. or r.f. gain control as low as possible. Under these circumstances the level of the signal entering the detector may be equal to or less than that of the b.f.o. and proper reception may be obtained. Sometimes this adjustment is impossible, however, because the audio gain must be turned up so high that hum is excessive. As a consequence the normal condition of a large number of ordinary communications receivers is that they inherently distort in single-sideband reception. This situation is quite largely responsible for criticism of SSB transmissions by a.m. operators.

Increasing the b.f.o. injection is a considerable help and may make single-sideband reception possible in many cases. However, it may introduce new problems such as pulling of the local oscillator in reception of c.w. signals or hum and microphonics.

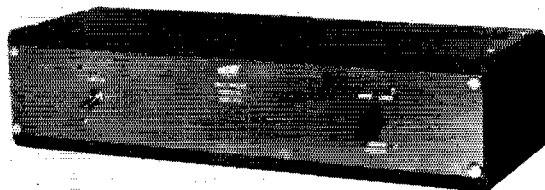
The ideal answer to the situation is a good "product" detector, designed for proper reception of single-sideband transmission. In addition, a sideband filter is very desirable, since by eliminating one sideband a large amount of interference may be rejected.

The Product Detector

Fig. 1 shows the basic arrangement of a product detector. Its general nature is that it has two separate inputs. One of these inputs is used for the sidebands and the other for the

* Crosby Laboratories, Inc., Hicksville, L. I., N. Y.

This single-sideband adapter unit uses the circuit arrangement shown in Fig. 4, incorporating a product detector with a sideband filter and switchable crystal oscillators for sideband selection.



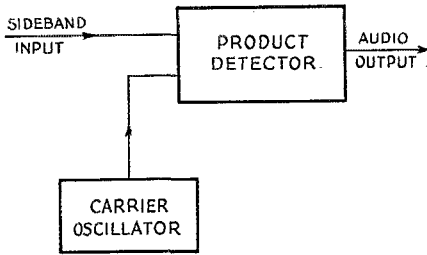


Fig. 1 — Basic arrangement of the product detector. Two inputs, sideband and local (carrier) oscillator, combine in the detector to produce an audio output proportional to the product of the applied voltages.

carrier oscillator. It is called a "product" detector because the audio output is a mathematical product of the two separate inputs which are fed to the tube grids in the detector circuit. The two grids are biased for operation over the linear portions of their characteristics so that individually they would act as amplifiers and do not detect. As a result, the only audio output is that which is a product or results from coaction of the local carrier oscillator and the incoming sidebands. That is, the audio output is comprised of beat notes or heterodynes between the carrier oscillator and individual sidebands of the incoming signal, and there is no detection of the signals applied to the signal grid when the carrier oscillator is switched off.

A good test of a product detector is to switch off the carrier oscillator and listen to determine if there is any detection of a modulated signal applied to the signal grid. The best product detectors reject detection, when the carrier oscillator is switched off, to the extent of 40 or 50 db. For instance, assume a double-sideband a.m. signal is coming in on the sideband input. If the carrier oscillator is switched off there will be no audio output, or at least it will be negligibly low. When the carrier oscillator is turned on there will be reception of the double-sideband signal if the local carrier oscillator is synchronized with the incoming carrier. If the local carrier oscillator and incoming carrier oscillator are not synchronized, the detection is unintelligible and all that comes out of the detector is a beat note between the carrier and local oscillator, together with distortion from the sidebands.

S. S. B., A. M., P. M. and C. W. Detection

The product detector not only is the ideal detector for single-sideband signals but is also ideal for the reception of double-sideband amplitude-modulation signals, double-sideband phase-modulation signals, and c.w. signals. With double-sideband reception it offers the advantages of exalted-carrier detection with its reduced fading distortion.¹ The same advantages are present for

¹ In exalted-carrier reception the carrier is amplified considerably more than the sidebands, before detection. This reduces the distortion that results from selective fading when the carrier amplitude fades below the sideband amplitude. — Ed.

the reception of p.m. of the type using a peak phase deviation of one radian or 57 degrees. For the reception of p.m., it is a better detector than an f.m. discriminator since the product detector is less susceptible to selective fading.

For c.w. reception the product detector has the advantage of producing a clean, undistorted beat note. It is more linear than the ordinary diode detector operating with a low value of h.f.o. injection. This gives the maximum signal-to-noise ratio at all times. Also, when used in conjunction with a sideband filter in the i.f. circuit, "single-signal" reception is obtained so that the audio image is rejected. The product detector is therefore the ideal c.w. detector.

Dual-Grid Product Detectors

Fig. 2 shows the pentagrid converter type of product detector. In this type the oscillator and signal grids provide the two inputs. Electrode voltages, signal level, and carrier level are adjusted so there is a minimum of detection when the carrier oscillator is switched off and a modulated signal is fed to the sideband grid. The measurement that might be made would be to turn the oscillator on, feed an unmodulated carrier to the sideband grid and measure the audio output. Then switch the oscillator off and measure the level of audio output when a 50 per cent amplitude modulated signal is applied to the sideband input. The difference between the two levels should be at least 25 db. to produce good exalted-carrier product detection.

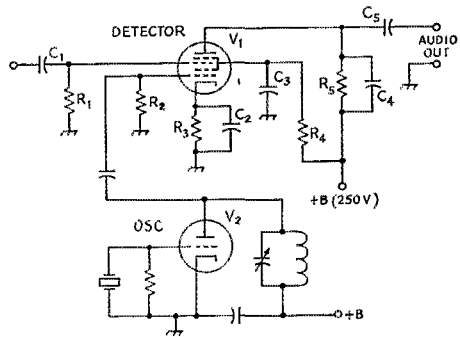
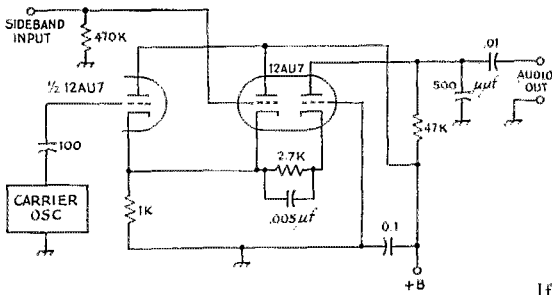


Fig. 2 — Product detector using a pentagrid converter tube. Circuit values are conventional for the frequency, and electrode voltages are normal for the particular types of tubes used. V₁ may be a 6BA7, 6BE6, 6SA7, etc. V₂ may be a 6C4, one section of a 12AU7, 6SN7GT, etc. Any convenient oscillator circuit may be employed. For 155 kc. and a 6BE6, suggested values are:

- C₁ — 100 μf. to .001 μf.
- C₂ — 0.01 to 0.1 μf.
- C₃ — 0.1 μf.
- C₄ — 100 to 500 μf.
- C₅ — Depending on audio load resistance (0.01 satisfactory for 0.5- to 1-megohm load).
- R₁ — 0.5 to 1 megohm.
- R₂ — 20,000 ohms.
- R₃ — 150 to 300 ohms.
- R₄ — 22,000 ohms.
- R₅ — 50,000 ohms.

Oscillator amplitude should be adjusted so that not more than 10 volts r.m.s. is applied to the No. 1 grid of the converter.



A disadvantage of the pentagrid converter type of product detector is the variation between tubes. Replacement of the tube may require readjustment of element voltages. However, if signal and oscillator levels are kept low this effect can be minimized.

The 6BN6 f.m. detector operated in the non-limiting condition may be used as a product detector in the same manner as the ordinary pentagrid converter tubes.

Triple-Triode Product Detector

Fig. 3 shows the triple-triode type of product detector.² It uses three triodes such as those in the 12AU7 twin-triode tubes. A particularly convenient arrangement is to use two 12AU7s with three of the triodes in the detector and the fourth either used for the carrier oscillator or as an audio amplifier. Various arrangements of resistances and biases may be worked out. The one shown uses a common cathode resistor of 1000 ohms and a by-passed cathode resistor connecting the output triode with the two cathode-follower input triodes. In effect, the arrangement is two cathode followers which receive the sideband input and the carrier oscillator input, respectively, and a cathode-driven output tube which gives the detected audio output. With this arrangement a sideband input of 0.25 to 0.5 volt r.m.s. and a carrier oscillator input of about 3.5 volts will produce proper operation. This gives about one-half volt audio output.

² M. G. Crosby, U. S. Patent No. 2,470,240, May 17, 1949.

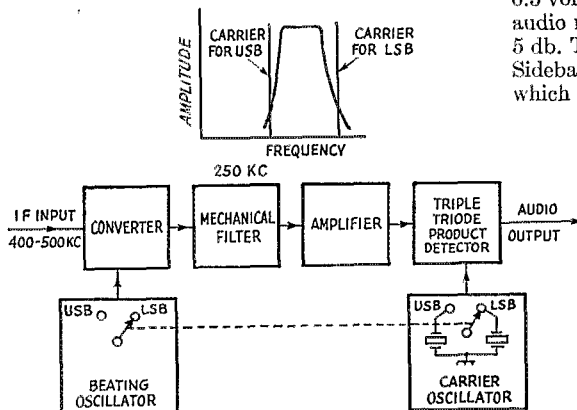


Fig. 4—Block diagram of SSB adapter using a mechanical sideband filter and product detector. Either sideband may be selected by means of the ganged oscillator switches, without retuning the receiver. This system is useful for c.w., p.m., and exalted-carrier a.m. reception as well as SSB detection.

If desired, the 2700-ohm self-biasing resistor may be removed and all cathodes tied together, in which case fixed bias must be applied to the output triode grid. This bias runs in the order of a few volts and is usually negative. However, it is best to adjust it both negative and positive to minimize the output when a modulated signal is applied to the sideband input with the carrier oscillator off. In other words, make the same adjustment of switching off the carrier oscillator and adjusting the bias so that detection is minimum from the sideband-input grid.

An Application

Fig. 4 shows the application of the product detector in the Crosby Model 67A Single-Sideband Converter. Here the triple-triode product detector is incorporated with a Collins mechanical filter to separate out the sidebands. Two crystals are used in the carrier oscillator. One of the crystals is on the lower side of the mechanical filter selectivity skirt and the other crystal on the higher side. In the converter circuit, the beating-oscillator frequency can be changed the same amount by switching. By ganging this switch with the switching of crystals in the carrier oscillator, reception may be switched from upper to lower sideband so that either one may be received without changing the tuning of the receiver.

The arrangement comprises a converter which beats the i.f. input down to 250 kc., the frequency of the filter, and at that frequency is fed to the triple-triode product detector. The carrier oscillators are at 250 kc. and about 253 kc. so that they fall on either side of the sideband filter. This arrangement will give an audio output of about 0.5 volt from an i.f. input of about 0.25 volt. The audio response is from 250 to 3200 cycles within 5 db. The audio distortion is about 1½ per cent. Sideband rejection is that of the mechanical filter, which is better than 50 db.

Variations in T-R Switch Performance

Some Factors Affecting Receiver Operation

BY E. LAIRD CAMPBELL, WICUT

• Within the last year several versions of an automatic T-R switch have appeared in the literature and on the market. These T-R (transmit-receive) switches are devices designed to eliminate the antenna relay when the same antenna is used for transmitting and receiving. Their use has been spurred by the need for rapid and frequent change-over in c.w. or voice-controlled break-in operation. The receiving experience with them has not been universally satisfactory, and in this article WICUT points out a few reasons why.

THERE has been much discussion recently concerning T-R switches. Commercial models have been made available and diagrams for homebuilt models are appearing in the literature. Many hams are now successfully using a T-R switch of some kind, but there are also some who have had disappointing results. It was decided to make a few lab tests to see if we could pin down this variation in performance, and perhaps find the answers to several other questions. Does it show gain? What is its performance over several different bands? How do different cable lengths affect the operation?

The Test Setup

The equipment used for testing the T-R switch was a Collins 75A-2 receiver, signal generator, and two different transmitters. They were connected as shown in Fig. 1. The two different transmitters were used to see what effects link or

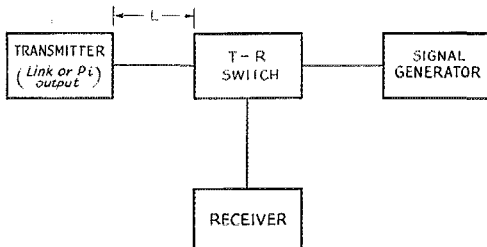


Fig. 1 — Block diagram of the test setup for a T-R switch. "L" is the length of cable used to connect transmitter to the B & W T-R switch.

pi output coupling would have on performance. A Viking Ranger was used for pi-tuned output and a Heathkit AT-1 for link output. Both transmitters were tuned up on the same frequency into a dummy load and then switched to stand-by position (key up). All measurements were

made with the transmitters in this condition, to simulate an operator, with his transmitter tuned up ready to go, tuning around the band for a call. Measurements were made over several different amateur bands, but the information shown here is typical for high- and low-frequency bands.

Output from the signal generator was adjusted to give a reading of S6 on the receiver at one end of the band. As the receiver was tuned (in steps) across the band, the signal generator was adjusted to keep the S meter at a constant S6.

Tests and Results

The first test was to find out what effect different lengths of cable between the transmitter

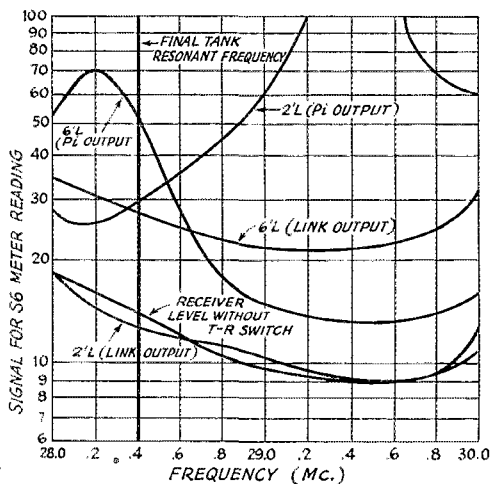
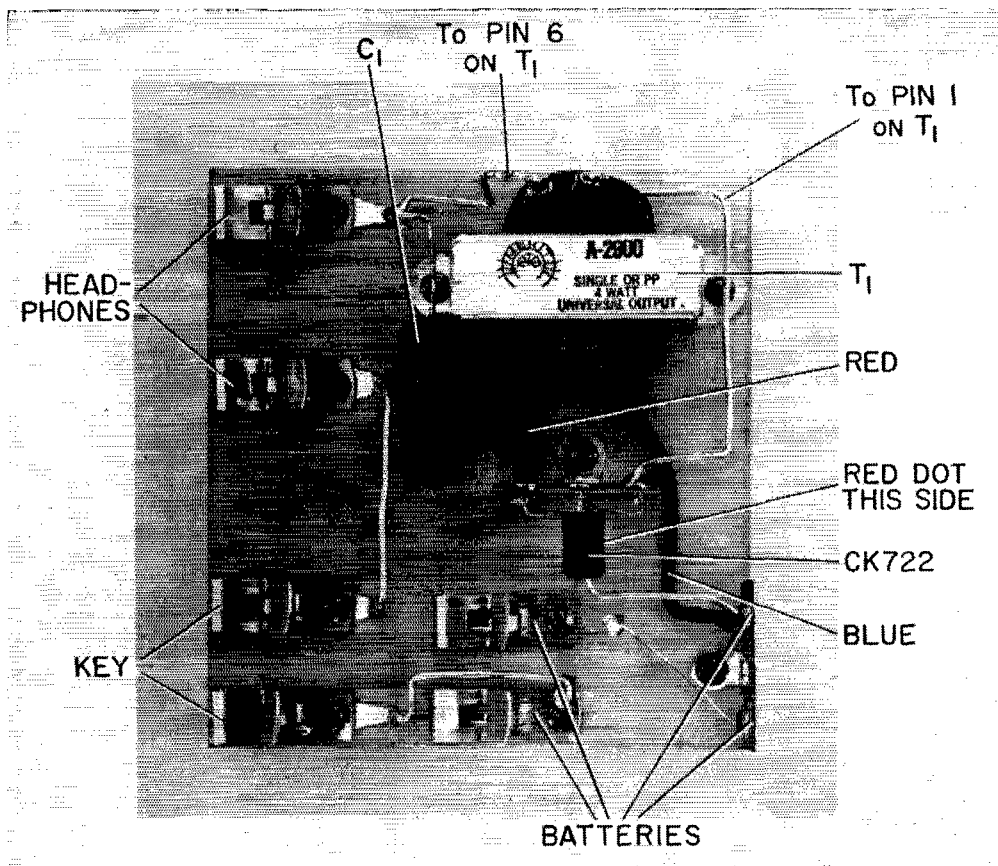


Fig. 2 — Curve showing voltage input (μ V) for a constant S-meter reading in the 28-Mc. band, using different connecting cable lengths and outputs (pi or link).

and the T-R switch would have. The effect was a large one, its degree depending on the length of cable, operating frequency and the type of tank circuit used. In Fig. 2 it can be seen that the received signal was greatly attenuated on the low-frequency end of the 10-meter band with a 6-foot cable (pi output). With a 2-foot cable (pi output) the attenuation increased at the high end of the band. It can also be seen that on 10 meters the pi-tank transmitter introduced a greater attenuation than the link-output transmitter.

The effect of a T-R switch on the lower frequencies can be seen in Fig. 3. The 10-meter conditions were found to a lesser degree on 40 meters, with actual gain shown in certain cases.

(Continued on page 150)



A Transistor Code-Practice Set

Simple and Inexpensive Audio Oscillator for the Beginner

BY LEWIS G. McCOY, WIICP

ONE of the first pieces of gear that the newcomer to amateur radio needs is a code-practice oscillator. This article describes the construction of an audio oscillator that is just about the ultimate in simplicity. By using a transistor instead of a vacuum tube, the cost of the unit is held to approximately \$3.00.¹ A vacuum tube would require relatively expensive heater and plate power supplies, but two 10-cent penlite cells are all that is needed to power the transistor.

The only tools needed to complete the unit are a soldering iron, screwdriver, and a pocket-knife. Construction time is, of course, only an hour or so.

¹ Many of the 1955 parts distributors' catalogues list the CK722 at \$2.20. Early in 1956 the price of the transistor was dropped to slightly under one dollar.

The photographs and Fig. 1 show all the necessary wiring details quite clearly. All components are mounted on a 4 × 4 × 1-inch piece of wood, wood screws being used to secure most of them to the "chassis."

The penlite cells are held in place by two Fahnestock clips and a standard two-terminal tie point. The spacing between the clips and the tie point should be just enough to allow the springiness of the clips to hold the batteries in place.

Special care should be taken when soldering the transistor leads to the terminal tie points, since excessive heat reaching the transistor through the leads is likely to damage it. This can be avoided by using a pair of long-nose pliers to hold the transistor lead being soldered. Grasp the lead with pliers as close as possible to the

body of the transistor. The heat from the iron is absorbed by the pliers and not by the transistor.

The lead closest to the red dot on the transistor and the lead from terminal No. 1 on T_1 should be connected to the same tie-point terminal. The lead on the opposite end of the transistor connects to the tie-point terminal that holds the red lead from T_1 and one lead from C_1 . A short length of wire is used to connect between one of the battery terminals and the terminal holding the center lead from the transistor.

Operation

After the unit is wired and checked, connect a pair of high-impedance headphones and a key

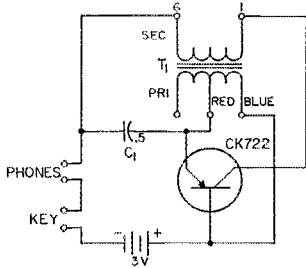


Fig. 1— Circuit diagram of the transistor code-practice oscillator.

PARTS LIST

- 6 Fahnestock clips
 - 6 Solder lugs
 - 10 No. 6 wood screws, $\frac{3}{8}$ -inch
 - 2 Two-terminal standard tie points
 - 1 CK722 transistor
 - 1 0.5- μ f. paper capacitor
 - 1 Universal-type replacement output transformer (Merit A-2900)
 - 2 1.5-volt penlite cells
- About two feet of hookup wire
Headphones, high-impedance type, 2000 ohms or more
Key
Chassis, 4 × 4 × 1-inch piece of soft wood

• If you have been thinking about getting the Jr. Op interested in amateur radio, here is a project that is tailor-made for him. He shouldn't have any problems building it — and if he does, you can demonstrate your ability as a trouble-shooter. Also, with all the transistor stuff that has been appearing lately, you can always "borrow" the parts later on.

to the appropriate Fahnestock clips. Mount the two penlite cells in the holders and the oscillator is ready for use.

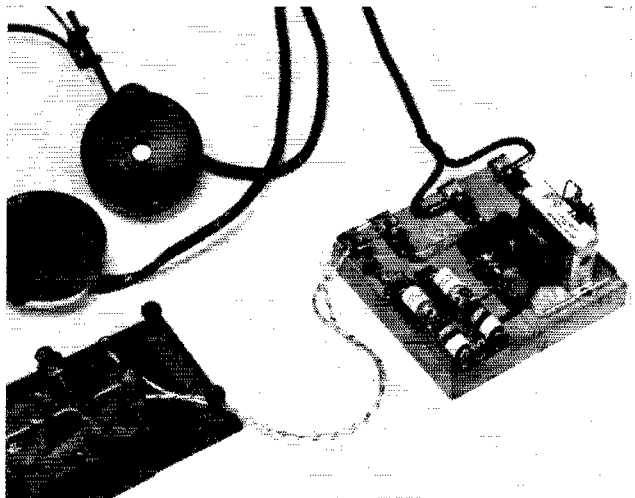
If the oscillator fails to work at first trial, recheck the wiring and, if possible, have the components tested to make sure none are defective. Many times a beginner will use enameled wire for making connections and will fail to scrape the enamel from the wire before soldering. If you use this type of wire, clean the ends with a knife until all the enamel is removed. When soldering a connection hold the tip of the iron to the joint until the joint becomes hot enough to melt the solder. Don't apply the solder to the soldering-iron tip — hold the solder to the work until it flows around the connection.

Several different types of transformers may be used in place of the unit specified. Every transformer tried that had a primary-to-secondary turns ratio of 20 to 1 or less worked. In fact, a 6.3-volt filament transformer served the purpose. The 6.3-volt terminals were connected to the same points as 1 and 6 in Fig. 1. The 115-volt primary leads were connected to the same points as the red and blue leads in the circuit diagram.

The pitch of the note will depend on the transformer and the capacitance of C_1 . If you like a higher tone, use a smaller value of capacitance. Increasing the capacitance will lower the pitch.

◆ This view shows the oscillator ready for use. Note how the batteries are held by the Fahnestock clips and the tie-point terminals. The bottoms (outside of can or negative side) of the cells contact the Fahnestock clips.

◆



A Dual Quad for 15 and 10

Concentric Elements on a Single Frame

BY ALBERT M. MAGAGNA,* W8RWW

INSPIRED by an article in *QST* early last year,¹ a cubical quad for 21 Mc. was built by the writer last October. The general construction practices suggested by W5DQV were used although the dimensions were, of course, different. The antenna consisted of two 11-foot square loops of wire, using a spacing of 5 feet between the reflector and driven element.

At a height above ground of 26 feet this 15-meter quad performed so successfully — 42 countries worked on phone in five weeks while running 65 watts input to the final stage — that a great deal of interest was created in the quad antenna in this locality.

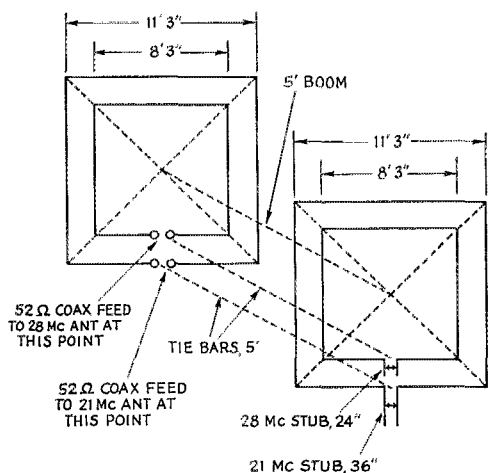


Fig. 1 — Dimensions of the electrical system of the 15/10-meter dual quad. Separate coax lines are run to each section. Stub lengths given are maximum; electrical length will be less after proper position is found for the shorting bar. Stubs are constructed of No. 14 bare copper wire, spaced 3 inches.

Elements are No. 14 copper wire, with 8-foot bamboo poles used for the cross supports. The main boom is a 5-foot length of 2×2 white pine. The 5-foot tie bars between the connection points of the elements are 1×2 white pine. All wood, including bamboo, was given two coats of "Val Oil" weatherproofing compound.

When a friend of the writer, W8FOV, indicated a desire to build a duplicate antenna it was decided to try a combination 21- and 28-Mc. cubical quad with the 28-Mc. elements strung inside the 21-Mc. elements. Since the spacing of 5 feet between the driven element and reflector supports represented approximately 0.1 wavelength spacing on 15 meters and 0.15 wave-

* 2010 Miller Road, Flint 3, Mich.

¹ Leslie, "A Cubical Quad for 20 Meters," *QST*, January, 1955.

• Starting from a constructional method described by W5DQV in an earlier issue of *QST*, W8RWW introduces another idea — two quads on the same frame, to cover two bands. The performance turned out to be all that could be hoped for — both antennas work just as well, from all tests, as they would in separate structures.

length spacing on 10 meters, it was hoped that a good compromise would be achieved on both bands with respect to forward gain and impedance characteristics. Such a combination quad was constructed using the dimensions given in Fig. 1.

After tuning up each quad separately for maximum forward gain it was found that the 15-meter portion performed just as well as the writer's separate 15-meter quad, and the 10-meter portion gave results that were the equal of a close-spaced 3-element parasitic beam. Although it had been anticipated that there might be serious interaction between the 10- and 15-meter sections, there is no evidence of such interaction in the antenna as constructed.

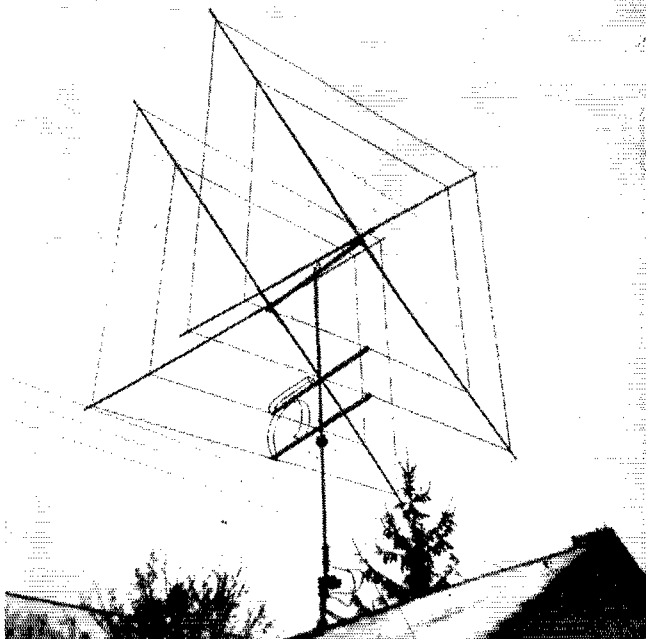
It has not been possible to make accurate measurements of forward gain or front-to-back ratio, but the indications are that the performance duplicates that of W5DQV's 20-meter quad. Our approximate measurements show a forward gain in the neighborhood of 7 db. on both the 21- and 28-Mc. portions, with the 21-Mc. section showing a 30-db. front-to-back ratio and the 28-Mc. portion showing a 25-db. front-to-back ratio. The front-to-side ratio on both portions is phenomenal — there is almost no measurable radiation from the sides.

Impedance Checks

Fig. 2 shows the results of s.w.r. measurements on both sections of the quad at W8FOV. These are in terms of readings of the reflected current (0-1 milliammeter) using the simple s.w.r. bridge described in the chapter on measurements in the *Handbook*. From an approximate calibration of the bridge the current readings indicate that the 15-meter quad has a maximum s.w.r. of 4 to 1 at 21 Mc. and a minimum s.w.r. of 1.3 to 1 at 21.45 Mc., and that the 10-meter quad has a maximum s.w.r. of 2 to 1 at 28 Mc. and a minimum s.w.r. of 1 to 1 centered at a frequency of 29.3 Mc.

It is obvious from these curves that a better match to 52-ohm coax could be obtained, accompanied by broader frequency response, on the 15-meter quad by increasing the spacing between the

The 15/10-meter quad as constructed at W8FOV. Tuning stubs for the reflectors are looped back along the tie bars. Total weight of this assembly, not including the mast, is 13 pounds.



driven element and reflector to 9 feet. At 9 feet the spacing on 15 meters would be 0.2 wavelength and on 10 meters slightly over 0.25 wavelength. This probably would not affect the match on 28 Mc. and should increase the bandwidth, if anything, on that band. However, increasing the spacing would defeat the original design intention of building a reasonably efficient full-size two-band beam in as small a space as possible.

Actually, the antenna at W8FOV is working at a disadvantage with respect to height, the center of the array being only 22 feet above ground. It

find out. Another project, too, is to determine whether a similarly constructed quad for three bands — 20, 15 and 10 — will work.

Note on Construction

No detailed constructional pointers are given since the construction, in general, follows that used by W5DQV. Because of the difference in physical size between a 20-meter quad and a 15/10-meter quad, one feature was changed. Instead of using two pieces of 1-inch angle iron, each piece 24 inches long, two pieces of 1-inch aluminum

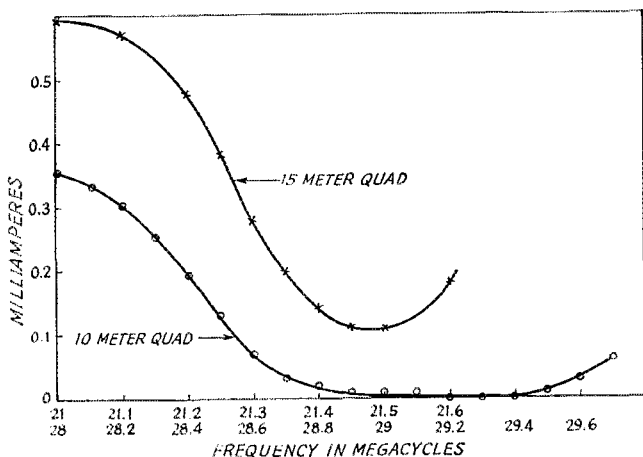


Fig. 2— Approximate s.w.r. vs. frequency, plotted in terms of bridge reading on 0-1 milliammeter with incident voltage adjusted to full scale (1 milliampere).

seems reasonable to assume that if the height could be materially increased and the antenna kept reasonably in the clear, both the s.w.r. and bandwidth would be improved. As soon as our Michigan weather permits (this is being written in midwinter!) the writer certainly intends to

angle 18 inches long were fabricated for the antenna at WSRWW.

Judging from local interest and on-the-air queries, it appears that a lot of hams with DX ambitions and postage-stamp size lots will be interested in the dual quad.

Using Those Surplus Relays

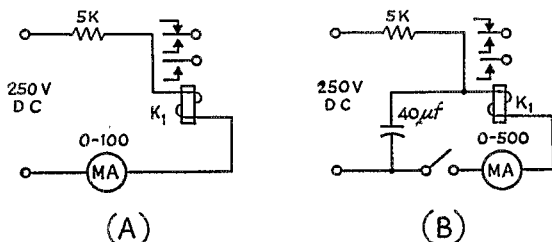
Operating without Specially Designed Power Supplies

BY E. B. BLETT,* W8CBM

• This is one of those "Why didn't I think of it?" ideas. Dig those discarded surplus relays out of the junk box and make them go to work.

Most of us at various times have looked at a well-made relay at a war-surplus dealer's and remarked, "Boy, I wish that was made for the right voltage!" — the "right" voltage being the voltage available for relay operation in the current construction project and not always the same value. Unfortunately, the most attractive war-surplus relays and the most plentiful are made for 24–28-volt d.c. operation, with lesser numbers for 12 to 14 volts d.c. These voltages are rarely, if ever, available in an amateur station unless a special relay power supply is

Fig. 1 — A — Setup for measuring minimum holding current; B — Method for providing current surge from charged capacitor for initial closing. K_1 , the relay used in this discussion, is from a BC-442 antenna-relay unit and has a resistance of approximately 140 ohms.



made. The cost of the transformer and rectifier required is greater than the saving realized by using the cheap surplus relay, so we buy the more expensive tailor-made relays and continue to look at the beautiful surplus jobs and say, "Boy, I wish . . ."

This article will show you how you can use the relay or relays that strike your eye at the surplus dealer's without much concern for the voltage and current ratings. If this is read by many amateurs, it will probably result in a future increase in the cost of my relays. This thought, coupled with an inherited Scotch instinct, has up until now kept me from revealing the not-widely-known facts that permit these relays to be utilized inexpensively. The same Scotch instinct (some people have less complimentary expressions for it) has resulted in an additional simultaneous use for the surplus relays: that of providing transmitter safety circuits. Yes, I get my money's worth.

A Little Experiment

The whole secret (?) is the fact that most relays of this type require much less current

* 19176 Forrer, Detroit 35, Michigan.

for holding the armature in than is required for operating it initially. As an example, let's take the nice little relay in the BC-442 antenna-relay unit. (I love these.) The measured resistance runs from 140 to 180 ohms. Since this is a 24–28-volt relay, Ohm's Law says that at 28 volts the 140-ohm relay will take 200 milliamperes. Who can afford a 200-ma. drain just to use a surplus relay?

Let's try an experiment with this relay. Let's hook it up in series with a 0–100 milliammeter and a 5000-ohm resistor across a 250-volt d.c. power supply, as in Fig. 1A. Hm-m-m, the relay doesn't operate. The meter indicates that Ohm's Law is still in effect and we are drawing a little under 50 milliamperes. Now push the armature over so the contacts close. The magnetism is enough to hold the relay closed and it will stay closed until the circuit is broken. The relay could

remain closed indefinitely without even warming up, because it is being held closed by less than 25 per cent of its rated operating current. This ratio of rated operating current to holding current will vary with different relays but the required holding current is always a great deal less than the required operating current.

Another Experiment

Now let's revise our circuit to that of Fig. 1B by adding a 40- μ f. condenser and a switch, and either changing our milliammeter to a 0–500 or removing it from the circuit. Warm up the power supply with the switch open. Now close the switch. Eureka! The relay operated, and after the initial surge the current is approximately the same as before.

What happened? Simply this: The condenser stored up more than enough energy to operate the relay initially, and after operation the steady-state current, as before, was sufficient to hold in the relay. If we wish, we can even increase the resistance a little more and reduce the steady current consumption of the relay to an even smaller value — to, say, 36 mils.

Circuit Values

What value and power rating should the resistor have? We can determine the minimum holding current and resistance value experimentally. Suppose we start with a 10,000-ohm, 10-watt slider-type resistor and reduce the current by increasing the resistance while we operate the relay armature manually. When we have too high a value of resistance, the armature will not

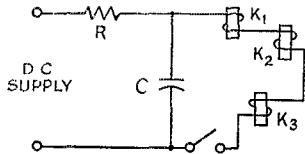


Fig. 2 — Series connection for use when several relays are to be operated simultaneously.

stay locked in. Decrease the value of resistance to a value a little smaller than appears necessary, to allow for varying line voltage and associated loads on the power supply. Supposing our holding current value is 36 ma. Ohm's Law tells us that to obtain a current of 36 ma. from a 250-volt supply our total circuit resistance is $250/.036$ or 6940 ohms. Our resistor then is this value less the resistance of the relay coil, or $6940 - 140 = 6800$ ohms. The power is I^2R ($.036^2 \times 6800$) or 8.8 watts, so we should use a resistor of 10 watts rating or more.

We don't have to have a power supply of 250 volts to operate a 28-volt relay. However, as

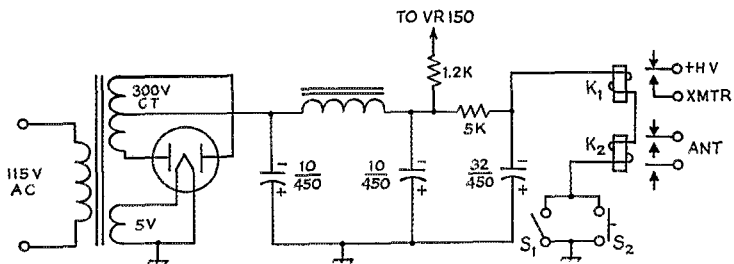
the one we previously used without increasing our total current drain for relays by even one milliampere. They don't even have to have the same holding-current values or voltage ratings.

All we do is hook them in series, as in Fig. 2, and adjust R to a value that provides adequate holding current for all the relays in the string. What we've done is to substitute some relay coils for part of the resistance we previously used with one relay coil. (It's that Scotch instinct cropping out again.) One of my requirements for relay operation is that the coils remain cold. If one should warm up — it's never happened to me — and it bothers you, you could try shunting that coil with a suitable resistor.

Some Applications

Most hams get uneasy when they think of the dire results to their final amplifier tube should a bias-supply rectifier go west. An SCR-522 transmitter is one of those animals requiring fixed bias — 150 volts. My brand of conversion required an antenna-changeover relay at the output link, operated by a push-to-talk (with carbon mike) or send-receive switch (with transmitter mike) that also operated a relay that switched on the high voltage and disabled the receiver. By running the two relays from the bias power supply I protected my final-amplifier tube. No bias, no relay current, and the plate voltage instantly removed. See Fig. 3. Note that a 6-volt and a 28-volt relay are used in series. The peculiar thing is that, when operating, these two relays have only an 8-volt drop across them.

Fig. 3 — Protective circuit used in conjunction with bias supply. As used at W8CBM, K_1 is a 6-volt relay having a 60-ohm coil and K_2 is a 28-volt relay with a 180-ohm coil. S_1 is the send-receive switch; S_2 is a spring-return switch used for push-to-talk operation.



we go to lower voltages the resistance will be lower and the required capacitance higher. The required capacitance for sufficient energy storage can be calculated, but it is a simpler matter to determine it experimentally. If your power supply can furnish the additional minimum current necessary for holding in the armature, simply add capacitance until closing the switch causes the relay to operate.

Relays in Series

Now to a case of eating your cake and having it too. Quite often it is desirable to use several relays at one time. This might be a matter of keeping leads short by locating relays close to the circuits they are to switch, or simply a case of not having enough of the right contacts available on one relay. We can substitute several relays for

Fig. 4 shows the power-supply and relay circuits of my \$1,500 "Field Day and Going A-Visiting" 6-band portable. (The \$1,500 is the rock-bottom price of building another like it — and I don't even want an order for one.) Here there were a number of relay requirements to be met. In the filter, choke input was used for receiving and condenser input for transmitting — an old Scotch method that permits using lower-voltage filter condensers and eliminates the heat and wasted current of a big dropping resistor while getting good regulation from a power supply used for both the receiver and transmitter. So one relay had to switch the B+ from the receiver to transmitter and put the 600-volt condenser into the input circuit of the power-supply filter. Another relay turns the cooling fan on with the transmitter when the fan switch

Filters for Multitransmitter Setups

An Idea for C.D. and F.D. Installations

IN DESCRIBING a civil-defense control-station transmitter some time ago (*QST*, September, 1954) Phil Rand, W1DBM, pointed out the desirability of using both low-pass and high-pass filters on each transmitter-receiver combination when such combinations are used simultaneously on different bands. The scheme is equally useful on a Field Day junket where a separate set-up is used for each band. The low-pass filter takes out the harmonics generated by the transmitter and also helps prevent blocking and spurious responses in the receiver from transmitters operating on higher bands. The high-pass filter, used on the receiver only, prevents blocking and other

worked up the charts of Figs. 2 and 4 for these circuits so that no calculations are necessary. Simply choose a cut-off frequency and read the values off the curves.

The cut-off frequency should not be more than 80 per cent of the operating frequency in the

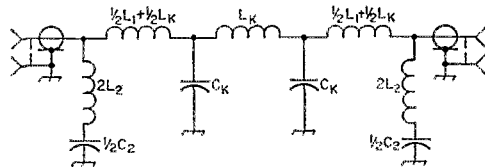


Fig. 1 — Low-pass filter. See Fig. 2 for values for filter to be used in 52-ohm matched coaxial line.

undesirable effects from other transmitters working on lower bands.

Suitable circuits are shown in Figs. 1 and 3, for low-pass and high-pass filters respectively. The nomenclature is the same as that used in the filter chart in the *Handbook* (data chapter) where the basic formulas are given. WIDBM has

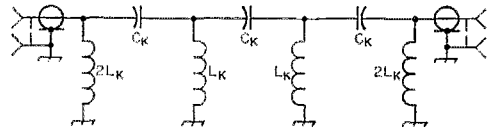


Fig. 3 — High-pass filter. See Fig. 4 for values for filter to be used in 52-ohm matched coaxial lines.

case of the high-pass filter, nor less than 1.2 times the operating frequency in the case of a low-pass filter. Other than this, the frequency can be chosen anywhere between the band of operation and the next lower or higher one. Taking, for example, a Field Day set-up having separate transmitter-receiver combinations for 3.5, 7 and 14 Mc., the low-pass filter for the 7-Mc. installation could have a cut-off frequency between 8.4 and 14 Mc., and the high-pass filter for the same band could have a cut-off frequency between 4 and 5.6 Mc. Splitting the difference probably would be the best plan; i.e., about 10-Mc. cut-off for the low-pass and 5-Mc. cut-off for the high-pass filter. It should be obvious, of

(Continued on page 156)

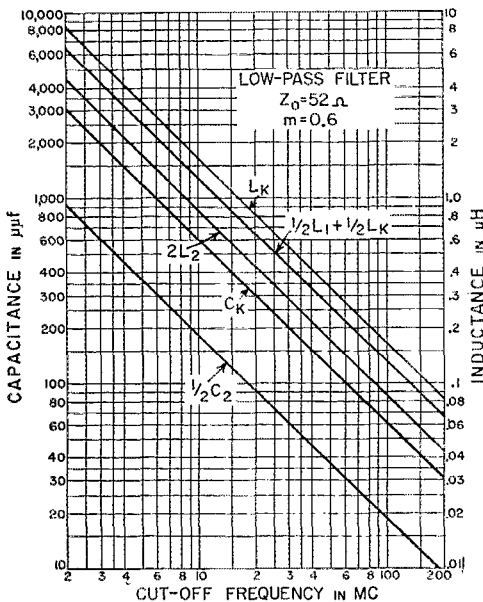


Fig. 2 — 52-ohm low-pass filter design chart.

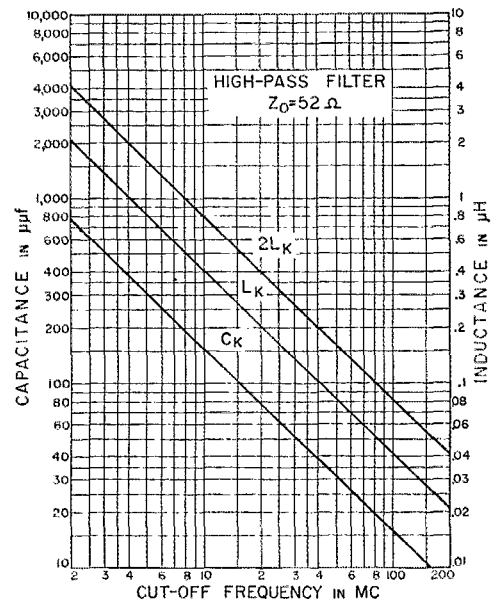


Fig. 4 — 52-ohm high-pass filter design chart.

A Versatile Power-Control System for Mobile Use

Getting the Most out of Car-Radio Power Supplies

BY A. F. POPELARSKI,* W3HDL

• Many mobile hams waste quite a few watts of primary power each time the transmitter is turned on. In this article, W3HDL explains how to eliminate this waste a good part of the time, and suggests a method of getting more work out of the car-receiver's power pack. The feature of convenient switching between low and high power is a natural for c.d. operators.

THIS VERSATILE power-control circuit is a "battery saver" that allows the car-receiver power supply to be used for certain phases of transmitter operation. It provides a convenient and rapid means of going to low power whenever desirable, and permits adjustment of the transmitter oscillator or v.f.o. without need for firing up the entire rig. The circuit silences the receiver and removes the receiver power load from the battery during normal operation of the transmitter, and allows the receiver to remain active while adjusting the oscillator or zero-beating the v.f.o. During the latter adjustments, the power

control and S_2 has zero-beat and normal-operation positions. The antenna relay is K_1 , and K_2 is the starting relay for the transmitter power supply. K_1 must be a d.p.d.t. type (K_{1A} and K_{1B}) and it is advantageous, but not necessary, for the relay to have a set of normally-open contacts (K_{1C}).

To install the system, first open the B-plus line from the broadcast-receiver power supply (disconnect it from the plate and screen circuits of the set) and then feed it to the transfer contact of K_{1A} . The normally-closed contact of K_{1A} is returned to the plate and the screen circuits of the receiver, and the normally-open contact is connected to S_{2A} . Section K_{1B} of the antenna relay performs the usual send-receive antenna functions, and the contacts of K_{1C} are wired in series with S_{2A} and the positive output terminal of the transmitter supply.

S_{2B} is used to control the relays. With the switch in the position shown, only K_1 will close when the microphone switch, S_1 , is pressed. With S_{2A} at the normal position, both K_1 and K_2 will be actuated when S_1 is closed.

The zero-beat switch, S_{3A} , is in series with a

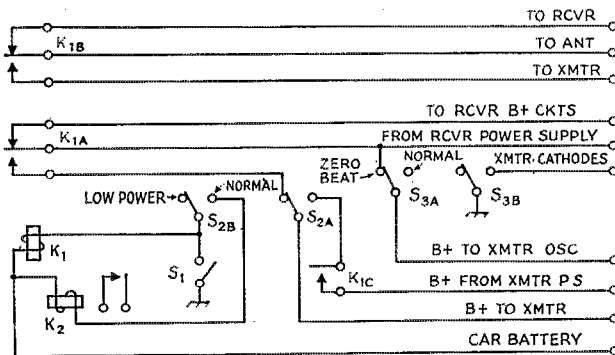


Fig. 1—Circuit of the versatile power-control system.

- K_1 —Antenna change-over relay (see text).
- K_2 —Starting relay (see text).
- S_1 —S.p.s.t. push-to-talk switch.
- S_2, S_3 —D.p.d.t. toggle switch.

for the oscillator or v.f.o. is obtained from the receiver power pack, and the heavy-duty or transmitter supply is turned off. Civil-defense operators who participate in prolonged periods of mobile operation will find the battery-saving feature of particular interest, and will be pleased with the results obtained by limiting the transmitter input to a few watts stolen from the broadcast receiver.

Circuit

The circuit is actually quite simple, as shown in Fig. 1. S_1 is the push-to-talk switch located on the microphone. S_2 is the low- high power

* 6029 67th Place, Riverdale, Maryland.

lead running to the B-plus line from the receiver (picked up at the transfer contact of K_{1A}) and a lead to the plate-voltage terminal of the oscillator or v.f.o. S_{3B} grounds the cathodes of all transmitting tubes except the oscillator or v.f.o. when the switch is thrown to the "normal" position. It opens the cathode circuits of all but the oscillator or v.f.o. tube when set at the zero-beat position. In some instances, the long cathode lead between the transmitter and ground (through S_{3B}) may result in instability. This may be cured with additional by-pass capacitance at the cathode of the effected stage or stages. If cathode bias is employed in a buffer, driver or power-

amplifier circuit, it may be necessary to by-pass the bottom end of any resistor that has been lifted from ground within the transmitter.

Using the System

To zero-beat a v.f.o. or check oscillator frequency, it is only necessary to throw S_3 to the zero-beat position and then proceed with the adjustments. *Do not* close S_1 during this operation. Under these conditions, the broadcast receiver will receive plate power, the antenna will be connected to the converter, and the transmitter oscillator or v.f.o. will take d.c. plate input from the receiver supply. The remainder of the transmitter will be inactive because of the open cathode circuits.

S_2 and S_3 are set at the low-power and normal positions, respectively, for low-power operation. Then, when S_1 is closed, K_1 will transfer the antenna to the transmitter, disable the receiver by opening its plate-supply lead, and feed power from the receiver power pack to the entire transmitter. The transmitter load will usually cause the normal output of the receiver supply — around 260 volts — to drop to 200 volts or less, depending on the current drawn by the transmitter. However, it is still possible to run the r.f. power amplifier at an input of 3 to 5 watts with little more battery drain than is usually taken by the receiver alone. S_1 will not activate the main transmitter supply during this type of operation.

Both S_2 and S_3 are set at the normal position for high-power operation. B-plus from the dynamotor or vibrator-type supply is then fed to the transmitter through S_{2A} and K_{1C} . No power is robbed from the receiver in this instance and none is wasted, because the receiver B-plus line is open. The transmitter supply is made active by the closing of S_1 and the resultant application of voltage to K_2 through S_{2B} .

It should be pointed out that relay contacts K_{1C} are not an essential part of the system. However, use of the contacts does prevent reception (on your own car receiver) of the transmitted signal due to coasting of the dynamotor after the push-to-talk switch has been released. Thus, this leads to better break-in operation.

The best practice in using the control system is to make the station call or CQ at the normal power level. Immediately after contact has been established, the rig may be switched to low power and communication carried on at this input as long as conditions permit. Incidentally, this practice of stealing power from the broadcast receiver for transmitting purposes has been employed regularly for five years or more without any apparent harm, because of power overload, to the Motorola and Philco receivers in use.

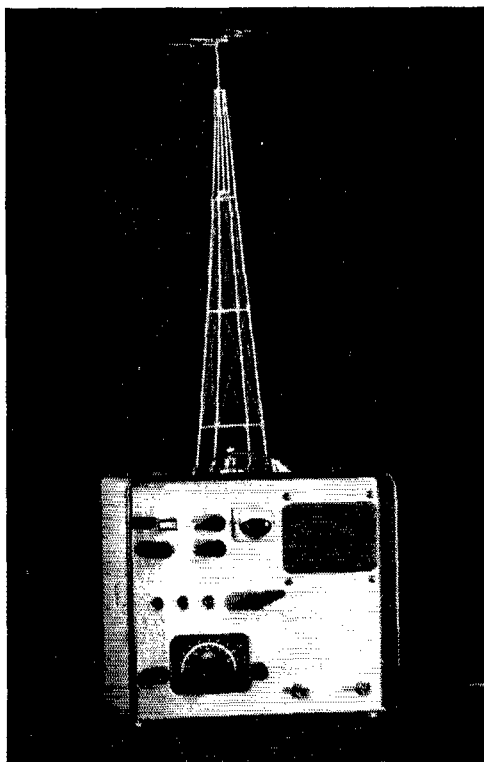
Results

Several comparisons of 3- vs. 50-watt mobile operation may interest those who contemplate using the versatile control system. When working between Washington, D. C. (considered to be a poor mobile location because most of the streets

are heavily lined with trees) and Seattle, Washington, the received signal reports were 15 db. over S9 and an even S9 at the 50- and 3-watt levels, respectively. Both reports carried a "5" prefix. An S8 report received from Puerto Rico dropped not more than 2 points when the power was reduced and, once again, it was R5 all the way through. These two contacts were made on 10 meters. An 11-meter contact with San Antonio, Texas, resulted in an R5-S9 plus 25 db. report for the 50 watts and an R5-S9 plus 5 db. report for 3 watts.

Civil-defense operators will be interested in the results of local ground-wave contacts made at the two different power inputs. Reports of S7 to S9, received when using 50 watts input, rarely fell below S5 when the input was lowered to 3 watts. And who isn't willing to watch the report fall off a couple of points as long as contact is maintained and providing that the battery load is reduced 8 or 10 amperes?

Strays



"Grand performance on a miniature scale" aptly captions this Gonset Communicator shown with an antenna tower built by W3HFG. While the tower was installed for its realistic appearance, it works as well as the $\frac{1}{4}$ -wave antenna that originally came with the set, says W3HFG. The tower is made of brass rods and its legs are mounted in rubber. It is fed through one leg and banana plugged to the Gonset output.

A Contest Man's Receiver-Tracking V.F.O. for 7 Mc.

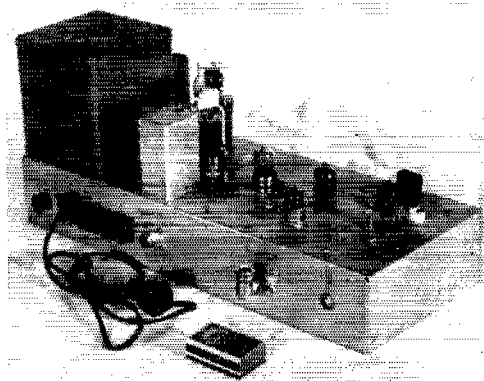
Using the Receiver Oscillator in a Heterodyne-Type Exciter

BY A. D. LaRUE,* W1IAP

• This system of tracking the transmitter v.f.o. with the receiver makes use of the tunable oscillator in a 75A-2 receiver. A signal from this oscillator in the region of 2500 kc. is mixed with the signal from a crystal oscillator to produce a v.f.o. signal of the same frequency as that to which the receiver is tuned. The system requires only one easily-made connection to the receiver, in no way impairing its operation or value. Although designed specifically in this instance for 7 Mc., there is no reason why the same principle should not be applied to other bands.

THE CONTEST OPERATOR who is serious about the accumulation of points soon learns to view the station installation with a critical eye, especially with regard to the placement of controls and the number of adjustments to be made in the course of routine operation of the equipment. One cumulatively time-consuming adjustment which must be made hundreds of times during a contest, if one is intent on answering the CQ calls of other stations, is that of

*12 Flintlock Rd., Lexington, Mass.



The receiver-tracking v.f.o. unit is shown here assembled on a 7 × 17 × 3-inch chassis. The power supply (not described in the article) is included. At the right are the oscillator inductor (L_7), the 9755-kc. crystal and the 12AT7 oscillator-phaser (V_1). To the left of these are the 6AK5 isolator (front) and the 12AT7 mixer (V_2). Near the center of the chassis are the 12AT7 driver and the 2E26 output tube with its tank coil enclosed in a shielding can. Power-supply components occupy the remainder of the space. A jack for monitoring the 2E26 grid current during initial adjustment and a power switch are on the rear side of the chassis.

adjusting the v.f.o. to the frequency of each station to be called. This adjustment is time-consuming because in the hurly-burly of contest operating, other things being equal, the station called very frequently first hears and responds to the call most accurately "zeroed-in" on his own frequency. Care must therefore be exercised in setting the v.f.o., and the stations locating the CQ first have the most time to make v.f.o. adjustments. Late comers must be content with hasty v.f.o. dial settings less likely of success. Hence, a substantial percentage of misses must usually be accepted in answering CQ calls.

Principles of the System

Participation in SS, DX, and LO contests and in FD exercises leads one to the conclusion that elimination of the necessity for retuning the v.f.o. to the frequency of each station in turn to be called would reduce the time and motion required in operating the station, hence making for reduced operator fatigue and, it is to be hoped, higher contest scores. The v.f.o. to be described accomplishes this by making use of the receiver local oscillator as the frequency-controlling element of the system. The unit is intended to supplement the regular station v.f.o. The receiver local-oscillator frequency is beat against the signal from a crystal oscillator, so producing a heterodyne signal identical in frequency to that to which the receiver is tuned. This signal is amplified and used to excite the grid of the final amplifier. The idea is not new,¹ but in view of the interest shown by many who have observed this particular v.f.o. system in operation, it appears worthwhile to describe the electrical design and the station operating arrangement.

First, a system of this kind immediately places two important requirements on the receiver local oscillator. The local oscillator must

- a) be exceptionally stable;
- b) operate on a frequency sufficiently higher (or lower) than that of the incoming signal, or that of the crystal oscillator, to permit the selection of the proper heterodyne and the rejection of all other signals in the v.f.o. mixer stage.

These requirements and the possibility of making use of a receiver-tracking v.f.o. were among the considerations which led to the selection of the Collins 75A-2 receiver a few years ago, when a new receiver was purchased for the home station, although there are undoubtedly

¹Treuke, "A Single-Control Transmitter-Receiver," *QST*, May, 1953.

other makes of receivers which would also serve adequately.

The v.f.o. to be described is a one-band affair, being designed to work in the 7-Mc. band, although there appears to be no fundamental reason why the system would not work equally well on any band. The 7-Mc. v.f.o. was built to try out the idea, a one-band design being used in the interest of simplicity.

The permeability-tuned second local oscillator of the 75A-2 receiver is exceptionally stable, so much so that the well-aligned receiver makes a creditable frequency meter. The set makes use of a double-conversion circuit in which the first local oscillator is crystal-controlled, the first i.f. being tunable. The relationship between the frequency of the permeability-tuned second local oscillator and that of the incoming signal is illustrated in Fig. 1. It is apparent that if this local-oscillator variable signal is beat against that

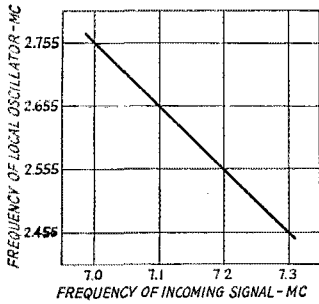


Fig. 1— Relationship between receiver local-oscillator and incoming-signal frequencies.

from a 9755-ke. crystal oscillator, the frequency of one of the resulting heterodynes will be identical to that to which the front end of the receiver is tuned.

But other frequencies are also likely to be present in the output of any practicable mixer stage, these being the harmonics of the injected signals, and the additive and subtractive heterodynes. It is desirable to tabulate these frequencies, so to determine the likelihood of difficulty with unwanted signals. In the accompanying

Table of Mixer Frequencies and Heterodynes		
Crystal Frequency 9755 kc.		
Local-Osc. Harmonics	Additive Heterodyne	Subtractive Heterodyne
1st 2755 to 2455 kc.	12510 to 12210 kc.	7000 to 7300 kc.
2nd 5510 to 4910 kc.	15265 to 14665 kc.	4245 to 4845 kc.
3rd 8265 to <u>7365 kc.</u>	18020 to 17120 kc.	1490 to 2390 kc.
4th 11020 to 9820 kc.	20775 to 19575 kc.	1265 to 65 kc.
5th 13775 to 12275 kc.	23530 to 22030 kc.	4020 to 2520 kc.
6th 16530 to 14730 kc.	26285 to 24485 kc.	6775 to 4975 kc.
7th 19285 to 17185 kc.	29040 to 26940 kc.	9530 to <u>7430 kc.</u>

table, the fundamental frequency of the crystal oscillator is related to the harmonics of the receiver local oscillator and to the heterodynes resulting from the mixing action. Theoretically, all of these frequencies are present, and the harmonics extend ad infinitum. Further, another set should exist for the second harmonic of the crystal oscillator and the harmonics of the receiver local oscillator, and so on.

As a practical matter, however, the higher-order harmonics are likely to be quite low in amplitude, and all frequencies very far removed from the desired frequency range of 7.0 to 7.3 Mc. will be highly attenuated by the action of the tuned circuits of the transmitter. The frequencies within or close to the desired 7-to-7.3-Mc. range are underlined in the table. The 7-to-7.3-Mc. range, indicated as the subtractive heterodyne of the crystal-oscillator fundamental and the first harmonic of the receiver local oscillator, is, of course, the heterodyne with which the system is to work. Competition might be expected from the third local oscillator harmonic at 7365 kc. and the subtractive heterodyne of the seventh harmonic at 7430 kc., but it was felt that a system should be built up to check out the basic idea and to determine experimentally what difficulties would be encountered.

Circuit

Fig. 2 shows a block diagram of the 7-Mc. experimental receiver-tracking v.f.o., while Fig.

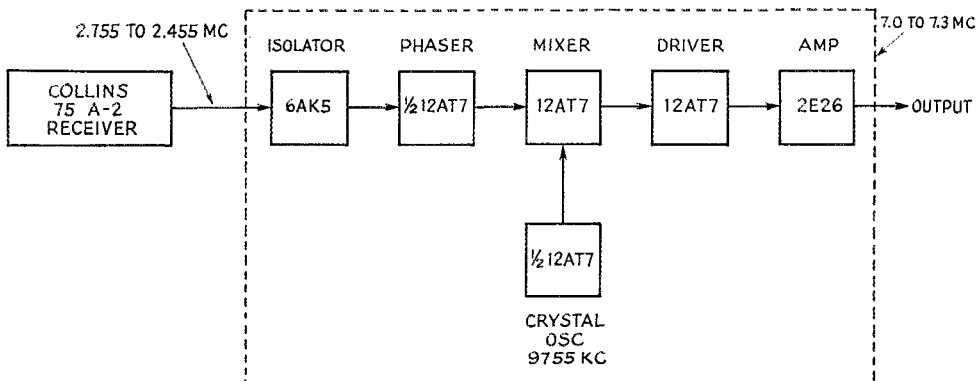


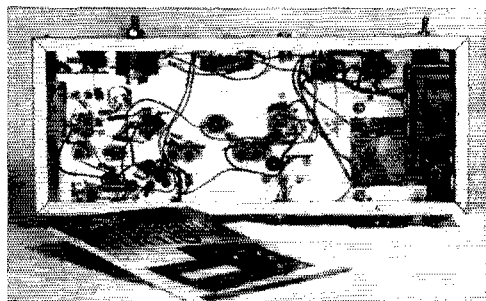
Fig. 2— Block diagram of receiver-tracking v.f.o. system.

3 illustrates the circuit diagram. The 2.755-2.455-Mc. input signal is obtained from the grid of the receiver 6BE6 second mixer tube. A 30- μ mf. coupling capacitor is used at the tube-socket grid terminal to tap off a small amount of the permeability-tuned second-local-oscillator signal. The center lead of a short length of RG-58/U coaxial cable is connected to the 30- μ mf. capacitor, the outer braid being grounded at a tie point located, conveniently nearby. This coaxial line may be fed along the corner of the chassis, up through the center hole of the tube socket marked "crystal calibrator," and out through one of the ventilating holes in the rear of the cabinet if one objects to mounting a suitable connector at the rear of the chassis because of future receiver resale considerations.

The input signal from the receiver is fed through the 6AK5 Class A buffer-isolator stage of Fig. 3 into the phaser stage, and then to the input of the 12AT7 balanced mixer where it is heterodyned with the output from the 9755-kc. crystal oscillator to produce the subtractive frequency in the range 7 to 7.3 Mc. in the output of the mixer. The heterodyne signal, identical in frequency to that to which the receiver is tuned, is fed through the 12AT7 grounded-grid driver stage and amplified by the 2E26 amplifier.

The 30- μ mf. coupling capacitor placed in the receiver, and the short length of coaxial cable, used in obtaining the receiver-tracking v.f.o. control signal, may be looked upon as a low capacitance shunted across the receiver second-mixer grid-to-ground circuit. RG-58/U coaxial cable has a capacitance of 28.5 μ mf. per foot. The coupling capacitors were purposely kept small, and there has been no observable deterioration in receiver performance because of the shunting effect of this coupling circuit.

The 6AK5 stage provides isolation between the receiver and the signal from the 9755-kc. crystal oscillator. If the latter gets back into the receiver second mixer, mixing action will occur here, and one will hear a continuous untunable c.w. note in the receiver output. Both the 12AT7 mixer and the 6AK5 isolator stages are keyed in the arrangement shown in Fig. 3, a system of grid-block keying being employed. The 6AK5 is a sharp cut-off pentode, and the tube works quite well in this application. A crystal-oscillator circuit suitable for keying might be used instead. The circuit shown did not key well, however, with the 9755-kc. crystal available. With regard



Bottom view of the receiver-tracking v.f.o. showing principally how the two coils of the bandpass couplers are placed. A filter choke for the power supply is to the right. The copper-oxide rectifier near the upper left-hand corner is used to obtain keying-bias voltage (not described in article). Input and output connectors are mounted along the rear edge of the chassis.

to the crystal, the exact crystal frequency required should be checked, since receiver manufacturing tolerances appear to allow slight variations from set to set. A 9755.3-kc. crystal was required in the unit described. Apparently the receiver second local oscillator of this particular set actually operates in the range 2.7553-2.4553 Mc. The crystal-frequency check may be made by measuring the second-local-oscillator frequency when the receiver is tuned to, for example, 7 Mc. Alternatively, the signal from an accurate frequency meter or signal generator may be substituted for that from the crystal oscillator. With the receiver-tracking v.f.o. in operation, the proper frequency will be that which results in a zero-beat signal in the receiver output, assuming that the b.f.o. is tuned for zero beat.

The phaser stage provides phase inversion to feed the grids of the 12AT7 balanced-mixer tube. The input signal in the range 2.755-2.455 Mc. would appear in the output of the mixer except for the fact that its frequency is remote from the frequency to which the mixer output circuit is tuned. The 9755-kc. crystal-oscillator signal is fed to both mixer grids in phase. Since the output plates of the mixer are in push-pull, the 9755-kc. signal is largely balanced out, and the main frequency found here is the subtractive heterodyne in the range 7-7.3 Mc. Variable capacitor C_1 is provided to permit balance of the input signal from the 9755-kc. crystal oscillator to the two mixer grids.

A band-pass circuit is used at the mixer output to couple to the 12AT7 grounded-grid driver stage, a second band-pass circuit being used at the driver output to couple to the grid circuit of the 2E26 amplifier. Each of the coils, L_1 through L_6 , is wound on a National XR-50 form and mounted in a hole in the chassis. It was found that adequate coupling for the frequency range 7-7.2 Mc. could be obtained by mounting the coils tightly together and stagger-tuning the individual units. The

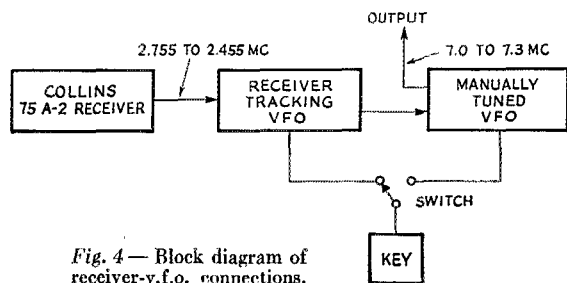


Fig. 4 — Block diagram of receiver-v.f.o. connections.

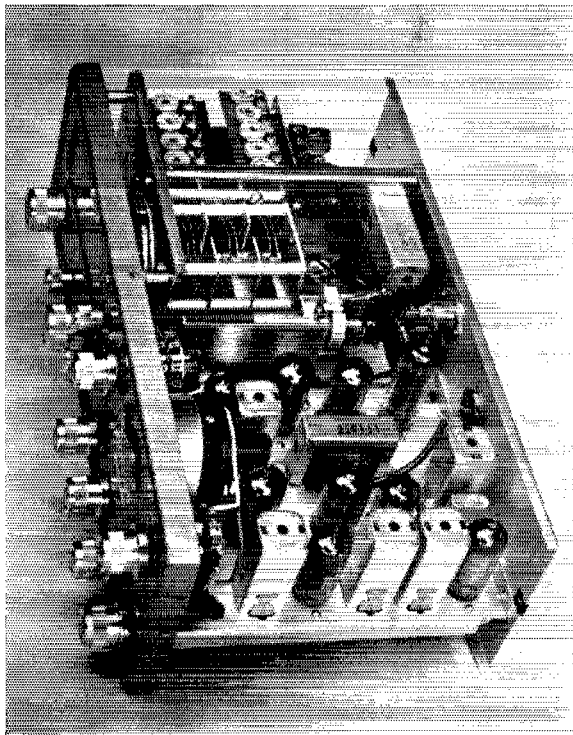
(Continued on page 152)

• Recent Equipment —

The Morrow MBR-5 Receiver

IF YOU haven't seen the MBR-5 receiver in your local radio store, it might be worth a special trip, because our words won't be able to get across to you how compact the receiver is. Sure, we can mention that it measures 12 inches wide by $4\frac{1}{4}$ inches high by $6\frac{1}{2}$ inches deep, but you really have to see it to appreciate what that means. This is no compromise receiver (except perhaps in one respect that will be mentioned later); it is an amateur-bands-only receiver that is obviously designed for mobile work primarily but which is certainly not limited to that single application. We did want to get across that bit about the size, and we wish you could remove the chassis and study the design and workmanship while holding the whole receiver in one hand, as we did, but your dealer probably won't hold still for that. Perhaps you can get some idea from the accompanying photographs.

The size mentioned above is that of the receiver proper. An extra unit houses the power supply and the loudspeaker. We used the receiver with the RAP-250 S supply, which works from 115 volts a.c. and is made just right to serve as a pedestal for the receiver when operating from a desk or table. The RVP-250 power supply can be obtained for use with a 6- or 12-volt d.c.



source. Either power supply can also be used to furnish the exciter plate power for a companion transmitter, the MB-560.

The MBR-5 covers the bands 3.5 to 4.0 Mc., 7.0 to 7.3 Mc., 14.0 to 14.35 Mc., 21.0 to 21.45 Mc., and 28.0 to 29.7 Mc. The tuning ranges have been adjusted so that these bands are covered with very little to spare, to give maximum bandspread. Six turns of the tuning knob covers each band, in case you're interested in the tuning rate. The dial scale is just over $3\frac{1}{2}$ inches long, with calibration marks every 10 kc. (except on 28 Mc. where they're every 50 kc.).

The panel controls will have to wait until you get a better idea of the receiver, and that's the reason for the block diagram of Fig. 1. This shows why the MBR-5 is a lot of receiver in a small package. As you can see, it is a double-conversion receiver, with a first i.f. of 1525 kc. and a second i.f. of 200 kc. But notice the tail end of the receiver: an automatic noise limiter, a field-strength meter (for help in tuning your mobile rig and antenna), and a squelch circuit that isn't turned on by noise peaks. The S meter works in the usual manner on signals and also serves as the indicator in the field-strength application. The MBR-5 has two crystals in it, a 100-kc. calibration crystal for setting up any band edge "on the nose," and a 1725-kc. crystal for the oscillator portion of the 6BE6 converter stage.

As for panel controls, the largest two knobs control the band switch and the tuning; an intermediate sized knob is used on BFO (pitch), VOLUME, SQUELCH (level set), R F GAIN, an OFF-SEND-RECV-LIM switch and an AVC-MAN-BFO-F.S.

◆
This view of the MBR-5 shows how a lot of receiver can be arranged in a small package without crowding. The converter crystal is visible behind the tube at the lower right.
◆

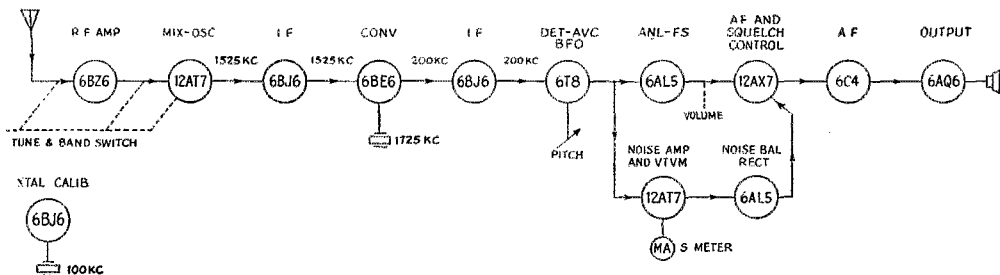


Fig. 1 — Block diagram of the MBR-5 receiver. The two i.f. tubes are controlled by the manual gain, and the two i.f. tubes plus the converter and r.f. amplifier are a.v.c. controlled.

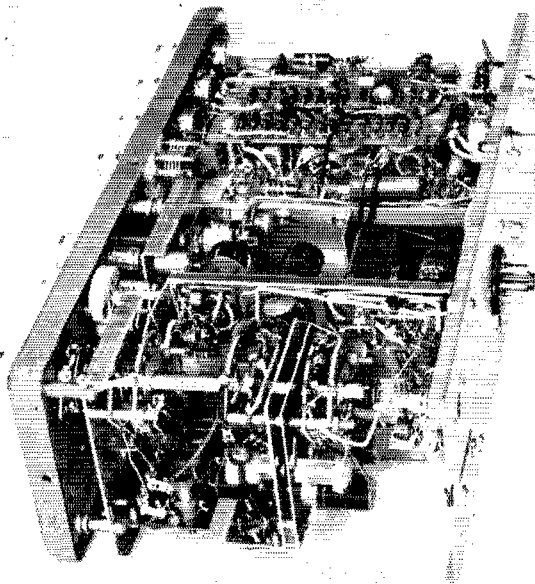
switch; and the smallest knob is used on the CAL (oscillator trimmer for bringing dial into exact calibration) and ANT TRIM controls and the crystal calibrator ON-OFF switch. The S meter uses a 2-inch meter, and if you have followed us this far you will realize that by now there isn't much room left on the panel for anything else. Even at that the panel isn't "cluttered" as one might expect from the long list. The S-meter zero-set control and the squelch noise-balance controls are available at the rear of the set, where the power cable, antenna, field-strength antenna and audio output connections are made. The headphone jack is mounted on the front of the power-supply/loudspeaker unit.

Referring again to the block diagram of Fig. 1, the use of a triode mixer in the second stage is not common practice, and presumably was used here in shooting for the best practical noise figure. The triode mixer has the oscillator voltage

capacitance-coupled to the grid, with the cathode grounded and a 2.2-megohm grid resistor for grid return. The series-tuned Colpitts (Clapp) circuit is used in the oscillator, with separate temperature-compensating capacitors for each band. The oscillator coils are wound on slug-tuned composition forms, and the r.f. and mixer coils are wound on polystyrene forms. A 1525-kc. series trap shunts the plate of the r.f. stage to minimize BC station feedthrough at the first i.f.

For those who might be interested in the tail end of the receiver, a simplified schematic is shown in Fig. 2. (The simplification is primarily in not showing all of the switch positions.) The field-strength meter uses one diode of a 6AL5 to rectify the r.f. and actuate the milliammeter. The car-radio antenna is presumably used for the f.s. antenna, and the pickup can be adjusted to the transmitter power level by proper choice of antenna length.

In this view some of the "front end" inductors and switches can be seen in the foreground. The tunable oscillator uses the series-tuned Colpitts (Clapp) circuit. The 100-kc. calibration crystal is housed in the metal case between the two tubes in the right foreground. Potentiometer shafts on the wall are for squelch noise balance and S-meter zero set.



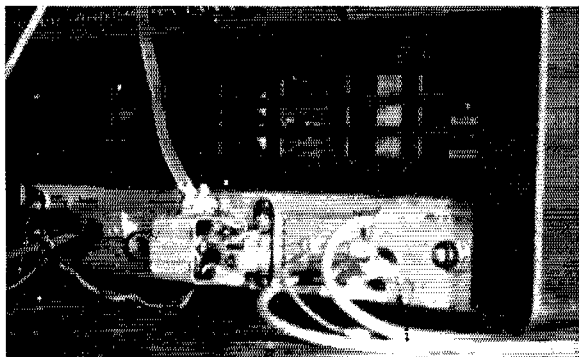
The Cathode-Follower T-R Switch

Simple Device for Break-In with One Antenna

BY WILL HERZOG,* W9LSK

At nearly all stations it is difficult enough to get up one good antenna for transmitting, much less another for break-in receiving. Many methods of automatic change-over for using the transmitting antenna for receiving have been devised, ranging from the simple (and expensive) surplus gas-filled T-R tubes from radar gear or a neon-bulb series-resonant circuit combination to special preamplifiers with biased swamping diodes across the resonant circuits.

The basic aim of these devices is receiver protection. However, they have various drawbacks.



The T-R switch at W9LSK is mounted right on the antenna-terminals of the receiver. Power is taken from the receiver's accessory socket, since the drain is small (about 12 ma. at 200 volts, plus 0.15 amp. at 6.3 volts for the heater).

Resonant circuits need constant tuning and coil changing. Several tubes require a separate power supply. Yes, there is a limit to the number of accessories that can be plugged into the power socket on a receiver!

The system used at W9LSK has most of these problems licked. It's silent, has no adjustments to make or coils to forget to change, affords a high degree of protection for the receiver, and introduces comparatively little attenuation. It consists of a simple resistance-capacitance coupled cathode-follower "preamplifier."

A cathode follower has several useful characteristics. Its output impedance is low, and by proper tube selection can be made to give a reasonably close match to the nominal 300-ohm antenna input impedance of most receivers. This low value makes it unnecessary to tune the output circuit since the shunting capacitances are too small to have an important effect on the impedance. The input impedance is high, so with proper installa-

tion the tube will have no effect on the transmission line to which it is connected and will absorb only a very small amount of power during transmitting. This is so even when the tube draws grid current, providing a high-resistance grid-leak is used. With a tube such as the 6C4 it is impossible to develop enough power output, even with as much as 200 volts of r.f. on the grid, to damage the receiver's input circuits since the plate input to the tube is only a little over a watt under such conditions. The maximum plate input, about 2.5 watts, occurs when the transmitter is idle.

The circuit is given in Fig. 1, and the photograph shows the installation on the SX 71 at W9LSK. To avoid stray pick-up on the lead between the cathode-follower tube and the antenna terminals on the receiver, this lead should be kept as short as possible. Likewise, the unit should be shielded to reduce pick-up.

The combination of the 50- μ mf. coupling condenser and 1-megohm grid leak has a short-enough time constant so that recovery is instantaneous. It is, in fact, possible to listen on other bands, such as the broadcast band, while the transmitter is in operation. The insertion loss is small¹ and, in the average case, is unimportant compared with the increase in signal-to-noise ratio afforded by using the transmitting antenna for receiving instead of a makeshift such as the traditional random length of wire. The factors that limit the r.f. voltage the circuit can handle are the voltage break-down rating of the 50- μ mf. capacitor and the voltage that may be safely applied between the grid and cathode of the tube. In tests, the tube did not break down with the unit connected to an unloaded antenna coupler tuned to resonance with the output of a 180-watt transmitter, on either 3.5 or 30 Mc.

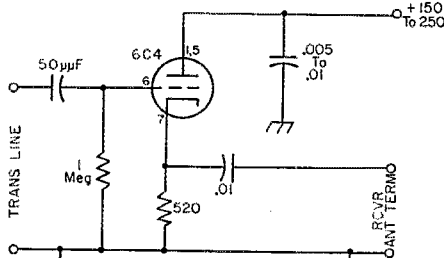


Fig. 1—Circuit of the cathode-follower T-R switch. Resistors are $\frac{1}{2}$ -watt composition; capacitances in μ f. where not indicated. Input and output circuit components and wiring should be separated to reduce feed-through by stray coupling.

* 5118 W. Washington Blvd., Milwaukee 8, Wis.

¹ Tests in the A.R.R.L. laboratory showed a loss of 6 db., practically constant through the 3.5-30-Mc. range, with no transmitter connected. The attenuation in an actual installation will vary with the line lengths and transmitter tuning (see Campbell, "Variations in T-R Switch Performance," this issue) — ED.

22nd ARRL Sweepstakes Results

Part I — C.W.

BY PHIL SIMMONS, WIZDP

EARLY NOVEMBER, 1955, was like any other early November. There was a nip in the air around the nation and the talk was of elections and turkey dinners. The banter took a different form, though, in ham circles. Here the topic was the pending 22nd ARRL Sweepstakes. Clubs hashed over plans for guaranteeing 100-per-cent representation in the heated race for the gavel and club certificates. Happily fingering previously-won awards, Old Pros craftily plotted angles for clobbering the local competition again. What to do this year? Try a CQ-SS wheel maybe? Better logging methods to minimize pesky duplications? Receiver muting? Break-in keying? Faster band-change? The debates concerning horizontals *vs.* verticals, super *vs.* not-so-much selectivity, high *vs.* low power, QSO quantity *vs.* section-hunting, raged anew. Bewildered by the yakking, uncomprehending newcomers shrugged and girded for a first fling.

Zero hour arrived and things were as confused as a Chinese fire drill. Even veterans of many campaigns sent preamble parts out of order here and there. Then the crowd warmed. Past lessons were recalled, new ones learned. Soon the spectrum became radioactive with smoothly-executed exchanges. You could almost *hear* the Novice metamorphose from uncertain beginner to savvy-fisted expert. WAS vistas unfolded. Thousands of man-hours were expended as the test of equipment, skill and stamina rumbled onward. An auroral disturbance November 20th scotched last-minute bids to scout sections and tumbled contact averages, but left the omnipresent enthusiasm undimmed.

Miscellaneous scuttlebutt: (1) W1 — tore his *Call Book* to shreds looking up 874 W7s and *still* no Idaho; (2) Gaily skipping 100 numbers every few hours, WØ — so disheartened the locals that they quit cold, allowing him to coast to easy victory; (3) W9 —, miffed by charges of power-multiplier finagling (“You’re *awfully* loud for 100 watts”), placed his kw. final under lock and key with a neighbor and has an affidavit to prove it. And so it went.

As the clock ticked inexorably toward the closing minutes, the seething bands slowly reverted to normalcy. The XYL and little harmonics, who had been breaking bread OM-less for quite a spell, welcomed disheveled Dad back to the fold. Logs having been toted to the Post Office, DXers returned to chasing prefixes, traffickers to the nets, v.h.f. men to the World Above. Calm reigned.

Except at ARRL, that is, where the postcontest bombardment of the mailroom swelled to new heights. The heights: 1880 valid entries (1455



The Fenwick brothers, W7VMs O, P and Q, have made a resounding splash on the operating front recently. Above we have W7VMQ, who skipped W7VMP to 141,036 points and Arizona plaudits. In addition to two 4-125As at one kw., the rack houses 6- and 2-meter amplifiers nearing completion.

e.w.) for a gain of 4.6 per cent over 1954. Thus the latest version — an SS *king-sized* — huskily upended all previous participation records.

Certificates are currently en route to brass-pounders in 73 sections and to 15 successful Novices. These surely rate special applause for their work in this biggest and most competitive Sweepstakes ever held!

By popular demand, we again offer the winners' equipment tabulation, wherein changing trends in rigs and inhalers immediately catch the eye. Most popular band was 40 meters, attacked by a

Eastern Pennsylvania awardee W3DGM, one of Frankford Radio Club's big guns, was fourth in line among the 1455 key-diddlers with a score just shy of 200,000. Club gave Mel trophy (right under clock) for establishing FRC record of 1091 rapid-fire SS QSOs.

QST for



thumping 97 per cent of the victors. Usage of 21 Mc. jumped to an impressive 42 per cent; fifteen looms a "must" for snagging DX sections, may eventually dislodge 20 in this respect. Only W0TDR and KZ5BC could cop kudos with

single-band work as the 80-40-20 trio continued widely favored. Average score climbed to 103,213 points, hitting six digits for the first time.

An unprecedented 100 entrants tallied over 100,000, three over 200,000. W7KVU's slick

C. W. WINNERS, 22ND A.R.R.L. SWEEPSTAKES

Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3DGM	198,743	HT18 VFO-Viking I.	NC101X, Q multiplier	80, 40, 20
Md.-Del.-D. C.	W3EIS	173,621	Command Sets-813	BC342, BC453 Q5er	80, 40, 20
S. N. J.	K2CPR	100,333	6S17 VFO-6146	HQ140X	80, 40
W. N. Y.	W2SSC	139,680	Ranger	75A3	80, 40, 20, 15
W. Penna.	W3PWN	99,533	6AK5-12AT7-6U8-6AG7-6N7-829B	HQ129X, NC183	80, 40, 20
Illinois	W9ERU	176,701	32V1	75A4	80, 40, 20, 15
Indiana	W9IOU	227,851	VFO-6AQ5s-4-65A	75A4, DB23	80, 40, 20
Wisconsin	W9RQM	172,440	VFO-813	HRO50T	80, 40, 20, 15
No. Dakota	W0EQZ	87,425	VFO-813	NC101X	80, 40, 20, 15
So. Dakota	W0PHR	150,500	Sig. Shifter-807-814	NC183D	80, 40, 20, 15
Minnesota	W0YCR	152,370	VFOsVT127As;304TL;250Ts,100THs	Super Pro	80, 40, 20, 15
Arkansas	W5WUR	25,750	Viking II	SX25	40, 15
Louisiana	W5MCT	143,445	Viking I	HQ140X, DB22A	80, 40, 20
Mississippi	W9APY/5	149,144	VFO-6AQ5-807-4D32	BC348(75kc.i.f.),SOJ	80, 40, 20
Tennessee	W4VOS	98,150	VFO-807s; VFO-829B	Homebuilt superhet	80, 40, 20
Kentucky	W4JBQ	116,438	Heathkit VFO-Viking I.	75A3	80, 40, 20, 15
Michigan	W9WJV/8	105,941	32V3	75A3	80, 40, 20, 15
Ohio	W3PBU	150,343	32V3	HRO5	80, 40, 20
E. N. Y.	K2HVN	87,570	Viking II	S76	80, 40, 20, 15
N. Y. C.-L. I.	W2PRN	118,808	BC458-Multiphase 20A-4-250A	75A4	80, 40, 20, 15
N. N. J.	W2GND	119,446	32V3	HRO60	80, 40, 20
Iowa	W0CXN	121,500	6C1A-6AK6-6F6-6L6-6146	SX71	80, 40, 20
Kansas	W0HUB	101,360	VX101-813	HQ129X	80, 40, 20, 15
Missouri	W0TDR	85,444	DX100	NC173	40
Nebraska	W0CJO	92,625	DX100	S76	80, 40, 20
Connecticut	W1TYQ	125,175	Viking II	75A4, DB23	80, 40, 20
Maine	W1IKE	58,225	VFO-Bandbox-6146	75A3	80, 40, 20, 15
E. Mass.	W1YMA/1	112,890	Viking II-HK354Cs	75A3	80, 40, 20
W. Mass.	W1JYH	124,200	310B-4-125A	HRO5	80, 40, 20, 15
N. H.	W1BFT	132,475	32V3	75A4	80, 40, 20, 15
R. I.	W1CJH	82,913	VFO-813	75A1	80, 40, 20, 15
Vermont	W1QMM	69,912	6AC7-6AG7-6L6-813	Homebuilt(triple conv.)	80, 40, 20
Alaska	KL7EVR	26,455	6AH6-6C4-5763-6AG7-4E27	BC348 (double conv.)	40, 20
Idaho	W7UDG	73,920	Viking II	HQ129X	80, 40, 20, 15
Montana	W7KVU	231,593	32V3	75A4	80, 40, 20, 15
Oregon	W7TML	77,420	VF1-AT1-813s	SX71	80, 40, 20
Washington	W7NLI	113,575	VFO-2E26-4E27	NC200, Q5er	80, 40, 20, 15
Hawaii	KH6IJ	82,928	VFO-4-250As	HQ129X	80, 40, 20, 15
Nevada	W7KEY	164,250	VFO-807-4-65A	HQ129X	40, 20, 15
Santa Clara V.	W6UTV	91,413	4D32 p.a.	HRO60	80, 40, 20
East Bay	W6TT	120,158	310B-4-125A	75A4	80, 40, 20, 15
San Francisco	W6BIP	84,680	VFO-813-VT127As	SX28, Q5er	80, 40, 20, 15
Sacramento V.	W6HIR	53,219	32V3	75A4	80, 40, 20, 15
San Joaquin V.	W6MPG	68,793	Sig. Shifter-1625-304TL	SX25	40, 20
No. Carolina	W1RAN/4	113,330	BC696A-6AG7-6N7-807-813s	SX25, Q multiplier	80, 40, 20
So. Carolina	W4GQE	83,243	VFO-6CL6-6146	SX96	80, 40, 20
Virginia	W4KFC	208,871	VFO-807-257B	75A2	80, 40, 20
W. Virginia	W8UMR	74,018	5100	NC300	80, 40, 20, 15
Colorado	W0CPD	99,630	DX100	SX71	80, 40, 20, 15
Utah	W7QDM	90,649	VFO-6AG7-807s	BC348P	60, 40, 20
Wyoming	W7P50	76,976	Viking II-810s	75A3	40, 20
Alabama	W4RAL	57,200	VFO-12A6-12SL7-6V6-1625s	SX28, Q5er	80, 40, 20
E. Florida	W4LVV	110,220	310B (modified)-813	HRO50T1	40, 20, 15
W. Florida	W4WKQ	107,355	Lysco 600-813	HQ140X	80, 40, 20
Georgia	W4ZKU	53,952	DX100; 6CL6-6146-813s	SX28	80, 40, 20
West Indies	KP4DH	22,150	Heathkit VFO-Viking II	HRO (modified)	40, 20
Canal Zone	KZ5BC	22,680	813 p.a.	NC100, HF10-20	20
Los Angeles	W6BJU	189,990	Sonar XEC VFO-4E27	75A2, DB23	80, 40, 20, 15
Arizona	W7VMP	141,036	Ranger-4-125As	75A4	80, 40, 20
San Diego	W6JVA	73,675	VFO-5763s-6146	HQ129X	80, 40, 20, 15
Santa Barbara	W6YK	63,190	6V6-6V6-807-TZ40-304TLs	NC183D	80, 40, 20
No. Texas	W5BJA	129,575	Heathkit VFO-Adventurer	S76	40, 20, 15
Oklahoma	W5CYQ	47,986	AT1; 81s p.a.	SX71	80, 40, 20
No. Texas	W5BTS	112,180	VFO-5763-6146	Homebuilt(50kc.i.f.)	40, 20
New Mexico	W5DWT	176,613	LM VFO-6AG7-1614-807-812A	75A1	80, 40, 20
Maritime	W2BBA/VO6	16,526	32V2	SP600	40, 20, 15
Quebec	VE2YU	70,898	BC221-6AC7-6AG7-807	SX28	80, 40, 20
Ontario	VE3DRD	78,275	6AU6-6SH7-6AG7-2E26-813	BC348 (50 kc. i.f.)	80, 40, 20
Manitoba	VE4RC	34,350	6J5 VFO-6AG7-6V6-807s	BC342N	80, 40, 20
Saskatchewan	VE6DZ	24,084	6AG7-6L6-807s-803	HRO Jr.	40, 20
Alberta	VE6NX	50,820	VFO-6146-813s	SX28	80, 20
B. C.	VE7ZK	108,590	6C4-6AG7-6AQ5s-6146-4-125A	NC240D	80, 40, 20
Yukon	VE8OI	16,231	5763 VFO-Bandbox-6146	AR88	80, 40, 20



Trudging along firmly in the footsteps of Dad W3BES goes Alan Mathis, WN3ERG. What with a Ranger, an HQ-129X and an S-38 (and perhaps some pointers from Papa), he registered the highest Novice score ever, 19,263 points. Between scheduled activities Alan, age 14, keeps vigil for Utah and Idaho, has tangled with upwards of 40 countries.

231,593 points and 1270 valid contacts accounted for brand new records in both departments. Not to be sneezed at either were W9IOP's 227,851 and W4KFC's 208,871 markers. Others in the top brackets: W3DGM 198,743, W6BJU 189,990, W9ERU 176,701, W5DWT 176,613, W3EIS 173,621, W9RQM 172,440, W7KEV 164,250, W9YFV 162,425, W9OCB 162,360, W3AEL 156,960, W0YCR 152,370, W3JNQ 151,628, W0PHR 150,500, W8PBU 150,343, W8LQA 149,538, W9APY/5 149,144, W5MCT 143,445, W4PNK 142,806, W3ALB 141,270, W7VMP 141,036, W4CC 140,000, W2SSC 139,680, W8OYI 135,800, W3GRF 135,013, W3HEC 134,820, W3GHM 133,622, W9KZZ 133,303, W3JTC 132,951, W0TKX 132,860, W1BTF 132,475, W3JBC 132,090, W6NWL 131,583, W8VTF 131,528, K6BLL 131,400, W9VUL 130,200, W9NII 129,763, W5BJA 129,575, W8BOJ 127,970, W3VOS 127,090, W1TYQ 125,175.

In 125-to-100 grand territory were W1s ARR/1 AW BIH JYH RAN/4 RND YMA/1 ZDP, W2s CQB GND PRN, K2CPR, W3s ADZ CPS DLR DVO RIV HHK IKN ISE KT MFJ VAN, W4s BZE JAT JBQ JUQ LVV WKQ YZC, W5s BTS CAY, K5CAW, W6TT, K6CJQ, W7s GWD NLI PQE, W8s ETU IFX NDU UZJ, W9s AMU GWK KLD PNE PZT TKR WBL WJV/8 YZA ZAB, W0s CXN FZO IUB RYJ, VE7ZK.

These 36 sleuths raised all 73 sections: W1s BIL CWX FTX, W2s CWK GND PRN, K2s HZR KCE, W3s ADZ DGM DLR DRD EVW JTC MSK, W4s CVI KFC PNK, W5s BJA

MCT, W6s BIP CRT GMF NWL TT UZX, K6BLL, W7s KVV VMP, W8s AQ ZJM, W9s IOP NH WJV/8 YFV, W0TKX. Foxy W1BIL collected the clean sweep in a scant 73 QSOs, and OT W8AQ managed it in just 102.

Eight per cent of the code entries, 116 logs, were those of Novices. Special WN/KN section awards went to these 15 budding sharpshooters: WN1FRR, KN2s MFF MWK ODE, WN3s AYY EBG, KN4DFR, KN5BKH, KN6IYJ, WN7ZOI, W8s ABM CFJ EYP, KN9BHD, KN0BHS.

Sidelights

Bookish Sweepstakers should check this QST bibliography: W3FQB's classic "The Man Who Broke the Bank," May 1953, p. 58; W1YYM's mathematical "Contacts vs. Multipliers," November 1955, p. 46; W1VJE's double helping of hilarity, "Reporter's Wife Sues for Divorce," December 1955, p. 188, and "Latest Sweep-steaks Noos," February 1956, p. 64. For an extra guffaw, see the Correspondence item "Es-Booster," February 1956, p. 130. . . . W9IUB, who delights in rummaging through his QST volumes to ferret out statistics, has been rummaging again. Here are his latest findings, edited to include 1955:

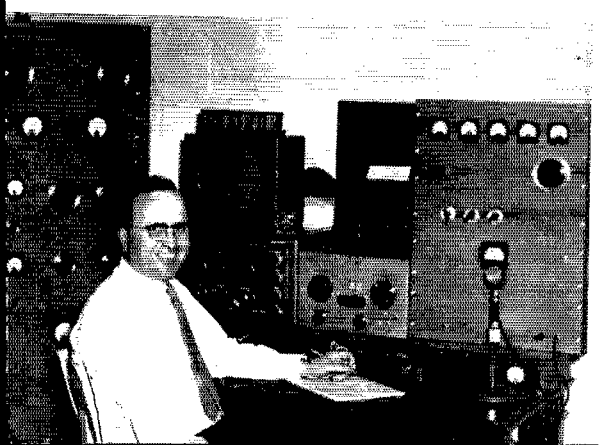
All-Time SS High Scorers			All-Time SS QSO Leaders		
Call	Score	Year	Call	QSOs	Year
W7KVU	231,593	1955	W7KVU	1270	1955
W9IOP	227,851	1955	W9IOP	1258	1955
W4KVX	209,353	1954	W4KFC	1183	1953
W4KFC	208,871	1955	W9IOP	1151	1954
W9IOP	208,506	1954	W4KFC	1149	1955
W4KFC	203,850	1954	W4KVX	1147	1954
W7KVU	202,210	1954	W4KFC	1137	1954
W9IOP	199,199	1953	W9IOP	1103	1953
W3DGM	198,743	1955	W8IOP	1100	1951
W6BJU	191,250	1951	W3DGM	1091	1955
W6BJU	189,990	1955	W4KFC	1067	1948
W4KFC	188,100	1952	W6BJU	1064	1951
W3DGM	187,650	1952	W6BJU	1060	1955
W9IOP	186,660	1952	W9IOP	1052	1952
W4FU	185,400	1949	W3DGM	1050	1951
W2IOP	183,690	1948	W4KFC	1048	1952
W3BES	183,600	1949	W3BES	1032	1948
W3BES	183,180	1948	W4FU	1030	1949
W3BES	181,980	1951	W4KFC	1026	1949
W4KFC	181,849	1949	W2IOP	1025	1948
W3BES	181,710	1952	W3BES	1022	1949
W3DGM	181,125	1951	W3BES	1011	1951
W3JTK	180,540	1954	W3BES	1010	1952

. . . . W1WPR, another self-styled actuary, gandered W1AW's 750 contacts and learned that states most often QSO'd almost paralleled the electoral college: New Yorkers at 69, Pennsylvanians at 60 and Californians at 53 were commonest, while Nevada and Wyoming, at one QSO apiece, were toughest. . . . Pioneering W2PEO called to the colors a crystal-oscillator transistor oscillator on 3501.5 kc. Power was 7½ volts at 2¼ ma. for a smashing 20 milliwatts input. . . . W2LPV knocked off more states toward his 14-Mc. WAS, now quests the last four. . . . Word comes from W8IFX that his ground plane radiates equally poor in all directions. . . . WN8VDA and KN2KRJ received Generals between contest week ends, finished up competing with the veterans. . . . W2BRC and W2CJM got by with attic antennas. . . . The 21½-inch Biley (W3GV) Memorial Trophy, donated by W3GJY to the leading W. Pa. scorer, goes to W3PWN. . . . W7AXJ's log was a 7-foot length of yellow TTY paper with occasional fingernail polish markings as reminders to change carbon paper. . . . Lucky W1PNK landed his

ARRL Director W0PHR, an avid contest fan, probably contributed toward a passel of WAS's in earning 150,500 points and the South Dakota wallpaper. Rig on left features 81s in the final, that on right a single TZ-40. All's power input ranges from 75 to 300 watts at the flick of a Variac.

(Photo by W0HSH)

QST for



73rd, VE4GB, with five minutes of operating time remaining. . . . KZ5BC latched onto 54 sections but Canal Zone wasn't one of them. . . . The Communications Dept.'s W1ZJE distributed over 10,000 log sheets but some who relied on one radiogram may have been disappointed. Please include your name, call and full QTH in the text of such messages to help us unscramble any arriving in garbled form. . . . W7UDG found 150 QSLs labeled "first Idaho" in the mailbox. . . . Number-one SS log to pop up at ARRL came from Vermonter W1UGW, scheduled to report to Fort Dix November 15th for a hitch with Uncle Sam. W1RWP, another Green Mountain State resident, missed the second period too. This section, it seems, won't be getting any easier. . . . W1ULU was the sole Technician in the c.w. SS. . . . Tightest sectional race occurred in Georgia, where W4ZKU squeaked past W4BXV by a mere 87 points. In another cat-whisker finish, Missourian W0TDR nosed out W0EZU. Peruse the score tabulations for other near dead heats in Iowa, N. N. J. and Ohio. . . . We'd have enough copy for ten more pages if all the comments in the "Wait 'til next year" vein were laid end to end. Good luck, boys. . . . Yukon is rough for most, but when you're in the neighborhood it's a breeze! VESOI snagged five in 134 QSOs. . . . Breaking in new calls were VE2YU (ex-VE6ZR), K0CSW (ex-W7PCZ), K6OIZ (ex-K2EUN). And big things are expected from ex-W4YHD, Chief Op at W1MX for years, now hiding out in W. N. Y. under the moniker K2QO. . . . "Forty hours of solid enjoyment, experience and 'fast living.' Picked up six new states and a whale of savvy. Everyone seemed to be in the running. The spirit is just plain contagious!" — K0AET. . . . "All 73 sections at last! Had 72 the first week end and hit the jackpot with VESJW after 90 minutes of pursuit." — W2CFK. . . . "I entered for fun and experience and with no firm determination to win anything. In the latter I wasn't disappointed, but I picked up five new states, learned some fundamentals of message handling and believe my code speed improved as well." — KN5BA. . . . "If one critical card comes through, my WAS is complete. KL7 was worked for the first time too." — W0QQH. . . . "Contests get in your blood. They're ruining me. Nobody else in town hits the tests but that's all right by me. The fewer the merrier in this neck of the woods." — W0IUB. . . . "Found it very worthwhile from experience gained in accurate sending and receiving, and learning the limitations of one's equipment and self. The good sportsmanship evidenced by Novices and old-timers alike reinforced my faith in ham radio." — W8CFJ. . . . "Biggest laugh was the W9 heard calling CQ Field Day." — W2BXS. . . . "There was hardly a dull moment. Clean competition was the keynote. Rules were adhered to and fair play was noticeable from beginning to end. The clatter on 40, 20 and 15 can't technically be termed QRM when everyone seemed to be making QSOs without trouble." — W4SHW. . . . "Don't let people kid you into believing that 800 and 75-100 watts are equalized by the 1.25 multiplier. When conditions are poor the QRP lads may as well sleep, while the big boys can play on only slightly hampered. My good friend W7PSO and I both hope he won for Wyoming." — W7UFB. . . . "Aurora conditions were pitiful. At Homer, Alaska, the sky was almost pure white for the entire second period with only an occasional path open and practically no signals. First time in eight postwar SS's that we had no antenna or equipment failures. Thoroughly enjoyable except for the northern lights." — KL7EVR. . . . "Two new states thanks to W7KEV and W7JLU." — W9WRO. . . . "May I thank the many kind, patient guys who QRS'd to my comfy 15 w.p.m. and repeated and repeated their NRs, CKs, and times? Now I am reconciled to my good XYL again, Junior is back in his room where the shack is, my bloodshot eyes have cleared, and my ears are beginning to prick up again for that musical CQ SS." — W3TV. . . . "The word Sweepstakes is *verboten* in our house these days." — W3FTW. . . . "Second year I've been so low in sections (61) with so many contacts (755).

After rogering W8HZR's NR 12 and penciling "off the air" in the log, W6BIP slipped into some fancy duds and faced the camera. Back in the fray moments later, "Bip" carried on for 34 hours to glom onto his fifth consecutive San Francisco certificate. Four Vcc beams and p.p. VT127-A's at a half-gallon conspired to poke sizable chinks in the QRM.

May 1956

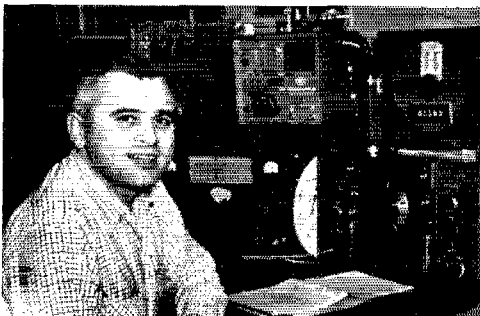


Connecticut's W1ADW grabbed top prize in the first Sweepstakes in January, 1930, wherein ARRL offered the leaders brooms signifying the clean sweep. Joe still performs notably SS-wise, and here he is in 1956, fondly clutching the broom, now 26 years old and slightly bedraggled. (Photo courtesy W1ZKQ)

Anybody got an answer? — W3IKV. . . . "Great Contest! Enjoyed furnishing Vermont to many, but wasted last half-hour fruitlessly searching for KL7." — W1QMM. . . . "My pet peeve is the long CQ'er. If he has been worked before, precious time is lost. Why don't these guys sign more often?" — W1UTA. . . . "Never thought I'd manage a WAS in two week ends." — W4WHK. . . . "Best signals on 7-Mc. Notice band were those of KN4CQA/4 and WN8WHF." — KN0CER. . . . "Guess I'm getting old! This was the first SS since 1936 that I failed to better any of my previous scores. Enjoyed the unique experience of having 71 sections answer my CQs. Had to call Canal Zone and missed West Indies. Wait 'til next year!" — W7KEV. . . . "Wonder if many realized that most of those K2s were KN2s not long ago. Didn't they do a slam-bang job?" — W4PNK. . . . "Extreme courtesy was the rule. Hope to be better prepared from standpoint of equipment and record-keeping in future." — W7FAW. . . . "Entire contest was logged both on paper and with a magnetic-tape recorder. Latter helped immeasurably in filling in missed or doubtful messages. A sheet similar to ARRL Operating Aid #6, but modified to conform with my location, served to eliminate duplicate QSOs." — W7KVU. . . . "Best SS ever and there were many fine ops on hand, but think more use should be made of the ARRL check sheet to avoid duplicates. W4KVX, W3DGM, and W7KEV had beautiful signals." — W4YZC. . . . "Nothing better than the SS to build one's operating skill." — W4DXF.

We could carry on interminably, but let's reserve a bit of space for the round-up of phone and club standings. For more photos, cartoons, comments and statistics, see June QST.





At this orderly installation Harry Marchar, W2GND, pinned down 119,446 points and the N.N.J. award. A glance at the masthead of *Boys' Life* reveals Harry is Editor of that widely-read publication.

C. W. SCORES

Twenty-Second 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: W3DGM 198,743-1091-73-A-40, or final score 198,743, number of stations 1091, number of sections 73, power factor of 1.25, total operating time 40 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.

ATLANTIC DIVISION

Eastern Pennsylvania

W3DGM	198,743-1091-73-A-40
W3JNQ	151,628-879-69-A-39
W3ALLS	141,270-831-68-A-38
W3GHM	133,422-951-71-B-40
W3JCK	123,090-77-68-A-38
W3CPS	122,029-741-67-A-40
W3DLR	112,420-770-73-B-40
W3K1T	106,678-601-71-A-33
W3HHK	104,360-608-68-A-39
W3ADD	100,575-550-75-A-34
W3ISE	100,350-669-60-A-40
W3EAN	92,318-562-66-A-38
W3LEZ	87,720-516-68-A-38
W3EQA	83,160-468-72-A-36
W3ARK	79,143-375-69-B-38
W3DBE	77,566-606-64-B
W3LVE	77,218-463-67-A-25
W3EVW	76,650-420-72-A-32
W3MDE	75,250-430-70-A-35
W3VDV	72,331-411-71-A-36
W3L26	71,269-455-65-A-36
W3GRS	69,930-444-65-A-29
W3KFK	68,681-500-55-A-31
W3SOM	62,075-382-65-A-35
W3MDO	60,847-429-71-B-35
W3AIZ	46,305-294-65-A-25
W3YUW	26,146-251-47-A-14
W3RRJ	42,700-307-56-A-29
W3CHL	38,700-360-43-A
W3LXN	33,800-325-52-B-27
W3YLL	33,498-286-47-A-30
W3WOS	34,038-270-49-A-30
W3DVC	31,728-360-48-A-22
W3ADE	29,000-232-50-A-16
W3TJU	27,040-260-52-B-40
W3YTM	26,966-213-51-A-34
W3BQA	26,341-252-53-B-22
W3HTR	25,335-229-48-A-32
W3YUW	25,215-254-45-A-30
W3CGS	24,780-210-59-B-15
W3DFJ	23,460-198-48-A-26
W3GHD	23,250-150-62-A
W3HRW	23,010-177-52-A-11
W3YUW	22,146-181-47-A-14
W3ZRQ	22,050-145-65-B-23
W3YWT	21,000-212-40-A-27
W3NFB	21,263-174-46-A-37
W3GSD	16,744-181-37-A-24
W3YJG	14,600-146-40-A-22
W3NHX	13,822-181-37-A-21
W3CHU	12,970-165-39-B-

W3ZHN	12,120-202-24-A-19
W3LUD	10,446-100-46-B-23
W3ZSE	10,678-167-34-B-23
W3WHJ	10,564-157-27-A-16
W3YHX	10,513-145-29-A-24
W3AVN	10,075-136-31-A-29
W3ORU	9,287-126-37-B-6
W3VHK	9,136-99-25-B-39
W3DYL	8,892-117-38-B-10
W3YVY	8,555-118-29-A
W3ANZ	7,020-90-39-B-17
W3FXN	5,923-103-24-A-11
W3ROG	5,736-85-27-A-23
W3H8K	5,130-89-25-B-39
W3QLJ	4,656-81-25-A-15
W3NBMF	2,795-44-26-A-11
W3VKO	2,700-45-24-A-15
W3VZY	2,504-52-20-A-11
W3AET	2,494-50-21-A-11
W3NCCO	1,233-30-17-A-18
W3NBWD	1,144-33-15-A-28
W3YVW	619-23-11-A-2
W3VAG	450-18-10-A-2
W3VCO	435-17-12-A-8
W3XBR	385-18-11-B-6
W3NEB	375-15-10-A-10
W3NSAC	363-18-10-A-5
W3UUA	191-9-9-A-1
W3NFE	132-6-1-B-1
W3BES	80-2-A-
W3YTW	(W2EIK, W2YVW)
W3ZLU	(W3ZLU ZWA)
W3RAF	(W3R AF UQJ ZPT)
W3MWL	(3 ops.)

Mid.-Del.-D.C.

W3EIS	173,621-1007-69-A-40
W3AEL	156,960-879-71-A-39
W3GRE	135,012-772-70-A-40
W3HEC	134,820-754-72-A-40
W3JTC	132,951-729-73-A-40
W3VON	127,071-717-71-A-37
W3EIV	124,426-701-71-A-40
W3YAN	115,472-814-72-B-34
W3IKN	115,061-755-61-A-38
W3DVO	103,850-620-67-A-35
W3MFE	101,850-582-70-A-40
W3IYE	99,540-553-72-A-37
W3CMT	96,210-535-72-A-40
W3TMDZ	93,325-505-66-A-27

W3ZAL	76,748-521-59-A-28
W3HIV	74,705-447-67-A-37
W3DRD	68,173-381-72-A-29
W3UZZS	59,520-396-62-A-39
W3UE	58,713-385-61-A-35
W3MSK	57,065-324-73-A-40
W3WV	54,210-417-65-B-29
W3WZL	53,580-377-57-A-36
W3YX	50,936-402-53-A-38
W3TAN	45,856-334-55-A-40
W3YJV	35,188-283-50-A-24
W3VJV	30,564-251-49-A-31
W3HDV	29,146-214-59-B-22
W3ZQA	26,914-232-58-B-24
W3VU	23,160-193-45-A-21
W3UFN	19,000-200-40-A-28
W3BFW	17,850-207-35-A-39
W3BKE	16,441-201-41-B-20
W3HH	16,233-151-43-A-13
W3HTK	13,975-130-43-A-11
W3LZO	12,333-177-29-A-15
W3FY	12,276-172-36-B-14
W3DPA	11,664-110-43-A
W3ZSR	10,948-151-29-A-15
W3YCV	10,098-150-34-B-16
W3YUW	8,943-187-25-A-23
W3KLL	8,600-108-44-5
W3KDP	5,688-80-36-B-4
W3RRT	5,535-98-22-A-15
W3LLD	4,480-70-32-B-15
W3ZGN	3,885-74-21-A-16
W3YX	3,156-49-25-A-15
W3ARB	2,731-48-25-A-15
W3PGA	2,496-80-16-B-6
W3NBXM	2,135-63-14-A-26
W3WAG	1,880-47-16-A-4
W3YXL	1,688-40-18-A-20
W3YUW	1,636-37-29-A-15
W3XUR	550-20-11-A-4
W3CDQ	338-15-9-A-3
W3YTS	(W3s RYX YTS)

W3GQP	52,694-401-55-A-8
W3ZQL	(W3ZQL W3S RJA)
SZP TEN	35,860-329-44-A-35

Southern New Jersey

K2CPR	100,333-599-67-A-35
K2HZR	91,980-504-73-A-38
W2EXB	87,268-521-67-A-39
K2ERC	87,255-555-63-A-38
W2HDW	65,230-600-55-B-33
W2PAU	52,550-302-70-A-17
W2OXA	49,155-341-58-A-25
W2HBE	41,663-304-55-A-33
W2SDB	41,075-310-55-A-29
W2KQ	39,839-302-55-A-21
K2OMT	23,588-187-51-A-35
W2QDY	23,560-248-38-A-30
W2DJA	19,688-214-46-B-22
W2TBD	18,848-182-42-A-25
K2EBC	17,980-232-31-A-24
W2PNA	17,829-182-37-A-26
W2ILN	16,610-151-44-A-15
W2ZVV	16,438-132-50-A-4
W2QKJ	14,260-155-46-B-33
W2EBW	13,464-154-44-B-17
W2YUW	12,163-144-35-A-22
W2RWB	10,463-140-30-A-21
K2EJA	9,425-31-29-A-19
W2DMU	9,270-103-36-A-18
K2KFF	7,150-110-26-A-23
W2LW	5,675-75-31-A-26
W2LTI	5,575-75-31-A-26
K2IHW	1,613-13-15-A-10
W4KUO	1,103-25-18-A-12
K2IYN	336-14-12-B-1
W2HAZ	315-14-9-A-1
K2COL	302-5-6-A-7
K2FTQ	(K2s ITP ITQ)

Western New York

W2SSC	139,680-776-72-A-35
W2EMW	79,076-446-71-A-38
K2KCE	74,095-407-73-A-40
W2FEB	65,660-470-70-B-40
W2VJO	53,070-366-58-A-36
K2GAL	52,298-368-57-A-40
W2QYV	45,240-349-52-A-23
W2DRN	43,092-332-52-A-34
K2EVE	40,612-286-57-A-38
W2QZL	37,271-276-57-A-38
K2KLD	30,912-276-56-B-29
W2KTT	29,093-220-54-A-29
K2JAD	24,180-202-48-A-22
W2KAT	23,963-214-45-A-30
W2KEL	23,184-276-42-B-20
W2QJN	22,138-161-55-A-14
K2GWN	21,440-335-32-B-29
W2KEC	19,760-190-52-B-12
K2GIG	17,010-163-42-A-29
W2TOP	16,819-151-45-A-22
W2QBL	16,116-155-58-B-28
W2ZCV	14,432-166-45-B-9
K2BDI	14,135-129-44-A-12
K2GHD	13,748-41-39-A-15
W2Z8Z	13,510-193-28-A-18
K2GVN	12,298-143-43-B-15
W2Z8Z	11,572-149-19-B-34
K2DSR	10,275-140-30-A-12
K2KIR	8,440-107-32-A-1
W2MTA	8,201-122-27-A-24
W2CJO	7,500-100-30-A-18
W2OVP	6,955-107-26-A-1
K2HYU	6,860-105-25-A-16

W2CTA	5828-63-37-A-6
W2PFW	5820-98-23-A-12
K2VX	5003-87-23-A-10
K2HVV	4137-59-25-A-10
K2KNW	4125-66-25-A-8
W2PFL	3690-62-24-A-5
K2MWM	3375-70-25-B-16
W2COU	3300-56-24-A-4
K2JDM	3150-55-18-A-1
K2JAC	2910-64-19-A-9
K2N2MWK*	2950-64-19-A-38
K2HWL	2560-64-16-A-10
K2INO	2300-66-20-A-10
K2KXE	2205-51-18-A-10
K2JY	2100-56-11-A-9
K2LJL	1934-47-17-A-24
K2N2L	1283-28-19-A-8
K2N2MLF	1073-35-13-A-10
K2IKQ	731-22-17-B-3
K2N2PJC	456-31-7-A-19
W2YRH	417-10-A-8
K2ZDJ	195-13-A-8
W2ZRC	120-10-6-B-1
W2ZXX	(14 ops.) 20,370-247-42-B-20

Western Pennsylvania

W3PWN	99,533-577-69-A-40
W3VIV	93,264-706-67-B-35
W3VRE	92,250-615-60-A-39
W3GJN	85,181-591-36-A-36
W3YJL	63,954-568-57-B-40
W3YCH	54,653-350-62-A-39
W3GEG	50,400-320-63-A-
W3YDK	45,979-302-61-A-30
W3YUW	45,372-300-44-A-36
W3UGJ	41,250-275-60-A-29
W3NKM	37,263-271-55-A-30
W3LMM	34,832-311-56-B-15
W3KQD	26,085-222-47-A-18
W3ZEE	22,310-200-44-A-
W3YUW	15,600-194-27-A-21
W3AVY	13,432-47-46-B-19
W3ZQT	10,990-157-28-A-26
W3AYY*	7280-100-32-A-26
W3VJE	7080-90-32-A-6
W3LNE	6808-92-37-B-7
W3ZUG	604-27-A-12
W3NBZ	5738-75-34-A-40
W3NBO	4661-59-33-A-25
W3NARN	3900-64-26-A-22
W3DLI	2970-50-24-A-4
W3EFW	2633-42-26-A-9
W3NBB	1320-35-16-A-11
W3WST	1170-27-18-A-8
W3TFL	200-10-10-B-1
W3YA	(32 ops.)
W3ZHQ	(W3Z YOS ZHQ) 12,688-147-35-A-19

CENTRAL DIVISION

Illinois

W9ERY	176,701-996-71-A-40
W9YFV	162,225-890-73-A-40
W9N1L	129,763-742-70-A-40
W9PNE	116,200-669-70-A-38
W9AMA	113,838-651-70-A-40
W9KLD	111,738-642-70-A-40
W9YUW	107,320-641-71-A-37
W9WBL	107,484-608-71-A-37
W9PZT	106,315-620-68-A-39
W9ZAB	100,625-575-70-A-36
W9GVZ	90,765-520-70-A-24
W9QCK	89,670-631-58-A-40
W9LQJ	86,350-618-68-A-32
W9VRG	81,685-481-68-A-40
W9RGC	77,100-514-60-A-40
W9WQE	70,275-473-60-A-36
W9WHF	61,190-422-58-A-34
W9WIO	54,165-395-63-B-21
W9OIN	54,000-360-80-A-34
W9YKH	49,335-300-66-A-32
W9FFX	49,140-378-65-B-35
W9ICE	45,375-279-68-A-22
W9AGM	40,000-300-80-A-22
W9WIO	38,600-286-62-A-31
W9LDO	43,283-299-58-A-31
K9RIV*	42,323-318-54-A-33
W9MRQ	35,226-309-57-B-23
W9BRC	31,658-236-54-A-37
W9BRL	28,750-250-46-A-36
W9MPT	26,488-296-55-A-16
W9EDH	27,072-282-48-B-31
W9CNF	26,468-228-59-B-28
W9WFS	25,938-208-50-A-13
W9MXT	23,580-208-48-A-37
W9TRZ	21,180-187-46-A-32
W9BLA	20,832-165-64-A-19
W9ZOU	19,695-202-39-A-22
W9PZZ	19,125-170-45-A-15
W9QGG	18,810-210-36-A-18
W9VLL	18,225-135-54-A-13
K9NBL*	16,605-177-44-A-39
W9HXW	16,332-130-47-A-19
W9YDQ	15,210-159-39-A-22
W9BUL	15,000-150-50-B-14
W9QET	14,950-157-50-B-1
W9MKA	13,136-170-31-A-22
W9LQJ	12,770-116-47-A-13
W9MKN	11,962-151-35-A-25
W9ZMJ	11,288-108-42-A-14
W9VOX	10,900-109-40-A-19
W9BEC	10,300-103-40-A-21
W9JCN	9502-91-42-A-16

Unless you're blessed with a prodigious memory, you'll find Operating Aid 6 an indispensable tool in avoiding duplicate contacts. Your claimed score is less likely to be guillotined too, since ARRL often uses it as a tie-breaker as part of the checking process. This is Side One of an actual "dupe check" a Hq. Staffer ran on an SS leader. Whip out a magnifying glass and you'll spot a pack of familiar calls!

W1	W2	W3	W4	W5
W6	W7	W8	W9	W10
W11	W12	W13	W14	W15
W16	W17	W18	W19	W20
W21	W22	W23	W24	W25
W26	W27	W28	W29	W30
W31	W32	W33	W34	W35
W36	W37	W38	W39	W40
W41	W42	W43	W44	W45
W46	W47	W48	W49	W50
W51	W52	W53	W54	W55
W56	W57	W58	W59	W60
W61	W62	W63	W64	W65
W66	W67	W68	W69	W70
W71	W72	W73	W74	W75
W76	W77	W78	W79	W80
W81	W82	W83	W84	W85
W86	W87	W88	W89	W90
W91	W92	W93	W94	W95
W96	W97	W98	W99	W100

W9ALO... 9343-101-37-A-15	W9WQQ... 3900-75-20-A-10
W9KRU... 8100-72-45-A-15	W9WUHL... 1743-41-17-A-3
K2JPM/9... 7553-80-38-A-13	KN9ADT... 1056-38-13-A-14
W9NUI... 5929-74-31-A-20	W9NIZB... 1041-25-17-A-6
W9PQT... 5824-81-18-A-11	W9ONG... 2220-11-8-A-1
W9OYI... 4593-86-22-A-19	
W9CMO... 4455-66-27-A-17	
K9ARN... 4360-57-32-A-7	
W9TAL... 4000-50-32-A-5	
W9UBI... 2500-50-20-A-2	
W9DBY... 06-16-A-16	
W9ECY... 2295-51-18-A-11	
KN9AKS... 1913-45-18-A-20	
W9FDY... 1839-35-19-A-7	
W9QCP... 1825-37-20-A-8	
W9ULF... 1733-33-21-A-4	
W9TVN... 1020-24-17-A-4	
W9ZFB... 796-25-12-A-23	
KN9ATY... 715-26-11-A-18	
WN9SJM... 625-27-10-A-7	
WN9UXM... 420-22-8-A-11	
KN9BAX... 280-18-7-A-10	
W9EBX... 231-17-7-B-4	
W9JTT... 225-15-6-A-9	
W9PFX... 90-6-6-A-2	
W9TAY... 50-5-4-A-2	
KN9BAD... 30-6-2-A-6	
W9RYX... 23-3-3-A-1	
W9EZF... 1-1-1-A-1	
W9TBW... 3-1-1-A-1	
W9OCB (W9s DDP DWD JSO)	
162,360-904-72-A-39	
W9YH (W9s N8L OKI VHR)	
13,500-135-50-B-8	
WN9YRH (W9s REA)	
WN9YRB)	
4013-61-30-A-1	
W9WBE (W9s VYD WBE)	
1508-35-18-A-1	

W9RQM... 172,440-958-72-A-39	
W9KZZ... 133,303-760-71-A-36	
W9GWC... 105,000-600-70-A-39	
W9YZZ... 102,638-580-70-A-39	
W9UDK... 96,205-550-71-A-35	
W9GWS... 86,800-545-64-A-40	
W9WUJ... 82,960-615-68-B-27	
W9RKP... 81,000-450-72-A-38	
W9ZDM... 77,546-509-61-A-32	
W9YAN... 70,050-470-60-A-39	
W9NIV... 65,894-408-65-A-29	
W9DIK... 55,575-385-60-A-29	
W9LVR... 40,870-244-67-A-17	
W9SDK... 33,460-239-70-B-21	
W9ZDN... 23,620-216-55-A-30	
W9YAN... 22,638-580-70-A-39	
W9DGR... 22,140-165-54-A-25	
W9IAH... 20,400-161-51-A-17	
W9RCC... 19,013-171-45-A-25	
W9GTY... 17,325-202-35-A-38	
W9KXK... 16,800-112-60-A-22	
W9URV... 15,295-185-46-A-27	
W9VYZ... 13,630-116-47-A-14	
W9FDX... 13,340-116-46-A-10	
W9QDP... 12,065-128-38-A-17	
W9CHD... 10,575-118-38-A-15	
W9GZR... 10,090-101-36-A-9	
W9GJJ... 8,442-108-42-B-16	
W9HDH... 7,796-95-36-A-10	
W9WUQ... 5,219-87-25-A-25	
W9RCFO... 3,544-54-27-A-10	
W9GHT... 1,838-55-14-A-8	
W9IUA... 735-25-40-A-39	
W9RTP... 540-40-9-B-6	
W9CFL... 500-20-10-A-3	
WN9NHE... 426-16-11-A-8	
W9HCX... 372-16-12-B-1	
KN9AKX... 195-13-5-A-6	
W9GIL... 160-8-8-A-7	
W9IRH... 85-9-4-A-2	
W9ZDU... 20-4-2-A-1	
W9AEM/9 (W9s AEM DGO LFP ZLD)	
59,200-370-65-A-34	

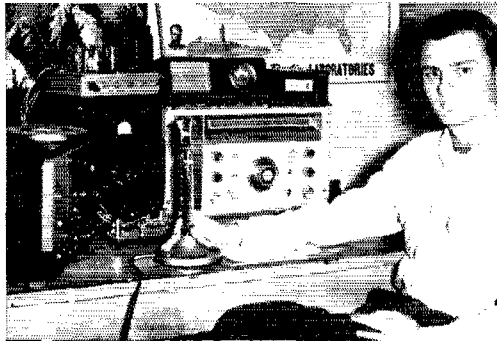
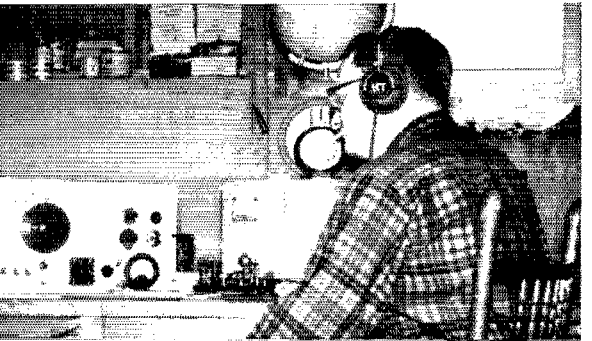
South Dakota	W4WZV... 28,710-254-58-B-37
W9PHR... 150,500-860-70-A-38	W4UVP... 27,428-209-53-A-28
W9PFD... 40,050-267-60-A-31	W4YMG... 14,000-160-35-A-17
W9TLD... 20,370-149-56-A-16	W4RCF... 2,185-38-23-A-4
W9GWS... 13,255-121-44-A-31	KN4EYV... 80-8-4-A-1
W9WUU... 3,558-10-22-B-13	
W9TLL... 2,470-39-26-A-9	
W9RRN... 1,500-30-25-R-3	
KN9BMM (KN9s BMM BMS)	
6480-72-36-A-37	
Minnesota	
W9YCR... 152,370-850-72-B-40	
W9TKX... 132,860-910-73-B-40	
W9RLI... 87,703-656-67-B-40	
W9OTL... 66,871-441-61-A-36	
W9WET... 55,890-415-69-B-31	
W9VBS... 45,801-368-63-B-33	
W9KPC... 40,066-400-55-B-28	
W9DMA... 33,930-263-65-A-24	
W9PBI... 31,344-216-59-A-20	
W9WDV... 30,938-250-50-A-37	
W9RCO... 21,480-180-48-A-16	
W9DGI... 10,082-71-71-A-28	
W9SHU... 813-150-45-A-14	
W9EBA... 8000-81-40-A-9	
W9QHS... 6818-101-27-A-8	

GREAT LAKES DIVISION	
Kentucky	
W4JRC... 116,438-675-69-A-40	
W4CVI... 96,451-531-72-A-33	
W4OMV... 89,696-536-57-A-36	
W4KXV... 55,170-501-68-A-14	
K4CKI... 50,400-360-56-A-31	
W4HOJ... 48,038-315-61-A-30	
W4YDL... 39,119-289-55-A-34	
W4BXP... 28,753-225-53-A-44	
W4YCF... 25,323-147-71-B-17	
KN4CHE... 12,350-125-40-A-40	
W4JCN... 8800-100-44-B-11	
KN4EFD... 8330-100-34-A-31	
K4ACIA... 4230-73-24-A-11	
W4TTO... 3000-48-25-A-5	
W4RT... 3-1-1-A-1	
KN4DTI (KN4s DTH DTD)	
6638-90-30-A-40	
Michigan	
W9WJV/8... 105,941-682-73-A-40	
W8OCK7... 97,004-549-71-A-40	
W8RAE... 57,688-358-65-A-31	
W8QVU... 55,760-334-68-A-38	
W8DM... 52,950-358-60-A-30	
W8WV... 50,151-332-53-A-38	
W8WV... 46,298-326-59-A-36	
W8TJQ/8... 41,370-294-56-A-40	
W8XJC... 41,210-317-52-A-19	
W8SXC... 38,186-313-61-R-28	
W8TKV... 37,935-281-54-A-39	
W8HGS... 35,544-265-55-A-29	
W8PCP... 35,126-258-57-B-31	
W8VFC... 34,790-251-56-A-30	
W8PYL... 33,933-285-49-A-29	
W8BG... 32,085-186-69-A-22	
W8ONA... 27,203-202-54-A-34	
W8LAN... 23,460-184-51-A-22	
W8RVZ... 21,360-178-48-A-15	
W8GP... 20,800-209-40-A-21	
W8MX... 18,596-132-57-A-15	
W8RRK... 18,540-207-36-A-20	
W8MSK... 16,481-149-45-A-36	
W8CB... 14,186-146-39-A-28	
W8FRN... 14,168-154-46-B-13	
WN8CFJ*... 11,918-120-42-A-38	
W8LVK... 10,959-143-39-B-18	
W8MGQ... 10,824-164-33-B-10	
W8ZK... 9,728-152-32-B-15	
W8EHI... 9,299-85-43-B-12	
W8AR... 7,750-100-31-A-10	
W8PHD... 11,008-531-31-A-23	

DELTA DIVISION	
Arkansas	
W5WUR... 25,750-206-50-A-36	
WN5KRI... 2,531-50-25-A-4	
W5FMP... 1,680-30-22-A-6	
Louisiana	
W5MCT... 143,445-800-73-A-40	
W5NDV... 52,384-346-61-A-37	
W5JAW... 40,455-288-58-A-4	
W5GAL... 22,825-210-55-B-23	
W5EJ... 18,743-150-40-A-11	
W5HNS... 11,456-123-39-A-38	
W5K... 4,689-70-27-A-4	
K5AJK... 3,625-60-25-A-16	
W5EKP... 3,600-46-32-A-4	
KN5ARH... 1,995-38-21-A-28	
Mississippi	
W9APY/5... 149,144-898-67-A-40	
W5DRM... 63,931-505-53-A-36	
W5GIF... 275-11-10-A-3	
W5KNA/5... 120-8-6-A-1	
Tennessee	
W4VOS... 98,150-608-65-A-40	
W4WGT... 93,100-532-70-A-40	
W4CYM... 77,366-441-67-A-34	
KAACG... 32,060-229-56-A-20	
W4SQE... 30,250-245-50-A-27	

DAKOTA DIVISION	
North Dakota	
W0EOZ... 87,425-541-65-A-31	
W0GQP... 9,029-120-31-A-23	
KN9CNC... 1,120-28-16-A-17	
W0YNS... 250-14-6-A-7	
KN9CND... 83-5-5-A-2	

Left: British Columbian VE7ZK celled 108,500 points, marched well ahead of his compatriots. Bert's dainty oscillator-exciter sports a 6146 final with pi-net output. Right: A jawbreaker of a call didn't slow up W9APY/5 noticeably. Lew apportioned Mississippi 898 times, triumphing handily there and placing 19th nationally with 149,144 markers. The unidentified object in his right hand saw no service.





The ways you can tackle the SS are many and diverse, and pursuit of a fast WAS is only one of them. Among those who managed this in '55 was W1VG. Here are the QSLs Pete wangled from amateurs in the 48 states. Maryland almost put the kibosh on the project but finally came through.

W8NWH... 3500- 51-28-A-7
 W8ZNY... 2220- 46-28-A-7
 W8NCRN... 1845- 41-18-A-10
 W8NBVA... 1785- 46-17-A-20
 W8NFVZ... 1200- 33-16-A-16
 W8NBHZ... 888- 29-10-A-18
 W8NGIM... 550- 21-11-A-9
 W8RTX... 55- 6-4-A-3
 W8FCB... 3- 1-A-1
 W8YV (K2CLL, W8S LDM
 ISP NDI 610), W8N9ALV)
 W8SSXA (W8s HMM SXA)
 11,054- 122-37-A-13
 W8NSBX (2 oprs.)
 3058- 69-19-A-13

Ohio

W8PBU... 150,343- 847-71-A-37
 W8LQA... 149,538- 861-70-A-39
 W8OYI... 135,800- 776-70-A-38
 W8VTE... 131,528- 741-71-A-39
 W8BOJ... 127,970- 764-67-A-31
 W8UJZ... 112,423- 731-67-A-39
 W8IFX... 118,925- 710-67-A-39
 W8NDU... 107,540- 614-70-A-40
 W8ETU... 101,003- 603-67-A-40
 W8EYV... 98,500- 580-60-A-37
 W8ZJM... 97,546- 537-73-A-11
 W8OFA... 91,371- 548-67-A-35
 W8TZO... 84,600- 564-60-A-38
 W8JSU... 86,423- 501-69-A-30
 W8LHV... 81,489- 487-67-A-33
 W8ZAU... 79,500- 380-60-A-37
 W8DQC... 78,705- 477-66-A-22
 W8FCQ... 72,180- 401-72-A-20
 W8BQQ... 63,773- 388-66-A-35
 W8RSP... 63,495- 377-68-A-18
 W8SDJ... 63,000- 420-60-A-40
 W8BGT... 61,875- 375-66-A-19
 W8FDC... 60,883- 400-62-A-39
 W8DCL... 59,221- 402-59-A-35
 W8EZF... 59,198- 452-84-A-19
 W8SWZ... 56,350- 322-70-A-26
 W8VON... 54,194- 334-65-A-21
 K8NRG... 48,578- 384-81-A-28
 W8NMR... 48,000- 300-64-A-24
 W8HOX... 47,940- 400-60-B-28
 W8QIH... 47,938- 325-59-A-25
 W8KCK... 43,200- 320-64-A-30
 W8DIP... 42,731- 325-53-A-35
 W8OJM... 37,863- 233-65-A-38
 W8SMK... 37,050- 250-60-A-21
 W8APC... 36,917- 278-67-B-32
 W8TND... 35,031- 238-59-A-27
 W8GLD... 34,965- 259-54-A-25
 W8ZBG... 33,750- 250-64-A-26
 W8GQU... 31,500- 210-60-A-26
 W8UMA... 28,329- 255-57-B-28
 W8RLB... 27,163- 205-53-A-30
 W8NPF... 26,215- 221-49-A-17
 W8CTP... 25,062- 232-52-A-28
 W8QLV... 25,694- 223-58-B-19
 W8OCU... 25,399- 262-39-A-22
 W8LOF... 24,910- 189-53-A-15

W8GKZ... 23,600- 182-52-A-20
 W8PBX... 22,540- 202-46-A-19
 W8SQU... 21,038- 187-45-A-36
 W8CGY... 20,803- 157-53-A-23
 W8TNK... 20,790- 231-36-A-25
 W8RCL... 20,528- 162-51-A-38
 W8TDL... 20,205- 223-26-A-4
 W8RO... 20,188- 162-50-A-24
 W8JIN... 20,000- 200-50-B-5
 W8AL... 19,101- 207-37-A-26
 W8OG... 18,480- 165-56-B-17
 W8NMG... 18,315- 249-37-B-34
 W8TJ/S... 18,300- 183-40-A-20
 W8EBK... 17,760- 142-50-A-16
 W8SRM... 17,015- 166-41-A-24
 W8SBB... 17,015- 166-41-A-31
 W8SABM*

W8NNC... 15,900- 141-48-A-33
 W8WZE... 15,190- 124-49-A-24
 W8AQ... 14,892- 102-73-B-11
 W8DAE... 13,856- 218-32-B-13
 W8QCL... 13,255- 140-38-A-20
 W8ZLH... 12,950- 140-37-A-13
 W8TGB... 12,673- 144-37-A-22
 W8QVW... 12,600- 126-40-A-14
 W8YV... 12,455- 106-47-A-21
 W8NWHF... 12,400- 132-40-A-35
 W8JLT... 12,300- 120-41-A-13
 W8MAE... 12,000- 100-36-A-8
 W8NWT0... 11,008- 131-34-A-22
 W8YPT... 10,481- 108-39-A-9
 W8AQD... 10,463- 93-45-A-15
 W8OHO... 10,080- 113-36-A-20
 W8PM... 8,360- 76-44-A-5
 W8MXO... 8,277- 134-31-B-13
 W8LWL... 7,700- 110-28-A-8
 W8L... 7,245- 63-46-A-8
 W8STR... 7,156- 115-25-A-20
 W8HIV... 6,934- 75-33-A-8
 W8P... 6,888- 75-35-A-3
 W8ZKK... 5,680- 71-40-B-8
 W8KMF... 5,664- 59-48-B-14
 W8NAXX... 5,590- 93-26-A-15
 W8NXX... 5,509- 57-39-A-14
 W8KAO... 4,943- 76-26-A-5
 W8MOH... 4,563- 74-25-A-9
 W8PCS... 4,125- 50-33-A-4
 W8TTP... 4,084- 64-27-A-10
 W8HFP... 4,050- 48-34-A-4
 W8BSM... 3,780- 65-24-A-13
 W8LO... 3,655- 47-26-A-4
 W8VYX... 3,220- 63-20-B-7
 W8NAT... 2,113- 73-13-A-30
 W8OYV... 2,040- 51-16-A-8
 W8JRB... 1,900- 26-20-A-2
 W8SUD... 915- 34-12-A-5
 W8S... 850- 20-17-A-3
 W8NBT... 350- 18-9-A-11
 W8NBDH... 250- 10-10-A-11
 W8DNU... 248- 11-9-A-3

W8PKU... 193- 11-7-A-3
 W8BMX... 50- 5-4-A-2
 W8JOY (6 oprs.)
 23,575- 208-46-A-38
 W8RAS (W8s OHP RAS)
 20,280- 160-48-A-24
 W8TXX (W8S BDO TCO)
 18,743- 157-49-A-40
 W8URD (W4YAU, K4GYO,
 W8s LQG NOU NVD)
 14,070- 170-42-B-24

HUDSON DIVISION

Eastern New York

K2HVN... 87,570- 660-63-A-40
 W2HSZ... 73,440- 459-64-A-39
 K2EDH... 66,414- 422-67-B-8
 W8AVT/2... 56,000- 350-64-A-35
 W2VCR... 46,574- 407-58-B-38
 K2DRN... 46,590- 389-47-A-39
 W2CJM... 34,875- 236-60-A-32
 K2HLX... 23,530- 225-44-A-25
 K2BB... 9,048- 87-52-A-16
 K2HMK... 7,920- 97-33-A-15
 W2KXS... 6,300- 90-28-A-16
 K2RQJ... 5,220- 61-36-A-16
 K2K... 4,025- 70-23-A-6
 K2AWA... 1,650- 31-22-A-8
 KN2OSY... 1,320- 37-16-A-14
 W2GTC... 805- 23-14-A-4
 K2GJC... 750- 30-10-A-4
 W2PEO... 193- 11-7-A-5

N. Y. C.-L. I.

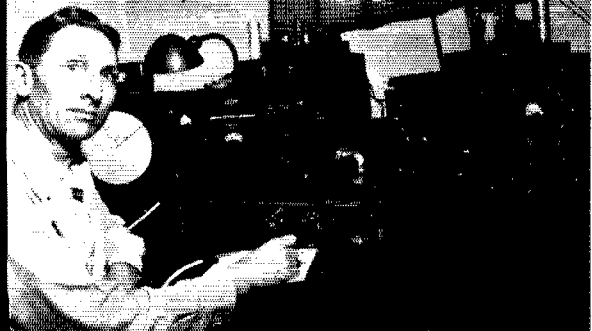
W2PRN... 118,808- 651-73-A-39
 K2DGT/2... 97,410- 573-68-A-38
 W2KTF... 93,300- 667-70-B-39
 W2TUK... 92,544- 553-67-A-36
 W2MUM... 84,923- 507-67-A-38
 W2KGN... 84,775- 505-64-A-34
 W2HQL... 84,169- 505-67-A-34
 K2GHS... 84,104- 553-61-A-7
 K2CF... 83,363- 513-65-A-37
 W2CWD... 65,985- 499-53-A-38
 W2TRQ... 64,339- 452-57-A-29
 W2BXS... 64,054- 451-57-A-33
 W2GXC... 63,813- 445-57-A-34
 W2MDM... 57,720- 444-65-B-31
 W2TWC... 54,443- 357-61-A-25
 W2WFL... 54,173- 350-62-A-28
 W2VY... 32,772- 363-72-B-34
 W2VDT... 43,911- 349-63-B-35
 K2CMV... 41,473- 313-53-A-24
 K2DTC... 33,060- 230-58-A-34
 K2EP... 39,204- 298-49-B-35
 W2GMP... 25,300- 259-40-A-40
 W2BZ... 24,675- 235-42-A-27
 K2GMP... 23,275- 270-35-A-24
 W2AOD... 23,230- 202-46-A-23
 W2DUS... 22,091- 208-43-A-19
 W2NLI... 21,000- 200-42-A-19
 W2BZ... 18,130- 148-49-A-25
 W2GP... 17,150- 245-28-A-16
 W2AZS... 17,000- 170-50-B-15

W2AIZ... 16,800- 240-35-B-38
 K2ABW... 16,450- 175-47-B-23
 W2NCG... 15,030- 169-36-A-14
 W2LPA... 13,260- 156-34-A-26
 K2DNL... 13,040- 160-32-A-11
 W2CRK... 12,512- 184-34-B-20
 K2HRS... 12,000- 150-32-A-21
 K2HMG... 11,633- 144-32-A-28
 K2CQP... 11,273- 167-27-A-8
 W2CPA... 10,920- 157-28-A-23
 W2PEZ... 7,778- 95-34-A-19
 W2BMQ... 7,533- 131-23-A-13
 K2BB... 5,525- 65-34-A-5
 W2OBU... 5,338- 113-19-A-6
 KN2ODE*... 5,175- 69-30-A-29
 K2DVT... 4,759- 73-27-A-8
 48-29-A-10
 W2TNI... 3,000- 60-20-A-11
 K2KTF... 3,000- 49-24-A-19
 W2AEV... 2,781- 58-19-A-4
 K2KUJ... 2,720- 71-16-A-18
 K2LQM... 2,351- 50-19-A-9
 W2LGS... 2,200- 55-20-B-7
 K2CQR... 2,153- 41-21-A-25
 W2DUN... 1,800- 36-20-A-15
 W2LO... 1,680- 42-20-B-4
 KN2OL... 1,600- 46-16-A-15
 W2MIK... 1,560- 39-20-B-12
 K2EZH... 1,318- 81-17-A-9
 K2KRJ... 1,240- 31-16-A-22
 W2AWH... 1,200- 30-18-A-5
 K2NO... 585- 19-13-A-4
 W2HNE... 240- 12-10-B-5
 W2JCA... 210- 13-7-A-2
 KN2OBN... 105- 7-6-A-5
 W2NHF... 75- 6-5-A-1
 KN2MHY... 60- 8-5-A-12
 W2VZT... 60- 8-5-B-5
 K2OPJ... 55- 6-4-A-3
 KN2PHT... 40- 8-2-A-9
 W2AEG (W2AIP, K2S CUI
 DPG JFZ)
 50,752- 419-61-B-28
 K2KYK (K2KYK, KN2OND)
 7395- 102-29-A-10

Northern New Jersey

W2GND... 119,446- 672-73-A-40
 W2CQB... 116,351- 675-69-A-40
 W2OIB... 94,638- 565-67-A-40
 W2DMJ... 88,400- 520-68-A-23
 K2DSW... 81,125- 550-59-A-35
 W2GBY... 78,700- 525-60-A-38
 K2ATQ... 76,415- 527-58-A-40
 W2CWLK... 73,091- 402-73-A-27
 W2AZL... 71,501- 416-69-A-31
 W2W8N... 70,125- 469-60-A-40
 W2FPJ... 69,120- 432-64-A-31
 W2GQB... 68,850- 428-55-A-30
 K2PBB... 64,921- 417-53-A-37
 K2EPP... 54,000- 405-54-A-36
 K2GFX... 53,940- 372-58-A-30
 W2TWC... 53,250- 355-60-A-20
 W2MPP... 46,883- 401-47-A-33
 W2BRG... 45,600- 380-48-A-33
 W2GUM... 45,600- 304-60-A-30

(Continued on page 156)



W4JBO's sorties on 4 bands resulted in 116,438 points, boosted the Ohio Valley club aggregation and netted the Kentucky certificate.

QST for

Amateur Radio: A Tribute

BY HERBERT HOOVER, JR., W6ZH/K6EV

• At the presentation of the 1955 Edison Radio Amateur Award to W2JIO, Under-Secretary of State Herbert Hoover, jr., delivered the principal address. We think you will find his remarks of considerable interest, coming not only from a high Government official, but from one who is himself an active amateur of some decades of experience.

MR. CHAIRMAN, distinguished guests and fellow amateurs:

It is a real pleasure for me to participate with you on this occasion for a number of reasons.

First, it gives me an opportunity to join with you in paying tribute to the winner of this year's award. Mr. Gunderson's life-long and unselfish dedication to the cause of helping others, together with his technical competence and ingenuity in the face of extraordinary difficulties, have been an inspiration to everyone who has known of his work. We are most fortunate that his field of interest and activity has centered around amateur radio, for as a member of this fraternity he has brought to us one of the highest possible examples of public service.

We also extend our appreciation and congratulations to those who have received honorable mention — for the Edison Awards (of the General Electric Company) have come to signify one of the highest honors attainable in the field of amateur radio. We join in paying tribute to these, and to thousands of other amateurs, who had an opportunity to be of service to their communities — often at the serious risk of their own lives — in the unprecedented series of emergencies and tragic disasters of the past year. Their voluntary service was in many instances far beyond the call of ordinary duty.

A second reason that I am delighted to be here this evening — and a rather rare one for me these days — is the opportunity to talk amateur shop and to renew many old acquaintances.

The fact that we are gathered here tonight, with a common bond of interest and friendship, is perhaps not a significant event in itself, for such events are taking place daily, in many walks of life. But it is when we come to analyze the reasons that underly the bonds existing in our own field of amateur radio, that we find difficulty in explaining the phenomenon to people who are not themselves members of the fraternity.

Few other fields have provided such a wide and contrasting range of opportunity as those that have evolved in ours over the period of the last forty years.

For amateur radio has developed into a unique form of human activity. Literally, at the flick of

a switch, any individual — young or old — has wide variety of personal participation at his finger tips. It can be an absorbing hobby, a field for unlimited technical experiment, or an opportunity to perform substantial community service. It can provide contact with old friends in the next county, or new ones on the other side of the globe. There may be days of concentrated effort, or an evening of pleasant tinkering.

Here, a youngster may have his first encounter with Ohm's Law, or a graduate physicist may explore the most abstract phases of electromagnetic theory. To both it provides an appreciation of the fundamental laws of nature that can come in no other way than through practical experience — including a full assortment of burns and shocks.

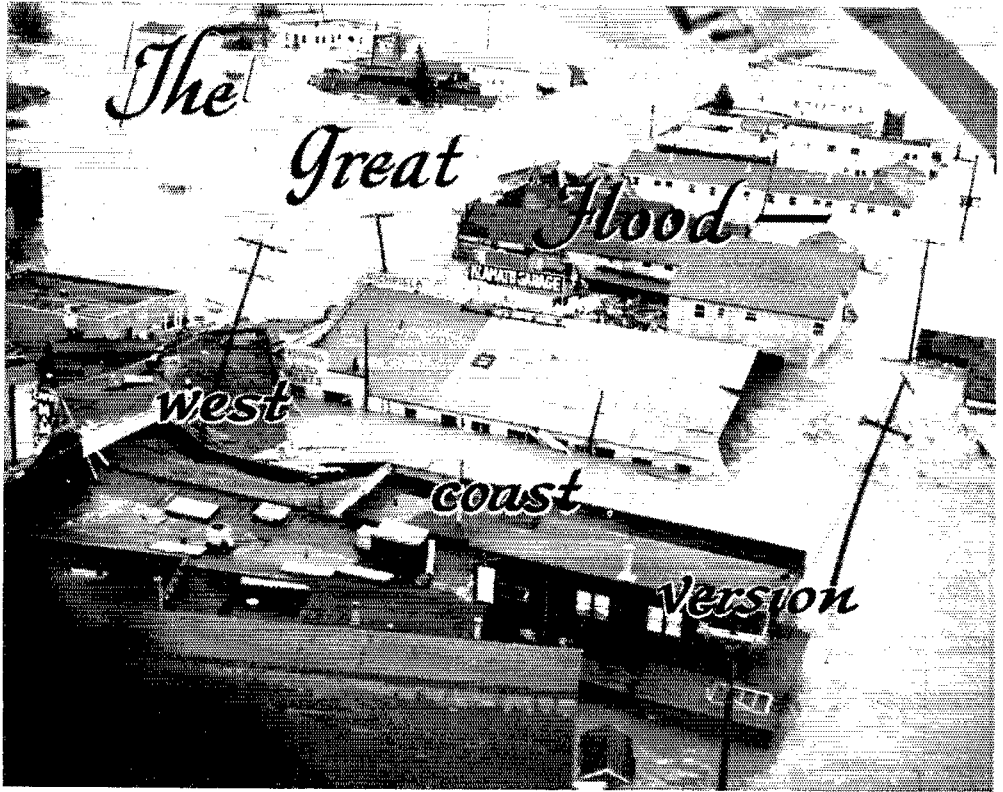
I have often wondered, in later years, if youngsters today get the same thrill that we did 40 years ago out of hearing their first radio signals, or of making their first two-way contacts. I doubt it — though the bug seems to bite just as viciously now as it did then.

The ingredients required by a small boy in those days consisted of a piece of galena; a Quaker Oats box wound with bell wire; and a large assortment of insulators and odd bits of wire for the aerial. The difficult item to come by was a pair of headphones. The prices in Duck's catalogue seemed incredibly high, and resulted in a long and tantalizing period of mowing lawns and performing chores around the neighborhood before the transaction could be completed. The pay was low, and I am sure that the ratio of man hours per unit of headphones was far higher than it is today.

Nevertheless, the thrill of hearing signals — any kind of signals — was ample repayment for all the time so spent. It was long before the days of broadcasting, bedside radios and singing commercials. The ether was still a relatively placid and undisturbed element. Our friends stood around us in awe as we jiggled the cat whisker to find a sensitive spot of the galena, and tuned in NAA or NPG. Later, as we acquired some knowledge of code, and rigged up a "sender," it seemed unbelievable that messages could be sent and received with nothing but the ether in between. We were happily oblivious to such things as sunspot cycles, the Heaviside layer or of maximum usable frequencies. We were in the middle of what is now the broadcast band, and as long as we kept away from the ships on 600 meters, nobody particularly cared what we did.

Although most of us started with a spark coil from a Model T Ford, we soon graduated to high voltage transformers and rotary gaps. They were awesome and noisy contraptions, but they put

(Continued on page 148)



*Christmas Season Storms Alert Amateurs in California and Oregon
for Largest Emergency Operation in Their History*

GEORGE HART, WINJM

WHETHER or not the California floods in December were worse than those experienced in the northeast in August is a matter impossible to resolve. It all depends on whom you are talking to. One thing is certain: in December, California and other west coast states experienced their most disastrous floods in history, if not worse than the northeastern floods last August, at least equal in that they were without precedent.

The pattern is a familiar one. Long-continued rains soak the ground until it will absorb no more; then the run-off begins. Streams rise, swell, become muddy, roily, then overflow their banks. Stream-side debris is swept into the current, lending lashing force to the flow of water. Oil and gasoline reserves are inundated, float atop the swiftly-flowing water to add filth and grime. Logs, buildings, parts of bridges soon become part of the savage driving force of the waters as they continue to rise, collecting more and more force and size, like a rolling snowball. Soon utility poles go down, power substations are drowned out, underground facilities are flooded and short-circuited. Fires break out, dispossessed

people clog traffic arteries and usually-inadequate relief facilities.

It was a sad, miserable business, in this case made even more so by its yuletide season timing.

California has more amateurs than any other state in the union, and they came out in force to back up communications facilities during the flood. The most extensive damage occurred in the Sacramento and San Joaquin Valley area of central California, although the boys from around Eureka might be inclined to dispute this point, with good reason. Flood emergency conditions also prevailed in Oregon. Amateurs and amateur groups, some organized on the spot, some pre-organized, some not organized at all, were active in all flooded areas. Let's see what we can do about sorting out the big pile of reports received.

Oregon

A veritable wealth of material has reached us from Oregon, and it is going to be difficult to reduce it to readable size. The *Oregon Netter*, published by the Oregon Phone Net, contains a fine summary of the operation. Work started on

rescue party by amateur radio. It should be noted that this was a ticklish operation endangering the lives of all in the rescue party, including, of course, W7SHA and W7OHK who were members thereof.

Amateurs in Grants Pass had their hands full even before the rescue operation of a downed pilot mentioned above. W7FTA reports that on December 22nd he, with W7s KEN AHP and ZQM met at city hall and offered their services to civil defense communications officer W7MEV. W7s MQY and JHC had already offered their services. Results of quick planning were that W7ZQM manned W7KEN's home transmitter and W7s AHP KEN ITZ and FTA patrolled different areas relaying road and water conditions to W7ZQM, who relayed to W7MQY, or direct to c.d. headquarters by land line if this was possible. W6GFK assisted as relief operator at c.d. headquarters. W7JHG was able to restore the city police's remotely-controlled transmitter, which had failed, to the air by making a hazardous trip to its mountain-top location. On Friday (Dec. 23rd) as waters receded, the task of cleaning up began. W7JHC in his mobile accompanied National Guard troops entering the still-isolated Galice section, maintaining communications back to c.d. headquarters in Grants Pass by W7FTA. W7MKA and W7OPH, both members of the city police force, provided much-needed police liaison.

W7BLN sends us a long string of agencies served and operators in Oregon involved in this



George Worthley, W7BLN, was outstanding in the Oregon activities during the flood. EC for Coos County. W7BLN was in operation from both his mobile and fixed station (above). Other amateurs in the picture are W7APF (L) and W7QYS.

considerable operation. Among agencies served were Civil Defense, CAA, Mercy Flights, United Press, Associated Press (and many local newspapers), West Coast Tel. Co., Independent Stevedore, Humboldt Stevedore, State Police, USAF, Bonneville Power Adm., U. S. Forest Service, Coos County Sheriff, Jackson Sheriff, Grants Pass Police Dept., Morrison Knutsen Const. Co., Pacific Power & Light Co., Coos Bay

Police, Myrtle Point Police, So. Pacific RR, U. S. Coast Guard. C.D. Station W7SAA in Salem was manned and kept in contact with the OEN by W7ASG, state c.d. communications officer. Key stations operating out of isolated areas, in addition to those already mentioned: W7s AWI RQJ HWX TCT TLK ROG VTW UMZ YRA. Other mobiles in operation: W7s SHA OUS BLN SCY TLQ QOZ NFZ LZG COZ IF VWG RWQ PDL. Other amateurs in Oregon, or participating in Oregon operations not already mentioned: W7s ASG ADX AYL AWD AXJ BA BTF BEK BSY BQK CRN CNA DKN EDU ENU EF EJJ FNX FDJ FKA GWE GU HHQ HJU JSJ JMW JDX KTG LMJ LT LJC NES OJG PDR PFA PPG QCL QPA QBK QJC QWE QJZ RSP RHX RCL RAX SAA SSQ SDH SPB TIR TUI TJJ TMF UAQ UGE UFN UJL UJY UIU UDZ UIN VPH VBG WJG WUR WTQ WHY WPW YQJ ZKH ZEW ZAL: W6s ACT AWF/7 BBR BJO BME BCL CXO DFL DVD FYY FKI GLE GKR GL GIA GQY GTU HSD HWF KTV LKA MFW OPL PNY QEE QKO SIY SMK YSD ZGO: KH6BIM/7.

California

Operation in California centered around Eureka, where the Mad and Eel Rivers rampaged, and in the Sacramento and San Joaquin Valleys, where general flooding conditions prevailed as a result of long continued rains. Among the worst-affected cities were Eureka, Yuba City, Marysville, Santa Cruz, and communities in Tulare County. Our reports of amateur operation in California are highly intergrated and overlapping, as was the operation itself. Each amateur reporting has his own story to tell. It is pretty difficult to get a clear picture out of a pile of miscellaneous reports, some connected and some disconnected. However, here goes for a try at it.

The California Civil Defense Net with W6CIS in charge went into action on 3501 kc. on Dec. 22. An additional circuit for daylight use was set up on 7100 kc., with W6s USA VPC and K6USN doing much operating on that frequency. W6JSY in Eureka and K6NAK at Chico checked in on 3501. W6GQY in Fortuna handled most of the traffic for the Eureka area, keeping regular schedules on 3501 and 7100 kc. with an occasional shift to other channels when these were busy. The net was active full time on Dec. 23rd and 24th, and from Christmas Day until Dec. 28th operation continued on a 24-hour basis, 3501 kc. for official traffic and 3510 kc. for Red Cross and welfare traffic. Key stations not already mentioned were W6HWF/6 in Redding, K6HA in Santa Rosa, K6NCL in Redding, K6FAV at McClellan AFB, K6USN and W6USA in San Francisco, and W6VPC in Oakland. Keeping W6CIS on the air in Sacramento were W6s CMA ISX HIR QKJ DBP AVK JGJ NFH GQH YFP, K6s GR CNA CNE GXE CCK HUE CFF. Other stations assisting in CCDN operations were W6s MYP RBQ MLZ EY UG JQB BKZ YUT NHA FAR BNQ SLX INH FZX MEB EXX IXJ



This is a picture of a c.w. traffic man hard at work. It would be impossible to over-emphasize the importance of the job done by Joe Conroy, W6GQY, at times the only contact with the Eureka area. Over 1500 messages were handled in eight days on the California Civil Defense net operating on 3501 kc.

OHQ LBJ BP DCH ZRJ BLU WPF SAH RRG
SDR ORT UTV OU BIP DDE ZAT ADB
AWF/6 HC JBP ZQD QHS GYH GJP ACL
DVQ, K6s HBF APZ CC LEP HWS OOH
LEJ ALJ DQA CCQ, W7s WHE MKW UVY
UTM OE JU JC APF ADU PGB WJF.

In the Eureka area, EC W6SLX reports that his telephone testboard called him at 0730 Dec. 22 and reported line outages, requested him to fire up his rig. Unable to reach San Francisco, he checked with Naval Reserve and found that they were in contact, so he spent the rest of the day there. Later, after amateur nets got started, W6GDV handled a lot of railroad, telephone and Red Cross traffic over his MARS circuit. W6BBR, W6GQY and W6BME also handled much traffic for the area.

OCD headquarters at Redding activated its station, W6HWF/6, during the emergency, using c.d. frequencies 3825 kc. for phone and 3501 kc. for c.w. This station originated 112 emergency messages, received 172 in the same category, and in addition handled 89 health and welfare messages. Contact was made with K6BBR in Eureka (operated by K6AKF) to secure a report on conditions there; at this time, mobile equipment of K6ACN was being used in fixed status at the Redding station. In the afternoon of December 23rd W6ZQD took over operation at W6HWF/6, and from then until the end of the emergency, W6ZQD and K6ACN kept the Redding station on the air. E. Rex Riley, of the Redding Sector OCD office, mentions the fol-

Ed Kirkwood, W6SLX, EC of Eureka, summarizes his activity as "three long days at Navy Reserve radio plus one at home station and one helping W6KMH at his station." This in addition to his work with the Pacific Telephone Co., itself demanding enough.

lowing in connection with this operation: K6AKF, who was caught in Eureka by the floods and did a great deal of operating from that point with K6BBR and W6YUH; K6IYO, who operated from his home; K6CBY, who lent equipment and operating time to the CD headquarters operation; W6PTX, ten hours of operation.

W6ZQD reports on an evacuation operation in which he was involved in Thorne. Three children and their father had to be moved to the hospital at Ukiah, but bad weather made this impossible by helicopter. On December 28th, when the situation of one little girl became critical, the Air-Sea Rescue Squadron was contacted. After securing the necessary authentications through K6AXW, W6VIA and phone patches, the helicopter was dispatched and landed at Garberville in a circle of lights made by automobile headlights at a drive-in theater, the airport being under water. After checking with his commanding officer through K6AXW, the pilot took off and delivered the patient to the hospital at Ukiah. Communication was by amateur radio throughout.

A report by W6FDJ of operations during the disaster in California is of interest. Activities commenced on December 22 when Southwest Airways called W6FDJ requesting information on airport conditions in Eureka. He contacted W6VPC, who contacted MARS station K6OUR at the Presidio, who made contact with W6GQY in Fortuna, who obtained the desired information. W6VPC instituted monitoring of 7100 and 3501 kc., by putting out a bulletin to that effect; this bulletin was copied by K6CNE in Sacramento, who telephoned W6CIS, who thereupon activated the state c.d. network on 3501. Two meter intercom service was established from the East Bay area to W6USA thru W6s VPC ASJ FZC FDJ DNX CBX VVF NKP WOC and others. Since there was a personnel shortage at W6USA, the two meter link served as an intercom to notify the MARS station when there was rush traffic for them on 3501. On Friday W6USA lost power temporarily, so handled their traffic via landline to W6VPC until power was restored. Some traffic was routed to the Mission Trail Net via W6ASJ. W6FZC put in two long stints acting as liaison between W6USA and the State C.D. CW Net. Hundreds of messages were relayed for the Red Cross, Civil Defense, Salvation Army and other agencies on 3501, 3992 and 3825 kc.





This mother and son combination were active from Eureka. K6MNV (mother) handled some flood traffic from her home station, while K6KGT, in addition to work at home, also assisted at the Naval Reserve Station and at W6SLX. Sonny (K6KGT) is fourteen years old and was given a fifteen-minute program on the local radio station for his flood work.

The American Legion Net on 3975 and the Mission Trail Net on 3854 handled additional hundreds of Health and Welfare messages. W6OT of the Oakland Radio Club and W6EXA at Oakland C.D. handled considerable Red Cross and railroad traffic. W6s FDJ ZSS WZN, K6GK and others spent many hours at the controls of these stations.

We are indebted to W6FSL for a summary of operations conducted on 7215 kc. during the flood emergency. Praised for assisting in the evacuation of many homes between Walnut Creek and Concord are W6s CGS RUC HOF QFE DEX TCU VMI AIL and K6s IMV and MFL. Others listed by W6FSL for activity on 7215 kc. include W6s GLE PYL LDV GSX SXI YPM RIL STH WDG CXO (W6s JWF BYS and BIP operating), K6s AXW ARJ OIS HOA and W7ZCA.

Mr. Lathman of the U. S. Weather Bureau praises the following amateurs for service rendered in the Fresno area: W6s DBX KMN QOS KOC JPS OUX ZOI MGN BFH WYT NAS JPU NTS FKL MSU ZYR OGM, K6s JGH ENQ IFL GDY HTG EDX LRQ BGZ.

We received plenty of newspaper clippings, most of them having nothing whatever to do with amateur operation. One set of clippings, datelined San Gabriel, praised the efforts of operators in that area in relaying traffic between points in the flooded area when skywave conditions made it impossible on 75 meters locally. Amateurs mentioned in this connection included W6s BLU MLZ and PFF. Apparently involved in local operations were W6s DMK DZI DXQ and K6s LXD EQV CYO KUV and HEF. Traffic in and out of the Eureka area was handled by W6GQY.

W6RLB, trustee for the two-meter repeater station K6GWE atop Grizzly Peak near San Francisco, reports widespread success in using this repeater during the flood operations. The station is located at a civil defense installation, owned and operated by the VHF Expeditionary Society. The station operated during the entire flood period without an operator in attendance,

and with only one maintenance visit, enabling reliable contact on two meters for a radius of fifty miles in all directions. Net control was shifted from W6CXO to W6EXX in Redwood City several times instantaneously with no confusion whatever. W6RLB lists the following stations as participating in this two-meter operation using the facilities of K6GWE: W6s UW PQH VSV PIV AUZ DTV GCG MIX MKA DBH OTW CHP YEQ GGC NW OHQ JCI HAN, K6s LHP ERF LHJ BAS HIT EDW HZD ERR ALG LKL ERQ GAQ, K6s KDU OOH.

K6BBF sends in a couple of clippings commenting on work done by W6NMV and himself in obtaining aid for flood-stricken Eureka. Making contact with a station in Eureka (not identified in the clip), he contacted Air-Sea Rescue at Hamilton AFB, the Coast Guard and the Presidio at San Francisco, all of whom reported that they were sending equipment to the Russian River. A helicopter was dispatched to Eureka from the naval air base at Alameda, at W6NMV's urgent plea. K6BBF discounts his own part, but says he handled some traffic in and out of the stricken area.

One net that spent a mighty busy time during the emergency was the Mission Trail Net on 3854 kc. Health and welfare traffic piled up on this frequency, while W6KZF scouted around trying to entice stations from the disaster area down to 3854 to handle some of it; but most of them, he says, were too busy with official traffic. W6BJO of Loleta was a big help, as was W6UQE of Ruth. Other MTNers in the thick of it were W6s RXX DVD RHA JWF (at W6CXO) and K6AXW. W6RXX at Yuba City was particularly busy, first in handling traffic regarding the evacuation of Marysville, then right in his own back yard as a dike broke and Yuba City itself was submerged. At first he had only his son, W6YNY, for help, but later many other amateurs came to assist. Contact with Red Cross was maintained by messenger until a small transmitter was set up to handle this bit of liaison. The whole operation was rugged for W6RXX, who lost much sleep and composure and is not the

slightest bit anxious to repeat the experience.

K6BYS, EC at Chico, reports that a station was set up at c.d. headquarters and maintained contact with K6NAK during the emergency. Much traffic was handled.

Out of the confusion that surrounded the operation at Santa Cruz, which was very hard hit, we gather that W6NVO, Santa Clara SEC, operated from K6FQ, along with K6FQ himself, who has been appointed EC for that city. Contact was maintained with W6CXO, and several Red Cross "conference" contacts were arranged through this circuit. Traffic was handled as well with other stations, including quite a few mobiles which came into the area. W6NVO remained in Santa Cruz for 24 hours. K6JJK says all telephone communication was out and that he was successfully operating a six meter circuit with K6HZD, who took traffic from KN6OOH in San Francisco on two meters. K6JJK then phoned the traffic in to Red Cross. Other amateurs mentioned as having a part in the Santa Cruz operation include W6s SZN RTE SXO ZGR GFJ ZRJ and KN6OWH.

Tulare County was hit pretty hard by the flood, according to reports received from W6GCS (EC) and W6ARE. W6IGJ operated on emergency power from Ash Mountain and was the only means of communication from that location. Other amateurs mentioned as being active in the area include W6s OHT IEM PCC WUD MSU ZKP, K6s WEH (W6BYY operating), and JGO (K6GSJ operating).

The situation in the Marysville-Yuba City area became critical on December 23rd when the rampaging Feather River, separating the two cities, obliterated the levee on the Yuba City side. W6JEQ, SEC for Sacramento Valley, gives us a fine summary of operations in that area. Alerted at 1025 on the 23rd, the Sacramento Amateur Emergency Communications system activated W6SIG at the Sacramento Signal Depot, which took over NCS on 3885 kc. until 1630, with W6MSI and W6RQO doing the operating. At that time, NCS was shifted to W6JEQ/6 at Sacramento Red Cross Headquar-

ters, which station had been installed and put into operation by W6JEQ, W6HQF and K6GDS. On December 23rd, K6ABY opened up W6SIG at 0700 and stood guard on the frequency until 1400. During the next seven days, NCS was shifted frequently to stations around the Sacramento area. Operators were sent to Marysville and Yuba City to relieve W6RXX and W6DEO, who had operated around the clock. W6MLN took his portable two meter rig to Marysville and in 14 hours handled nearly 200 messages. K6CKH and KN6KDU provided a link with Auburn to set up a QRM-free pipeline into and out of the stricken area.

In Sacramento, communication was set up on a levee south of the city by W6s MEB MSI IWZ and K6GDS. These operators spent approximately 12 hours relaying messages for the Red Cross, and private contractors making equipment for flood relief and control available. These operators were relieved at 0200 on December 29th by operators and equipment from McClellan AFB. W6JEQ lists the following additional amateurs as having participated: W6s CMA CIS ETD (GTG GKW GGW HIR HTS HQF HSB IOY ILZ IHX IQF JEQ KKI KME LSK LSB MLN NFH NQH OPY PIV QAC RNR RQO SXI SIG TOL TGS TUO VKT ZF (GNQ ITJ PHO MTB; K6s ABY CFF CNA CNE CKH DHI ER GSI HLE KDU EWH.

RN6 Manager W6ZRJ reports that the NTS Sixth Regional Net handled much emergency traffic on its regular sessions, and also set up a special circuit to Santa Cruz to handle Red Cross traffic on 3610. W6UW, the Santa Clara Valley Amateur Radio Club station, finally succeeded in lining up a sked with W6RTE in Santa Cruz. This station was later shut down, but arrangements were made with W6SZN to clear Red Cross traffic on the RN6 special net. W6UTV ran the show much of the time, with W6s HC BPT VZT GFJ ZRJ YHM and K6DYX doing some of the NCS work. Around 150 messages were passed, with liaison conducted between RN6, CCDN and the phone nets. The net closed

(Continued on page 140)



This is W6RHA, Milan Terkla, who worked with the Mission Trail Net on 3854 kc., serving as NCS some of the time. W6RHA was the only outlet from the isolated Watsonville area. (Photo by Vestal, Watsonville, Calif.)



Andy Chenoweth, W6RXX, was a mainstay at Yuba City. At first active in evacuation traffic for threatened Marysville, the flood came close to home when Yuba City was inundated after the levee separated.

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

Ministers' Wives

You may have noticed that occasionally we like to present together groups of YLs who share something specific in common — operating, activity, vocation, or interest-wise. This month our YLs in the spotlight are all wives of ministers, who are also amateurs. As ministers' wives, they are very busy helpmates, but they all find time to enjoy mutual interest in their hobby with their husbands.



Father, mother, son, and daughter are all licensed amateurs in the Battin family of Elgin, Illinois. W9OTO's OM is W9OWD, a minister for twenty-five years. At present Edith and Everett are working at the Harbor Lights Corps Mission with the Salvation Army on Skid Row, Chicago. Edith's help means much to Everett, for he is sightless. Son John is W9MEM, daughter June is K8MXC and son-in-law is W9UDS. Edith, who was licensed in 1951, is on 80 and 40 c.w. and 75 and 2 phone.



For K2IWO, Hilda Andrew, getting an amateur license was part of her marriage contract in 1941 — well, almost anyway. Hilda has no regrets though, for as the wife of W4EFG/2, Lt. Colonel Joseph Andrew, Chaplain, now with the U.S.A.F. at Stewart Air Force Base, Newburgh, New York, she has had an interesting life. Hilda was W4HWR and D4AAB when Joe's work took him to Florida and then to Germany. The Andrews have three children and manage considerable operating time on 80, 40, 20, and 10.

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



Otilia (Til) Lynch, W9GMA, is the XYL of Reverend Everett Lynch, W9JL, of the Zion Church, Evangelical and Reformed, in Marion, Illinois. Married in 1940, Til got her amateur license a year later "in self-defense." In the following years she held the calls W5KDE and W9QEN and made her OM quite proud of her when she built a workable two-stage c.w. transmitter on an inverted cake pan. Til and Everett now have two young daughters who sit by and listen when they operate 75 phone.



When Oneta Smith, K4CDC, and her husband and brother get together they can have both a hamfest and a Methodist conference at the same time. Nita's OM is K4BUS, Reverend O. Dewey Smith, Minister of Spray Methodist Church, Spray, North Carolina. Her Dad, K4BFH, and brother, W4ZOG, are also both Methodist ministers. Nita and her OM were "both bit by the radio bug at the same time" with resulting novice and general licenses in February and July 1955. They work several bands with a Viking II and are the parents of two girls.

The May 1955 YL column carried a photo and story of W9GXG, Mildred Drummond, whose OM is W9BWP, Reverend Wesley J. Drummond, Pastor of the Second Presbyterian Church, Flandreau, South Dakota.

Any other YLs who are ministers' wives?



W2OLB — YL Author

W2OLB — YL Author

Amelia Lobsenz, W2OLB, is the author of the first two fiction books on amateur radio expressly written for teen-age YLs. The books, *KAY EVERETT CALLS CQ* and *KAY EVERETT WORKS DX* (published by Vanguard Press, 424 Madison Ave., N. Y. C.) are exciting adventure stories which should be of particular interest to girls from ten to sixteen years of age. Amelia is the author of a number of articles for nationally-known magazines covering a wide range of subjects. In her latest article, "Magic Carpet in Her Kitchen," which appears in the March 1956 issue of *BETTER LIVING*, a supermarket monthly, Amelia relates the amateur story of WIULF, Gertrude "Tweet" Hines, while interestingly informing the general public of our hobby. Licensed in 1941, Amelia favors c.w. and is looking forward to operating 10, 20, and 40 meters soon from her new York City QTH.

Looking for a Rhode Island YL? Here are seven who will do their best to oblige you for a contact with the smallest state. With the recent inception of the Rhode Island YL Club, the girls are organized for action too. W1VXC, June, is President and Secretary, with WICEW, Mary, Vice President and Treasurer of the club, which conducts two weekly nets: a two meter phone net on Thursday at 2000



EST on 145.3 mcs, with W1WPX, NCS; and a c.w. net on Wednesday on 3743 kcs, at 1330 EST, W1VXC, NCS. Any OM or YL can qualify for a R.I. YL Certificate Award by sending ten QSLs confirming QSO with ten R.I. YLs (at present there are 16, with several more awaiting calls) to W1WED, Ruth Parker, 75 Ridgeway Avenue, Hoxszie, R.I. Seated in the picture are W1s HUH, WPX, and VXC; Standing, W1s CEW, ZWM, WED, and ZOK.



Twenty-four YLs enjoyed this year's Midwinter Hamfest at Grand Rapids, Michigan, on March 3rd. OM W8GJH, Radio Chairman for the Flint end of the 1956 All Woman Transcontinental Air Race in July, asked for operating assistance from the girls. In a talk on MARS, Captain John Downey, MARS Director of Fifth Army Headquarters, Chicago, urged more YL interest in the system, stressing the value of women operators during an emergency. Left to right in the photo are: Front: W8s QOM, ATB, FPT, ORP, QOQ, and WN8FJU. Middle: W9LKD, W8s

UAP, SNB, QPT, EIR, and VRH. Top: W8s MMB, OGY, UAU, WN8?, W8s WQE, ONI, UVV, and RIR. (Photo by W8HSG)

Coming YL Get-Togethers

New England—The Women Radio Operators of New England will sponsor the annual W1 YL Spring Luncheon at the Hotel Touraine, downtown Boston, Saturday, May 26th, at 1:00 p.m. Flyers with complete details will be sent to some 300 New England YLs. W1SVN, Mildred Doremus, 177 Essex Street, Lynnfield Center, will handle replies.

Midwest—The Sixth Midwest YL Convention, May 25, 26th, and 27th, at the Hotel Capri, St. Paul, Minn. Details in last month's column.

ARRL National Convention, San Francisco, California—Chairman of Women's Activities is W6PCN, Peggy Detsch, 123 Robinhood Drive, San Francisco, with W6FEA, Gertrude Cassidy, assisting her. The dates are July 6th, 7th, and 8th. Watch "Coming ARRL Conventions" department elsewhere in *QST* for details on the entire program. We'll handle only the women's events, although undoubtedly the licensed YLs will want to take in many of the technical talks and various amateur activities, which promise to be most interesting. The XYLs will have their own doings guaranteed to keep them happily entertained. Tours, fashion shows, a tea, special guest speakers are but a few of the events planned especially for the women. There will be an informal party with games and dancing following Friday night's ARRL meeting. The Grand Ball comes after the big banquet Saturday night. Breakfasts for various groups are scheduled for Sunday and there will be a special YL meeting for all licensed YLs. These are but some of the highlights. Plans are popping fast. W6PCN promises to have ticket prices and more details next month.

Net Correction: The NYLON (Northwest YL Operators Net) meets Wednesday at 9:00 a.m. PST on 3820 kcs., and not on Monday as given in the net listing in the March 1956 column.

Have you made your Field Day plans yet?

Keeping Up With the Girls

Thick steaks were served to 84 YLs and their OMs at Petersons' Buggy Whip in Westchester during the Los Angeles YLRC's annual YL-OM Valentine Dinner. Club President W6QOG, Helene, introduced guest speakers Mr. Bernard Linden, FCC Engineer-in-charge, Mr. Walt Joos, W6EKM, ARRL Director, Southwestern Division,

W2BTB



With deep regret we record the passing of Jeanne Walker, W2BTB, of Fayetteville, New York, on March 17. Since 1949 when she was licensed, Jeanne was known throughout hamdom as an untiringly active amateur who poured her energies into many worthwhile causes. As a top-rate traffic handler, she relayed thousands of messages annually. In 1953 she received an Edison Award honorable mention citation for outstanding public service work. Recently appointed Air Force MARS Co-ordinator for New York, she was Assistant Director to W3YA of the Atlantic Division of the ARRL. Jeanne was the wife of Richard Walker, W2ZOL, and the mother of one son.



The first amateur to work all 83 counties in Michigan (on 75 only) is Anna Strawway, W800M, of West Branch. Anna's OM is not licensed, but he does let her keep her DX100 and SX25 in a corner of the living room.

Three years of DX chasing have rewarded Blanche Edwards, W9-QLH, of Alton, Illinois, with 158 countries confirmed on phone and c.w. and 137 on phone only. Blanche says she has learned a lot from her early days of trying to work S9 plus signals only sans a beam. Her OM is W9NDA.



and Harry Leonard, W6MBD. Club Vice President W6AKE, Lorraine, chairmanned the successful dinner. . . . W5VNI, is planning the YL program for the West Gulf Convention in Galveston June 15th thru 17th. Betty's OM W5ULN is Convention General Chairman. . . . At the second anniversary dinner of the San Francisco YLRC, W6QMO, Jeri, past president, was presented with a gift of jewelry from K6s DEN, EEEs, AIU, and W6s PCN, QMO, and FEA. . . . W0IRJ, Jean, is net manager of the Minnesota Junior Net which meets Monday, Wednesday, and Friday at 1700 CST on 3690 kcs. . . . K5DAB is helping to provide a much-needed traffic outlet in New Mexico. Ruth operates in the daily 7290 kcs. net. . . . Fourteen-year-old W5DJG, Chris, is learning to play chess via the air waves. . . . W7SYF, Mary, is EC for Hood River County, Oregon. . . . W7QYA, Flo, of Lewistown, Montana, is a new OBS. . . . K9AXS, Goldie, and K9AMD, Carole, are a new mother-daughter team in Hillsboro, Illinois. . . . K6ANG, Billie, has been reelected Secy.-Treas. of the Los Angeles Area Council of Amateur Radio Clubs. . . . KZ5AE, Sis, plans to be in Pa. in June and in southeast U. S. in July and August; and KZ5VR, Virginia, will be stateside from May to September. . . . New novice WN7BUI, Ann, of Hoquiam, Washington, is 68 years young. . . . Former YLCC Custodian W7GLK, Dot, now has her own YLCC (No. 60). . . . W9JYO, Thelma, spends some five hours a day on MARS nets. . . . FB8BR, Madagascar, is W6WSV's newest DX conquest. Carol is showing the 20 c.w. DXers how to do it with 80 watts and no beam. . . . Members who attended the February meeting of the Portland Roses were W7s QKU, QXH, REU, RVM, SPC, TVU, WFO, ZKY, and WN7CCF. A round-table was scheduled for Tuesdays at 1300 on the club frequency. . . . W1IRP is the new call of ex W5VXS, Nancy, now of Hingham, Mass. . . . W7BMT, Mary, was formerly W9BCH. . . . W7BHZ, Jan, is a recent



A member of the Executive Committee of the Women Radio Operators of New England, Mildred Doremus, W1SVN, is on 10 and 75. She's also the wife of W1KEK, the mother of four young boys, and a part-time policeman for the town of Lynnfield, Massachusetts.

bride of W7KOF. . . . Using a low pass filter Christmas present, W1UZR, Rita, has cleared up all of her TVI troubles. . . . W0IRD, Lil, is NCS of the Minnesota Fone net Monday noon session. . . . W9RTH, Adah, conducts code classes for live boys twice a week. . . . A commercial artist, W7WFO, Marianna, designed the official emblem for the Oregon A.R. Society. . . . W7MUT, Sister Charlotte, is Idaho Director of the Natural Science Teachers Association. . . . It's 210 countries confirmed for W6UHA, Maxine. . . . W7KQY, Gert, has been PAM for Arizona for three years. . . . W0ZWL runs a weather net on 3870 kcs. at 0745 MST Monday thru Friday. Martha made BPL last October, Nov., and Dec., and earned the first medalion awarded to a South Dakota amateur. . . . W8FPT, Wava, was happy to work FS9RT, St. Martin's Island on 15. . . . K6BQV, Karyl, a W.A.F., is stationed at Warren AFB, Wyoming. . . . When the car she was driving turned over during a bad January snowstorm, W7QYN, Lois, was lucky enough to escape serious injury. . . . WIZOL, Leta, of Bangor, Maine, is busy checking out the two meter transmitter and converter she built. . . . W7QKU, Donna, represented the Portland YLs in a half-hour TV program on amateur radio. . . . W7QWX, Mary, edits the monthly Teen Age Net publication. . . . W1VXC, June, says the bug she received on her birthday precipitated a case of c.w. and DX fever. . . . W0KJZ's latest appointment is Tenth Regional Net Manager. . . . The YL of W1ZWC, Lucy Smith, of New Milford, Conn., wrote that after reading about so many YLs announcing new arrivals, she and her OM are pleased to report the arrival of twins, a boy and a girl, on Jan. 31st, with signals loud and clear.

1956 AWTAR Starts July 7th

Plans for the Tenth Annual All Woman Transcontinental Air Race are under the direction of two able chairmen, both of whom have served in the same capacity more than once before. W6QPI, Betty Gillies, of San Diego, a member of the Ninety-Nines, is Air Chairman. W2JZX, Viola Grossman, whose new QTH is 316 West 84th St., N. Y. 24, is General Radio Chairman. The race will start at San Carlos, California, on July 7th (which is the Saturday of the ARRL National Convention at San Francisco only twenty miles away). Stop-over cities are Bakersfield and Needles, Calif.; Prescott and Winslow, Ariz.; Albuquerque, N. Mex.; Amarillo, Texas; Wichita, Kansas; Columbia, Mo.; Urbana, Ill.; Ft. Wayne, Indiana; with the finish at Flint, Michigan. Radio Chairman for California is Gertrude Cassidy, W6-FEA, who will also direct operations at San Carlos. W6QGQX, Haryette, will handle Bakersfield. OM W8GJH will chairman for the finish of the race at Flint, with W8ATB, Esther, assisting. Other radio chairmen will be announced. Amateurs interested in assisting with the relay of flight information should contact W2JZX.



Hilder Heddin, W0TOP, of Wright, Minnesota, is always willing to help novices with practice on 80 c.w. Licensed in 1951, she enjoys lengthy QSOs on 75 and 160. From sale of her handiwork, she has bought almost all of her own gear.

The only ham in her family, Camille Storey, W5ILO, says she is indebted to W5GYW for encouraging youth in radio in McAlester, Oklahoma. Eleven-year-old Camille is on 75 daily.





CONDUCTED BY EDWARD P. TILTON, WHDQ

A FUNDAMENTAL DIFFERENCE between v.h.f. operation and the kind of hamming most commonly done on lower bands lies in the obstacles we have to overcome in order to make contacts. On the frequencies below 30 Mc., the main trouble is usually interference from other stations on the same or nearby frequencies. External noise, both man-made and natural, is also a limiting factor. In the world above 50 Mc. we are more often defeated by the noise generated *within* our receivers than by any other factor.

One line of attack that is still not being pushed to full advantage in weak-signal work by most v.h.f. men is the use of the highest practical selectivity. The receiver manufacturers have been helping out on this one. There are some very effective receivers on the market today, even in the medium-price bracket. How well do we make use of the selectivity tools at our disposal?

To answer this one we have to think about transmitters, and methods of conveying information therewith. If we use double sideband a.m. phone, we're doing our weak-signal work in the least effective way. That old-fashioned talk-with-the-hands, c.w., is the best. If we take full advantage of all that c.w. has to offer, it is 17 db. better than double-sideband a.m. phone. That means the equivalent of a power gain of 50 times by the simple expedient of talking with a key instead of a microphone.

But some hams simply will not use c.w., no matter what it has to offer. (Though some hard-to-get states coming through during recent auroras have made a few converts!) How about narrowing down the phone passband? Some decibels can be picked up that way rather easily, through the use of single-sideband suppressed-carrier techniques. This calls for a little extra effort at both ends of the v.h.f. circuit, but it is now being shown that it can pay off handsomely.

Use of SSB on 6 and 2 is not new, of course. It's more than five years since W1PNB came on the air with what was undoubtedly the first amateur v.h.f. SSB signal on 50 Mc. He was joined shortly thereafter by W1CGY and W1SCO. More recently, W7JRG had SSB on 6, and W0DSR has been reported using it on 144 Mc. for the past couple of years. One of the most successful SSB advocates on 144 Mc. has been W2JJC, New Market, N. J., who puts a splendid signal up to W1s on 144 Mc. In nightly skeds with W1DXE and your conductor, W2JJC has been consistently readable. The signal-to-noise ratio his signal exhibits has been

phenomenal, and it gives every evidence of delivering the 9-db. gain over double sideband a.m. that SSB is theoretically capable of. Under favorable propagation the 9 db. improvement is nice to have, but it doesn't sound tremendously impressive. But when the a.m. signal is fighting a losing battle with the noise level, the switch to SSB brings W2JJC up out of the hiss in a most convincing fashion.

What may have been the first two-way contact with single sideband on 144 Mc. was made March 27th by W2JJC and W3HWN, Mechanicsburg, Pa. This 150-mile path over regular terrain has shown marginal signals in the past, with W3HWN running a high-powered a.m. rig. His peak power for the SSB contact was 3 watts!

W2JJC uses a crystal-lattice exciter (June, '53, QST and the SSB Handbook) with a simple heterodyning lineup to get to 144 Mc. This drives 832A and 826 p.p. linear amplifiers. W3HWN employs the SSB Jr. approach, heterodyning to 144 Mc. in a manner similar to that of W2JJC. His output stage, for this first contact, was a single 6360.

An old hand at 6-meter work who has recently appeared with SSB is W1CLS, Weston, Mass. Doc is taking the 28-Mc. SSB signal out of his KWS-1, two stages back from the final, feeding it to the screen of a 5763 mixer. The heterodyning signal is applied to the 5763 grid. This mixer drives a 6146 AB₁ linear amplifier, which is pushing a pair of 4-125As in the final.

The method employed at W1CLS shows that putting SSB on 6 or 2 is no great task for fellows who already have sideband rigs on lower bands. Going to 6 is particularly easy; two or three

New 50-Mc. DX Record!

According to a report from NEIGE, the 50-Mc. DX record was extended on March 24th. LU9MA, Mendoza, Argentina, worked JA6FR, Kyushu Island, Japan, at 0115 Argentine time. JA6FR then went on to work LU3EX and LU2EW, his signal remaining at LU9MA until 0240. The exact locations of the stations involved have not been determined at this writing, so the true distance is not known, but it appears to be just under 12,000 miles.

The first South American 50-Mc. DX of the current solar cycle to be worked from this country came on March 28th, when K6OBO, Pacoima, Calif., worked LU8AE and LU9EV. Time: 1355 to 1415 PST. This report from W6ABN.

tubes can be made to do the job. It is probable that quite a few of the high-powered amplifiers currently in use for a.m. service could be made to deliver satisfactory performance as linears. The 4-125A amplifier at W1CLS saw years of service previously. The only major change required was the installation of screen neutralization, to improve the stability to the optimum required for good linearity in SSB work.

To make the most of SSB requires cooperation at both ends of the v.h.f. circuit. The fellow who generates an SSB signal of good quality has done his part. It is up to the receiving operator to make use of its potentialities. The full value of SSB for weak signal v.h.f. voice work can be realized only if it is tuned in properly, with the receiver set at the narrowest usable passband.

V.h.f. men have a reputation for being eager to make use of any technique that will make for better receiver performance. We should hear little of that "My receiver won't tune in side-band" chant that has become so familiar on lower frequencies. We need that 9 db. too much to quibble over a little extra work in tuning in the signals!

Furthermore, we have all the territory we need to keep one form of transmission from causing trouble to another. There is plenty of room for both SSB and DSB, and we do not mean to imply that the former is going to push out the more familiar mode of operation in v.h.f. work. With four megacycles per band to play around in, experimentation with SSB on 6 and 2 should generate none of the strife that so quickly characterized its introduction on our more crowded lower bands. Used to full capability, it could make a tremendous contribution to the extension of our reliable working range on voice.

Here and There on 6 and 2

International DX is building up on 6 again to very promising proportions. XE1GE, Cuernavaca, Mexico, is repeating the spring-and-fall contacts with South American stations that he and XE1KE promoted during the last sunspot cycle peak. We have already reported his contacts made in March, October and November, 1955. The South American DX returned on schedule March 11th of this year, when Jeff worked LU7DDG, LU9MA, CE3TB and CE3CC. The latter were the first Chilean 50-Mc. contacts for XE1GE. Jeff also heard some of the LUs working TG9JW and XE1FU. This went on as late as 2020 CST, and the band was open at 1515 the next day. Five LUs were worked on the 13th, and 8 on the 14th.

CE1AH, Chuquicamata, Chile, reports that sporadic-E contacts were possible with the LUs almost nightly after she got back on 6 January 26th. The LUs also were working CP5EK and OA4AE (Bolivia and Peru) in February. PZ1AE, Surinam, worked LUs and CE3CC in February, but Ida could not hear him. She worked PY3BW on Feb. 22nd. Schedules are kept with Africa between 1700 and 1900 GCT, and Japan at 0100 GCT, in the hope of catching something good in those directions. (Remember Ida is coholder of the 10,500-mile 50-Mc. DX record.) She says that 50-Mc. activity is at an all-time high in South America, and all hands are watching closely for signs of DX from North America. We should check for high m.u.f. to the south on mornings after pronounced ionospheric disturbances, but they shouldn't give up hope for openings later in the day, too, particularly in the Gulf states.

Countries never before available on 6 are showing up. VP6PV and VP6JR, Barbados, and CX1AQ, Uruguay,

2-METER STANDINGS

Call			Call				
States	Areas	Miles	States	Areas	Miles		
W1RFU	19	7	1150	W5CVW	10	5	1180
W1HDQ	19	6	1020	W5MWW	9	4	570
W1REZ	18	5	710	W5MLL	9	3	700
W1UIZ	17	5	680	W5SWV	8	3	690
W1CCH	17	5	670	W5FRD	8	3	570
W1IZC	16	5	750	W5FEK	8	2	580
W1KCS	16	5	690	W5VX	7	3	1200
W1CLH	16	5	565	W5VY	7	3	1200
W1EIO	16	5	475	W5ONS	7	2	950
W1AJR	15	5	600	W5FSC	7	2	500
W1AZK	14	5	650				
W1MNE	14	5	600	W6WSV	5	3	1380
W1BCN	14	5	650	W6NLZ	4	2	400
W1DJK	13	5	520	W6DNG	4	2	350
W1MMN	13	5	520	W6ZL	3	2	1400
				W6BAZ	3	2	320
W2ORI	26	8	1000	W6MMU	3	2	240
W2NLY	23	7	1050	W6LSB	2	2	360
W2BLY	22	7	1020				
W2AZL	21	7	1050	W7VPM	6	4	1280
W2UTH	19	7	880	W7LEE	5	3	1020
W2AZP	19	7	650	W7JU	4	2	353
W2WVJ	19	6	780	W7YZU	3	2	240
W2OPQ	19	6	630	W7JQO	3	2	140
W2DWI	19	6	630				
W2AOC	18	6	660	W8WVX	28	8	1200
W2KIR	18	6	660	W8LPD	25	8	750
W2WFB	17	6	900	W8SPG	24	8	850
K2CEH	16	7	910	W8RME	24	8	850
W2FAU	16	6	740	W8RRY	23	8	850
W2PCQ	16	5	650	W8SVL	22	8	725
W2LHI	16	5	550	W8DX	22	7	675
W2RXG	15	6	630	W8RAX	21	8	685
K2IEJ	15	5	620	W8WRN	20	8	670
W2LWJ	15	5	525	W8JWV	19	8	740
W2BRV	15	5	435	W8P	18	7	800
W2FHV	15	5	435	W8ZCV	17	7	970
W2LXB	15	5	—	W8RWV	17	7	630
W2DFV	15	5	—	W8WSE	16	7	800
W8BGT	28	8	740	W9KLR	25	8	850
W8RUE	25	8	950	W9EQC	24	8	820
W8KCA	21	7	—	W9EHX	24	7	725
W8GKP	20	6	800	W9FVJ	23	8	850
W8KWL	19	7	740	W9HPV	23	7	1000
W8NKM	19	8	660	W9HLL	23	7	690
W8BHI	19	7	650	W9WOK	22	8	860
W8TDF	19	6	720	W9UCB	22	8	750
W8BNC	18	7	750	W9UED	22	7	960
W8PFA	18	7	—	W9KPS	21	7	660
W8LNA	18	7	720	W9GAB	20	7	750
				W9MUD	19	7	840
W4HHK	28	9	1280	W9MAL	19	6	600
W4AO	23	7	950	W9REM	19	6	—
W4MKJ	20	8	725	W9LFL	19	6	—
W4PCT	20	8	—	W9ALU	18	7	800
W4JGJ	19	6	660	W9JGA	18	6	720
W4JFV	18	7	830	W9MBS	16	7	660
W4VLY	17	7	825	W9WY	17	7	560
W4UMF	17	7	600	W9BOV	15	6	—
W4TLV	16	7	1000	W9LEE	15	6	780
W4HJQ	15	7	650	W9DDP	15	6	760
W4OLK	15	6	720	W9DDG	15	6	790
W4CTY	15	5	720	W9FAN	14	7	680
W4ZBU	14	5	800	W9CKM	14	6	620
W4OXC	14	5	500				
W4JHC	14	5	720	W9EMS	27	8	1175
W4VCB	14	5	740	W9GUD	25	7	1065
W4TCR	14	5	720	W9IHD	24	5	870
W4UBV	14	5	435	W9BPC	18	6	660
W4VNL	13	7	650	W9BNQ	17	6	1000
W4IKZ	13	6	720	W9INL	15	5	830
W4JFU	13	5	720	W9OAC	14	5	725
W4SOP	13	5	680	W9TJF	13	4	—
W4CPZ	12	5	650				
W4UDQ	11	5	850	VE3DTR	26	8	915
W4MDD	10	4	680	VE3AIB	24	8	910
				VE3DER	16	7	820
W5RCI	21	7	925	VE3BQN	15	7	790
W5JTI	19	7	1000	VE3BPB	13	6	715
W5AJG	13	5	1260	VE2AOK	12	5	550
W5REH	12	7	830	VE3AUG	11	7	800
W5ABN	11	5	780	VE1QY	11	4	900
W5QNL	10	5	1400	VE7FI	2	1	365

are new ones already on. CE1AH says that HC1FS, Ecuador, and VP8BF, South Shetland Islands, are among the current prospects. There should be a hot time when (and if) F2 openings reach up to the United States! XE1GE has already made more than 100 contacts with 44 different LUs. LU8AE reports that there are 145 of his countrymen active on 6, mostly between 50 and 51 Mc. PZ1AE is on 50.3, as is VP6PV. CP5EK uses 50.1, CE1AH 50.15 and OA4AE 50.2 Mc.

There has been international DX work on 144 Mc., too. CO2CT, Havana, Cuba, who has been working steadily on 144 Mc. for months with only rare success, began doing business late in February. On the night of the 26th he heard W4CCR, Sarasota, and W1GJO/4, Ft. Myers, Fla., working each other. After some calling he attracted their attention, and worked W4QEA and W4WHF, Sarasota,

as well. These are around 300 miles, but contacts have been made almost nightly ever since.

W4GJO (Grid got his old call back on Feb. 27th) writes that CO2CT is in practically every night, holding over S9 three or four nights each week. He is also finding excellent conditions for extended-local work nightly, with the reliable range running far better than was the case when he was W1GJO at Westminster, Mass. Stations with low power in Sarasota, Tampa, Gainesville, Orlando and St. Petersburg put in fine signals, and activity is quite good. His first contact with the Miami area was made March 13th, with W4RNV, who runs only 15 watts.

Grid is also on 50 Mc. again, but so far has been plagued with high line noise. He now starts in on his third pursuit of 50-Mc. WAS, having gotten up to 46 as W4GJO, Orlando, and to 47 at W1GJO in Massachusetts! He feels that much greater tropospheric DX than has been worked so far should be in prospect on both 50 and 144 Mc. TV Channel 10 from Albany, Ga., is frequently seen like a local, and Channel 2 from Charleston, S. C., has been logged a few times. These are 360 and 450 miles, respectively.

The summer sporadic-E season should bring forth many new claimants for 50-Mc. WAS. The first special 50-Mc. WAS award of 1956 has already been issued, to W0WKB, Ankeny, Iowa, who got his last, Wisconsin, on March 3rd. Harold is the first to make the 50-Mc. Grand Slam from Iowa.

Idaho, long represented by W7ACD, will be available again this year. Louie moved to Mesa, Ariz., last fall, but he will be set up again at Shelley, Ida., before the DX begins popping this spring. W7ACD needs a few states himself: New Hampshire, Vermont, Utah and Nevada.

Utah and Nevada will be the goal of another W2QCY/7 50-Mc. expedition this year. Roy is getting set for another trip to the Utah-Nevada border country where he operated last year so successfully. W2QCY/7 will be in operation on or before June 27th from points near Wendover, Utah. They will also operate mobile en route, both ways, whenever signals can be heard on 6.

A report from an old 6-meter hand, W5LIU, now in Arizona, promises 6-meter portable work from Nevada during the DX season. Prospects for resident activity in Utah are good. W7WLV, Salt Lake City, says that he and W7s VFY and APR are on 6 nightly, and there are about 15 others in the Salt Lake City area who can get on. Looks like Montana and Wyoming will be the tough ones this year. Any prospects?

From Dallas, Texas, K5BEL reports that the Dallas-Ft. Worth net has expanded and is now known as the North Texas 6-Meter Net. There are about 30 stations presently, and newcomers are invited. Net time is 1900 Tuesdays; frequency 50.55 Mc.

And speaking of 50-Mc. activity, W1DJ, Winthrop, Mass., has made a practice of seeing how many stations he can log on a Sunday. His best total, outside of contest weekends, was made on March 4th, when he spotted 56 different stations, all in Eastern New England.

In the Northeast the v.h.f. operating news for March can be summed up in a single word: auroral! It's been several years since we've had much aurora DX, and in that time the v.h.f. scene has changed quite markedly. More high power, bigger and better antennas, and most important of all, more stations willing and able to go on c.w., make both 2 and 6 really come alive whenever there is a sign of the fuzzy signals from the north.

W9GAB, Beloit, Wis., with two 21-foot 144-Mc. Yagis stacked at 85 feet above ground, has been working quite a few easterners for their first Wisconsin contacts.

W0SV, St. Cloud, Minn., has been reported at least twice in W1, a distance greater than any we've heard of on 144 Mc. previously. We reported his reception by W1FZJ last month, and he was heard on March 22nd by W1QVF, Canton, Conn.

W4UMF, Alexandria, Va., reports 14 states heard via aurora March 10th. This was with a single 5-element 2-meter array.

W1MMN, Orange, Vt., feels that he may be too far north for some of the aurora DX. He hears Connecticut and New Jersey stations calling W9s, but has heard nothing west of W8, and they rather poorly. George has worked a total of 159 stations in the four years he has been on 144 Mc. He reports that Vermont contacts are also available on 50 Mc. with W1TFE, Barre, working the band regularly. A point W1MMN makes here is well worth

bearing in mind: Remember that there are many newcomers on 6, and quite a few on 2. They would like to make aurora contacts, but the c.w. of the regulars seems very fast to them. There is little to be gained in sending at high speeds. Take it easy, fellows, and if you hear some extra-slow CQs, give the newcomers a break by calling them at a speed they can copy.

For the past several years we've been lucky to catch one good aurora session during the spring season, but 1956 has changed that. For instance, W9KLR, Rensselaer, Ind., heard or worked 2-meter aurora DX on Jan. 24th and 27th, Feb. 11th and 28th, March 1st, 2nd, 3rd, 10th and 12th, up to that date. And the March activity had no more than started by that time! There were good periods during 6 of the last 9 nights of March that we know of from personal observation.

We frequently hear fellows asking how it is that the aurora experts seldom miss an opening. That's easy: aurora is one of the most readily anticipated of all types of v.h.f. DX. There are many ways to catch it for sure. One is to monitor the 75-meter phone band. If there's an aurora on, or in immediate prospect, you'll have no trouble telling it from the way the signals sound. The 5-Mc. WWV signal is also a good check, in localities where it is normally strong. Late afternoon or early evening is a good time to listen.

Continuous signals like the 49.8-Mc. station at Cedar Rapids (we'll miss that thing if they ever take it off the air!) and the Nova Scotia beacon on about 49.98 Mc. are excellent checks for 50-Mc. men within a few hundred miles of these points. The Nova Scotia signal is especially good for observation in the Northeast.

(Continued on page 144)



W0ZJB 48	W40XC 41	W88QU 43
W0BJV 48	W4MB 40	W80JN 43
W0CJS 48	W4PFR 39	W8LPD 42
W0CJS 48	W4TUJ 38	W8YLS 41
W9ZHU 48	W4EJR 37	W9ZEB 48
W9OCA 48	W4BEN 35	W9QUV 48
W6OB 48	W4IKK 31	W9HGE 47
W0INI 48	W5VY 48	W9VZE 47
W1HDO 48	W5EFW 47	W9RQM 47
W5MJD 48	W5GNQ 46	W9ALU 47
W2IDZ 48	W5ONS 45	W9QKM 47
W1ILL 48	W5JTI 44	W9UTA 45
W0DZM 48	W5MLT 44	W9UNS 45
W0HVW 48	W5RSC 44	W9MFH 40
W0WKB 48	W5JLY 43	W0QIN 47
W1CLS 46	W5JME 43	W0NFM 47
W1CGY 46	W5VV 42	W0TKX 47
W1LSN 45	W5PAL 41	W0K YF 47
W1DJ 41	W5HBZ 41	W0JOL 46
W1RFU 41	W5ELD 40	W0MYG 46
W1SPX 36	W4FSN 38	W0TJF 44
W1FOS 32	W5NSJ 24	W0URQ 44
W1WAS 23	W5ZVF 23	W0JHS 43
W2MEU 47	W6VNN 48	W0PKD 43
W2AMJ 46	W6ANN 45	W0PFI 41
W2BYM 46	W6TMI 45	W0ORE 37
W2RLV 45	W6IWS 41	W0UST 36
W2FHL 45	W6CAN 40	W0ZTW 36
W2QYV 40	W6ABN 35	W0VTK 34
W2QVH 38	W6CGC 35	W0FKY 32
W2ZLW 36	W6IWC 33	VERAET 44
W2ORA 33	W60JF 31	VEGAB 35
K2AXQ 32	W7HER 47	VEIQZ 34
K2JNS 30	W7EBA 47	VEIQY 32
W3OHU 46	W7QSA 47	VEJBR 31
W3TIP 42	W7PDJ 46	VEIFP 28
W3NKM 41	W7DYD 45	XE1GE 25
W3MQU 41	W7JRG 44	CO6WW 21
W3OTC 40	W7ACD 44	
W3KMU 39	W7BOC 42	
W3RUV 38	W7FA 42	
W3MXW 38	W7PIV 41	
W3LFC 37	W7CAM 40	
W3EPH 35	W8N8S 46	
W4FBH 46	W8CMS 46	
W4APZ 45	W8NGD 45	
W4EQM 44	W8LIZ 45	
W4QCN 44	W8RFW 45	
W4FLW 43	W8LPD 44	

Calls in bold face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.

Armed Forces Day - May 19th

THE Army, Navy and Air Force invite all U. S. amateur radio operators to participate in the Armed Forces Day Program for 1956, co-sponsored by the Director, Naval Communications and Military Affiliate Radio System (MARS) representing the Army Signal Corps and Air Force Directorate of Communications.

A receiving contest will be open to anyone who can copy International Morse Code at 25 wpm. 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.

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

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.

For the first time, voice single-sideband military-to-amateur contacts will be held as well as contacts by radioteletypewriter.

C.W. Receiving Competition

A c.w. receiving competition will feature a message from the Secretary of Defense. Any individual is eligible to participate. A certificate of merit will be issued to each participant who makes perfect copy. Transmissions will be at 25 words per minute on the following schedules:

Time	Call Sign	Frequencies (kc.)
(19 May 1956)		
1900 (EST)	WAR (Army Radio Washington, D. C.)	14405, 20994
1900 (EST)	NSS (Navy Radio Washington, D. C.)	4010, 7375, 14480
1900 (EST)	AIR (Air Force Radio Washington, D. C.)	3319, 3347, 6997.5
0100 (EST)	WAR (Army Radio Washington, D. C.)	143,460, 14405, 20994
20 May 1956	NPG (Navy Radio San Francisco, Calif.)	3319, 7595, 14927.5
20 May 1956	AIR (Air Force Radio Washington, D. C.)	3347, 6997.5, 143,460
1100 (GCT)	NDT (Navy Radio Yokosuka)	2287.5, 4545, 9427.5, 13471.5
(2000 Item)		16445, 23010
19 May 1956		

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 so doing. Transcriptions should be submitted "as received." No attempt should be made to correct possible transmission errors.

Radioteletypewriter Receiving Competition

A radioteletypewriter (RATT) receiving competition will feature a special joint message from the Chief Signal Officer, U. S. Army; Director, Naval Communications; and the Director of Communications, U. S. Air Force. A letter of acknowledgment will be sent to each amateur participant who submits a copy made from the radioteletypewriter transmission of this message. Transmission will be at 60 words per minute on the following schedule:

Time	Call Sign	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
	NDW2 (Salt Lake City, Utah)	
	A5USA (Fort Sam Houston, Texas)	14405
1300 (PST)	NDW (Treasure Island, Cal.)	7375
	AF6AIR (Hamilton AFB, Cal.)	14405

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. It is not necessary to copy more than one station, and no extra credit will be given for so doing. The message should be submitted "as received." No attempt should be made to correct possible transmission errors.

Military-to-Amateur Contacts

Military stations, WAR, NSS, and AIR will be on the air between 1800 and 2400 (EST) on 19 May 1956 to contact amateur radio stations. The military stations will operate on spot frequencies outside the amateur bands as follows:

	Frequencies (kc.)
WAR (Army Radio Washington)	4025 (Voice), 6997.5 (c.w.)
NSS (Navy Radio Washington)	4010 (c.w.), 7375 (c.w.), 14480 (c.w.), 4040 (SSB), 14385 (SSB), 3269 (RATT)
AIR (Air Force Washington)	3347 (c.w.), 7635 (Voice), 14405 (Voice)

Military stations will listen for calls from amateurs within the appropriate amateur bands. Contacts will consist of a brief exchange of location and signal report. No traffic handling or message exchange will be permitted. An acknowledgment (QSL) card will be sent to each amateur station worked. Each of the military stations will acknowledge separately.

Copies of the received c.w. and RATT transmissions should be mailed to Armed Forces Day Contest, Room BE1000, The Pentagon, Washington 25, D. C. Time, frequency and call letters of the station copied should be indicated as well as the name and call sign of the amateur concerned.



CONDUCTED BY ROD NEWKIRK,* W9BRD

Whew:

Its muffled roar could be heard two blocks down the street as Jeeves & Co. hurried to join the annual caucus of the DXHPDS — our beloved DX Hogger and Poetry Depreciation Society. We slipped into the hall and sat down just in time to catch the opening bawl tossed out by Oliver DeBand, five lines dedicated to DX Winchells-in-reverse:

DXpert club member McPelf
 Can scream like a hotfooted elf
 At the lack of choice meat
 In the club's DX sheet
 But he keeps all his tips to himself.

Then Major N. Miner Lobes arose, flourishing his steaming stein of Old Haywire as daintily as an 1820-vintage *aperitif*. The Major's offering was a salute to an old army chowhound who always carried his mess kit and adventurously bucked every queue in sight:

A joiner is Joyboy O'Slot
 Who joins any brawl on the spot.
 He calls DX stations
 Without invitations
 And whether he hears them or not.

Joyboy's Company B shot record filled three volumes, the Major added. Our next volunteer, Harley Readable, mounted the pole-pig packing crate which served as rostrum and uttered an ode to an oaf who hams in a big glass shack:

For rare QSLs Bill sobs "Please!"
 And even gets down on his knees.
 He curses them blue
 Until they come through
 (Bill owes cards to two hundred Gs).

The crowd warmed up and the party began to get rough. We pulled on our crash helmets, tightened our safety belts, grabbed two more glasses of O.H. and heard Theophilus Chirpevall give the bird to some curiously flexible crystals recently noted on 21 Mc.:

He treads on thin ice o'er deep snow —
 It may be as far as he'll go —
 The wise Novice boy
 Who tries to be coy
 With a borrowed or bought VFO.

A blinding flash of blue-white flame pierced the smoke strata to the podium's left. *The ritual!* There, blazing brilliantly and transfixed by ten fiery Wouff Hongs (one for each call area) hung the DX Hog of the Year, dying in effigy. Willoughby Thrusoon had to shriek his opus above the soaring noise level:

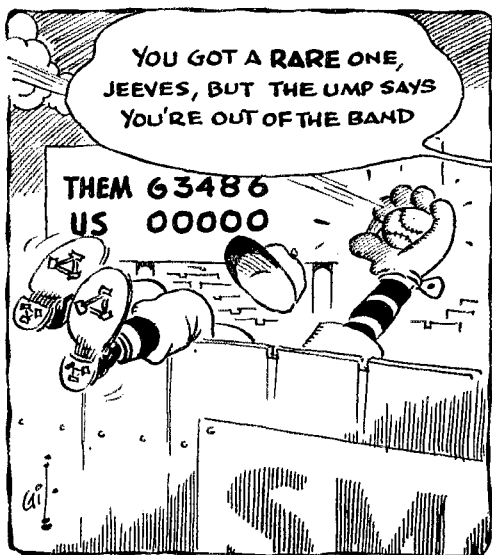
Gab Gabber gives many a pain;
 His routine is darned near insane.
 Each new one he'll work
 Not just once, the jerk,
 But again and again and AGAIN!

A frenzied screaming mob rushed to the front of the hall hurling empty glasses at that battered, burning, dangling thing. Then they snatched the Swine down and trampled him to sodden ash. It was horrible — we withdrew, for we could bear no more.

What:

That fearsome phantasmagoria behind us, now to the task at hand. Ever hear long-haul stuff boiling through so loud as it has during the past few weeks? And now they're beefing up the ionosphere for us with rocket-sprayed nitric oxide! KG4USA of Deepfreeze, and VR1B (VP2VB/P) at British Phoenix were among the more delightful numbers lashing through. Anyway,

20 phone is a good take-off point for this month's "How's" Bandwagon cavalcade. W7PHO pulled no punches: FB8ZZ (14, 145 kc.) 16-17 GMT of Amsterdam Isle, SP5AK (153) 21, VQ5FS (140) 20, VU2ES (155) 18, XZ2SS (190) 16, YI2AM (180) 16, ZK1BL (180) 16 and ZS2MI (160) 17 of Marion. . . . KG6NAA 11, KX6AF 6, VK9s BS 7, DB 11 and IYAK/Trieste 9 were arrested by the Ranger of W4GUV. . . . FP8AP (110) 22, FP8AP (160), HE9LAA (190) 22, HZ1TA (155) 13, KX6BU (265) 4, OX3KW (155) 3, VR6AC (143) 1, ZK1BS (195) 3, 3V8BA (190) 5 and 5A1TA (144) 22 were caught by Miamian W4HKJ. . . . W9PNE trapped VP2KM (170) 21 of the Leewards; W9UDK hitched onto KG6AFX 2; and DL4ZC cuddled up to MP4KDS (180) 16-17. . . . CE7ZZ (160) 4-5, GR7s AF (131) 5, AH (110) 17, CN (121) 5, CZ (121) 4, CT3s AN (173) 13, AW (123) 22, DU3 1CV (160) 14, 7SV (165) 14-15, EA9s AR (130) 17, AZ (108) 3-4, ET2US (175) 20-21, FB8BC (135) 3, FG7XA (100) 15, FK8AI (149) 1, FM7s WP (125) 13, WQ (150) 1, FO8s AB (194) 6, AD (120) 6, F08AC (150) 8, FY7YE (120) 3, HC8GI (168) 13, KG6GX (208) 14, KH6ASP/KB6 (182) 4, KM6AX (250) 5, OD5DA (175) 4, ST2DB (120) 23, VP3s 5DC (160) 3, 8BQ (200) 1, VQ6LQ (190) 15, VR2s BZ (117) 5, CX (128) 5, VU2CD (125) 14, YJ1DL (25) 6, ZDs 2FNX (1), 4BZ (130) 8, ZM6AT (160) 6, ZSs 7C (110) 5-6, 9G (193) 6, 4S7YL (160) 3 and 5A1TZ (192) 21-22 are 14-Mc. A3 possibilities illuminated by the West Gulf DX Club's *DX Bulletin* and the Northern California DX Club's *DXer*.



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Say, remember 'way back when a ham could cram a log by the soft filament glow of the old bread-board layout? And could replace a blown by-pass in 60 seconds against today's 24-hour tussles with triple-shielded anti-TVI cabinets? This view of YN1KK, who works his full DX allotment, brings back those old pre-TV days. As it must to all hams, however, television doubtless soon will come to Managua, Nicaragua. (Photo via S.S. Lawrence)

20 c.w., now, and the slot is red hot. CR5JB (62) 22, ET2AB (82) 22-23, FB8Z (30) 13, H18FR (113) 8c) 3, K2HGU/KW6 (17) 12, KB6BA (75) 2, UA9VB (65) 12, VK9s RM (48) 15, XK (10) 12, ZD2ROC (75) 21, ZK1BS (50) 3, ZSDY (10) 21 and 4S7WP (40) 12 attracted K2GMO K6ENX, with a fresh DXCC diploma, tangled with CR7s AG (65) 16, CI (25) 4-5, FO8AM (50) 17, F9OJ/FQ8 (25) 17, LU1ZM (60) 4, LZ1s KPZ (30) 15, KSA (20) 15, OQ5QS (10) 16, ST2NG (25) 16, VO 21M (40) 16, 2ST (40) 16, 3CF (70) 15, 4AO (90) 15, 4EF (25) 15, VS1s FS (4A HA HC HE between 15 and 17, VSs 4NW (90) 17, 6DE (80) 16, VU2s BL (30) 15, HF (55) 18, SS (75) 16, ZB1CH (45) 16, ZD6RM (15) 15, ZE5s JN (30) 15, JV (30) 15, ZSs 3BB (40) 17, 3Q (75) 17 and 7H (10) 17. AC5PN (52-90) 2-13 and AP2F got away from Otto K2QQO scored with CR7MB (21) 3, DU7SV (81) 13, FO8AY (74) 20, KGIAR (75) 2, KJ6BN (60) 3, UA6AI (60) 13, VK9RM (63) 13 who QSLs fast, VS6CI (31) 14, ZE2JC (27) 5, 4S7s GE (57) 13 and MG (5) 14 CR6AI (35) 16, FY7YE (50) 1, H13L 13, KX6AF (39) 4-7 and PZ1BS (13) 13 answered W4GUV foot sweet W9UDK rattled off EA9AP (40) 18, FY7YF (12) 17, HA5KBA (52) 10, HPIEH 7, LU7ZT (60) 21 and a Y12 on long path The Ranger and Viking I at K6EVT account for KAAs, KG1s, KG6CX, LU9ZB, OX3MH, PZ1LM (100) 4, TF3AB, W4IKC/KW6 and So. Georgian VP8BK (65) 2-3 CN2AY (50) 21, CR7s CN (35) 5, IZ (100) 2-3, CT3AB (10) 20, FB8BS (65) 20, SV9WT (20) 21, ZDs 2DCP (32) 22, 2FNX (15) 21, 4CC (65) 22, 6BX (50) 22, ZE3s JL (15) 19 and JO (50) 4 got together with K2GHV Neighbor K2EQD made off with HA5AP (32) 3, OD5AV (1) 21, SV9WL (7) 20, TG9MR (60) 5, Y12AM (22) 32, YQ3RD (42) 20 and 3V8FA (5) 21 CR4AG (80) 3, HG1LE (52) 1, KG1CB SP5KAB (22) 2, SV9FY (75) 22 and 4S7WP (41) 3 logged K2BZT K6OIZ piled up an impressive batch of JA/KAs, DU3DO, KR6s QW and SC, K16 and TF3 specimens CE7ZY, GP3CA (10) 4, CR7AG, DUICE, HA5BL, VSs 1HB 6CG, VU2AL (49) 2, ZD6BX (55) 15 and an FB8 on Madagascar worked K6DNH ISLV (22) 20-21 and VO8CB (74) 13 are no longer needed by K2BU W3YUW clicked with EA8BF (10) 3-8, I1BNU/Trieste (43) 23-4, PJ2s AJ AK AN and VPIKT 0 I5AAW (25) 20, LUZTF, TG7CB, VP3AD, VS9AS (99) 20, VU2, ZAIKAD (69) 16 and 5A2TG (2) 2 rounded out a good W2HQL month A 4-125A and the remaining portion of W1WTE's wind-torn cube quad captured CR6AP, FD4BD, HC1PJ, KG1KK, KT1UX and SU1C Now, an accelerated rundown of good 20-meter luck around the land, at W1AB: FG7XB (75) 2, VP8BS (34) 1, 4S7, W2DEC: HA5s, I1BLF/Trieste (1) 1, UC2AA, VQ2GW, 3V8AN (1) 20, W2GTZ: MP4BAU (8) 3, VPS, 4S7, K2DSW: FP8AP (60) 15, KG1BO, PZ1, ZB1, 4X4FT (73) 16, K2GMF: HK3CP, VP3YQ (16) 19, ZB1AY, K2GMV/0: FP8AP, K2PHC: SU2AO, W3YCH: CR6s, FY7, VP3, W4HBJ: 4X4IL, W4UWA: VP4AA (1), K4ARP: YO3RF (40) 14-16, K4CHK/A: KV1AA (80) 20-23, VP7NL, K6HFA: LU7ZK (15) 6, VS6CO (30) 15, W7JLU: CE7ZY, HA5KKB, T1PZ, W7PHO: MP4TAA (36) 15-16, W9PNE: VE9NA (100) 2 in Trinidad waters. W9VFM: JA3TT, KA2s KS SK WK, DL4ZC: one 3A2X 11, 4S7PT 17 Among the more scrumptious entries avidly sought, FB8BR/FB8 (80) 21-22 hooked DL4ZC, K2BU: MP4QAL (35) 19 got Ws 1WTE 2DEC, K2EQD: VQ5GC (75) 20-21 raised K2GHV 2GMO 6ENX, DL4ZC: VQ6LQ (64) 14 worked Ks 2QOQ 61NE; VR3B (30-85) 2-3 is reported by Ws 2GVZ 2HQL 9PNE, Ks 2BU 6DNH; ZD3A (40) 23 cheered W1AB, K2QQO; and ZD6RM (10) 15 was nailed by Ks 2GHV and 6ENX NCDXC and WGDXC close our 14-Mc. A1 report with notes on AC4TN (53) 15, AP2s C (31) 14, L (42) 13, RH (25), CRs 4A1 15-16, 6AQ (40) 1, 7CK (28) 6, 9AI (67) 13, CT2BO (10) 22, DU1FC (40) 15, EA5 6AF (56) 16-17, 8CA (10) 8, 9DF (100) 20, EL2C

(69) 22, ET3LF (13) 14, F9QV/FC (2) 23, FF8s AJ (10) 7, BI (12) 17, FK8AO (60) 8, FM7s WD (100) 2, WP (25) 20-21, WV (80) 3, FO8s AB (83) 6, AK (43) 5, AG (85) 6, FU8AP (162) 8, FW8AB (60) 7-8, HZ1AB (8) 14, IT1s TAI (74) 15-16, ZGY (8) 16, IS1FC (44) 16, KG6s AFT (30) 14, PAE (60) 5, IG (55) 13 of the Bonins, KM6AX (54) 2-5, KR6PG (45) 5, KTIEXO (31) 18, KX6s BU (25) 5, NC (30) 4-5, MP4BBE (28) 16, OD5s LJ (65) 13, LT (56) 3, OQ5CP (30) 17, OY2Z (30) 13, SV9WR (13) 14, TF3MB (17) 2, UAs 1KBE 4LE 6KBB 9KAB 9KCA 9VA 9AB 9KAD 9KGA, UB5s UA KAB KEM, UC2KAA, UG6KAA, UISAE, UO2KAO—all Us between 14,020 and 14,080 kc., 14-16—VK1s AWI (14) 20-21, IJ (55) 7, VK9DB (60) 14-15, VPs 2AD (65) 2, 5BE (95) 6, 8BM (8-90) 1-2, SBT (115) 2, VO 4AQ (20) 16, 4FM (43) 19-20, 8AG (15) 5-18, VSs ICX (85) 14, 1GV (19) 14, ZDZ (30) 15, 2FN (32) 13, over a dozen VU2s between 7 and 19, XZ2s OM (98) 13, SS (40) 13, YA1AM (85) 13, Y12RP (27) 17, Y1JDL (22) 6, YN1PM (42) 15, YS1O (55) 23, ZC4s VP (75) 15, XA, ZDs 1DR (23) 22, ZJHP (71) 23, ZBT (35) 17, 9AD (19) 22-23, ZK1BC (5) 13, ZP5GM (25) 3, ZSs 2MI (80) 15, 3AP (9) 6-7, 3X (35) 5, 8D (85) 8, 9D (10) 16-17, 9Q (67) 11, 4S7s EM (45) 19, MR (49) 2, NX (35) 13, PD (52) 1, 4X4s BX (16) 15, DR (40) 23 and old faithful 9S4AX (3) 15.

15 c.w. served CR6AI (20) 20-22, CT3AB (58) 0, DU1AQ (17) 24, KG6AFY (40) 1, KX6AF (19) 24, MP4BBL (42) 13, OY7ML (79) 19, ST2NG (50) 21, TF3MB (40) 21, VO2VW (80) 20, VO4FK (129) 18, YO3RF (80) 17, ZB1s HKO 20, TD (27) 17, ZD1DR (27) 22, ZE5JA (20) 19, ZK1BS (3) 24, ZP9AY 11 and W3UIF/KG6 to K2QQO (ex-W4YHD) K2D8V caught that ZD1 as well as GD3FXN, IT1ZGY, SV9WT, VP3YG, two YOs, ZB1BJ, 4X4s FA IB and IC HA5KBA (20) 18, SPIKAA (51) 18, VO4FK (65) 20 and ZB2P (38) 21 go well with K2EQD W6ZZ snapped up HK3PC, JAs 1KF 3AB 3BB, KR6LJ, KV4AA, PJ2AV, VS6AE and aforesaid Sierra Leone sparkler EA8BF, FO8AG, OY2Z, VP3, ZD1 and ZS3BB QSLs are expected by W1CTW. One 9A1AA fooled nobody K2BZT associated with FP8AJ (90) 19, 4X4BX (120) 15 with son Micky at the key, and 4X4DR 19 Trieste candidates I1s BLF and YCV were appropriated by W2DEC W8DLZ really went to town: CR7LU (60), EA9AP (45), F9YF/FC (38), GC5EML (32), HA5s BI (65), BO (56), HPIEH (105), JA3AB (70), OQ5RS (35), OY7ML (85), ST2NG (12), VUs 2BK (60), 5BC (104), YO3RD (42), ZB1AJX (45) and ZD6BX (77) Casting about here and there, at W2GVZ VS6DW (70) 18-19, K2GMF: VP7NG, K2GMV/0: VP8BS, W3DDY: VU5, IT1ZDA, ZB1CN, W3HTG: CR6, PZ1RM, VP3, ZP W3YUV: GD, SP, ZB1, PJ2AJ, W4GCB: TF, VP3, VP6DG, W4GUV: JA1KF 0, W4UWA: VP3, XE1A, K2HFT: many Euros, K544A: VKs, ZSs, OA4ED, K2HFA: KR6, KXG, VP7NL, DL4ZC: FM7WD 11, VK9XK 11, KL7BPK, KG6A1V (25), KM6BY (40) ST2NG (40) 0, VQ3JTW (95) 19, VR4FR (104) 0, W4IKC/KW6 (135) 0, ZP5HX (80) 1, ZSs 3K (85) 15 and 7H (100) 20 are 21-Mc. c.w. candidates recommended by NCDXC and WGDXC.

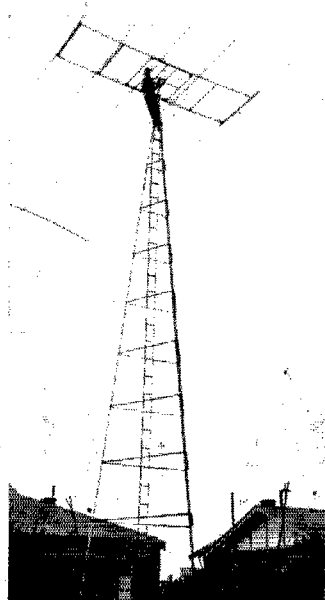
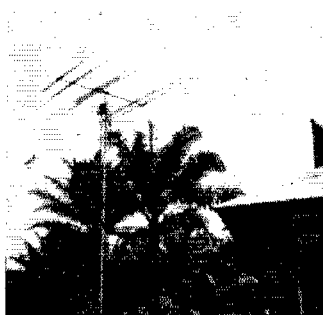
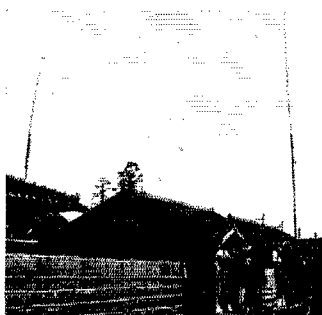
15 phone and W2DEC got together for EA8s AX BO, GDs 3ENK 3IBQ 6LA, HA5KBA, VPs 3HAG 5DC, VO4RF, ZB1AJ, ZSs 7C 9G and 4X4KD It's CN8MM, EL2C, JAs 1ANG 3BN, KG6FAE, KR6LJ, KV4BD, KX6AF, TG9AD, VP2DL, VP3YG, VO4EO, VR2CG, ZE2KR, ZP5IT and a Z89, plus six /MMs, at W6ZZ and Miles reached the 107-country 15-meter mark thereby W61LM chatted with DU7SV, HC4MK, HK1RP, KR6R, PJ2AB, VP7NG and YV3BD W9WHM settled for FO8AD (245), IT1ZGY (140), MP4KAC (245), VP8BT (300) of So. Orkneys and VS6AE

(210) EL3A, TG9WB, VP7NF and YN1KK grabbed K2PHC. At random points, K2BZT: SV8WO 3, 4X4CK (220) 20. K2GMV/Ø: CR6BH, KA2WE, W3DDV: CR6AI, ZE2KJ, ZS7, ZS9, W4UFC: EL2C, FM7WQ, VP1HA, K5AAK: HG1ES, PJ2AB, VP1EE, K5ARR II: VP7NZ. WGDXC and NCDXC chime in with CR9AH (130) 0-1, FF8s AK (200) 20, AP (14), LX1SI (210) 17, OK1KAI (240) 17, PZ1RM 14, SVØWT (120) 15, VP8BS (190) 1 and ZK1BS (153) 3.

15 Novice is gaining ground. KN5BGB sealed off his WAC with DU7SV, JA1EC, VQ4BRM, W4IKC/KW6, WH0s and W17s, running 70 watts to a rotary dipole. KN4DRO, now K4DR0, adds FF8GP and VP8BH. DU, JAs IJT 3FA 3JM, KA2USA, KN9BBZ/WH6, YN1KK and W17s succumbed to the KNØPI Ranger. F7DB, guaranteeing fast QSLs, searches for 21-Mc. Novices almost daily, 1630-1800 GMT. We note, at AN2MDL: VQ2GW, YV3BH, KN2ØNU: KZ5CF, many Euros, KNØØPF: up to 31 countries. WNB3X: Europeans. WØ9YZG: PY, VP5RR. When you're a newcomer and haven't yet smoothed out your QSO technique, it's easy to jump to the conclusion that you're "not getting out." We'll wager quite a few of the following Novices will be pleasantly surprised to learn they were logged on 21 Mc. by G3IDG of London during February or March: WNI5 ELB EQR WQW ETM FTV EUC EWS EYW FAO FKA FSJ FXL FZY GBF GCV GDQ GFH GNJ GNN GPP GTT GXH GZP HBW HCC HDS/I HFT HKH HTF HTT HXH IBA IEH ILT, KN2s LKM LMV LTC MGO MIP MKF MLN MNQ MRB MTI MVM MYW OIG OMY OIL ONU OVU OYZ PBD PDX PGB PGN PLP PKT PLF PMC PON PØO PSQ PSL PSR PTU PYX QBY QIN QNQ QOV QWJ RDI RJL RLC, WN3s CFL CMB CMG DFD DSO DZW EBG EDM EFN EHF EHA FHR, KN4s CMG CSK CTC CVI DLB DPK EHQ EHQ EMX EUD GMT GNO GNO GNT GØZ GTN GTW GXN GYK GZJ HAD HAV HCS HDG HEB HED HFH HFK HNC HQL HRG HSV/A, KN5s AOK AFX BGB BGZ BXT CØV DLA/5, WN7ANE, WN8s ABH AHO AVO BTK CAN DSZ EEZ FJR GIM GMT GØX HBI HCO HCP LET WNX WQM WRH KN5BKG/8, KN6MNQ/8, KN9s AMG AWK BBD BCZ BDN BEE BEH BGL BJH BNC CAN CAZ CEG, WNØs BMS CFE DEE DFI and WP4AEO. W2JVZ and others adjure WN/KNs to watch those 15-meter band limits. A DX career begun with an FCC citation is definitely off on the wrong foot.

10 phone, back in business to stay, treated WØFBT to FG7XB, KH6ASP/KB6, KX6NC of Majuro, Papiuan VK9DB, W3UIF/KG6 and W4IKC/KW6. CN8CF, CR7BB, FF8AP, Gds 3FOC 6IA, JA3s AB AF, KG1s CG KK, KR6PI, OQ5s BW GM, VQs 2FJ 4RF, VR2BC, ZDs 6RM 9AC and ZS3B came back to W5YJB. Bill still hunts EA8BF, GC3KAV, OD5BR, UB5KAA, YØ3LM, ZD4BR and ZK1BS. K2GMV/Ø recommends KX6AF and PJ2AO.

In the spring a young man's fancy turns to thoughts of—antennas, naturally, if he's a DX man. Typical skywires from three continents pictured here range from the modest but effective bamboo-supported 14-Mc. Zepp of JA1CV, through the palm-skimming 3-element 20-over-10 job at OQ5BI, to the skyscraping 5-element eggbeater in VK5ZR's back yard (that's him). Fit yourself out with the DX urge, pad and pencil, supply-house catalog, an acre or rooftop, and an ARRL *Antenna Book* and you, too, can play this pleasant game. (Photos via K2OAH and K6DV)



VKs, ZLs, ZSs, CR6BH, OQ5FV, VQ2HJ and a ZD6 clicked with K2AJD. W3QMG made the grade with HA5KBA, LX1DC, VQ3ES, ZB1AJX and 4X4DX. W3QMG's archival, W3ZKH, did okay on KG6GX, PZ1AD, VP3HAG and 4X4DK—72 10-meter countries in three short months as a General! W2UTH was intrigued by a UQ2AN (200) A3 contact. Other 28-Mc. phones barreling through of late: CRs 6BN (300) 17, 7CJ (100) 16-17, 9AH (359) 12, GC8EML (300) 16, GD3GMH (312) 18, OQ5EB (210) 19, VQ4EØ (700) 15, ZSs 3Ø (370) 20 and 7C (374) 11. WØUWD offers the month's most comprehensive 10-c.w. comment: DM2s ADL AEB AFN, PZ1BS, VQ2GW, W4IKC/KW6, ZD3A and ZP9AY.

40 c.w. is responsible for K6ØIZ's success with DU1AQ, KG6AGC, KR6LJ, KV4AA, W3UIF/KG6 and 17 different JA DXers. K2QØQ, W3BVN, W4s CEN and KFR came up with that long-haul KR6, too, and K2QØQ adds CR7CI (17) 4. Jim checked his ex-W4YHD logs and finds 106 ARRL DXCC Countries List items ticked off on 7 Mc. Here and there, at W2HQL: PZ1s BS CD LL MM, VP3YG, K2DSW: CT2BO, SP8CK, K2EQD: KTIUX, TI2DN, heard UA1KAI, K2KIR: KV4BK, W3PG: HA5BI, YØ3RA, W3YUW: FA8DA, W4GUV: JA1KF, W5ØNQ: YV5DE (20) 7, K5ARR: KV4, WØ1IM: JAs, DU7SV, KØHFA: KJ6BN (5) 8, W9UDK: VQ4EØ, WØVBS: T18X. WIKE nipped VQ6LQ (1), while WGDXC sources account for CR6AI (3) 5, EA8BF (5) 5, HL2AC, IS1ØI (32) 0 and KR6KR (3) 13. WH6s B8P B8R, WL7s BPI B8S and WP4ADI are Novice DX QSOs by KN5BXG.

80 c.w. still puts out for the midnight-oil-burners. HK3PC, VP7MI, YV5BJ, ZK1BS, a half dozen JAs, ZLs and VKs registered W7JLU contacts. Miscellaneously, W2LPV: OK3AL, K2BZT: T12BX, K2DSW: OK2KBE, W4GUV: VP3YG, W9UDK: YV, ZL1CI (2) 7. One-sixty is quiet. W2QHH believes his FP8AK/VP2 1.8-Mc. chat to be a first, and W3EIS struck oil with YN1AA.

Where:

One way to conjure up a stack of useless mail is to select a rare DX call at random, rack up a few QSOs, and designate over the air some unsuspecting "QSL manager." It works every time, for there always is an outside chance that the booty is genuine and hasn't yet had a chance to notify his sponsor. W6BP hit a postal jackpot because of recent EAØI/Imi and PJ2MB deprecations but he makes full disclaimer. Lest any unstable lad who reads this be tempted to try to prove something by putting two watts into a piece of wire and signing VQØ, HV, etc., calls, let us put his unsound mind to rest. Sure he'll get out—genuine rare DX stations do it legitimately every day. So the only

thing really proved is that something is seriously askew in one poor fellow's mentality. . . . UC2AA, one of those sometimes-workable Russians, QSLD W2DEC via RSGB. The name is Ben, the rig a 200-watter, the antenna a 40-metre dipole and the receiver a 14-tube homespun deal. Yes, U.S.S.R. confirmations are coming through. Now watch those DXCC endorsement applications pin the needle, WIWPO. . . . W0IOS assures us that IRCs are of no value so far as ET2US QSLs are concerned. Save 'em. . . . GI3IVJ, convinced that some of his outbound QSL shipments have strayed, offers to re-QSL upon request and is especially anxious to schedule Miss., Okla., Wyo., Mont. and Colo. for WAS completion. . . . W4EJP scored a rebound from our March FG7XC QTH. Hmm. . . . Ex-PKILZ, who has been maintaining a token Indonesia QSL bureau at Surabaya, writes to the effect that he has returned home (QTH follows) and that the PK bureau specified in past QST's now is no more. . . . From the quill of KR6QC (K2GRK): "Our QSL bureau has cards on hand for ex-KR6s who have long departed Okinawa and who left no forwarding addresses. Any former KR6 can address inquiry to us concerning the status of his old cards." KR6QC's able XYL is proprietor at OARC, P. O. Box 379, APO 331, San Francisco, Calif. . . . Bandi of HA5KBA tells W2EQD that the whole crew there will pitch in on the HA5KBA QSL backlog upon receipt of 4000 cards overdue from the printer. . . . G2RO is prowling DX haunts once more, this time in VS9 and VQ6 areas. Bob's 7- and 14-Mc. 15-watter already has provided plenty of QSOs from numerous rare AERL DXCC Countries List entities—QSL "RO" via RSGB, as usual. . . . HB9KU, who recently applied for A3 DXCC, must have set some kind of efficiency record by QSLing all his 901 HB1KU/HE QSOs within four days after return to Pffeffingen. But Doc still receives requests for HB1KU/HE pasteboards which evidently went astray. "I am willing to send another to anyone who asks me to do so but he must refer to this note in QST." . . . The accuracy of the individual items to follow is by no means guaranteed and none is necessarily "official." They come your way thanks to the unselfish efforts of W1s BDI BLO ODW EDV UED ZDP, W2s BVS DMJ EEL HQL UTH, K2s AJD MU NZT EQD QOQ, W3s BOA VOS, W4KFC, W6s HPB MUR YV, K6s DNH ENX, W7PHO, W8HOY, W8s FBT QGI VBS, DL4ZC, G3LB, VE3ADV, NCDXC, SCDXC, WGDXC and R. Conley. So:

AP2M, 110 Mulji Street, Karachi 2, Pakistan. . . . AP2RH, R. Hargreaves, c/o Office of the U. K. Deputy High Commissioner, 4, Race Course Rd., Lahore, Punjab, W. Pakistan. . . . CN8HO, D. Carver, Box 40, Navy 214 NCF, FPO, New York, N. Y. . . . GR4AG (QSL via W5BNO). . . . CR7MB, Box 12, Quelimane, Mozambique. . . . ex-DL4TM, SP3 D. W. Sher (W9LYA), 629th AC&W Sqdn., Box 584, APO 251, New York, N. Y. . . . EL2C, Box 36, Harbel, Liberia. . . . EL2D (QSL to EL5A). . . . ET2LB, L. A. Brown, NAVCOM

Unit 3, APO 843, New York, N. Y. . . . FB8BR/TB8 (QSL to FB8BR). . . . FF8AK, C. Laget, Box 1957, Dakar, Fr. W. Afr. . . . FP8AK, VP2 (QSL to W2BBK). . . . FQ8AY, Box 538, Brazzaville, Fr. Equatorial Afr. . . . FS7AA (QSL to W2BBK). . . . HH5GR (QSL via HH3DL). . . . HI8FR, Radio Amateur Station de la Feria, de la Paz, Ciudad Trujillo, Dominican Republic. . . . K2HGU/KW6, Bob Ave. c/o CAA, Wake Island. . . . KG1CB (QSL to W2UGL). . . . KH6BSY, 3075 E. Kolowalu St., Honolulu, Hawaii, T. H. . . . KJ6BJ, R. A. Lecker, Box 65, APO 105, San Francisco, Calif. . . . KL7BOV, Box 153, Anchorage, Alaska. . . . KX6NC (QSL via KX6NB). . . . ex-MP4BAF (QSL to VU2JA). . . . OAAAU, G. R. Bragdon, Box 1529, Lima, Peru. . . . OD5BS, G. E. Luecker, c/o U. S. Embassy, Beirut, Lebanon. . . . OY7ML (QSL via W8PQQ). . . . PA7GG, F. Priem, Ir. Leylelaan 69, Hoemstede, Netherlands. . . . ex-PKILZ, C. Luze, Badhuisstreet 26 rood., Haarlem, Netherlands. . . . PY6PT, Box 533, Salvador, Bahia, Brazil. . . . SM8CSH, L. Gvarfordh, SS Petro-Emperor, (Universe Tankships, Inc., 380 Madison Avenue, New York, N. Y. . . . SV0FY, Box 564, Athens, Greece. . . . UA4LE (QSL via OK3EA c/o CAV). . . . UA6UI, Box 22, Astrakhan, Astrakhan Region, U.S.S.R. . . . UC2AA (QSL via RSGB). . . . UO2AN (QSL via RSGB). . . . VP5RR (QSL via W5HUV). . . . VP6AF, A. St. C. Farmer, Brighton, Black Rock, Barbados. . . . VP7BC (QSL to W4T8Z). . . . ex-VQ3CC (QSL to VQ4CC). . . . VQ4CC, V. C. Slight, c/o DCA, P. O. Box 5163, Nairobi, Kenya. . . . VQ5GC, N. Jackson, Box 23, Entebbe Airport, Uganda. . . . VR4FR, c/o C. B. Jones, Honiara, Guadalcanal, Br. Solomons. . . . VS4NW (QSL via RSGB). . . . ex-VS6CO, T. Holbert, G3DXJ, 52b Married Qtrs., Arborfield, Berks., England. . . . ex-VS9AA-LJ3JU-VU7JU (QSL to G3JU). . . . VU2BT (QSL via RSGB). . . . VU2KM, Box 534, New Delhi, India. . . . W2JTA/KL7, c/o Western Electric, Pouch No. 2, Fairbanks, Alaska. . . . W3UIP/KG6, Box 70, Navy 943, FPO, San Francisco, Calif. . . . W8FBK/KL7, E. W. Goodhue, 2201 Sunrise Dr., Anchorage, Alaska. . . . W8EBM/KL7 (QSL to W8EBK/KL7). . . . YI2AM (QSL via RSGB). . . . YN1PM, P. Martin, P. O. Box 227, Managua, Nicaragua. . . . ZA1KAD, Box 731, Tirana, Albania. . . . ex-ZC1AZ (QSL to G3KJX). . . . ex-ZC4CA, J. R. Simpson, G3CAA, 67 Routhley Rd., Mountsorrell, Leics., England. . . . ex-ZC4FB, 141 Knight Thorpe Rd., Loughboro, Leics., England. . . . ex-ZC4GF, R. Edington, G3AGF, 69 Rothley Rd., Mountsorrell, Leics., England. . . . ZD4CC, Signals (Hiffard Camp, Accra, Gold Coast). . . . ZE6JL, G. S. Fyman, Blundun, Box 605, Gweo, So. Rhodesia. . . . ZS7H, G. Smit, GPO Staff, Georgegun, Swaziland. . . . 3V8AB, J. Mareille, 19 rue Junon, Carthage, Tunisia. . . . 4S7GE, E. G. Gibbins, Box 985, Colombo, Ceylon. . . . 4S7WP, Shanthi, Box 807, Colombo, Ceylon. . . . 5A2TG, Box 372, Tripoli, Libya.

Whence:

Asia — AP2RH (G3FNF) who raised eyebrows by firing up in Lahore with other than an AP5 label, explains all with interesting lines: "I recently arrived here from the U. K.

Everybody's doing it — field day! 'Tis held in some circles that no hams have quite as much fun on field days as do the boys in Eire. Here EI5D and logkeeper lend a nautical touch to the 1955 Irish NFD, operating the EI1AB/P tent-covered 19-watter to the tune of 100 QSOs (including W1s and W2s) on 7 Mc. Right, EI5V and EI2Q discuss — or possibly cuss — the 807 25-watter of EI3R/P while EI5X pounds the brass on 20 meters. They'll be out again next month, joyful and eager, even as you and I.



for a tour of duty of some 18 months. Permission was quickly obtained from Pakistani authorities to operate, using the call sign AP5RH. Some few days later I was asked to use AP2RH — all Pakistan amateurs now use the AP2 prefix, this normally followed by one letter. . . . The TX at AP2RH is a simple 6L6-807 running 25 watts to a centre-fed 40-meter Zepp. In order to contact as many stations as possible I shall be on the band — normally 20 metres — as often as I am able. I ask the lads to remember that a guy has gotta eat now and then; the number of calls answering my CQs must be heard to be believed! . . . At this time most States come in over here around 1300-1500 GMT. Crystals held at AP2RH are 7007, 7012, 7020 and 7025 kc/s. I will QSL one hundred per cent and hope that other stations will do the same." AP2RH's only audible local QRM is that of AP2C in Quetta. Ray's there about six hours on 20 netted him over 120 QSOs, these mostly with Yanks. . . . Another imminent AP2 is W5LAK who leaves New York for Karachi by way of 3V8. "I expect to be in Pakistan for a couple of years and I'll do my darndest to get on the air." . . . KA9TB, who haunts 14,040-kc. e.w. from 0000 to 0700 GMT, desires to work back home into Easton, Penna., or vicinity. Any DXers whereabouts willing to try a sked? W2DMJ vouches for Roy's potent East Coast signal. . . . Ex-ZC4FB, who looks forward to becoming a ZL circa October next, writes ament former Cyprus buddies. ZC4RX is heard to be back in the U.K., ex-ZC4CA works DX as G3CAA with hopes of another future ZC4 stint, and ex-ZC4GF may soon put G3AGF on the air. Ex-ZCs FB and PB have G tickets in the works. If FB receives that New Zealand assignment he intends to ship via KZ5, visiting on-the-air pals all along the way. . . . The 1956 improvement in general DX conditions is nowhere more evident than in Okinawa. KR6LJ picked off 434 QSOs among 53 multipliers in the first week end of the 22nd ARRL International DX Competition as compared with a total score of 520 and 47 in the 1955 affair. . . . A modest 50L6G final collected fifty fast W/K QSOs for VU2BL of Calcutta. W1BLO contributed one of them. . . . New Okinawa Amateur Radio Club officers for '56 are KR6s NP, pres.; PO, v.p.; PN, sec.; BJ, treas.; and QC, activities director. Qualifications for KR6 operating privileges are rather steep, incidentally, and FCC-licensed amateurs expecting to op on the island in the future would do well to make thorough inquiry on the subject through OARC. . . . No. Calif. and W. Gulf DXC Asian gleanings: JAS report activity by HL9AA of Seoul's engineering college, but Korea still needs clearance from ITU-FCC taboo. . . . QSLs bounce back from ARLEW's publicized QTH marked *inconnu*. . . . Widely worked 487WP hopes to leave Ceylon soon for formal electronics training. . . . Ex-G3JTG, best known as 487GE, more than holds his own on 20 with a VFOD 6AC7-6V6-6AG7-6L6-807s arrangement which has accounted for 117 countries.

Africa — ET2LB (W2FTR) passes out numerous Eri-trean contacts with his TBS-50 and S-85 on 40, 20 and 15. Les has all continents and over 35 countries logged despite the inevitable flock of pursuing W/Ks. A vertical or doublet does the radiating; W2EEL lists ET2LB's crystal fundamentals as 7020 and 7030 kc. . . . ZD1DR's 20 watts and dipole do yeoman duty in keeping Sierra Leone currently workable. Dave's receiver is an Eddystone and W3BOA finds him readily available around 21.1 Mc. . . . Ex-VQ3CC, now VQ4CC, keeps Tanganyika QSL stock handy for those who report their deserved VQ3CC cards unreceived. Acknowledging receipt of his country-high certification for outstanding performance in the 1955 ARRL DX frolic, Vivian pens: "It'll be a perpetual reminder of the enjoyable QSOs I had with your country when I operated VQ3CC. I only hope I was able to give some of your members a 'new' country." . . . W7PHO finds old EL5A now signing EL21. . . . Club Africanotes thanks to WGDXC and NCDXC: KT1UX will be Ifni-bound in August if he has his way, while VQ4s AQ and FM tinker with VQ9 intentions. (Say, too bad the Seychelles' new V.I.P. Cypriot exile isn't a ham.) . . . Petrol shortage curtailed ZS2MI's QSO output during March and April. . . . Idaho, Mont., Nev. and both Dakotas are sought high and low by CT3AN.

Oceania — 7K1BG, notably absent from DX bands of late, tells the sad tale of his hiatus. "I lost my HP-100 1000-volt power transformer, filament transformer and choke within a few days of each other — then the modulation tranny. There is very high humidity here and the air is very salty. The 1000-volt job I took to pieces and all wind-



A big sig out of Southern Rhodesia on 14 and 28 Mc. nowadays is that of Z6EJL. In his clean-cut Gwelo layout a preselector rests atop the speaker cabinet over the HRO; an f.s. meter is supported by the v.f.o. next to the receiver; and the rig at right runs 35 watts to beam antennae or drives a 100-watter just out of view at left. (Photo via W7IOS)

ing layers were just dirty green slush. My operating table [pictured in March '54 QST] has a cover of linoleum and I get a reading on a meter between it and earth, which will give a good example of the humidity here." Doug reports much activity on 20 by ZK1BS (ex-ZK2AA) who replaced ailing ZK1AB at Rarotonga Radio. ZK1s BH and BI are back in New Zealand. OT ZK1AA talks of returning to the air via 15 meters. ZK1BG, himself, still receives European QSLs as the result of somebody's spurious employment of his call a year or so ago. . . . Wake Island, definitely on the scarce side lately, appears to be a DX objective for passer-by airlines hams. W4KIC was one who got in a few /KW6 licks; K2HGU, another. . . . KX6NC appeared on Majuro just in time to make the 22nd ARRL International DX Competition and shortly expects to put Ponape Isle, Eastern Carolines, back on the DX map for a year or so. This from W8FBT who also was told that KH6ASP/KB6 should have his KB6 suffix by now in preparation for a three-year stay. . . . W7PHO reports a rotary beam air-expressed by W7FA to VP2VB/P-FORAN for possible use in the British Phoenix Group. VR1s don't grow on trees these days although a VR1F is reported by W6YY to be active on 20. . . . W5YJB finds ex-VP1GG going strong on 28,450 kc. as VR2BC and looking for old DX pals from his temporary QTH at Sigatoka. Fiji Radio Club's *Splatter* reports visits coming from Ws 6AL 7FA and 0CPM. The VR2 gang is having a ball with a bunch of band-carried portable transceivers acquired and disseminated by VR2AD. . . . W7IOS relays VK7UW's plea for a South Dakota QSO on 20 phone — 14,165 kc. daily around 1500 GMT. . . . W7FNK-FORAN plans another trip to Pacific areas this summer aboard *Gemini*, according to NCDXC sources, and has his eye on ZM7 and VL0 in particular. . . . FW8AB continues to be a Sunday fixture at 0730 GMT on 14,060 kc.

Europe — AG, *Argovie*; AR, *Appenzell*; BE, *Berne*; BS, *Basle*; FR, *Fribourg*; GE, *Geneva*; GL, *Glaris*; GR, *Grisons*; LU, *Lucerne*; NE, *Neuchâtel*; NW, *Unterwald*; SG, *St. Gall*; SH, *Schaffhouse*; SO, *Soleure*; SZ, *Schwyz*; TG, *Thurgovie*; TL, *Tessin*; UR, *Uri*; VD, *Vaud*; VS, *Valais*; ZG, *Zoug*; and ZH, *Zurich*. What's that all about? Well, it's your check list of canton (state) suffixes which will be appended to HB9 and HB1 call signs during the annual USKA (Switzerland) Helvetia-22 DX Contest scheduled for 1500 GMT, May 12th, to 1500, May 13th. Amateurs world wide are invited to participate using phone and/or c.w. on all bands 3.5 through 29.7 Mc. DXers outside Switzerland will strive to work as many HB stations in as many Swiss cantons as possible. The scoring is simple: 3 points per band-QSO, this total to be multiplied by the total number of band-cantons worked. The exchange is the usual RS or RST followed immediately by the contact number (001, 002, etc.). Logs, consisting of separate band-sheets, should go to USKA, Box 1203, St. Gallen, Switzerland, postmarked no

(Continued on page 146)

HAMFEST CALENDAR

Alabama — The Montgomery Amateur Radio Club will hold a hamfest on Sunday, May 20, at Narrow Lane Inn, Montgomery, Ala. A special program has been prepared for the ladies. Movies for the kids. Bring any gear you would like to swap or sell. 3955 kc. and 29,560 kc. will be monitored for convenience of mobilizers. Meal tickets \$1.25. For advance registrations, contact W4AUP, Rt. 1, Fleming Road, Box 88, Montgomery, Ala.

Arkansas — The Greater Little Rock Amateur Radio Club, W5ABL, will hold a Hamfest May 26 and 27.

The clubroom will be general headquarters for Saturday with open house at the homes of most Little Rock hams Saturday afternoon and night.

Sunday's program will be held in Pavilion #1 at Boyle Park, from 9 A.M., with a general get-together and pot-luck lunch at noon. Concession stand will be available. There will be time set aside for shop and swap, too. So bring the family and the junk box, and stay all day. Everyone is cordially invited.

For further information, contact Club Secretary, W5ELG, 301 Prothro, North Little Rock, Arkansas.

California — The San Fernando Valley Radio Club is holding its 10th anniversary hamfest on May 18 at the Glen Aire Country Club, 3990 Stansbury, Sherman Oaks. Your choice of four dinners at \$3.00: Roast Sirloin, Baked Ham, Swiss Steak, and Fish (probably trout). Reservations, due by May 7, should be sent to Ellen Garner, K6EIA, 7414 Alabama, Canoga Park.

Hawaii — The Annual Hawaiian Territorial Amateur Radio Convention will be held on the Island of Maui on July 14, and 15, 1956, with a pre-convention get-together on the night of July 13. Sponsored by the Maui Amateur Radio Club.

Illinois — Again this year, the Quad City Amateur Radio Club is sponsoring its big annual Mississippi Valley Hamfest, on Sunday, May 20, at the Rock Island County Conservation Club Grounds on Big Island, Milan, Illinois. There will be plenty of fun for OM, YL, XYL, and Junior Ops. Tickets are \$1.25 advance registration or \$1.75 at the gate. For advance registrations, write to Ray Brunsvig, W9UAE, 557 — 21st Avenue, Rock Island, Illinois.

Illinois — The Peoria Area Amateur Radio Club is sponsoring a Single-Sideband Dinner at 7:00 P.M. CDST, on June 2, 1956, in Peoria, Illinois. Notice of the exact location will accompany ticket mailings. Plans call for steak dinner, refreshments and dancing. Tickets \$5.00 per person in advance, may be had by writing Chairman Jim Buzzard, W9YYM, 803 South Adams St., Peoria, or from any of the Peoria area SSB gang. All a.m., c.w., or RTTY ops are welcome but attend at their own risk, since it is well-known that SSB fever is highly contagious. Get your orders in early. Watch 75-meter SSB for further information.

Illinois — Starved Rock Radio Club Hamfest, June 3, 1946, at same site as last year, overlooking the Illinois River at the south edge of Ottawa, Ill. Follow Route 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 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. All the good features of previous hamfests, plus additional new activities. Swap department for disposal of your surplus gear. Registration \$1.00, if postmarked before May 20; \$1.50 at Hamfest. Listen on 3920 and 3940 kc. for late news or write W9MKS, Utica, Illinois, for details and advance registrations.

Kansas — The Kaw-Blue Radio Club is sponsoring a mobile picnic April 29 from 10 A.M. to 4 P.M. Bring your whole family and a covered dish to the Sunset Park Pa-

vilion, Manhattan, Kansas. Registration is 25¢ per person. Cokes and coffee will be provided. There will be mobile hunts on 10 and 75 meters, and other events.

Kansas — The Central Kansas Radio Club will sponsor the annual ham picnic to be held in Kenwood Park, Salina, Kansas, June 3, with registration at the usual 75¢. The order of the day will include a basket dinner, transmitter hunts, and activities for the ladies and children. All welcome.

Minnesota — The North Star YL Club will be hostess to the Sixth YL Convention to be held in St. Paul, Minnesota, at the Hotel Capri on the 25th, 26th, and 27th of May. There will be a luncheon and tour through the Minnesota Mining Company plant. All OMs are invited to attend the Saturday night smorgasbord with the YLs. Convention registration fee will be \$2.00. For advance registration, write Lydia Johnson, W0KJZ, 1258 Van Buren Ave., St. Paul, Minnesota.

New Jersey — The Lakeland Amateur Radio Association (W2VDJ) will hold their Tenth Anniversary Picnic and Hamfest on June 3. In case of rain, on June 10. Location of festivities, beginning at 10:00 A.M., will be the Dover Water Department Park, Princeton Avenue (off Route 46). Admission will be \$1.00 per adult; children free. Order of the day will be contests for all ages, hidden transmitter hunts, auctions and events galore. Contact Mr. Jack Lee, W2RGV, for additional information.

New York — The Rochester Amateur Radio Association will sponsor the annual Western New York Hamfest on May 19 at Doud Post in Rochester (same place as last year). Special features in the afternoon will be code contests, VHF exhibits, prominent speakers, antique wireless exhibits and numerous other unusual attractions. Advance registration urged to assure place at banquet. For information, write RARA, 268 Forest Hills Road, Rochester 10, N. Y.

Oklahoma — The 4th annual Northfork Amateur Radio Club Hamfest will be held in the new lodge at beautiful Quartz Mountain State Park in southwestern Oklahoma on May 19 and 20. To register write Clyde J. Smith, 313 N. Pennsylvania, Mangum, Oklahoma.

Pennsylvania — 2nd Annual Hamfest of the Breezeshooters' Net at the lodge, North Park, Pittsburgh, Pa., on Sunday, May 13, 1956. Registration free — donations accepted.

Rhode Island — Rhode Island's largest gathering of Amateurs, the PRA annual dinner dance, is scheduled for May 19, at Johnson's Hummocks Grille on Allens Avenue in Providence. As in the past, the affair will be highlighted by numerous events.

Tennessee — West Tennessee hamfest will be at Chickasaw State Park, May 6. Location on highway 100, 8 miles southwest of Henderson, Tenn. Family affair — bring your own lunch. Soft drinks available at pavilion if you do not care to bring your own. Boating and swimming on lake, and playground available for children. Bring a piece of equipment not worth over \$5.00 for grab bag. No admission charge. Everybody welcome.

Virginia — The Blue Ridge Amateur Radio Society, Inc. will hold its second annual hamfest on Sunday, May 20, 1956, at Lakeside Amusement Park, Salem, Va. Registration starts at 9:00 A.M. Program at 11:00 A.M. with several outstanding speakers. Special features for the ladies and children. Virginia Ham or Chicken dinner at 1:00 P.M. Advance registration and meal ticket, \$2.50 for adults. Children \$1.00 (meal only). At gate, \$2.75 and \$1.25. Make checks payable to Blue Ridge Amateur Radio Society, Inc., and mail to W4LNX, Box 2002, Roanoke, Va.

Washington — The Amateur Radio Association of Bremerton will hold their annual fabulous Hamfest, May 19, at Norway Hall in Bremerton, Washington. Festivities
(Continued on page 164)

Putting French Saint Martin on the DX Map

The Story of FS7RT

BY D. REGINALD TIBBETTS,* W6ITH/FS7RT

• Here is the story of what appears to be the first licensed operation from French Saint Martin Island. W6ITH had a pleasant visit to an interesting Caribbean isle, and gladdened the hearts of many, many DXers.

SHORTLY after noon on February 13, 1956, the telephone rang. It was a cablegram from Paris. "Informe Ministre Affaires Etrangeres authise M. D. Reginald Tibbetts à utiliser emetteur amateur radio à Saint Martin." Without knowing too much French, I knew it said "Informing you that Minister of Foreign Affairs authorizes use amateur radio transmitter at Saint Martin."

It was like a bolt out of the blue. For many months numerous and continual attempts had been made to secure official permission to operate on French Saint Martin in the Caribbean — the last country in the Western Hemisphere that had yet to have a licensed amateur station operate and therefore be a brand new country for almost anyone who worked it.¹ Very little encouragement in getting a license was received and many long roads that might lead to success ended up in blind alleys of red tape. It had been given up as hopeless. Now here was the license — wow!

Long and detailed checklists of equipment, supplies and personal items had long ago been prepared and this greatly helped for a quick departure. Airline reservations for W6ITH and XYL Louise were made together with provision for the extra amount of equipment. The next morning we left San Francisco on United Airline's DC-7 nonstop flight to New York. A few hours in New York and then on via Pan American Clipper flight to San Juan, Puerto Rico. A cable had been sent ahead to San Juan and West

* P. O. Box 1000, Moraga, Calif.

¹Except W2QHH, who worked FG8Z in 1947.

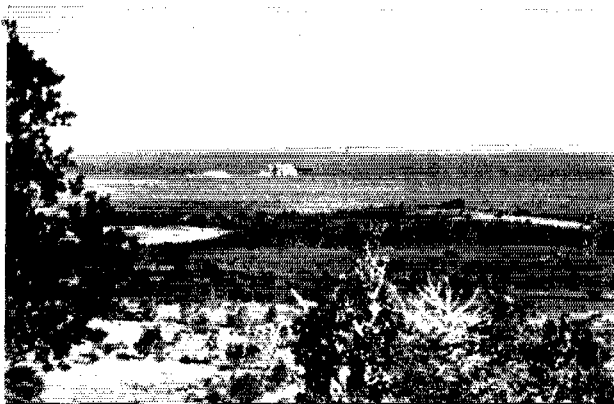
Indies Airways was waiting with a charter Twin-Beech for the flight to Saint Martin. The pilot knew every little island in the West Indies and at intervals pointed out numerous of the interesting smaller islands as we passed overhead. The 200-mile trip was covered in a little over an hour, and there it was below us — Saint Martin.

We landed at Juliana airstrip, which is on the Dutch side of the island. The island's sovereignty is divided between France and the Netherlands. In 1648, to solve a border dispute, a Hollander and a Frenchman agreed to start back to back, and walk in opposite directions around the shoreline. Where they met, a line was drawn to the starting point. The border is one of the few unguarded and customs-free national barriers of the world. The only indication of a border at all is a sign not unlike one that could be found on any county line in America.

No entry formalities were required either for us or any of the equipment. George Van den Berg, manager of the airport, was most helpful in assisting in the unloading of the equipment and in arranging transportation. A station wagon taxi was hired and since no time was to be wasted in getting on the air, we drove right over to the French capital town of Marigot.

A few kilometers inside the French side, beyond the boundary marked by a stone obelisk inscribed "1648-1948" to mark 300 years of friendship, and flanked by a pair of flagpoles — one flying the French Tricolor and the other the Netherlands flag, also red, white and blue but colors horizontal instead of vertical — we noticed a vacant cottage on top of a hill overlooking the brilliant turquoise blue water of the Caribbean. It would be an ideal location — isolated and nicely in the clear. Inquiry to the owner, Mrs. Louis Fleming, a young and attractive French widow, revealed it would be available to me for the stay there. Mrs. Fleming runs a thriving business of farming as well as an export-import house. She was very kind and took her time to arrange

◆
This is the view that greeted FS7RT when he took time from the operating position to look westward out over the Caribbean. It looks like a mighty pleasant place to work on antennas!
◆





◆
 Here is W6ITH himself at the equipment, just about ready to make 3012 QSOs. W6ITH, FS7RT used c.w., a.m. and SSB.
 ◆

everything for us to get set up immediately. The next call was upon M. Elie Fleming, French Administrator of Saint Martin and Mrs. Fleming's brother-in-law. He was expecting us and extended his warmest greetings. Best of all he presented the document which assigned the call letters FS7RT.

On the Air

After leaving Marigot we returned to the cottage known as "Bellevue Plantation," and with the help of a native lad the prefabricated Multi-Band Trap Doublet was strung up between a large Guineap tree and the peak of the cottage roof. The Collins KWS-1 and 75A-4 were set up rapidly with previously prepared cables, the 1500 watt "putt-putt" gassed up, the starter spun, and FS7RT was ready for the first QSO at 2115 GMT, February 15th, nearly 5000 miles and only 27 hours after leaving home in California.

Two stations working SSB on 20 meters were spotted. "How would you like to work a new country," I asked. One of them replied, "Sure, why not?" "Okay," I said, "This is FS7RT, on the French island of Saint Martin in the far eastern Caribbean." The first station contacted was W8ASL/4. For the next ten minutes it was impossible to work anyone because of the terrific QRM on the band, all calling FS7RT.

You can read about, be told of, and even try to visualize what it might be like to come on the air for the first time from a new country. But no possible stretch of the imagination can even come near describing just how the "roof falls in" when you make the first call from a brand new country. Every station you can hear is calling you and they are dozens deep on every frequency.

The next station worked was the old reliable of SSB, ZS6KD, "Empty." Then followed W8BN, W8KKG, ZS6ACH and KV4BB. Twenty-meter sideband was used for the next five hours and stations were worked at better than two a minute.

Saint Martin is one of the most attractive islands in the West Indies. Neat homesteads nestle along pleasant green hills; fat cattle browse in deep pastures in the valleys, and paved shaded

roads give ready access to any number of beautiful white sand beaches. The island was discovered by Columbus on November 11, 1493 (Saint Martin's Day) on his second voyage to the New World. The island is truly one of the few unspoiled islands of the West Indies. As an example a maid at the hotel was offered an American twenty-five cent piece for an errand. She looked at it for a moment, then handed it back saying "What is this?" When told it was an American quarter and money, she said, "No good here." Try that anywhere else in the world.

At the time of Columbus a few Arawak Indians occupied the island, but for the next century Saint Martin was sort of a No Man's Land for island adventurers and traders. A prosperous tobacco trade was carried on with St. Kitts as early as 1623. Then the island was temporarily held by the Spaniards, next by the Dutch who arrived in force in 1666. Peter Stuyvesant, who was famous for his founding of New Amsterdam, now New York City, was governor of the Netherlands West Indies from 1645 until 1664. He lost his leg in a naval battle for Saint Martin in 1644. Next France, Holland and Britain assumed control of Saint Martin until the Dutch finally won the island by treaty in 1802. Pirate raids were never too frequent, for Saint Martin's main wealth was derived from sugar cane cultivation. When the French liberated their slaves in 1848 and Dutch settlers refused to follow suit, troops had to be brought from Curacao to restore order. It was not until 1863 that emancipation was eventually granted the plantation workers. Since then, time has virtually stood still and trading operations are confined to neighboring islands.

A new hotel with sixteen double rooms, the Little Bay, was recently completed. It is clean and very comfortable. Breakfast is served on the open terrace overlooking the ocean, lunch and dinner served inside in the artistic dining room. Each table has a small flagpole flying the flag of the guest's own country. Each order of food is prepared as it is needed so that it is hot and tasty.

The French capital of Marigot is fascinating. The main street looks like a set from a South

Sea Island movie. It is two blocks long with the waterfront and wharf at one end. A blackboard is placed on the street corner with the news and announcements written in chalk: "Schooner Marie Antoinette sails for Basse Terre at sundown carrying cargo and passengers. Inquire within for bookings." Also, "Madame Josephine, Fortune Teller appears at Yankee Hall tonight, fortunes and mind-reading." Fishing boats line the single dock alongside stacks of lobster traps. Houses and stores are intermixed. A typical store sells French perfumes at one end and fresh fish at the other. The architecture is typically French — ornate grill balconies and shuttered French windows and doors. When the fishing boats come in, the people flock to the waterfront to bargain for fresh fish. Since Saint Martin is a "free-port" without duties, import taxes or customs, it means that imports from all over the world come in without taxes or duties. The best quality French champagne, premium Scotch whisky, brandy and after-dinner liqueurs, are all only two dollars a bottle. The size Chanel No. 5 perfume that sells in the States for twenty-four dollars a bottle is but four dollars, and hand made French blouses that would sell for ten dollars in New York are only two dollars in Saint Martin.

A Surprise Visit

It pays to take the pains and trouble to obtain *full official permission* from the home government to operate an amateur station in a foreign country. This was forcibly brought home because shortly after FS7RT was operating a substantial segment of the local gendarmes paid a surprise visit, equipped for action and in the mood for finding out just what was going on and why. The Gendarme Captain-General Cambon had quietly checked back with Paris and was told that no radio station could be operated there without authorization of the Minister of Foreign Affairs in Paris. The official papers from Paris answered all the questions and from that point on all was cheek-kissing and champagne. "Permission" can often be obtained from officials who have no such authority. Such can be likened to the mayor of Hoboken giving permission for, say, a European amateur to operate in New Jersey. Such permission and license comes only from Washington and any such authorization from the mayor would make the station just another "hoot-legger." Proper permission in writing insures full recognition for your efforts and keeps you on the level with the hams who work you in good faith as a new country.

◆

This plantation cottage is "Bellevue Plantation," some two kilometers south of the capital city of Marigot, served as the operating headquarters. Construction is typical of the better homes on Saint Martin — heavy concrete walls with shuttered windows and doors for protection during the fall hurricane season. Reg strung his antenna to a nearby Guineap tree.

◆

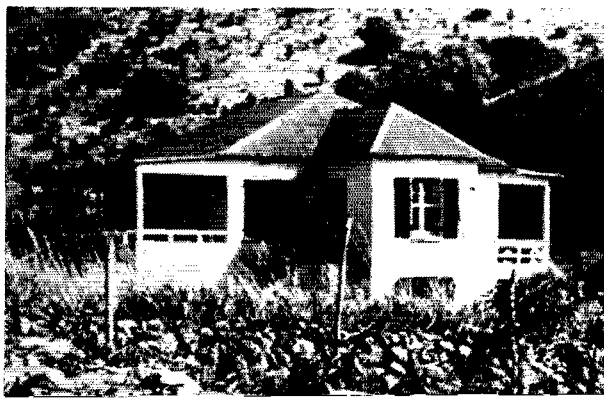
Detailed and painstaking planning for a DX expedition also is absolutely necessary. Every story of previous expeditions was carefully analyzed, with the strong and weak points noted. From these accounts and my own experience it was decided to do everything first class and with no compromises in any manner. Everything needed must be taken along and local supply not depended upon for a single item. Such seemingly minor things as plastic window screening, DDT bombs, putt-putt oil and gasoline are but a few. This meant taking along good equipment — a Collins KWS-1 and 75A-4, plus a 1500-watt power plant. The local power, available only in the town, is an alleged 240 volts but is on only from six to eleven o'clock in the evening and with the poorest of regulation. A single additional 100-watt lamp causes a drop of several volts. Having your own power is just like being at home — reliable, good regulation and always there.

During the entire operation at FS7RT, at least 18 hours daily, none of the equipment gave the least sign of trouble. It was a real pleasure not to have to be concerned about the transmitter or receiver.

Single-sideband was used for nearly all phone operation and was extremely effective in getting through QRM and to DX points when propagation was not the best. Full voice break in enabled the most effective and fastest operation. A half dozen stations could easily be worked at the same time — asking each to stand by as he signed to get one at a time for error-free call signs and exchange of reports. Some a.m. operation was used, especially for the benefit of ten-meter stations who operate that band exclusively and who may not yet be familiar with sideband tuning procedure.

To reward the native boy who helped with the antenna — his name is René — Louise had a local seamstress make him a new pair of trousers and shirt as his only clothes were in tatters. He didn't wear the new ones until Sunday when he appeared all dressed up. We told him how nice he looked and he beamed all over. He was our constant shadow from then on, and faithfully watched over the generator to keep it supplied with gasoline. One afternoon he brought a bag of native fruit which tasted like prunes; another time he brought a coconut and breadfruit.

On the second night a South American station was contacted. When he realized FS7RT was on a French island, he broke out in his best high school French which was absolutely impossible to



understand. The matter was solved by my utilizing my best high school Spanish, to the relief of all.

The total area of Saint Martin (the Dutch spell their part Sint Maarten), is about twenty square miles and is enclosed by an attractive succession of small, sheltered creeks and beautiful sandy bays. A spinal cord of mountains runs north and south across the island reaching a climax in 1360-foot Paradise Peak. Both the northeast and southeast coasts offer precipitous scenery; the latter is particularly impressive with its vertical white cliffs. Yet a complete contrast is met around Terres Basse Point, where low, sandy dunes pile up behind the beach and a sandy spit, easily traced in the clear blue waters, runs far out to sea. Inland the small valleys provide an agricultural existence for the largely colored population. Near Simpson Bay live the small white community of fishermen who catch the fine lobsters for which the island is well known. About five hundred pounds of these lobsters are flown weekly to the plush hotels in the Virgin Islands.

Our taxi driver Joe also owned a pool hall and a bar. His French team had been invited to play a team from the Dutch side. They had about two hundred guests to watch the cue experts. They were all very happy with their pool and their refreshments. The owner of the building, who lives upstairs, apparently was not a billiards fan and complained of the noise. The teams stopped the game and, as Joe said, "We were very democratic about it," adding, "We took a vote before we decided to toss the landlord into the harbor."

One night we returned to the station from dinner about dark and found about a dozen women and children huddled around the gate. They said they just wanted to listen to the radio. We invited them to come up on the porch. They sat down quietly on the floor and no doubt greatly enjoyed it even though they probably had no idea what it was they were listening to. In any case they stayed for hours. One woman hid her feet until we told her it was all right to be without shoes. After that we had a constant flow of visitors from all over the island. FS7RT was probably the first new attraction the island had for many years.

After a few days we found we could use a good broom. Our taxi driver brought one to use and it was made from a straight branch of a tree with palm leaves tied around the end. It cost the whole sum of eight cents. We still needed a good broom.

We were told there were no thieves on the island and it was not necessary to worry about locking anything. We left everything in plain sight at all times unlocked and nothing was ever taken or tampered with.

One afternoon when operating fifteen-meter phone a well-dressed man appeared. He announced in a grand manner: "I am George, calypso singer from St. Thomas." Without another word, he seized the microphone and began a loud ditty to the tune of "Rum and Coca-Cola." When he finished, he looked around and said, "Where's the turntable, is there no accompaniment?" He was informed it was not a broadcast station, but a ham radio setup. He replied, "Yes, yes I know," then grabbed the mike again and ran through another chorus. By that time I was laughing so hard, I could do little to stop him. I never did hear the last of that for the rest of the afternoon from the fifteen-meter phone boys.

Louis Richardson, a Frenchman who was born on Saint Martin and has lived there all his life, became a fast friend and his assistance was invaluable. Louis is in charge of the small French wireless station which keeps in touch with the other nearby French islands.

The weather is near-perfect as it is possible on Saint Martin. In the daytime there is plenty of warm sun and with air temperatures of about 85 degrees, and with a moderate and comfortable range of humidity, and a cool breeze is constantly blowing. The nights are always cool for pleasant sleeping—usually about seventy and a light breeze. Sometimes there are quick hard showers, then the sun breaks through again with the air refreshed. The cool breezes keep the usual tropical insects at a minimum.

For the Record

A total of 3012 contacts were made, about 1000 on c.w. and the balance on phone, both SSB and a.m., but mostly SSB. A total of 127 different countries were worked with WAC being made 43 times. WAS was made on 10, 15 and 20 meters. Besides the hundreds of W/Ks, hundreds of foreign stations were QSOd. In a single day's operation over 200 Europeans and Africans were worked. Twenty was the most consistent band, although 15 meters was even better for foreign stations. Common courtesy dictated that as many French and French possession stations be worked as possible. A substantial number of

(Continued on page 164)



Here Louise Tibbetts (W6ITH's XYL) and Chef des Gendarmes Cambon pause for the photographer on the Marigot waterfront. Cambon is head of the local French Colonial Police force, which totals four men.

Silent Keys

IT IS WITH DEEP REGRET that we record the passing of these amateurs:

W1BJP, Forrest O. Drew, Newport, Vermont
ex-W1BTC, Charles B. Libby, Waterville, Maine
W1GD, Willis B. Jardine, Framingham, Mass.
WILTA, James Calfain, Worcester, Massachusetts
W2BTB, Jeanne Walker, Syracuse, New York
W2FBT, Max Bogner, New York City, New York
W2HHL, Wilson E. Rowell, Baldwinsville, N. Y.
W2LLJ, Philip J. Pitlak, Jersey City, N. J.
ex-W2TXD, Charlotte R. Hoff, Pennington, N. J.
W3DDX, Lt. Stanley J. Urbaneck, Cheverly, Md.
W3LQC, Milton R. Hanson, Johnstown, Penna.
W4AOL, Walter H. Sykes, sr., Brookhaven, Ga.
ex-KN4AWL, Robert M. Williams, Hickory, N. C.
W4FGT, Leland T. Fluker, Selma, Alabama
W4VIE, Erick V. Erickson, Lakeland, Florida
W5BGU, Robert L. Greene, Yazoo City, Mississippi
W5UJE, George H. Eller, Canadian, Texas
KN6LDS, Joseph C. Milligan, Los Angeles, Cal.
W6MUA, Glenn F. Hull, Dunsmuir, Cal.
W6OV, Clarence H. Shoemaker, San Francisco, Cal.
W6OWU, Lt. Col. John J. Lynch, Alhambra, Cal.
W6YUT, Malcolm M. Deuchars, Altadena, Cal.
W7MQE, Donald L. Rostek, Tucson, Arizona
W7OJQ, Lyman H. Streeter, jr., Winslow, Arkansas
W8BIU, G. Raymond DeVore, Livonia, Michigan
W9CXR, Frank Rippie, Harvard, Illinois
ex-VE1AR, John J. Fassett, Dartmouth, N. S.

Our Apologies

... to Mr. Richard G. Wells, jr., W4NSZ, of Pikeville, Ky., who was erroneously listed in Silent Keys in the March issue of *QST*. We are glad to be able to report that W4NSZ is still very much with us.

FEED BACK

The following corrections and additions should be made to the article on "A Three-Band S.S.B. Exciter Using a Mechanical Filter," by David Hoisington, W6CHB, in the January 1956 *QST*.

C_{17} and C_{18} are 39 μfd , $\pm 5\%$, NPO ceramics.

C_{22} is 75 μfd , $\pm 5\%$, silver mica.

The 250 volts required in Fig. 1 comes from across C_{50} in Fig. 3.

The line fuse should be rated at 5 amperes.

S_3 is the frequency check switch.

In the circuit diagram of the 10-meter station for emergencies, page 33 of the March issue, the 22K resistor in the plate circuit of the 6AK5 amplifier should return to the right-hand side of the 25K resistor in the high voltage lead immediately below, instead of to the line connecting the two cathodes as shown.

Inability to keep up with changes resulted in two minor errors in the description of the PRO-310 receiver last month (page 36). The automatic noise limiter function is now part of the second detector stage, and the 100-kc. crystal calibrator is standard equipment in the receiver.



May, 1931

... The editor reports that at his home station he's spent the winter on the 7000 band. He used almost nothing but apparatus constructed in 1928 during the League's technical development program preparing for "1929 conditions." His receiver was that old four tube peaked audio one, the monitor a heavy copper contraption described in the Handbook. The transmitter was the High-C 250-watter, later modified to be an oscillator-amplifier job. Some of the time he used only a single 210 and sometimes 600 watts of crystal control; all of which was of the 1928 vintage, but he says he had plenty of fun!

... Activity of amateurs during the final journey of the Carnegie, destroyed by an explosion at Apia, Samoa, November 29, 1929, is described by S. L. Seaton, W3BCW, who discusses "Amateur Radio As an Aid to Territorial Magnetic Research."

... Marshall P. Wilder, D4CJ-W1AWK, and Rudolph Romeike, D4AU, outline a method of controlling the frequency of a high-power oscillator with a low-power tube, a predecessor of crystal control. Experimenters are advised that such arrangements, generally classified as "controlled oscillators," are critical and demand cautious adjustment to prevent fracturing crystals.

... Stray — W8ECN wants to know where to get thin corset springs used to construct a homemade "bug" key described in a recent issue. He says they're as extinct as rotary sparks out his way.

... Features of the variable-mu tetrode, a modified screen-grid receiving tube of improved performance, are outlined by George Grammar, who illustrates the truth of the saying "necessity is the mother of invention" in an article telling about development of the vacuum-tube family.

... Operation of a combined Dynatron frequency meter and monitor is described by John J. Long, jr., W8ABX, who was prompted to construct the apparatus he describes by several articles which appeared in previous issues of *QST*.

... Hams interested in a new rectifier for low-power supplies are told by Paul Schwein that the development of a full-wave mercury-vapor rectifier tube of the 280 type has been brought about by the demand for a rectifier of low voltage drop and high efficiency for use in receiver power packs and plate supply units for low power transmitters. His article titled "A Full-Wave Mercury-Vapor Rectifier Tube," tells of the application of this type of service.

... One phase of New Zealand's tragic earthquake disaster about which not much was previously known, even in amateur radio circles — the extraordinary work performed by hams in and around the stricken towns — is graphically told in a story transmitted by Ivan O'Meara, ZL2AC, direct to WISZ, which provides a graphic suggestion of the noble work done by the "ZL" men.

... Use of a home-made photo cell and construction of one from an old Type '01-A tube is described by Harley Iams, while comments on a common fallacy are made by George Grammar, who discusses "Impedance Matching in Oscillator Circuits."

... "Standard Frequency News and Schedules" is hailed as "a million dollar service free" with its many advantages described. Hams are advised "Let's use it!"

... Rigs described are those of W9EGU and W5AIE. In the "Correspondence" section Dr. R. H. Baker, W5BTL, makes what is perhaps the first suggestion for the holding of the recent Frequency Measuring Tests.



Hints and Kinks

For the Experimenter



ANTENNA HINT FOR THE GONSET COMMUNICATOR

HORIZONTAL polarization of a Gonset portable antenna can be most easily obtained by mounting the whip in an Amphenol type 83-1AP right-angle connector. When this assembly is mated with the Gonset antenna receptacle, it will cause the whip to extend out in a horizontal plane without need for tipping the communicator on its side. If the 83-1AP is not too tightly coupled (mechanically) to the antenna connector it will allow the whip to be swiveled about in *beam* fashion, thus introducing some choice of directivity to the system.

— Lester Reiss, W2BR

CONVENIENT METHOD OF MOUNTING MOBILE GEAR

BY USING HINGES — the type having removable locking pins — for the support of dash-mounted mobile gear, it is possible to remove and install equipment with a minimum expenditure of time and effort.

Fig. 1 shows the hinge-support method of mounting. One half of a hinge is fastened to each side of the mobile unit. The companion sections of the hinges are appropriately located under the dashboard. Use self-tapping screws at the

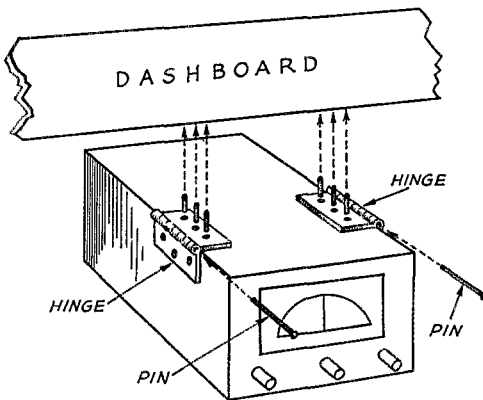


Fig. 1 — Sketch showing the hinge method of mounting mobile gear.

sides of a unit, and machine screws, lock washers and nuts to hold the dash-mounted members in place. On heavy equipment, it may be advisable to provide additional support by means of a brace or bracket located at the rear of the unit.

To remove or install equipment, merely pull

the hinge pins. Another feature of the system is that very little space is used by mounting supports, thus permitting several pieces of gear to be mounted in a row without need for wide space-wasting gaps.

— Lt. Myron D. Weisberg

SIMPLE ANTENNA CHANGEOVER CIRCUIT

THE CIRCUIT shown in Fig. 2 uses a d.p.d.t. switch for transfer of the send-receive antenna. Notice that r.f. input terminal of the

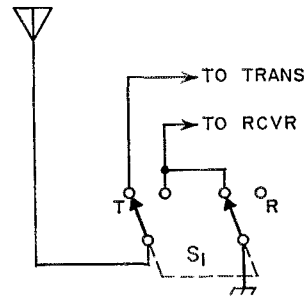


Fig. 2 — The simple transmit-receive circuit used by KN2OUI.

receiver is grounded when the switch is at the transmit position. This feature of the arrangement prevents receiver overload or holdover that might otherwise be caused by the transmitter output.

S₁ should be a switch of reasonably good quality such as a knife or rotary type. Ordinarily, a toggle switch would not be suitable for the application.

— Larry Emerson, KN2OUI

CRYSTAL HOLDER HINT

ANYONE who does much crystal grinding probably has frequent occasion for dismantling surplus-type crystal holders. And it's probably just as true that the grinder has had his share of trouble keeping track of the small nuts and lock washers that fall free of the holder when the latter is opened.

There is a very simple solution to this problem. Merely cover the back side of the holder with a strip or two of Scotch tape. This prevents the nuts and washers from falling free and, of course, each piece of hardware will be right where it belongs when assembly time comes due.

— Bert Felsburg, W3VA

SOLDERING TO SHIELDED WIRE

WHILE SOLDERING TVI-suppression capacitors to the metallic braid of shielded wire, I burned the d.c. insulating coating so badly that it later failed. In replacing the wire, the following step-by-step procedure was employed as a preventive measure against renewed breakdown.

- 1) Cut the wire to size.
- 2) Slide the shielding out over one end of the wire for an inch or so.
- 3) Cut off the protruding shielding.
- 4) Slide the shielding out an additional $\frac{1}{2}$ inch.
- 5) Insert a rusted nail or spike (diameter depends on the i.d. of the shielding) into the protruding shielding.
- 6) Wrap capacitor lead tightly around this end of the shielding, and solder.
- 7) Slide the shielding back on to the wire and repeat Steps 4, 5 and 6 at the opposite end.
- 8) Center shielding, strip d.c. insulation from ends of inner conductor, and solder capacitor leads to wire.

This neat and safe way of soldering to shielded wire may be modified slightly to take care of connections to be terminated at grounded soldering lugs.

— Francis J. Maier, K2BSZ

REVERSING THE HEAT-CONTROL SWITCH OF WELLER SOLDERING GUNS

THE NEWER WELLER soldering guns (Type D-550) with dual-heat range have a switch action that is very light. The manufacturer, quite reasonably, points out that high heat should be used only intermittently. Unfortunately, the weight of the gun vs. the switch action combines to make it just a little difficult to refrain from pulling the trigger into the second (high-heat) position.

It is relatively simple to remove the case and rewire the switch. There are two terminals on the upper half of the switch and one on the lower part. Reversal of the upper connections will provide high heat on the first position and low heat with the trigger full on.

The change allows the gun to be firmly grasped and the trigger firmly pulled all the way on as the work is begun. Momentary release (partial) of the trigger raises the heat quickly and easily.

— William H. Fishback, W1IKU

HINTS FOR STRIPPING ENAMELED WIRE

WHEN SOLDERING Formvar and similarly enameled wire, an easy and rapid method for removing the coating is to hold a lighted match under the area to be stripped. The coating is burned off and it is necessary only to pull the wire between the fingers a couple of times to remove the oxide. It is then very easy to solder to the wire. This method works quite well when you don't happen to have any of the commercial preparations to remove the tenacious stuff.

— Al Baron, W4ORJ

IMPEDANCE MATCH FOR THE SIMPLE SHUNT CLIPPER

ALTHOUGH a single-tube circuit can be used for a noise clipping during c.w. reception, it is not usually an especially effective arrangement unless the receiver output circuit is designed for a high-impedance load. In other words, the average one-tube clipper does not work too well when plugged into the output jack of a receiver designed for low-impedance phones.

This problem can be easily overcome without expense by using a cheap or salvaged broadcast-

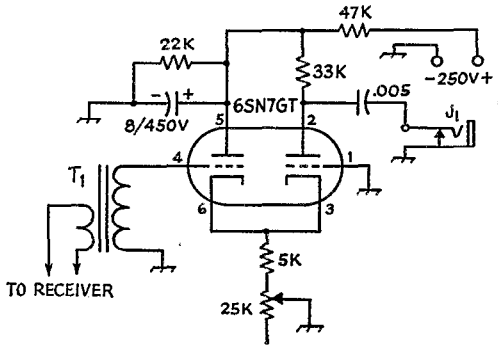


Fig. 3— Circuit diagram of the one-tube clipper. T_1 is an inexpensive b.c. receiver output transformer used for impedance matching.

receiver output transformer at the input of the clipper. The transformer, reverse connected as shown in Fig. 3, will provide a better impedance match for the grid of the clipper tube, thereby increasing the input signal and the clipping action. Use of a variable cathode resistor as shown permits adjustment of the audio volume and the clipping level. The rest of the circuit is quite similar to the clipper arrangement described in chapter five of *The Radio Amateur's Handbook*.

— Otto Woolley, W0SGG

NEW LIFE FOR WORN SOLDERING-IRON TIPS

SOLDERING-IRON TIPS that have been subjected to prolonged service usually become poor conductors of heat. This condition may be remedied by cleaning away the oxide that has formed between the tip and the heating compartment of the iron. However, several such treatments ordinarily reduce the diameter of the tip excessively and render it completely useless.

One method of extending the life of a tip that has been cleaned and recleaned to a state of apparent uselessness is to wrap it in a strip of flashing copper. The tip should be thoroughly cleaned before the wrapping is applied, and the fit between tip, copper and the heating barrel should be as tight as possible.

— George Grammer, W1DF



Correspondence From Members -

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

SCARED SMART

2309 76th Avenue
Philadelphia 38, Pa.

Editor, *QST*:

In reading W3JSI's hot and hair-raising tale (March *QST*), it brought back an unpleasant memory of about a year ago.

Having received my 1,000-volt power transformer in the mail, I quickly bought a chassis and mounted the transformer, and wired the rectifier. Since it would be quite a while before I would use the power for my new rig, I was just fooling around with it. I got a big thrill making the thing arc. Just for fun — some fun — I charged up a 4-mfd. oil-filled condenser. While holding the body of the condenser in one hand, and sliding a screwdriver into position to arc it, my hand slipped, and WHAM, all 500 volts hit me. I couldn't see, my arms twisted up to my chest, and then nothing — blank. That's all I could remember. When I regained my senses, I was in another part of the room. The brief moment in which the shock took place felt like it would never end. I only know that I won't play bleeder resistor to that or any other condenser again.

— Stephen L. Bass, W3DCH

So. Main Street
Eminence, Ky.

Editor, *QST*:

Whew! W3JSI scared some sense into me. Thanks for the warning before I learned the hard way.

— Mike Mitchell, K4CHK

170 Taft Street
Revere, Mass.

Editor, *QST*:

I have just finished reading W3JSI's ghastly experience. It's a wonder he survived. Just the fright would have gotten me! But after reading the article, you can bet that I am now installing a master switch here for the station. I think more amateurs should do the same thing.

— Joe Ferullo, W1HFF

1533 Tremont Street
Dover, Ohio

Editor, *QST*:

FB on Switch to Safety. Just remember, not everybody is as lucky as W3JSI. It only takes one slip.

— Homer E. Spence, W8QXH

NO LOWER

1413 No. State Street
Rolla, Missouri

Editor, *QST*:

When I read the letter from W6UYG/QYR (February issue), I couldn't help shaking my head in agreement. I think that lowering standards to grant Novice licenses was quite an accommodation to those of us who are not so elite on our theory or code; but when they try lowering the Extra Class license to General, I tend to object. . . .

— Evelyn L. Hall, KNØDEY

6217 So. Bell Street
Tacoma 4, Washington

Editor, *QST*:

I feel that the ranks of amateur radio are being over-run by too many incompetent operators. This is due to the fact that the present General-class examination is over-simplified. Surely the examination could be revised, so that no person could possibly pass, as they sometimes do, without knowing the fundamentals of radio theory and operation.

The present examination of the FCC is an extremely-simplified version of the fundamentals put forth in the *License Manual*. . . .

Perhaps if FCC would tighten up, we would be free from a few lids and some of the unnecessary QRM.

— William N. Rohrer, W7ZFY

CONELRAD

7922 N. Oconto Avenue
Niles 31, Illinois

Editor, *QST*:

JUST FINISHED CONELRAD DEVICE USING DIODE TRANSISTOR AND METER X (Jan. *QST* p. 34) WORKS LIKE A CHARM AND CAN HEARTILY RECOMMEND IT FOR COMPLIANCE NEW REGULATIONS.

— George G. Hanson, W9FFD

45s IN P.P.

355 E. Laurel St.
Oxnard, Calif.

Editor, *QST*:

My article, "A Pair of 45s in Push-Pull," appeared in November, 1955 issue of *QST*.

Since that time, I have received a large number of letters from beginners in ham radio asking for complete parts list and instructions for building this fine old museum piece. Apparently, it strikes many newcomers as a very simple and satisfactory rig for use on the air.

In every case, I have plainly answered that the PP-45 rig is *not* suitable for use in 1956 and particularly not the thing for a novice to start out with.

Having just received another request for constructional details this morning, it occurs to me that it is possible that many young varmints are proceeding to build the rig with the limited information presented in *QST*. If this is the case, they are in for some bad moments.

It might be well to warn beginners to steer well clear of the PP-45 transmitter. In writing the article I meant only to dig up a few fond memories; I had no intention of presenting the old rig as something simple for use by modern novices.

— Keith S. Williams, W6DTY

WILLING WORKER

R.R. #3
St. Stephan, N. B.

Editor, *QST*:

I wonder if W7WUM is strictly a phone operator? (Stray #1, page 10, Feb. *QST*). The inscription on Canadian nickels minted during the latter years of World War II should read, "We win (*not wine*) when we work willingly."

One additional letter certainly makes a vast change in the meaning of a sentence. Sounds like a very vicious circle. We work willingly so we can purchase wine to make us willing to work more willingly, etc. WOW!!!

— Don Weeks, VE1WB

OTHER SERIOUS AMATEURS

8827 Coyle Avenue
Detroit 28, Michigan

Editor, *QST*:

I was just reading over W6UYG/QYR's letter in the February issue, and thinking to myself, ". . . now there's a man after my own heart . . ." when to my horror I

(Continued on page 168)

Yugoslav Amateur Radio

BY TIMA POPOVIC,* YUIFR

• Most of us here have enjoyed the benefits of cordial relations between the government and amateurs for so long it's hard to imagine operating under other circumstances. It hasn't always been easy to operate at the other end of DX, however. Here a long-time YU reports the difficulties experienced by prewar Yugoslav amateurs, and in contrast their postwar development and progress.

THE EVOLUTION of the Yugoslav amateur radio was not a simple matter. That is true not because amateur radio went underway late in this country, for radio amateurs cropped up as early as 1925, but for the rather curious and unbelievable fact that pre-war Yugoslav authorities did not have the slightest understanding for that kind of activity.

Quoted as subversive and politically suspicious individual, the early Yugoslav amateur had to be not only scientifically curious, but adventurous as well. For, although indolent in most of its duties, the former Yugoslav security service was unexpectedly eager in hunting the amateurs. An anonymous denouncement, or even a whisper, was always sufficient to cause a pursuit, combined with an inopportune home inspection, which usually resulted in the confiscation of the amateur radio gear, and the imprisonment of the unlucky ham. This practice gave to the rulers, besides the satisfaction of their security ambitions, the benefit of getting free radio stations for their own purposes. We old-timers do know it better than anyone else, from our own experience.

Under such circumstances, the passionate

* Banat. Novo-Selo, Yugoslavia

amateurs did not have any other choice than to do undercover operation, and to get more and more deeply in anonymity, as their hobby became menaced to be discovered. For, as all of us do know it very well, once an amateur contaminated with the hamming bacillus, the fellow becomes an incurable hazarder, ready to put in the balance his material goods, security, and freedom, for the satisfaction of his infinite passion.

It is only too obvious that such conditions could not bring about any big increase in ham activity. A unifying organization was nonexistent and even impossible, although there was a presidium UJRA (Union of Yugoslav Radio Amateurs) in Zagreb, whose task was to unite all amateurs. There was no success, for the operators were afraid of once being betrayed, and that is why they did not let their names and addresses to be known. As far as we know, there were 50 to 60 hams working in this country at that period, but many of them remained unknown.

The first to be caught by the police was Stephen Liebermann (UN7DD, and later YU7UU), a skilled worker, who may be considered as the pioneer of Yugoslav amateur radio, and who has been well known far over the borders long before 1930. Many of the old-timers may recall his QSL card which carried the inscription, "Yugoslav Radio YU7UU, an amateur station of Zagreb, persecuted by all Yugoslav authorities is herewith confirming the . . . Mc. two-way communication. . . ," etc. His station was after that used for years by a Press Bureau.

Liquidated as an active ham, he acted as undercover QSL agent for all Yugoslav amateurs until the beginning of the war.

Apprehensive of the relative progress of the radio amateur, the authorities aggravated police

◆
SRJ vice-president, Svetozar Ribar, presents a pennant to G3FOO (right, rear) at the Zagreb convention. In the foreground is F9AA, president of REF, and OZ9FM (right).
◆



orders and even tried, from time to time, to spread among the amateurs police radio telegraphers camouflaged as quasi-hams. But they did not have any substantial success. On the contrary, many of them became contaminated themselves, got a growing interest in amateur radio, and soon started to do hamming on their official rigs! From that point on, they always warned their new friends as soon as any danger from the police had to be expected.

Nevertheless, almost every one of us did suffer rigours, especially in the period immediately preceding World War II.

Another prominent prewar Yugoslav ham, who had to QRT very early by force, was YT7KP, an electronic engineer attached to the Tungram Company. His case was one of the most interesting ones.

When the police broke into his home, and his ham station was discovered, the agents asked him to show them how it worked. He fired on the transmitter, and tuned his receiver over the band for the last time. As YT7TJ happened to be on the air at the moment, he gave him a call and warned him, under the eyes of the totally-ignorant agents, that addresses of some hams were just found amongst his QSLs, so it would be wise to stop activity and remove stations. Soon after that, direction-finding instruments appeared on the streets, but apparatus and devices could be hidden just in the time.

However, strange it sounds, the prewar amateurs found it necessary, in spite of the difficulties, to run a radio amateur's magazine. The first magazine, entitled, "Unlis," was issued in Ljubljana, in November, 1939, and in its introducing article one could read:

"Dear OMs: Yugoslav amateurs are trying to erect their activity in issuing this journal at a time when a great battle is fought all over the ether, in the air, on ground, and on sea. Our foreign colleagues have changed their wavelengths and most of them have gone into war service.

"Instead of 'RST' we can hear 10,000 dead, 30,000 wounded; the input of the receivers has changed with the output of guns. '73 es gud luck' had changed with menacing and ultimatums but the radio amateur's organization remained strong. 'Ham Spirit' still crosses the air and

everybody is hardly awaiting those who are in war service, and all Yugoslav amateurs are sure that, after a victorious end of war, amateur radio in this country will grow up to a magnificently useful institution."

Some amateurs really experienced this glorious day, but there were many who never did. During the war, almost all Yugoslav radio amateurs went into the forests to join the People's Liberation Forces, and fight the great historical battle for the liberty. They continued their activity on the field of the battle and soon they organized a great number of transmitters. Radio contacts were often made under almost impossible conditions and without having the necessary resources.

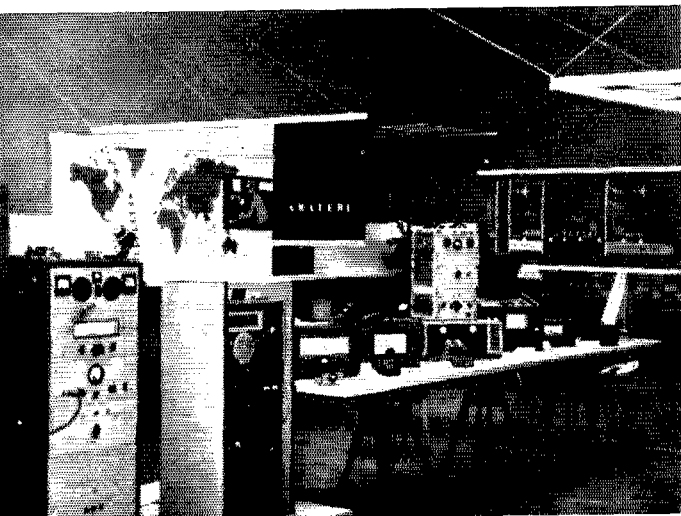
Many of such heroes-radio amateurs have sacrificed their lives for their country. We never shall forget them.

Only three amateurs of the elder generation, YU1FR (ex-YU7BJ), YU2AN (ex-YU7XU), and YU3AB (ex-YU7LX), are still active, and they did their best to inspire and to give any assistance to younger people, in order to enable them to become skilled hams and to develop the backward areas.

The new Yugoslavia brought to the amateurs an entirely different position and the possibility of working in full legality. Already at the beginning of 1946, a meeting of radio amateurs was initiated in Belgrade by some hams who participated in the Liberation War, in order to organize all the Yugoslav amateurs, and somewhat later the First Radioamateur Council was called together, which laid down first policies, gave rules for the Radioamateur Societies, and organizational instructions.

After the period of consolidation, in which a great progress in radionics in general was realized, on June, 1948, the Yugoslav Radioamateurs Union, SRJ, was put into being, and the Founding Meeting gave birth to the SRJ constitution, delineating exact purposes and tasks of the SRJ.

Finally, the great dream of Yugoslav hams became a reality. The second SRJ Convention, of April, 1950, in Zagreb, happily welcomed the first licensed amateur stations on the air. From that date on, the growth and membership increase of ham groups and SRJ membership in general took an impressive proportion. The Yugoslav Radioamateurs Union has been officially recog-



The neat equipment shown here was part of an exhibit of home-built gear at the 2nd SRJ Hamfest in Zagreb last August.

nized abroad, IARU has accepted SRJ among its members, and in May, 1953, the SRJ representatives participated for the first time at the IARU First District Congress.

Today, SRJ numbers about 300 radio clubs, with a membership of 20,000 and about 1,000 ham operators.

One of the most important decisions of the 1954 SRJ Congress has been to hold yearly Radio-amateur Meetings, and still stronger cooperation with IARU.

In accordance with that decision, and following the successful last-year SRJ meeting, held in Ljubljana, the second meeting took place on August 4-7, 1955, in Zagreb.

A tent camp has been set up at the meeting site at Pionirski Grad for the attendants, but hotel rooms were reserved as well for those who did prefer them. A short-wave station was there for the convenience of the hams during the meeting, and an exhibit of home-made gear of both domestic and foreign hams, QSL cards and ham cartoons, as well as a hamfair were organized.

The meeting ended with a big hamfest with dinner, prizes and award. Some 600 domestic and a great number of foreign amateurs were present.

Among the prominent foreign hams present, we shall mention F9AA, the President of REF; OE9FM; G3FOO; I1ZRS; DJ1AA; DJ1TE; DL1DH; DL3RK; 9S4AJ; 9S4AY, and many others.

It is the belief of Yugoslav amateurs, that such



Here is the author in 1939, when he was signing YU7BJ.

meetings will help towards better understanding and cooperation with the hams throughout the world, as well as to foster partnership and goodwill among human beings everywhere.

Strays

The "Beer Can Vertical" that was described in the November, 1955, *QST* now is used by the Illinois State Police Department. Early in March W9EDH, and W9ZJZ, constructed an antenna mast out of 77 cans and erected it on top of the state police building. The *Chicago Daily Tribune* recently gave front-page recognition to the antenna, not only devoting a half column to its description and operation, but also running a photograph showing W9EDH and W9ZJZ in-

specting the base insulator fashioned from a ginger ale bottle mounted in a coffee can. The beer-can job was constructed for use with the state police 700-watt transmitter and has already withstood winds sufficiently strong to bring down display signs and do considerable property damage. Total height of the 77 cans is 39 feet. No info was supplied on the source of the cans.

Author of the news story was W9GAS, a member of the *Tribune* staff.

»

Amateur radio, seen as a "working concept" of brotherhood, was the theme of the intermission program of the Schlitz Saturday Night Theatre on February 11. As its salute to World Brotherhood Week, the sponsors presented W9GZR, W9GER, W9RZY, W9ONY, and W9RUJ, (seated) shown here with Jack Brand, announcer (second from right), and Maurice Terry, regional director of the National Conference of Christians and Jews (right). W9RUJ, whose station is shown, presented a transcribed QSO with W2ZXM/MM, "Captain Stay-put" of the *Flying Enterprise*. The show, seen by some 2 million viewers, was a rare public relations opportunity



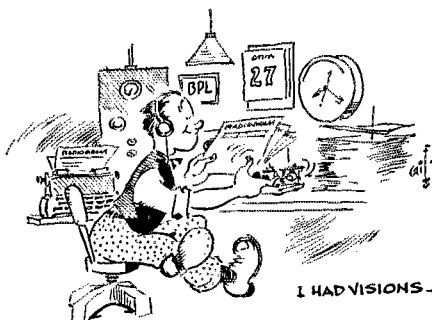
Anyway, It's Free!

BY JOHN BRAWLEY,* WØGYZ

AT THE OFFICE where I work none of the people are hams and the other day when the subject of radio came up, I was the center of considerable interest as I explained ham radio to them. I am not usually the center of interest and in my excitement I may have overdone things a bit. At any rate, things didn't work out exactly as I described them and I find myself in something of a pickle.

It all started when, as I said, the subject of ham radio came up. I believe it may not have come up of its own accord. I may have pushed it a bit. I may have pushed it a bit too far, as a matter of fact. One fellow asked me what in the world hams did and I said they talked to people all over the world. He said that sounded out of this world to him and I inferred that we were working on that, too. Then he asked me what did they talk about. He sort of had me there because I couldn't very well tell him they said, "Well, OM, the rig here is a pair of T-40s in the final with an input of 100 watts, so QRU now and 73 and hope to CU agn soon and if you hear me on give me a call and I'll do the same here so best 73 and best of luck and DX and 73s and, by the way, the wx here is fair and warmer so 73 and DX and best of luck and I'll be seeing you agn soon I hope so 73 and SK and what say now?" so I said we had a thing called "radio relay" whereby one could send a message free of charge to any point he desired by merely starting a sort of chain reaction going.

Well, they all seemed so amazed and impressed by my sending messages all over the world free of charge that I may have, in my enthusiasm, expanded a bit and let things get out of hand. At one point I got so worked up that I, myself, had visions of a ham sitting at his operating desk casually shooting messages right and left while a



group of laymen watched in amazement and awe. At about this point one of the fellows asked me how one would get a message to, say, Honolulu. This is where I began to get in too deep. I inferred

* 815 January Ave., Ferguson 21, Mo.

that Honolulu was for purposes of message handling practically in my back yard. "Honolulu!" I said, with a gesture to denote its insignificance. "Honolulu is nothing. Honolulu is like shouting out the window. We use Honolulu merely for a relay point —" At this point this fellow interrupted me. "As it happens," he said, "I just came back from Honolulu a few weeks ago and have a good friend there. I'd like to send him a message." This, you'll have to admit, was a dirty trick. I tried to wriggle out gracefully. "Well, actually," I began, "you have to have an address —" "Just happen to have his address here," he said. "Telephone number is also —" "Just happen to have his telephone number, too," he said as he started writing out the message.

That more or less ended the conversation. I sort of lost my enthusiasm and everybody went back to work after saying they all wanted to see the answer I got to the message.

Hello-o-o-o-o, Honolulu

That night I waited until about 1 A.M. before I started trying to get the message out, hoping in this way to avoid some of the QRM. I started out by boldly calling "CQ KH6." After a few hours of this I gave up. The only answer I had gotten was a weak W2 who said, when I went back to him, that he was sorry but he didn't hear me say "CQ KH6" but would I please stand by while he changed antennas and give him another report. I said, "Negative, I'm sorry but I have a rush message to get out to KH6 so I'll CUL." He said, "Tx a lot, OM, ur sigs are now 30 DB over R9 and vy FB, so QRX now while I change to the other antenna." I said, "Negative, I'm sorry, OM, but I have a rush message to get out to KH6, so I'll CUL." He said, "Sorry, OM, QRM got u that time. QRX and I'll change to the other antenna." As far as I know, the other antenna didn't work.

About 4 A.M., while tuning the low end of 20, I suddenly ran across a KH6 calling "CQ DX" and coming in like a local. Happy at such a stroke of good luck, I shifted down near his frequency, peaked up the rig and got set to call him. After about 20 minutes he stood by and I gave him a snappy call. When I stood by and listened he was madly calling "CQ DX" again. I kept calling him for about 2 hours before finally deciding that what is DX to one person is not necessarily DX to another. Or perhaps his receiver wasn't working.

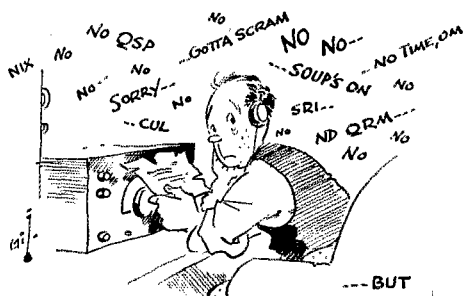
This experience chilled the remainder of my enthusiasm but I still had the message in front of me and, since it was growing older by the minute, I decided to give it to a W6 and trust to QSP. Hooking a W6 was no problem. The band was full of them and right away I contacted

one on fone. We got along FB until I mentioned the QSP and then he said he was sorry but my signal had begun to fade badly so maybe we could hook up again some time when condx weren't so lousy so thanks again for the call and 73 and see you around. The next one was just as definite but not quite so panicky. "Sorry," he said, "but there's a big hill to the west of me and besides I don't schedule any KH6s any more so 73 and I'll see you around."

At this point I gave up and went to bed but the next night I was back at it again. After a few days I had so many reasons why stations couldn't QSP that I began cataloging them. One of the most interesting was a W7 whom I had hooked on c.w. The QRM was pretty rough and I didn't get his excuse right away so I asked him again if he would QSP Hawaii. When he came back, all he said was, "No, no, no, no, no, no, dah di di di dah, no, no, no, 73 es CUL SK."

One day I actually almost got the message out. I had hooked a W6 who runs a KW on fone and schedules the Pacific regularly. By way of a starter I took a couple of messages from him (I still have them, incidentally) before I mentioned mine. When I asked him to take my Honolulu

message he said, "Sure, OM, go right ahead." I pulled myself together and gave him the message but then when I stood by I didn't hear him any more. I called and called, trying to find out if he had copied me, but I guess the QRMary got me.



I haven't given up yet. Since I have been trying to get rid of this message the fellow who wrote it has sent and received two letters by regular mail to his friend in Honolulu. I'm not the center of interest at the office any more and there have been certain remarks made, but I am determined to show 'em. Only thing is I'll have to hurry. The message is beginning to fade with age.

Strays

A recent issue of *Popular Science Monthly* reports that Prof. George A. Miller of Harvard has found that seven of anything is the maximum load the brain can handle. Men have difficulty remembering more than seven items, or judging more than seven degrees of magnitude, according to Prof. Miller. Is that why some of us have so much trouble getting (or giving) a valid RST report?

You fellows who have pioneered in ham radio SSB can pop another vest button. The U. S. Navy has now specified that any medium and high frequency communications equipment pro-

cured must have single-sideband capability, and the Navy plans to introduce some single-sideband equipment to the fleet in 1956.

More on SSB. DL4YU issues a plea to those on SSB to come up on 10 and 15 meters and do a little DXing. The frequencies of 21,440 and 28,650 kc., upper sideband, are suggested as meeting places.

This quotation comes from KN6OFT, and is reproduced without comment: "My girl's bathtub has a filter on it and she gets out nice and clean."

KH6KS tries his new license plate on for size with an assist from KH6AED, SCM for Hawaii, who drafted the original bill which passed the legislature essentially intact. Considerable credit is also due KH6ARE, and KH6ASV who helped materially in presenting the bill.

Charles Carpentier (center), Secretary of State, hands out the first call letter license plates to Illinois amateurs. Present at the happy occasion were: (l. to r.) Ladd J. Smach, Alex K. Scherer, Tom G. Scese, and William J. Halligan, jr., standing in for his father.





Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., 'Phone

About Club Scores. In the Sweepstakes report (club comparisons next month) we show the number of entries contributing to a club total in order to show *how well* each club got the whole gang out. In any activity, the typical score within a club group can be worked out to serve as a local barometer of the general activity of the members. The activities manager in the club can use this in connection with Incentive Awards which are sometimes given for bettering one's previous year's score, for the best score in the given activity, for the most progress over one's individual (past) score attainment, etc.

To publish the number of participants in each club in *all* contests would probably in some cases unduly credit club size alone as a factor. This number doesn't necessarily mean that one club or the other does a better job usually; it will sometimes indicate merely that a club had a "better territory" or more stations in the particular geographical area to work. This factor is especially important in v.h.f. contest considerations. We shall of course show the numbers of participants out on the June Field Day where there are no prizes. ARRL official Club and Section Award Certifications also take into account that radio propagation conditions beyond one's immediate area are subject to considerable variations. One may not assume north-south, east-west propagation conditions equally favorable to all contestants in *widely separated areas* at the same time without error. In the FD, coming up next month, interested clubs that select a special adversary would do well, we think, to work out any private equalizing factors desired after study of their unique expected differences in size or location or manner of participation.

Kudos for Traffic Success. Great credit should go to NCS who keep net sessions going week after week throughout the nation. The Net Control is a key position. Net managers and NCS are responsible for efficient, ordered control of operations. By phone-c.w. net liaisons within one's section and to sections throughout the nation via ARRL NTS, the netters swiftly and accurately move traffic to all points. Also to the RMs and PAMs who are the net managers should go a full measure of praise for moving traffic efficiently as a teamwork proposition. In W0SCT's bulletin, *The Prairie Dog's S-S-S-Barks*, W0EXX reports hearing a spontaneous compliment to the So. Dak. Net: "If you have traffic, get it on there. . . . They really handle it. . . . you don't have to do a lot of waiting 'round." The new ARRL Net Directory in a

registration of 394 nets shows 202 dedicated to traffic work, average net sessions 48 minutes per session. Kudos to all who support this activity which spells out our traffic service.

A-1 Operator Club. Here's one award certification that is based on spontaneous consideration by fellow amateurs of general keying or voice operating technique, procedure, copying ability and courtesy-and-judgment exercised. Each of the four groupings requires at least 15 of a possible 25 points to warrant a nomination, which can come only from those already A-1 members. To *ask* for a nomination of course automatically voids the possibility of making the grade. Even if an operator shows courtesy in other ways, this would not be considered good judgment. For those interested we recommend reading *Operating an Amateur Radio Station*. While technical perfection in operating is stressed in the first three factors, a recent nomination letter may best show that it is in the department of courtesy and helpfulness and humility that some who would otherwise be nominated are passed over.

"This amateur award only should be conferred where earned in every sense of the spirit exemplifying the best things we stand for. A technically good installation can in part be purchased over the counter but it is in its use that one uncovers the *real* amateur operator . . . a willingness to assist those who need assistance—to relay when things get tough—a friendly hand to the newcomer (is needed). Besides the where-can-I-help-best spirit that counts not the cost, one seeks to find the spirit of the ham that can himself listen to justified suggestions or correction of errors. In receiving a bit of constructive criticism one has to put aside his self-sufficiency (gee, we *can't always* be right)! To be the brunt of a joke and able to take it on the chin and come up with a smile—you would be surprised to see how far you could see a smile over the mike or key."

—W2ACY

Biggest BPL-Card Collection? Since Stan Surber, W9NZZ, started to maintain regular amateur traffic circuits to the Arctic outposts in November 1950 he has totalled (to February) some 43,465 traffic points and received some 59 BPL cards! It should be added that his word count in these messages would compare quite favorably with any other BPLers total. His skeds have been consistent for five years without a break. After some sixty consecutive months of this brass pounding, Stan speaks of the upturn in interesting traffic that starts with the spring

air lift and changes in personnel around April first! One of the longest messages ever handled in the annals of amateur radio comprises the full text of an Arctic story appearing in *Male Magazine*. His traffic for people is largely to points with which no other forms of personal communications are available. As to BPLs, it should be recorded that huge collections are also on hand at W3CUL, W4PL, W6KYV, W7BA, W9DO, W0BDR, W0CPI, W0SCA and others. The devoted service to the families represented, to the public interest and to our hobby, we conceive one of the finest examples — the BPL cards a token of the constancy with which this self-assigned problem for amateur communications has been carried through.

Got Your WAS? There's a great challenge in "Working all States" and a thrill in final attainment of same. To let you share with us some of the romance, we've set down some random remarks noted in the current processing of these bundles of cards. Some WN's are working all 48 states well within their WN-year; other packages have cards that show collections started 25 or 30 years back. Perhaps it's best for us to let quotes tell the story.

"Worked like mad but really enjoyed it. Learned a lot about the best time of day to contact different states." — W9HCN. "Some time finding the cards. The kids played havoc with my QSLs." — W3LSG. "Finally got N. Dak. to complete 48." — W7PJA. "For two and one half years have been looking for Utah — it took 2800 QSOs. Then worked three in a row!" — W8ILC. "Got my WAS in six months on 40 and 15 with a Viking Adventurer and an NC 300." — KN0CER. "Had trouble getting N. H. and S. C.; had to work ten Ore. stations to get one card." — VE3DN. "At long last — It took me two years. Postage for safe return of my treasured cards." — W7VGQ. "A real thrill it will be to hang this in a very prominent place in my shack." — KN5BGT. "Glad somebody sent a DX-pedition up there (Vt.). I needed it." — W1YZA/1. "Took me 30 years but by golly I made it. THE BIG 48. Please send one of those coveted certificates." — W1ARR. "Note the only Arizona QSL I ever did get." — W4KMF/7.

Here are some simple rules to follow in sending in your WAS submission: (1) Arrange your QSLs *alphabetically by states*. (2) See that you have complied with all award requirements, page 6 of *Operating an Amateur Radio Station*. (3) Enclose return postage. The same amount used for sending them to us will bring them back to you. One chap (for good measure) sent 57 cards, including Canada, T.H., P.R. etc.; 48 only are required. The District of Columbia can count for Maryland. *F. E. H.*

DIRECTIONAL CQ, KC4USA CALLING

March, 1956 marked the reactivation of KC4USA after some years of silence. This was the original call assigned to Little America on Rear Admiral Byrd's 1928 expedition. Operation DEEPFREEZE in support of the United States Scientific Participation in the International Geophysical Year on Antarctica has now established bases and laboratories on that continent as agreed among the participating nations.

K4GFR, Staff Communications Officer for Operation DEEPFREEZE writes, "Task Force Forty Three, under the command of Rear Admiral George Dufek has completed its task of setting up buildings to house the construction personnel and make the wintering over party self-sufficient to meet the icing conditions of the imminent Antarctic winter.

"Little America V is located on the Ross Barrier Ice, just off Kainan Bay. The communications center building

which houses KC4USA was put up under high priority, so may be expected to start operations first.

"Since the work at McMurdo Sound proceeded under somewhat greater difficulties than at Little America, KC4USA should be heard on the air ahead of KC4USV.

"In the near future you can expect to hear Dube, Ramsden or Marino, W5GOP calling CQ (Directional) from KC4USA. Your assistance in establishing contact and passing traffic if you are in the locality being called will be much appreciated. Time will be important, so if you hear KC4USA working a station allow him to maintain a clear channel to pass his traffic.

"In the latter part of March, you should hear your old friend Garrett, Montgomery or Chaudoin calling CQ (Directional) from KC4USV. Both of these stations will be working with a Collins KWS-1 and a 75A-4 receiver, capable of c.w., voice and s.s.b. Other operators will be on the air from these two stations, and will identify themselves when working the station.

"Since these operators are in the best position to control the type of desired communications, it is hoped that all amateurs will assist in getting their directional CQ to some point near or at one of the Wintering Over Members' homes, and avoid blocking any channel they establish. Operators at both KC4USA and KC4USV will be supplied with lists of amateur stations, clubs, and amateur radio relay nets that have offered their services in handling traffic. Based on working conditions, traffic loads and the degree of interference experienced, KC4USA and KC4USV will establish working schedules with points closest to traffic addresses.

"During the stay of the ships in Antarctica, it was observed that atmospheric phenomena limited the communication time severely in the various frequency bands. Recognizing the world wide amateur radio interest in Dging Antarctica, both of these stations will strive to satisfy these interests. The men wintering over in Antarctica, will, however, recognize that amateur communications will be the mainstay of communications between their families, and will devote a major part of their working time to passing traffic and establishing schedules to permit personal contacts to be carried on.

CQ from KC4USA Little America, Antarctica, or from KC4USV U.S. Naval Air Operating Facility McMurdo Sound, Antarctica. I read you clear OM — come on in please because we all are waiting to work you!

KC4USA's first QSO upon reactivation was apparently with W6JHB on 20-meter phone March 16th, and a KC4USA operator advised W6WLY March 25th that he was their first 7-Mc. c.w. contact. Many other reports of two-way work with Little America are reaching ARRL as we go to press.

THIRD ANNIVERSARY RADIOTELETYPE SS

The following *claimed scores* are reported by the RTTY Society of Southern California for all logs received up to March 7th. The operating activity was sponsored in mid-February. The most ARRL sections were worked by VE7KX, W0BP and W2PGB, VE7KX hitting the new high of 32. The listings below indicate call, number of sections worked, and score:

VE7KX.....	32	3968	W1BDI.....	18	1026
W3PYW.....	26	3744	W1WEW.....	15	630
W2PBG.....	27	3402	W1FDL.....	13	520
W0BP.....	27	3240	W3MHD.....	12	468
W2JAV.....	25	2475	W7CSC.....	12	468
W6MTJ.....	20	2420	W1AW.....	13	377
W9OCV.....	24	2400	W9ZBK.....	11	330
W6OWP.....	22	2376	VE3BAD.....	10	260
W9TCJ.....	21	1848	W2PAT.....	9	234
W2TKO.....	23	1748	W1BGW.....	8	208
W6AEE.....	22	1672	W9OKS.....	8	176
W2RTW.....	20	1160	W3NQC.....	7	140
W0WRO.....	16	1092	W6MXJ.....	6	84
			W6VPC.....	4	72

Exchange of message preambles as in the ARRL SS, at a point for each when successfully received for, made a possible 2 points per station per band the basis for scoring in this 1800 Fri. to 2400 Sat. RTTY activity.

ARRL section winners will receive certificates from the Society. All reporters will be mentioned with the final results in the Society's publication *RTTY*.



You can do almost anything with statistics. Any statistician can tell you this. We aren't statisticians, but we have learned it from experience. Once a year we ask each Emergency Coordinator in the AREC to submit a detailed report of the status of his AREC organization. In previous years, we included this report form with the SET Bulletin, along with the SET report form, and were rewarded with about a ten per cent return.

In 1955, we changed our tactics. The EC Annual Report form went out with a separate letter of transmittal some time after the SET Bulletin was issued. In due time, back came over 400 reports, more than twice as many as reported for 1954. With much chortling and cackling, we undertook the somewhat fatiguing task of reducing the data to meaningful conclusions.

The first thing that was apparent was that either our previous estimates based on a 10% return were greatly in error (which we kept harping might be the case, you will remember), or our AREC fortunes had experienced a decided drop from 1954 to 1955. Not only do we prefer to believe the former, but the amount of correspondence received, along with other expressions of interest in AREC organization gleaned throughout the year, make it extremely unlikely that we have suffered any set-back in organization. So let's call the new figures a revision of estimates on a more conservative basis arrived at through better accuracy.

Four hundred ECs reported on behalf of 6853 AREC members. Based on a simple proportion, we then estimate our total AREC strength at 29,120 members. 75% of them in the status of "full" members, meaning that they take an active part of AREC doings locally. Sixty per cent have agreements with Red Cross, and 85% are included in local civil defense plans. RACES plans in the 400 amount to 136, and RACES operators of the 6852 AREC members total 2620, or about 38%. Most of our AREC members operate on 3.5 Mc. c.w. and 3.8 Mc. phone, with 28 Mc., 7 Mc., 144 Mc. and 50 Mc. following in that order. A little over 35% of the AREC members operate mobile, 60% on ten meters, 48% on 75-80 meters, 23% on two meters, six per cent on six meters and 5% on "other bands" (1.8, 7, 14 and 21 Mc.).

At 0200 on New Year's Day, 1956, W3QVW, on his way home, came upon a three-car pile up. At the time, he was in contact with another amateur. Investigating the accident, W3QVW discovered that one of the accident victims was bleeding badly. Via amateur radio, an ambulance was called and the victim was transported promptly to a hospital, where it is reported he will live. Nice going, W3QVW! Also, kudos to the other amateur, who was not identified in the report.

On January 7th, communication was practically non-existent on Prince Edward Island, Canada, due to icing and flooding conditions. Amateurs filled the breach as usual. VE1ZM set up his transmitter, receiver and an emergency

generator at Summerside and made contact with VE1FQ in Halifax. The following day, VE1KZ in Charlottetown got his power, was contacted by VE1GR/m who told him the telephone company needed contact with Summerside. VE1ZM was then contacted and much official traffic was passed asking for equipment and supplies for the stricken area, train information, welfare of individuals, etc. VE1BZ was active also in this work. Later, VE1WA took his 150-watt transmitter to Summerside and set it up at the telephone company, while VE1ZM took his mobile equipment to the RCAF airport. VE1FX served as relay when conditions made direct contact between stations in the affected area impossible. VE1ACL spelled some of the operation between Summerside, Charlottetown and Alberton.

On January 14th, VE1ZM took his 400-watt transmitter to Alberton and commenced relaying traffic from VE1WA in Summerside and VE1s ACL, KZ and IA in Charlottetown, as telephone communication continued to be unavailable. The circuit was still in operation on January 29th, when this report was made by VE1KZ. Others who assisted were VE1s OH GR PE AC and CO.

W6USY was instrumental, on February 12th, in rescuing and obtaining prompt medical aid to an injured man via amateur radio. The man was injured on Waterman Mountain in a toboggan accident, suffering a broken back. W6USY offered his panel truck to transport him to town for medical aid. On the way he put out an emergency call on 10 meters and was answered by W6NSV/m. Although contact was not solid, apparently W6NSV got the message, because a doctor was waiting at the man's home when they arrived.

Several tornadoes struck in Northern Alabama, putting the Alabama Emergency Net P in emergency session from 2145 CST Feb. 17th to 0140 CST Feb. 18th. Welfare messages were handled and news of the extent of the damage was sent out as all telephone lines into the area were down. W4s CEF, UHA and K4AOZ served as net controls, and these stations participated: W4s WRU VRY DGH RNX ZSH MEP OR YXZ HHG HON WOG EWB VVT HKE BFL COD HPE ZUP AVX YPC YAI EVD WXM VRI GCV NIQ FCW CSA ARG DEG MEB DDH GOV; K4s DEU COT GKD CTC; W6s DAT BEV AHR; W9PVQ. — W4TKL, SEC Alabama.

The AREC of Belleville, Ill., performed emergency service on February 25th when a tornado hit St. Clair County about 0030 that date, doing considerable damage in the town of Summerfield. W9PIA/m was the first AREC mobile to reach Summerfield, and W9BA and W9TCX in Belleville served as outlets. Later the following also took part in the operation: W9s NAW RDC ATU RQR Ewu BAE, K9AVC and W5IOH/9. — W9BA, EC St. Clair Co., Ill.

On Feb. 6, amateurs in Tarrant County, Texas, were called upon to assist in the search for some missing fliers from a crashed B-36 bomber. Mobile units moved out at 2030 CST to establish a relay system between search control at Argyle and Fort Worth. Shortly after midnight twelve additional mobiles established an efficient network between the various control points at Roanoke, Argyle, Grapevine and Lewisville. An all night search was fruitless, and CAP took over the search from the air at sunup.

Wednesday morning (Feb. 8th) the search was confined entirely to the ground by bad weather. W5PEC set up a portable rig at Convoir tower and directed mobiles W5s NVJ GIS BNG UXY and K5ASZ in coordinating the search parties. K5ASZ, the nearest mobile, was dispatched promptly to the scene when one of the fliers was found (dead) on a farm near Roanoke, and was able to provide vital communi-

The AREC of Dade County, Fla., held a mock plane crash drill on Feb. 19th, 1956. Amateur mobiles and planes, all searching for the wreckage, were kept in contact by amateur radio. Here's W4IYT/m operating portable/mobile at Tamiami Airport, with Andy himself at the mike. Other amateurs are K4AEE (white hair) and K4ENN (left). The Sheriff was very much impressed with the efficiency of the AREC.



QST for

cation for officials investigating. The other flier was also found dead near the same place, and again K5ASZ supplied immediate communication from the field. W5NVJ acted as relay and control station in the field with W5s BNG GIS and UXY assisting. Other amateurs participating from mobiles or fixed stations were W5s ATR DFB HZF KJI LBL ADR TGH WTP OWP OSV BUN; K5DFD. — *W5DFB, NCS Tarrant County Disaster Control Net.*

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Amateurs over a wide area in West Texas and Oklahoma effectively demonstrated the value of an emergency network by gathering and reporting election returns for the Canadian River Municipal Water Authority on November 8th for tabulation and publication. Results from all the nine cities involved were reported by 2015. Newspapers and broadcast stations in the area gave the participating amateurs and network full credit for a job well done. Stations participating were: W5WBY, NFO, SMK, YPI, RP, NEW, ILA, TWO, BFK, YIB and PML. — *W5RRM, SCM Northern Texas.*

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Just to prove the old saw that there is nothing new under the sun, nine amateur groups reported activity in the March of Dimes in January, most of them thinking they were doing something new and different. A worthwhile AREC activity, just the same, deserving summarization herewith:

Milwaukee's AREC unit conducted its drive on January 17th. The Milwaukee Radio Amateur Club and the West Allis Radio Amateur Club cooperated, with Milwaukee EC W9RUF coordinating the entire operation. Headquarters were established at the Milwaukee auditorium, from whence mobiles were controlled on 10 and 6 meters. Thirty-six amateurs participated, accumulating over 2100 miles of travel to collect \$9,500 from TV viewers who phoned in pledges. The amateurs were in action for 17 of the 23 hours of the show, making collections at 257 of the 353 places they visited.

The occasion in Portland was a parade in which ex-Marines each took a step for each dime donated to the cause. The Salem Amateur Radio Club was requested to furnish communication for the parade. Starting the morning of January 19th, W7UIU and W7UGQ operated mobile with W7ERT and W7TMF at fixed stations. On the following two days, Portland amateurs took over. On Friday, W7s QKU and HDN operated fixed while W7OGI arranged for mobiles W7s PFW AEF and SZS to accompany the paraders. On Saturday W7PPQ took over the escort to Portland city limits, where W7JGJ and W7QWE continued the escort to downtown Portland. W7OUS helped locate a record of the Marine Hymn for the March of Dimes center. Excellent publicity was afforded the amateurs' part by newspapers and radio stations.

Northern Texas SCM W5RRM has consolidated reports of four groups who provided communications for the March of Dimes drive in his section. We summarize his report herewith:

In Plainview the Club set up a control at KVOP and dispatched 75-meter mobile units to pick up contributions. Mobiles participating were W5s JKL NEW YNL VQO QAP EAU RGU.

A joint Teletelthon for Odessa and Midland was conducted over KMLD, Marine Reserves from both cities started marching at 0830 on the 21st, completing the march by 1800. The Midland and Odessa Clubs furnished communications for their respective Marine units, handling approximately 1103 messages. From 0930 on the 21st to 1600 the following day, 25 members of the Odessa Club furnished 11 mobile units for collecting donations, driving over 1000 miles and making some 1200 collections totalling \$8,450 of \$9,503 pledged.

In the Abilene area W5QA was set up as control station at KRBC-TV with W8ESF, KN5BKH and W5CYL as operators. Telephone numbers for participating towns in the surrounding area were listed on KRBC-TV and donations were relayed by amateur radio to the control station to be flashed on the screen by KRBC-TV. From 1930 to 0300 246 messages were handled. Participating: W5s AHC LOS ACK SFA KOR WNK ADR YDQ SMK YTK and ANL.

The Lubbock club operated on 10 meters from 2045 on the 28th until 1000 the following day with detailed advanced planning and assignments under the direction of NGX RP ZOK and BFK. Club station W5WIH was located at the fairgrounds dispatching mobile units by districts through-

out the city. The operation was carried through efficiently with approximately 40 operators manning about 15 mobiles and the fixed station in shifts.

In Omaha, Nebr., the Ak-Sar-Ben Radio Club on January 26th supplied a base station controlling 12 mobiles from City Hall. Excellent publicity was given to the preparation and the event itself by newspapers and TV. At the control station were W0s QMD NMN NKG NAG FQB and K9A1S. Mobiles included W0s UIO AEM CQX AQJ JJK QMIV YMU PHW PIZ and SPE.

In Johnson County, Kansas, amateurs set up stations at March of Dimes headquarters and at Red Cross headquarters on January 21st. When donations were telephoned in, name and address of donor was given to the March of Dimes Headquarters setup, who relayed it by radio to Red Cross Headquarters, from whence mobiles were dispatched by club station W0ERI to pick up the donations. Participants included W0s LPA UQV CLA IPQ QYP OYV DEL WJC GLN and K0CFI.

The Cumberland Valley Amateur Radio Club of Chambersburg, Pa., set up a station at the telephone company to dispatch mobiles to collect donations as they were telephoned in. Almost six thousand dollars were collected by the amateur mobiles consisting of W0s RLH ZQU QCU JKQ. Assisting in mobiles were KN2PBT and W3NXX. Operating from fixed stations were W0s ACH and DPC. EC W3DPC says that the operation accomplished three objectives: (1) tested emergency gear; (2) gave publicity to the radio club; and (3) performed a public service.

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Eighteen SEC reports were received representing 5745 AREC members for January. This is a slight improvement over any previous January, so the year-beginning is encouraging. Sections reported: Ind., So. Texas, Los A., Mo., N. Dak., N. Y. C., W. N. Y., Tenn., Vt., Minn., San Joaquin Valley, Santa Barbara, Ala., Wis., Wash., Santa Clara Valley, Md.-Del.-D. C., Montana. How about the rest of the sections?

RACES News

A recent check with FCDA indicates that 37 states now have FCDA-approved RACES plans. In addition, 450 local RACES plans have passed FCDA approval. Additional RACES plans continue to pour into FCDA headquarters. With a little additional help at FCDA (see April *QST RACES News*) there is some promise of increased attention to RACES details at that level.

The RACES plan for FCDA Region 6 has now been approved. This region comprises the states of Colorado, Wyoming, Nebraska, Kansas and Missouri, and has its headquarters in Denver. We understand the plan was ramrodded by Gene Stewart, W0WBC, Region Six's Assistant Communications Officer.

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One of the few states still without a RACES plan, Indiana is definitely making plans to connect its five local RACES authorizations together into a statewide plan. At a recent meeting of the Indiana Radio Club Council in West Lafayette, Ind., G. H. Echeibarger, state civil defense director, explained that each of the state's six areas would require a radio officer, and that local plans subsequently approved would be subject to rules set forth in the state plan. However, RACES plans already approved would not be affected.

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New York State now has a plan whereby radioactive fallout patterns are distributed throughout the state by amateur radio. The U. S. Weather Bureau originates this information twice daily, teletypes it to State CD Headquarters in New York City, whence it goes by radio to W2KEB, who operates the "fan out" to ten stations in the state situated geographically for the best possible coverage. Receivers have been provided so each local civil defense office may listen if it wants to get the reports direct. The entire transmission takes something less than ten minutes. Such a network would prove invaluable in the event of attack if normal means of communications were lacking, as they certainly would be. Stations participating are: Binghamton — K2IYP and K2GVM; Brooklyn — W2KQL; Catskill — W2NOC; East Aurora — K2LJN; Hudson Falls — K2ACA and W2FEM; Oneonta — W2QHL; Rochester — K2AMZ; Schenectady — K2BSD.

A.R.R.L. ACTIVITIES CALENDAR

May 5th: CP Qualifying Run — W6OWP
 May 14th: CP Qualifying Run — W1AW
 June 1st: CP Qualifying Run — W6OWP
 June 9th-10th: V.I.F. QSO Party
 June 12th: CP Qualifying Run — W1AW
 June 23rd-24th: ARRL Field Day
 July 7th: CP Qualifying Run — W6OWP
 July 18th: CP Qualifying Run — W1AW
 July 21st-22nd: CD QSO Party (c.w.)
 July 28th-29th: CD QSO Party (phone)
 Aug. 3rd: CP Qualifying Run — W6OWP
 Aug. 16th: CP Qualifying Run — W1AW
 Sept. 1st: CP Qualifying Run — W6OWP
 Sept. 13th: Frequency Measuring Test
 Sept. 14th: CP Qualifying Run — W1AW
 Sept. 15th-16th: V.I.F. QSO Party

BRIEFS

Two Oklahoma hams expect to operate in the 1956 Field Day with equipment powered by an Army-surplus hand generator. Anyone for Sloan's Liniment?

This gem was overheard by W1WPR as W6XXX passed a message for ARRL to W1XXX.

W6XXX: "Please send a multitude of DX Contest forms . . ."

W1XXX: "That's very indefinite. Can't you make it for a specific number?"

W6XXX: "Okay, change it to read, 'Please send plenty of DX Contest forms.'"

The frequency of 3905 kc. has been set up as a calling frequency for the convenience of those interested in working Louisiana, or for contacting cities and towns within the state with traffic. During their spare time, Louisiana hams will monitor the frequency. After contact is established, both parties will QSY elsewhere so as to leave the spot free for others.

Via W1TD we hear of this fowl combination: ex-W1ANC is now K4HEN on Duck Avenue, Key West, Fla.

Over 200 hams within a 250-mile radius of Denver competed in the 1955 Rapscot QSL Contest, held from August 31st through November 30th. Top honors were taken by W0UPT, with W0DW second, W0SFO third. Other winners include W5DMO, W6SYA, W0DQN, W0CND, W0QXM, W0QAZ, W5RFF, W0AIN, W0WUY, W7GBY and W0RDN. All were awarded useful equipment prizes donated by manufacturers.

Two corrections should be added to the January Phone CD Party Results on p. 62, last month's QST: W2AEE's five multiplier score of 33,200 points, 166 QSOs, 40 sections was omitted; W3EAN's total should have been shown as 12,090, not 18,330 points. Sorry, fellows.

CODE-PRACTICE STATIONS

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

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

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

W2EZZ, Paul Reynolds, 63 Oswego St., Baldwinville, N. Y.; 3700 kc.; Mon., 1900 EST; 5-15 w.p.m.

W2FW, John Nelson, 915 Sherman St., Schenectady, N. Y.; 1815 kc.; Sat., 1100 EST; beginner's speeds.

W2HNG, Saul Schachet, 135-30 232nd St., Rosedale, L. I., N. Y.; 145.6 Mc.; Mon., 2000 EST; beginner's speeds.

W2NRM, Howard Jack, 12 Beech St., Ramsey, N. J.; 1880 kc., 29.118 Mc.; Mon. through Fri., 1915 EST; intermediate speeds.

K2DXV, Larry Alkoff, 113 Shirley Rd., Syracuse, N. Y.; 3700 kc.; Wed., 1900 EST; Beginner's speeds.

K2HWG, Stanley Werner, 4 May St., Binghamton, N. Y.; 3555 kc.; Mon. through Sunday, 1830 EST; beginner's speeds.

K2HXE, Edward Ewald, 220 Beecher St., Syracuse, N. Y.; 3700 kc.; Fri., 1900 EST; 5-15 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.

K2JKA, Jack Layton, West Red Bank and Barlow, Woodbury, N. J.; 3600 kc.; Mon., Wed., and Fri., 2100 EST; intermediate speeds.

K2KQS, Andrew DeLeo, 205 Lock St., Clyde, N. Y.; 3638 kc.; Thurs., 2100 EST; 8-13 w.p.m.

K2KTK, Richard Pitzeruse, 128 Fulton St., Clyde, N. Y.; 3551 kc.; Mon. and Wed., 2100 EST; 7-10 w.p.m.

W3KWH, Steel City Amateur Radio Club, RD. 5 McMichael Rd., Pittsburgh, Penna.; 29.108 Mc.; Wed., 2000 EST; 5-13-25 w.p.m.

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

W3VEJ, James M. Alcorn, 207½ Longfellow St., Vandergrift, Penna.; 7150 kc.; Mon. and Wed., 1900 EST; 5-15 w.p.m.

W3WWD, Alfred B. Miles, North Keim St., Rte. 18, Pottstown, Penna.; 3555 kc.; Wed., 1900 EST; 5 w.p.m.

W4RUR, for St. Petersburg Amateur Radio Club, E. J. Blatt, 538 16th Ave., So., St. Petersburg, Fla.; 28.050 Mc.; Mon. and Wed., 1930 EST; 6-22 w.p.m.

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

NATIONAL CALLING AND EMERGENCY FREQUENCIES (kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be vacated immediately to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: c.r. — 3835, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

K4CDA, The Chessie Radio Club, C & O Freight Station, Ellerson, Va.; 29.1 Mc.; Mon. and Wed., 1900 EST; intermediate speeds.

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).

W6ODX, Ronald Reed, 11671 San Vicente Blvd., Los Angeles 49, Calif.; 3550 kc.; Mon., Wed., Fri. and Sat., 1830 PST; 19-22 w.p.m.

K6USN, Cmdr. J. M. McCoy, 12th Naval District Reserve Electronics Stn., Bldg. 7, Treasure Island, San Francisco, Calif.; 3590 & 7138 kc.; Mon. through Thurs., 1830 PST; 7½-45 w.p.m.

W7PGB, Frazier Davidson, 198 Cross Place, Eugene, Oregon; 1938 kc.; Mon. through Fri., 1700 PST; intermediate speeds.

W8APC, Sandy Dye, 31 South Algonquin Ave., Columbus, Ohio; 3540 kc.; Mon., 2000 EST; 5-13 w.p.m.

W8STR, Meredith Gayle Bargar, Box 446, Gnadenhuetten, Ohio; 3690 kc.; Mon., Wed., Fri., Sat. and Sun., 1900 EST; 5-10 w.p.m.

W9IRH, John Gohndrone, 135 East 103rd Place, Chicago, Ill.; 3504 kc.; Thurs., 1930 CST; 5-10 w.p.m.

W9KRJ, Ken Moreau, 2206 Riverside Drive, East Gary, Ind.; 1812 kc.; Sun., 1400 EST; intermediate speeds.

W9MHC, George S. Bones, 2320 N. Raynor Ave., Joliet, Ill.; 1823 kc.; Mon. and Wed., 1830 CST; 8-15 w.p.m.

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.

W9ODD, for Radio Amateurs of Marquette University, 625 N. 15th, Milwaukee 3, Wisc.; 29.2 Mc.; Mon., Wed. and Fri., 1930 CST; 4-15 w.p.m.

W9TFA/9, for Hamfesters Radio Club, 159th and Indian Ave., South Holland, Ill.; 3504 kc.; Thurs., 1930 CST; 5-10 w.p.m.

W9UCW, Barry Boothe, 312 Larkin Rd., Joliet, Ill.; 1823 kc.; Thurs. and Fri., 1830 CST; 8-15 w.p.m.

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

W0DQL, Herbert Williams Patterson, 3111-12th Ave. South, Minneapolis 7, Minn.; 3690 kc.; Sun., 1700 CST; 13 w.p.m.

W0LGG, Bertha V. Willits, 108 N. 19th St., Marshalltown, Iowa; 3695 kc.; Mon. through Sun., 1800 CST; 5-13 w.p.m. Same schedule alternated with W0EGQ, Bob McMullin, Route 1, Leigh, Nebr., with text from *The Braille Technical Press*.

W0SEF, Harold C. Lantow, 1614-48th St., Des Moines, Iowa; 3728 kc.; Mon. through Fri., 2100 CST; intermediate speeds.

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One of our most faithful Code-Practice stations is W4RUR, Ed Blatt of Sarasota, Florida, who, although confined to his home with arthritis has been thus actively engaged since June, 1952. In order to facilitate his method of code-practice, Ed, using a Mon-Key, records the lesson on a tape recorder, utilizes the output from the recorder to operate a relay, which in turn keys the transmitter. At the present he uses a Lyco transmitter, a 32V-2, an NC183D and a three-element beam. W4RUR has proven his ability above and beyond that of a radio amateur, and remains an outstanding asset to the ARRL Code-Practice program.

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 14th at 2130 EDT. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on May 5th at 2100 PDT on 3590 and 7128 kc.

Any person may apply; neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted,

10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions will be made from W1AW each evening at 2130 EDT. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To get sending practice, hook up your own key and buzzer and attempt to send in unison with W1AW.

Date	Subject of Practice Text from March QST
May 4th:	"CQ TR," p. 11
May 8th:	<i>Cheap and Easy S.S.B.</i> , p. 16
May 10th:	<i>Switch to Safety</i> , p. 21
May 16th:	<i>What Value Resistor?</i> , p. 30
May 18th:	<i>A 10-Meter Station for Emergencies</i> , p. 32
May 21st:	<i>A Two-Stage . . . Transmitter</i> , p. 35
May 24th:	<i>V.H.F. Scatter Propagation . . .</i> , p. 43
May 29th:	<i>My Feedline Tunes My Antenna!</i> , p. 49

W1AW SUMMER SCHEDULE

(Effective April 29, 1956)

(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.

Exception: W1AW will be closed from 0100 May 30th to 1300 May 31st in observance of Memorial Day.

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, 7080, 14,100, 21,010, 50,900, 145,600 kc.

Phone: 1885, 3945, 7255, 14,280, 21,330, 50,900, 145,600 kc.

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 EDT, 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 May 14 and June 12, instead of the regular code practice, W1AW will transmit a certificate qualifying run.

W1AW GENERAL-CONTACT SCHEDULE

(In Effect April 29, 1956)

W1AW welcomes calls from any amateur station. Starting April 29th, W1AW will listen for calls in accordance with the following time-frequency chart.

Time (EDST)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0900-0100 ¹	.....	.....	3555 ²	.....	3945	7080 ³	.....
1300-1400 ²	.....	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	.....
1500-1600	.....	7080	14,100	7255	14,100	7080	.....
1600-1700	.....	14,280	7080	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 ²	14,100	14,100	7080 ³	14,100	.....
2030-2100	14,280	3555	14,100	14,100	7080	.....	.....
2100-2130 ¹	145.6 Mc.	21,330	145.6 Mc.	50.9 Mc.	21,330	.....	.....
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, 21,330, 28,050 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.

SUPPLEMENT TO NET DIRECTORY

The following list of nets will supplement and correct the listings on page 59, Nov. QST; page 70, Jan. QST; and page 69, March QST. This brings the record up to date as of March 16, 1956. Since these nets were registered subsequent to publication of the cross-indexed Net Directory, use this information to make corrections and additions thereto.

An asterisk (*) indicates a correction from a prior listing in November, January or March QST. The next QST listing of nets will be in the November, 1956, issue, after fall reregistration.

Name of Net	Freq.	Time	Days
Atlantic to Pacific Net (APN)	3540	2130 EST	Mon.-Sat.
	7080	1700 EST	Mon.-Sat.
Coast Guard Auxiliary First District Net	3511	1100 EST	Sun.
Colo. Emergency Net *	3890	0830 MST	Sun.
Colo. Slow Speed Net (CSSN) *	3570	1800 MST	Mon.-Fri.
Dade Emerg. Net (DEN) (Fla.)	29,044	1930 EST	Mon.
Delta 75 Net *	3905	0730 CST	Sun.
East Coast Radioteletype Net	3822	1900 EST	Wed.
Eastern New York Medical Net	147,910	1200 EST	Mon., Wed., Fri.
El Paso Emergency Net	29,640	1930 MST	Mon.
Grand Canyon State Phone Net*	7210	0900 MST	Sun.
Inter-County Net (Miami, Fla.)	29,600	1930 EST	3rd Mon.
Long Island Phone Net	3908	1730 EST	Mon.-Sat.
Midwest RTNET	3624	1600 CST	Sun.
Minn. Junior Net *	3700	1700 CST	Mon.-Fri.
Minn. Section Net *	3595	1830 CST	Mon.-Sat.
		1230 CST	Sat.
Montana State Net	3520	1900 MST	Sun., Tue., Thu.
Mont. State Phone Net	3910	1730 MST	Mon., Wed., Fri.
Nassau Co. (N. Y.) 6 Meter Emerg. Net	50,250	1930 EST	Tue.-Thu.
New Orleans Emerg. Net	3825	0930 CST	Sun.
North Central Phone Net (NCN)	3915	0700 CST	Mon.-Sat.
North Jersey Mobile Radio Club	29,532	1930 EST	2/4 Mon.

North Fork Emerg. Net (Okla.)	3815	1215 CST	Mon.-Sat.
OARS Net (OARSN) (Ore.)	29,200	1930 PST	Daily
Pittsburgh Novice Net (PNN)	7161	1545 EST	Thu.
San Francisco Section Net	145,350	2000 PST	Alt. Mon.
7290 Traffic Net	7290	0900 CST	Mon.-Fri.
		1300 CST	
Sheridan Emerg. Net (Wyo.)	3825	1930 MST	Sun.
Sling Net (SLG)	7150	2100 CST	Wed.
Traffic Hounds Morning Watch	3510	0715 EST	Daily
Upper Peninsula (Mich.) Net	3930	1015 EST	Sun.
Westlake Net (Ohio)	3950	1000 EST	Sun.
Windjammer Net	3948	0800 PST	Daily

TRAFFIC TOPICS

Our traffic statistics for the year 1955 have shown that there is less traffic being handled now than a year or two ago, but there are more amateurs doing it. No doubt the former is due to a decrease in "GI" type traffic, brought about through no fault of ours. Perhaps the continued up-trend in amateurs handling traffic has been brought about by the tendency of NTS to spread the traffic work among all amateurs, including those with limited time or inclination for that kind of activity.

We're not going to bore you with a lot of statistics here. We'll do that in a subsequent Emergency and Traffic Bulletin. The above is just working up to an observation: that we could use a bit more versatility in our traffic operations, and that aiming toward that end would certainly do no harm, even if your main interest in amateur radio lies other than in traffic fun. What kind of versatility? This kind:

- (1) Use break-in operation (see April QST Traffic Topics).
- (2) Construct your station so as to be able to direct a good signal in any direction on any band. Some amateur band will provide effective contact over almost any path. Rapid switching for directional antennas or rotatable arrays should be considered.
- (3) Learn to "copy behind." On c.w., when you start copying words instead of letters, you're in, boy, you're in. If you often get fooled because a word doesn't end the way you think it's going to, you're not copying far enough behind.
- (4) Learn to count words as you copy. You can do this five to a line or ten to a line, or just leave a space every fifth

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for February traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	111	1423	1292	176	3002
W0BDR	37	918	862	2	1819
W9DO	20	722	663	81	1486
W0PZO	6	652	624	17	1293
W2KEB	36	541	487	141	1205
W3W1Q	23	577	540	58	1198
W7PGY	17	522	493	59	1121
W0CPI	6	556	487	69	1118
W7BA	14	544	515	23	1096
W0SCA	19	450	444	2	915
W2KPV	17	402	340	133	892
W8GBF	28	428	410	6	872
W4PJU	7	400	370	30	807
W0GAR	11	384	376	9	780
W6DDE	180	199	373	3	755
W9JQZ	11	364	372	2	749
W0ZWL	7	368	27	311	713
W9NZZ	207	249	3	246	705
W9PFC	242	220	217	1	680
W6GQY	263	80	277	14	634
W0BLI	5	314	295	8	622
W2XN	136	234	206	28	604
W0WVO	5	288	285	3	581
W7VAZ	43	268	243	25	579
K5AOV	13	207	260	6	546
W9MAK	52	248	222	24	546
W1EMG	1	271	223	44	539
W4SHJ	9	266	246	18	539
W3CVEL	155	191	156	35	537
W3WZL	60	216	245	11	532
W4PL	5	268	205	48	526
W9YYG	10	254	245	17	526
W0OFL	9	253	248	5	515
W2RUF	25	248	159	55	510
K4AKP	13	249	222	25	509

Late Reports:

W0ZWL (Jan.)	4	461	33	249	747
KH6QU (Jan.)	.88	213	121	90	512

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
W4DUG	3376	0	0	0	3376
W0YDK	31	975	922	53	1981
W4RFR	26	771	864	107	1768
W4RFR	1535	0	0	0	1535
K3WCO	563	559	0	0	1122
W4OSY	0	525	0	525	1050
K0WBB	96	436	384	26	942
K4CSM	0	344	0	344	688
KH6AJF	47	271	208	63	589
W4OEZ	0	268	268	0	536
K1USA	28	242	225	17	512

Late Reports:

KH6AJF (Dec.)	306	788	566	78	1738
KH6AJF (Jan.)	29	408	357	45	839
KH6QU (Dec.)	.89	315	142	173	719

BPL for 100 or more originations-plus deliveries:

W0OUV	220	W1DWA	120	W1YBH	105
W6GYH	215	K2GHS	119	W7AHV	105
W6BHG	197	K2KIR	116	W0TUS	101
W0N1Y	157	W9SHR	112		
W9KTX	134	W8DAE	111		
W0VTE	128	W0TVI	110		
W4PIM	122	W4HMK	108	W6FFA (Jan.)	107
W9SVZ	121	K2DEM	107	KP8AK (Dec.)	102

More-Than-One-Operator Stations

W9OFR/9206	K4AMC	178	W1AW	113
W4APH	180			

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateur since last month's listing: W7AHV.

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.

or tenth word as you copy. This is very easy and becomes a matter of habit if you practice it a little.

(5) Figure out some kind of a system whereby you can change bands rapidly, especially if you handle any traffic by schedules. There have been many instances in which we have wanted to shift to another band, only to find that the other guy can't operate there, or it would take twenty minutes to make the changeover, or he causes TVI on that band.

Maybe you can add a few more, if you think about it. There are quite a few things you can do to your station, or yourself, to increase your traffic-handling efficiency; and the surprising part is that none of them will hurt you (or your station) one bit in any other amateur radio pursuits that may interest you.

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Transcontinental Phone Net submits the following reports: First Call Area, 20 stations reporting 713 message counts; Second Call Area, 20 stations reporting 778 message counts; Fourth, Ninth and Tenth Call Areas reporting 613 message counts; total traffic, 2104. WISJO has been elected National TCPN Chairman. Other officers are W9SVL, Vice Chairman; and W2KEB, Secretary.

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National Traffic System. There seems to be a developing tendency on the part of NTS organizers to place the blame for organizational defects on the other fellow. In an organization having interdependent parts in which the failure of one part lowers the efficiency of others, how other nets are working is every net manager's business; but it behooves each of us to see that his own setup is perfected before he tries to pin organizational shortcomings on others. He who criticizes should be above criticism. Working together means patient cooperation in effecting improvements, not denunciation. True, for a message to go through the system from Maine to California in one night requires that six nets and the TCC function properly with respect to that message's routing, unless a shortcut or two happens to be convenient. If any one of those relays fails, the message is delayed. Someone (or some net) goofed. Rather than write headquarters a letter suggesting that a certain net manager be "fired," or told to get on the ball, write to the guy himself and make a few suggestions as to what might be done about the situation to improve overall efficiency.

Even more important, be aware of and primarily concerned with the shortcomings of your own organization. None of us is perfect.

February reports:

Net	Sessions	Traffic	Rate	Average	Representation
1RN	25	379	0.82	15.1	92.6%
2RN	25	302	0.53	12.1	100%
3RN	41	273	0.40	8.7	89.4%
RN5	35	563	0.91	16.1	60%
RN6	52	647	0.91	12.4	53.4%
RN7	45	225	—	5.0	31.9%
8RN	46	317	—	6.9	84.8%
9RN	29	948	0.88	32.7	96.6%
TEN	67	1454	—	21.7	69.8%
TRN	45	165	0.36	3.7	84.4%
EAN	22	962	1.20	44.0	96.1%
CAN	21	893	0.90	42.5	100%
PAN	25	1250	0.65	50.0	—
Sections*	5	4194	—	7.6	—
TCC (East)	—	635	—	—	—
TCC (Central)	—	1346	—	—	—
TCC (Pacific)	—	1379	—	—	—

Summary: 1030 Sessions, 15,932 Traffic, FAN 12.2, Record: 1030 Sessions, 15,932 Traffic, 19.1, 100%
 * Sections reporting: 1RN (Ind.); TLGN, Iowa 75 Meter Phone (Ia.); S. Dak. 75 Phone; GSN (Ga.); NYS (N. Y.); M.J.N. MSN & MPN (Minn.); CN (Conn.); AENT, AENP & AENB (Ala.); NTX (Tex.); CVN (Cal.); KYN (Ky.); Tenn. Sectional CW & Tenn. 160 Meter CW; WVN (W. Va.).

Conn., Maine and R. I. attended every 1RN session in February. W2ZRC says 2RN is running itself; he just sits back and collects reports. W3UE is replacing W3NRE as 3RN manager. W4OGG has issued a very interesting RN5 Bulletin, at its end indicating his desire to relinquish the RN5 managership. RN6 certificates have been issued to W6s YLJ BHG USY and K6s EPC DYX. Representation on RN7 from section nets has been low; only Washington and B. C. are represented regularly. Iowa, Kansas and Minnesota were 100% on TEN during February — and that means all 67 sessions! Maritimes hit a record high attendance on TRN in February, but now Quebec is dropping off! CAN is rolling along smoothly, says manager W9DO. PAN Manager W7APF has licked his TVI problem and is working hard again.

Transcontinental Corps. In the Eastern Area, W8UPB is well on the way to filling all vacancies. That 0030 EST spot is a tough one. W0BDR reports for W0SCA for Central Area, while Doc vacations down south. W0KQD submits a really comprehensive report for Pacific Area TCC.

Note that the total of traffic handled on TCC for February was 3360. The Corps is now doing pretty close to a 100% job of handling all NTS inter-area traffic. Here's the present roster (March, 1956): Eastern Area: W1AW W1AYC W1EMG W1NJM W2AEE K2GHS W3BUD W3COK W3GEG W8DSX (SG) W8FYO VE3AJR VE3VZ. Central Area: W0BDR W0SCA W0DQL W0LGG W9DO. Pacific Area: W6ADB W6BPT W6LWP W6VZT W6THI W7DXV K7NBK W0KHQ W0KQD W0PGN K0WBB. These boys and gals deserve a lot of credit for the big job they are doing.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH	264	W3BES	253	G2PL	251
W6AM	290	W9NDA	253	W6SN	251
W4VFR	259	W3GHD	252	W3KT	251
W6RNV	257	W8NBK	252	W0YXO	250
W6MX	256	W8HWG	251	W2AGW	250
P2CK	254	W3JTC	251	L6DJK	250
W8SYG	254			W6DZZ	250

Radiotelephone

P2CK	247	W9RBI	220	W6AM	218
W1FH	237	W1MCW	220	N3TAC	215
W4VFR	236	W1JCY	219	W8GFP	214
Z56BW	231	W1NWO	219	W8HWG	214
W9NDA	221	W3JNN	218	W8GZ	214
		GM3DHD	218		

From February 15, to March 15, 1956 DXCC certificates and endorsements based on postwar contacts with 100 or more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

W8DHC	205	W6GMC	107	W4EJN	103
W78FA	141	W8VTF	107	W6YBI	103
Z51K	118	W8GFB	106	KT1UX	103
VQ5EK	117	HB9CS	106	PA0NIC	103
G3IMY	112	FIAMO	106	KP4DP	102
P2WB	112	SM2BCS	106	W50CS	101
CFICE	111	Z6JA	106	W6HNX	101
G3CCN	110	W2RK	105	W1DHO	100
W9BBU	109	W3WSF	105	W4AVY	100
F3DA	109	VF3KP	104	W5ZZR	100
OH6PE	108	FR7ZA	104	KZ5KA	100
OK1NC	108			SM5VN	100

Radiotelephone

W4TO	114	HB9KU	103	W2SKE	100
SM3BIZ	108	W6BYB	101	W0YFC	100
VQ5EK	106			DL6VM	100

ENDORSEMENTS

W1ME	244	W6NGA	181	W21JU	140
W6ADP	240	W0NLY	180	W9NN	140
W3JTK	211	W4AAU	171	W0VBQ	140
CN8MM	210	G3AAE	171	CR9AH	136
W8LKH	206	W1BLO	170	W1WLW	131
W8RWS	205	W3AXT	170	W3VRJ	130
W3ADZ	200	W6NGO	170	W7PHO	130
W6BUD	200	OZ7BG	170	KZ5DG	130
H1AV	200	CX4CS	163	W4TFB	125
W9FJB	191	CR6AI	161	W1EIO	121
W2GUM	190	KV4AQ	161	W1LHZ	120
W61RU	189	W3GLK	160	W1OJR	120
W4DHz	184	W8AFA	163	F4SGF	120
W61VM	181	W3RNU	150	W1BRK	112
		HB9KU	147		

Radiotelephone

CN8MM	203	W9WHM	140	W9JLH	121
ZL2GX	200	W6SYG	130	DL4BY	120
W3ECR	162	W8ZOK	130	ON4DH	120
W8NGO	142	KZ5DG	127	W1VQC	110
CX4CS	141			E47EM	110

W/VE/VO Call Area and Continental Leaders

W4RPD	241	VE2WV	189	VERAW	160
W4TO	241	VE3QD	210	V6GFP	190
W5ASG	249	VE4XO	118	Z56BW	238
W7AMX	249	VE5QZ	140	444RE	218
VE1HG	159	VE6VK	120	ZL2GX	247
		VE7IC	209		

Radiotelephone

W2BXA	202	VE1CR	120	VE5YE	140
W4HA	191	VE2WW	114	V17ZM	140
W7HIA	185	VE3KF	163	ZL1HY	205
W9A1W	201			OB5AB	170

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Clarence Snyder, W3PYF — SEC, NNT, RM; AXA, PAAL; TEL, EPA nets, 3850 kc, at 1800; AN 3610 kc, at 1900; EPA, 3610 kc, at 1930. Plans are going ahead for a big Pennsylvania picnic to be held at Hershey Park on Aug. 12th. Keep tuned to the PFN or EPA c.w. net for further details. TOL has his new 10-meter ground plane up. ZRQ has taken over as manager of the Anthracite Net and will welcome all new-comers to c.w. traffic-handling on 3610 kc, at 1700, Mon. through Fri. PVY, who did such a bang-up job, had to resign because of business commitments. BUR is leading the NPARC WAS 40-meter Contest. AZV is a new General Class licensee in Sunbury. BHC is sporting a new 700-watt rig. New officers of the SPARK include, FZR, pres.; NJS, vice-pres.; ZMD, treas.; Father Urban, secy. YAZ, Monroe County EC, is trying to keep activity in the 6-meter net for emergency use. The Bucks County RACES plan has been approved. BES has been working DX with a Ranger and Cubical Quad. New officers of the Abington Township ARC are RFI, pres.; OQG, vice-pres.; PDJ, secy.; and RCE, treas. RCE lost his beam to the February high winds but will be back on 20 meters again with his kw. from Warrington. MAC made it 156 countries with his 10-meter contact with F87RT. BAL dropped the "N" from his call. GES is mobile again on 75 and 10 meters with a new home-built rig. The Hilltop Transmitting Assn. is on the air with a new 10-meter beam and a Viking II. CAL and CAK have dropped the "N" from their calls. VXI is back in the Navy. PVY, YAZ, YVY, ZRQ, and YVX are alternating net controls on the AN Net. The Delco Radio Club in Delaware County has reactivated its 10-meter net. YWU has made WAS, DVB made 2nd-class telegraph. The joint Emergency Council composed of representatives from the various York County Amateur Radio Clubs has been very active. PVF is mobile on all bands now with an HW TBS-50D. AXA and the EPA C.W. Net are trying to get a representative in the Williamsport Area. If interested, QNI the net with information. NCSs for the EPA Net include KCG, AXA, QV, and NOK. 3RN representatives include YVX, YUW, NOK, and KCG. The Philmont movie of emergency operations by that club has been making the rounds and has been very well accepted. The Windsor Amateur Radio Club's new officers are QHF, pres.; WN3DEH, vice-pres.; WUY, secy.-treas.; DSR, act. mgr. Meetings are held the 1st Wed. at 8 o'clock at the Towne Pharmacy, 5 Corners, Levittown. The club TVI Committee is starting to roll. Traffic: W3CUL 3002, OK 222, BFF 180, OGD 125, YAZ 108, TEJ 99, DLJ 64, ZSX 59, AXA 45, NF 44, BHC 43, ELI 29, BNR 28, PYF 24, NOK 22, WUE 19, CNO 14, PDJ 11, PVY 9, ZLX 9, ZRQ 9, GCQ 7, ADE 2, BES 2, NQB 2.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, John W. Gore, W3PRL — It is readily apparent in tuning across the 10-meter band that many 10-meter transmitters have been reactivated for DX-hunting as a result of the increased activity resulting from the upswing in the sun-spot cycle. SPL reports that WKG and ENN are conducting Novice classes at the Dover High School for the Kent County Amateur Radio Club. BWT reported that at the Feb. 3rd meeting of the Washington Radio Club ECP discussed and demonstrated "A Successful ARC-5 Transmitter Conversion"; also MOJ gave an impromptu talk on "Voice of America" high-power transmitters. At the Washington Club on Feb. 17th, Rudy, the ex-DL member, showed movies of Field Day and the Gettysburg Hamfest held last fall. The Amalgamated Association of Ozonite Sniffers and the Washington section of the QCWC held a joint meeting and dinner at Olney Inn on Feb. 25th at 6:30 p.m., and 83 members were present. George Sterling, 3DF/IAE, gave a very interesting

talk. The Antietam Radio Association reports FB progress with 16 members in the code classes being conducted by CIQ, CSX, EPV, NHR, NZT, OAY, OXL, RFL, VAM, and YRK. Also the club project of building twenty SWR Bridges is practically completed with six in service with successful results. OXL has now designed a 75-meter vertical, top hat and all, and is anxiously awaiting its erection and results. QCB has returned to the active ranks. BUD reports a new jr. operator, making a total of eight, five girls and three boys. This will explain his partial absence from activity. CVE reports TCRN now has established a relay to KC4USA. Recent TCRN representatives are CUL and 2QDM and the roster now includes nineteen A-1 c.w. operators, including some 60-w.p.m. operators. The West Coast representative is 6PNE. UE reports that ZGN has QNTI M.D.D. several times and helps fill a much-needed gap in Western Maryland. PRL gave a talk at the CARC Feb. 13th on "Matching Receiver Impedances." ZME received his WAS certificate and worked 6 new countries in the DX Test; he now has a total of 47 countries. BUD reports that he is on TCC regularly with 3 weekly schedules. We have been advised as a result of our survey to determine the amateurs in Maryland who intend to apply for the auto call letter license plates that they were installing mobile equipment with the result that there will be increased mobile activity in Maryland. ULI advises that he is working with a ZK41 Klystron for 3300-Mc. gear. N3FAQ hit a high spot in his short two-month career as a Novice when after working 30 states he had an enjoyable QSO with a Hawaii Novice. Traffic: K3WCO 1122, W3CVE 537, WZL 532, UE 400, WV 392, K3WBJ 385, W3BUD 140, PRL 72, PKC 57, UCR 55, COK 33, RV 27, ULI 20, BKE 6, OYX 6.

FIRST DELAWARE QSO PARTY

The Delaware Amateur Radio Club of Wilmington announces its First Delaware QSO Party and invites all amateurs to participate. Delaware hams are urged to work as many out-of-state stations as possible, so that those interested can earn credit toward WAS and the new W-DEL certificate. Here are the details:

- (1) Time: 48-hour period from 9 p.m. EST Friday, May 11th, to 9 p.m. EST Sunday, May 13th.
- (2) No time limit and no power restrictions.
- (3) Scoring: *Delaware stations*: 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian provinces and foreign countries worked during the contest period. *Outside stations*: 5 points for each Delaware station worked and multiply total by the number of counties in Delaware worked during the contest period.
- (4) Credit for contacts with the same station on another band will be given.
- (5) A certificate will be awarded to the highest-scoring station in each state, U. S. Possession, Canadian province and foreign country, and to the highest-scoring station in each Delaware county. In addition, a W-DEL certificate will be sent to any station working all 3 Delaware counties. Party logs showing required data will be accepted in lieu of QSLs.
- (6) Watch 3700, 3905, 7030, 7275, 14,100, 14,250, 21,100, 21,400, 28,100 and 29,520 kc., also 50.3 and 145 Mc. for contest stations.
- (7) General Call: "CQ DEL." Delaware c.w. stations should identify themselves by signing *de DEL (call) K*. Phones say, "Delaware calling."
- (8) Contact information required: Delaware stations send number of QSO, RST or RS and county. All others send number of QSO, RST or RS report, and state, possession, province or country.
- (9) Logs and scores must be postmarked not later than June 1, 1956, and should be sent to the Delaware Amateur Radio Club, c/o C. D. Justis, W3EEB, 315 First Ave., Newport, Delaware.

(Continued on page 94)

Quiz Program for Receivers

A WELL BUILT communications receiver is a rugged and long-lived piece of equipment. About the only parts that need to be replaced after years of service are tubes and electrolytic filter capacitors. With normal care, many older models are still giving the same performance they did when new.

SOMETIMES a good receiver can take an unmerciful beating and still come back for more. We heard recently from an amateur in Connecticut whose S-40B was washed 300 yards downstream in the August, 1955, flood. When found several months later, it was full of mud, gravel, and one very dead fish. He buried the fish, washed out the mud with a garden hose, replaced the speaker, aligned the i.f. stages, and his S-40B is working as good as new.

NATURALLY we are proud of these early models which continue to prove their quality by year-in year-out performance. But we wonder if their owners are aware of recent advances in receiver design and what they are missing by sticking to older gear. Probably the most fundamental change is the adoption of dual conversion with a high first intermediate frequency above 1600 kc. for maximum image rejection and a low second intermediate frequency below 60 kc. for greater selectivity.

WITH the steep side band-pass characteristics of the low second intermediate frequency, the crystal filter is no longer desirable. Variable selectivity is provided by switching different values of resistance and capacitance in the low frequency i.f. circuit and a Tee notch filter rejects unwanted signals. These innovations provide far greater flexibility of control than is possible with a crystal filter or other mechanical device. The application of crystal control to the second conversion oscillator contributes greatly to frequency stability and, in the SX-100 with two crystal oscillator circuits, permits selection of the upper or lower sideband from a switch on the panel.

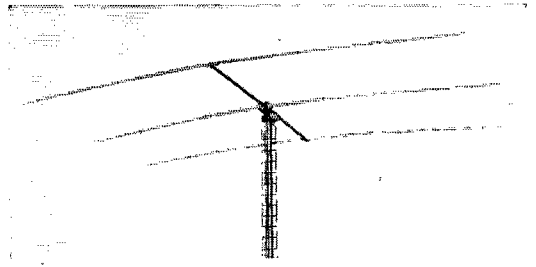
OTHER FEATURES which characterize the truly modern receiver are the use of voltage regulation in all critical circuits, temperature compensation for maximum freedom from drift, and positive gear drive of the tuning condensers to assure absolute accuracy of reset.

ASK YOUR receiver these \$64,000 questions — Can you tune across the ten meter band and hear only the signals that are actually there or is it loaded with images? — Can you use maximum selectivity for CW without unpleasant “ringing” and continual readjustment for receiver drift? — When you tune in SSB stations do they all sound like Mortimer Snerd no matter what you do? — Can you set your dials to a pre-logged figure and know that you are right on frequency?

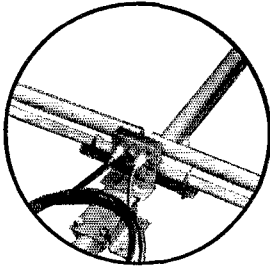
IF YOUR receiver doesn't come up with the right answers, it may be time to make a change and we suggest Hallicrafters SX-100. It does give the right answers.

— Cy Read, W9AA

Birchballing Jr. W. J. Halligan W9AC for **hallicrafters**



**FOR 20, 15 OR 10 METERS —
HIGHER GAIN! LOWER SWR!
RUGGED CONSTRUCTION!**

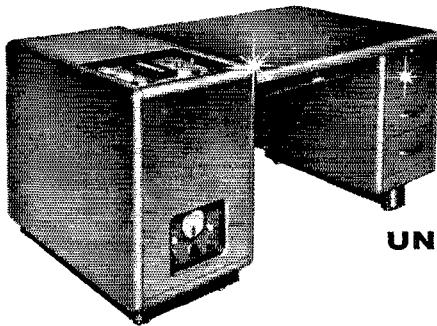


Completely pre-tuned with balun matching sections, these new Semi-Wide Spaced Beams have shown in recent tests that they will outperform all other commercially available pre-tuned beams. No adjustments necessary ... simply assemble, connect your coax feedline and you're ready to go!

- Greater than 9.0 db gain over dipole.
- Pattern is uni-directional, less than 55° beam width.
- Greater than 27 db front-to-back ratio.
- Covers entire 20 meter band with lower than 1.4 to 1 SWR.
- Extra rugged construction — beam clamps eliminate drilling and subsequent weakening of structural elements. Boom is galvanized steel — extra heavy element construction.
- No loading devices needed for flutter dampening or corona discharge.
- Mast arrangement permits stacking of up to three beams.

Cat. No.	Amateur Net
138-420-3	20 meters \$139.50
138-415-3	15 meters 110.00
138-410-3	10 meters 79.50

Complete with 3 element beam, boom, and balun.



**UNMATCHED OPERATING FEATURES!
1000 WATTS AM, CW, OR SSB!**

Available as a self-contained pedestal type unit or with the matching executive type desk top and three drawer pedestal.

Cat. No. 240-1000 Viking Kilowatt Power Amplifier — wired, tested, complete with tubes \$1595.00 Amateur Net

Cat. No. 240-101-1 Matching Accessory Desk Top and three drawer pedestal \$123.50 FOB Corry, Pa.

Powered with authority and designed for ease of operation, the Viking Kilowatt Power Amplifier is truly tomorrow's concept of electronic equipment design. All controls may be easily reached from a seated operating position, and meters are angled for direct viewing. Low power or maximum legal input AM, CW, or SSB may be selected with the flip of a single switch. Tuning is continuous from 3.5 to 30 mc — no coil changes necessary.

Excitation requirements are 30 watts RF and 15 watts audio for AM, 2-3 watts peak for SSB.



E. F. Johnson Company

2825 Second Avenue Southwest • Waseca, Minnesota

Engineers Wanted

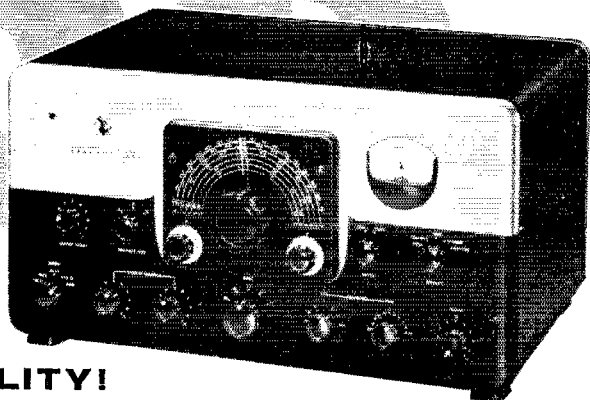
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Capacitors • Inductors • Knobs • Dials • Sockets • Insulators • Plugs • Jacks • Pilot Lights

New... for Single Sideband!

THE "PACEMAKER"

SSB

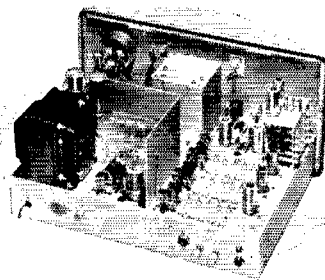


NO OTHER SSB RIG OFFERS YOU SUCH COMPLETE FLEXIBILITY!

Here is the exciting new Viking "Pacemaker" . . . designed for the amateur who wants more than just a single sideband "exciter." The "Pacemaker's" power puts it in the transmitter class with unmatched flexibility of operation and control. Completely self-contained and effectively TVI suppressed, the "Pacemaker" covers 80, 40, 20, 15 and 10 meters with single-knob bandswitching. Extremely stable, temperature compensated, built-in VFO operates in the 3 to 4 mc region at all times. VOX and anti-trip controls are easily adjusted for dependable operation. Pi-network output circuit will load virtually any antenna system . . . plenty of power here, too, to drive conventional or grounded grid amplifiers up to a full kilowatt.

Handsome maroon and grey cabinet measures only 11 $\frac{1}{8}$ " high x 21 $\frac{1}{8}$ " wide x 17 $\frac{3}{8}$ " deep, just right for desk-top operation. Supplied as a completely wired and tested unit only; all tubes furnished.

Cat. No. 240-301-2 Viking "Pacemaker," wired and tested, complete with tubes. . \$495.00 Amateur Net



- 90 watts P.E.P. SSB!
- AM and CW at the flip of a switch!
- Built-in, high stability VFO!
- "Fool-proof" voice controlled operation!
- Wide range pi-network output!
- Plenty of power to drive a kilowatt!
- Compact . . . for desk-top operation!



E. F. Johnson Company

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Johnson Amateur Equipment is sold only through Authorized Johnson Distributors—most offer convenient time payment plans. For complete information see your distributor.

(Continued from page 30)

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC, WZSYW, PAM; W2ZI, LYN ORS are K2BHQ, K2EWR, and K200K. Net certificates were issued to K2EMJ, K2JGU, and W2KFR for their participation in the New Jersey 75-Meter Emergency Phone Net. We are very glad to issue these certificates to anyone who consistently takes part in net activities. K2GQL and K2GWK are conducting a code class in Columbus. WUP, ZNB, and ZNF are doing a fine job teaching code to a number of Scouts in Delanco, VA. Burlington County EC has appointed KHV, WK1, and ZNB as Asst. ECs. YRW, Delaware Valley 2-meter Traffic Net manager, has issued a fine bulletin on net procedure. The net has 11 regular members. K2PQS, Margate, has dropped the "N" and has a new rig all set to go. K2CPR worked F7AA for country No. 215. K2EWR is increasing his traffic total each month. RG and K200K are father and son. Both are FB traffic-handlers. SDB, DX activities writer for SJRA Harmonics, keeps the club well posted on DX contests and awards. The SJRA is making plans for a bigger and better Field Day. We hope CPI recovers quickly from a recent operation. EFM is planning a 10-meter mobile rig. Installation of Gloucester County RACES gear is expected soon. It will be a fine opportunity for RACES-licensed men to take part in the State drills. Your SCM attended the DVRA meeting in February and expects to visit the SCARA soon. ZVW, our SEC, is a regular EAN net control station operating from 3NF. Keep up the fine work of sending Form 1 reports at the end of each month. Traffic: W2ILDW 205, RG 135, K2EWR 104, BHQ 100, W2YRW 79, K200K 66, W2ZI 41, K2JGU 39, W2SUG 28, ZVW 23, K2EMJ 9, CPR 7.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: NAI and TEP. NYS c.w. meets on 3615 kc. at 6 p.m.; ESS on 3590 kc. at 6 p.m.; NYS Phone on 3925 kc. at 6 p.m.; TAR on 3570 kc. at 4 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 3980 kc. at 10 a.m.; ISN on 3970 kc. at 3 p.m. OZR and family vacationed in Florida. K2GUG blew up his haywire and now is rebuilding. K2GIG has an NC-98. K2KXE was named NCS for AF Net No. 4. K2PMV, ex-DL4BP, visited RAWNY. RPO gave a talk and demonstration on Ham Use of the Scope, at RAWNY. PVI is on s.s.b. KN2RCB is a new Novice. New officers of the Elmira ARA are IML, pres.; UZF, vice-pres.; K2GRP, secy.; KN2PKT, treas. K2GRP has a beer-cau vertical. The club toured Rem-Rand. SJV has been appointed Air Force MARS New York State Assistant Coordinator. K2KTX is ORS. K2s GDL, LZL, HQT, and G8M are on 6 meters. K2HRB is working with a helical antenna on 220 Mc. K2LTT dropped the "N" from his call. EMW now has 208 countries. CXM, K2KIR, K2DXV, and RUF made BPL. Note that TAR has been changed to 3570 kc. K2IYP has received RACES Authorization. K2CUQ is enjoying her Ranger and is active in nets and with OO work. New officers of the Houghton College ARC are KN2QNL, pres.; OKY, trustee; KN2QNL, secy.-treas. The club meets the 2nd Wed. of each month in the College Physics Lab. OKY spoke on antennas and how to load them efficiently. YPS and KN2QOI are active in club affairs. The RARA V.H.F. group met at the QTH of CTA. IEP retired from NMP and is buying an antenna farm in the Binghamton Area. K2MJV is the call of the Cardinal Mindszenty HS ARC using an SX-96 and a DX-100. New Novices are KN2RDC and RIP. The Northern Chautauque ARC meeting was devoted to c.d. activity. The Schenectady ARC is sponsoring a training net, the Mohawk Hudson Training Net (MHTN) every Sat. at 1300 on 3716 kc. K2CEH completed a new converter for 2 meters and a sixteen-element beam. PPL spoke at ARATS on R.F. Amplifiers including Linear Amplifiers. TCPN officers of the 2nd call area are KFV, dir.; YRW, vice-director; K2AMF/2 checks into TCPN regularly from Canandaigua. K2KNV is ORS. GBX and his XYL, KN20BX, purchased a new QTH. Active in Wayne County on 2 meters are OMV, QS, EQM, and OWZ. K2DXV has a new Viking Ranger. The RACS meeting was addressed by COU on Net Operations, EMW on the Art of DX, and H. Lowry, of G.E., on Transistors, Selenium, and Germanium Products. K2ELD skeeds his dad. YYP, each a.m. on 40 meters. K2BZC is in Japan. YRH has an SX-100. OKY made DXCC. RUJ has a DX-100. BZN has an 813 in the final. VTR returned from Turkey, where he operated as TA3BE. VQN is interested in Color Ham TV. K2LXB purchased an antenna farm. K2JFY changed QTH and is on with a 20A s.s.b. CBA has an 814 in the final. K2CTN has a 32V-2. CTA keeps in touch with K2LNG, the jr. operator, via a milliwatt on 2 meters. K2LNG dropped the "N." SCZ and SEA are back on v.h.f. Sorry to have to report the passing to Silent Keys of A.V.D. The K2ORLs have a daughter. K2GUR is on with a half-gallon. K2KWF has a TBS-50 and an SX-28A. Congrats to EPU, the new SCM of Eastern New York. Glad to hear that BNC is out of the hospital. Net certificates were issued to K2KIR, KNV, JIR, GQU, HVT, DEX, RUT, FPW, HYP, MBS, HLY, and GWN. KUB and GUG are OBSS. KIR and KTK are ORSs. We regret to

report the passing of BTB. Traffic: (Feb.) W2CXM 604, RUF 510, ZRC 310, K2KIR 251, IYP 231, LSF 148, W2OE 132, K2DJN 81, W2RUT 75, K2DXV 66, HVT 66, KNV 58, DSR 55, W2ZLT 54, EMW 37, RJJ 24, RQF 16, BLO 13, IEP 10, FEB 8, K2CUQ 4. (Jan.) K2AMZ 80, W2FPW 13, IEP 11, K2KIR 6.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: GEG. RMs: UHN, NRE, NUG, and GEG. PAMs: LXE and AER. Section Traffic Net WPA meets at 7 p.m. on 3585 kc. Mon. through Fri. The Radio Association of Erie is making every effort to get the emergency truck completed before the vacation season arrives. Completion of racks by TXZ indicates that progress is being made. A new call up Erie way is WN3FIQ, operating on 80, 40, and 15 meters. The South Hills Brass Pounders and Modulators have elected the following officers: QNI, pres.; QWW, vice-pres.; LDB, secy.; WFR, treas.; QQQ, VKS, and OWD, board of directors. BL, KRQ, and KYW, board of trustees. The Horseshoe Radio Club of Altoona requests that all interested in amateur c.d. work in that area contact KFD. The club also sponsored a display in the Penn Electric Building during its radio week. The Steel City Amateur Radio Club is in the planning stage with a new receiver coming up. Antennas are needed, especially the 20-meter beam which the wind pushed out of kilter. Also big plans are afoot for Field Day. The Washington County ARC is planning code and radio classes to start soon with UEM and KHY conducting. Franklin County EC DPC has appointed QCU as Asst. EC and reports everything is shaping up well in that section. The Breeze Shooters Net meets on 29 Mc. Mon. The BSN (Breeze Shooters) Hamfest is planned for May 13th at the same location as last year. PII is chairman. Division Director Crossley was the main speaker at the Indiana County ARC February meeting and was accompanied by five student operators from Penn. State College. The Mon Valley ARC is advocating operation on 160 meters by its members this season. Traffic: W3WUQ 1198, W9OZQ/3 155, W3KUN 138, NQA 131, LXQ 84, ZEG 44, SIJ 39, UHN 31, KNQ 22, NCD 9, LOD 5.

CENTRAL DIVISION

ILLINOIS — SCM, George T. Schreiber, W9YIX — SEC: HOA. RMs: RUK and CTZ. PAM: UQT. Cook County EC: HPG. Section nets: ILN, 3515 kc. Mon. through Fri.; IEN, 3940 kc. NCS assignments for ILN are Mon. STZ, Tue. MAK, Wed. PCC, Thurs. BUK, Fri. I.L. VHD has recovered from a serious illness. New calls heard in the section are KN9KIX, KN9CIC, GBH, GJU, and RML. STZ's rig went up in smoke and Art is rebuilding feverishly. ZOG and QUF have started plenty of 2-meter activity downstate and are responsible for a dozen or more 2-meter construction projects in Bloomington. EU is organizing a MARS net Mon. through Fri. on 2258 kc. at 0300Z. NIU gets out a really fine bulletin for the Starved Rock Radio Club. HUX is working on a new frequency standard. Officers of the Mississippi Valley Radio Club are BSA, pres.; UAP, secy.-treas.; and KN9ABO and #IBH, directors. The St. Clair County Amateur Radio Club elected the following: TCG, pres.; RSY, vice-pres.; JMY, secy.; PAM, treas.; UWP, sergeant-at-arms; and RQR, act. mgr. Members of the Chicagoland Mobile Radio Club really enjoy the hidden transmitter hunts on 10 and 2 meters and press for more of them. LZE now has 400 watts on 80 and 40 meters with an 813. Add to Silent Keys: MDI, of Decatur. VEY is wiring a DX-100 for UZE. The Greenville College Radio Club has quite a few students interested in code and theory classes. The prize student learned enough code in one night to pass the Novice Class test. New ECs are REA for Will and Kendall Counties and NJG for Boone and Winnebago Counties. Congrats to PTT who made his WAS the hard way, viz., with an indoor antenna made of No. 22 wire. So far the Kankakee Area Radio Society has graduated 12 prospective Novices in code and theory and its class goes on at the high school Thurs. at 6:30 p.m. OUS is new on 160 meters and enjoys it. FMA is on 15 meters and HKA has gone RTTY. KLD finally made WAC with only fifty watts. NKR runs the Kankakee Airport but still finds time for hamming. BPL certificates this month went to four stations in the section. They are DO, MAK, YYG, and OFR/9. Winner of the Illinois QSO Party, held Oct. 21st through 30th, was YYG, with 135 contacts in 41 counties for a score of 5535 points. Runner-up ICF worked the most counties, 45, and had 85 QSOs for 3825 points. Other scores received: BIN 1472, FRP 1432, MAJ 1300, UYZ 1248, RFC 1155, MHC 966, UBI 798, FVU 700, YRH 243, K9ATY 126, W9LQC 98, MAK 72, OAN 70, YIX 70, HPG 57, ZEN 54, DDP 15, K9BJV 9. What's wrong with you fellows? Didn't you do anything this month? Get your items here by the fifth, please. Traffic: W9DO 1486, MAK 546, YYG 526, MRO 354, SHR 254, OFR/9 206, YIX 115, IDA 109, K9CFJ 93, W9TNN 84, CTZ 80, OKI 63, HAW 61, BUK 55, LL 38, STZ 35, OCB 28, SXL 25, YFO 24, VEY 17, BA 8, FRP 6, LZE 4, KLD 3, KJ 2.

INDIANA — SCM, Seth Lew Baker, WONTA — Asst. SCM: George H. Graue, 9BKJ. SEC: QYA. RMs: DGA, JBQ, WWT, and UQP. PAMs: CMT, EQO, and UXK.

(Continued on page 98)

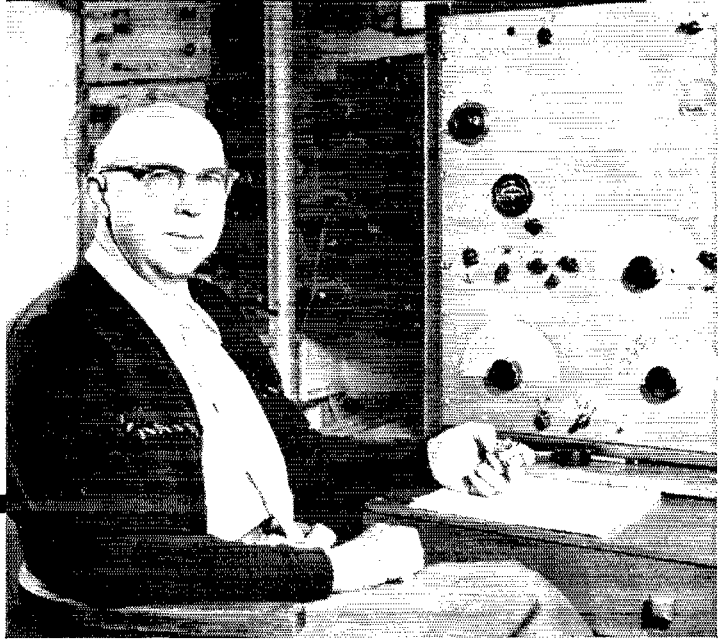
Heart of the modern 2 meter transmitter— Eimac's 4X250B

TYPICAL OPERATION

4X250B Radial-Beam Power Tetrode
(Frequencies to 175mc per tube)

	Class-C CW or FM Phone	Class AB ₁ RF Linear
D-C Plate Voltage	2000v	2000v
D-C Screen Voltage	250v	350v
D-C Grid Voltage	-90v	-50v
D-C Plate Current	250ma	250ma*
Zero Sig D-C Plate Current	—	100ma
D-C Screen Current	25ma	15ma*
Peak RF Grid Voltage	115v	50v*
Driving Power	2.8w	0w
Plate Power Input	500w	500w*
Plate Power Output	410w	325w*

*Max Signal



Amateur pioneer, Frank C. Jones, W6AJF, uses two Eimac 4X250B's in his new 2 meter transmitter.

Frank, who was founder of the Radio Handbook and Radio Magazine, has been a leading figure in amateur radio for 35 years. In 1923 he and John Reinartz, K6BJ, were the first to establish one-way contact across the United States on 20 meters. Frank's prime interest is now VHF, and from his Sonoma, California home he has logged over 950 stations on 2 meters, and has won the San Francisco Section title in the last 22 consecutive ARRL VHF contests.

Discover for yourself why Frank is using Eimac 4X250B's in his 2 meter rig. Already the outstanding new tube in modern, lower frequency transmitters, they are today's easiest approach to a compact, one-kilowatt transmitter at 2 meters. They offer simple circuit design, low driving requirements, stability.

Build your new transmitter around these rugged, reliable new tubes.

For further information on the 4X250B, contact Eimac's Amateur Service Bureau or visit your Eimac distributor.

EITEL-McCULLOUGH, INC.
SAN BRUNO, CALIFORNIA
The World's Largest Manufacturer of Transmitting Tubes

(Continued from page 94)

New appointments: SVZ and WTY as OPS, LBD as OBS. New ECs and their counties: CDW Kosciusko, CMT Miami, ERV Rush, IEZ Hendricks, IMI Warrick, RZS Carroll, and ZKX for RACFS. EQO reports IFN evening traffic as 216, morning 154, total 370. UQP reports 234 for QIN, WWT 109 for RFN, and EHZ gives 234 for CAFN. The picnic at Clifty Falls State Park will be held Sun., May 27th. HPO is putting up a tower and 50-Mc. beam. AB has a nice write-up in the Red Cross bulletin. QYQ has a new 20-A, LA-400, and side-band slicer in service. SVL now is vice-chairman of TCPN. K9AIO dropped the "N" and is on with a Ranger. OOK now is General Class. Those making BPL were JOZ, KTX, NZZ, and SVZ. This makes 50 straight months for NZZ, with an average of 737. New Novices: KN9AIL, KN9BZY, KN9CBP, and KN9CEE. Lawrence and Orange County hams are building 6-meter gear. The weather played havoc with many antennas over the State. AYD, RPV, JKR, and VPJ have DX-100s. DKR has a new c.w. rig. QUI is on s.s.b. HUF, QUI, ESQ, and QBL are on 50.2 Mc. The Michiana Club had a family night with about 60 attending. MAM furnished the music. AYU is newly married. The Connerville group is working on 6-meter gear. From reports over the State it looks like 6 meters will be the band for c.d. AIP and WN9VDS are 2-meter mobile. The Kokomo Club is making good progress on 6-meter rigs. FGX is building p.p. 8075. The Evansville Club is making big plans to win the IRCC prize for Field Day. RIT reports some 75 hams at Purdue. KVE is on the high end of 75 meters on s.s.b. regularly. The Hoosier Lake Club has a 2-meter rig on the air in the Court House at Warsaw. All appointees are requested to check the date on their certificates as they must be endorsed yearly. Traffic: (Feb.) W9JOZ 749, NZZ 705, TT 452, EHJZ 423, ZYK 210, KTX 169, SVZ 153, UQP 135, FGF 130, SWD 92, JYO 75, WBA 75, BKJ 71, SVL 71, UKX 67, NTA 62, EQO 61, WRO 57, CTF 54, DGA 50, ALL 48, CC 44, QYQ 40, CMT 39, TQC 30, WUH 29, DDK 27, BDP 26, QBD 23, FHA 22, DOK 21, VNV 21, TG 20, AB 18, LGD 15, STC 15, FGX 14, DKR 13, WTY 12, ZSW 12, AZF 10, NSY 9, NTR 8, YVS 8, ZIB 8, QR 7, GDL 6, BRW 5, CDW 5, WAU 4, PPS 1. (Jan.) W9WUH 30, HRY 2, AMW 1, AYD 1.

WISCONSIN—SCM, Reno W. Goetseh, W9RQM—SEC: OVO, PAMs: AJU and ESJ, RAMs: BVG and KQB. Nets: WIN meets on 3685 kc. at 7 p.m. daily; BEN on 3950 kc. daily; WPN on 3950 kc. 1215 Mon.-Sat., 0930 Sun. Wisconsin mobile and emergency frequency: 29,620 kc. Because of moving, YZA is QRT and his spot as RM and Asst. WIN Net Mgr. is being filled by KQB. CBW worked 2 states on 3500.2 kc. with .045 watt to a transistor rig. K9AEQ is new in Coloma. FFC makes BPL this month. The U. of W. boys at GOC now hold ORS appointment under SZR, the trustee. GYA worked CR6 with his Ranger on 14 Mc. OMT is working on a 2-meter rig. SQM has the mobile back on 28 Mc. AKY will be operating DAE in Vernon County this spring. GFL now has an even 100 countries. IQW has a new 8&W 5100-B and s.s.b. generator. RKP worked E73, VS6, ZDI, FS7, and SV9 for new ops. RKK comes up to 161 worked and 152 confirmed with new ones like 487, VQ6, FS7, FB8, CR4, ZS9, VU2, and VS6. Foliothion participation in Milwaukee by MAREC 6- and 10-meter mobiles and NCS operators resulted in excellent publicity. PJT is putting up a bamboo pole beam for 21 Mc. GAB has the 220-Mc. rig ready with AX9003 final at 70 watts into an eight-element beam [85 ft. up]. He has 20 states worked in 7 call areas on 144 Mc. QMB is on 144 Mc. with a Gonset Communicator and twelve-element beam at 50 ft. GHG has a new Mosley VP beam and loaded doublet. GKT gave an excellent talk on s.s.b. at a recent AIRAC meeting. CCO has been on from Great Lakes. K9NBS, regularly. WYE and JFP upped power on 50 Mc. to 125 watts and 1 kw., respectively. The Point Radio Amateurs Club purchased a 1-kw. gas-engine-driven generator for emergency power. IKY is back on with bulletins after being in the hospital for several weeks. Correction—CFN is attending Ripon College instead of Lawrence, as reported previously. VCH reports hearing quite a few W9s on 28 Mc. from Kyoto, Japan, where he is stationed. The WVRA Hamfest will be held at Wausau, May 12th. See Hamfest Calendar in this issue for details. For advance registrations send \$3.00 to WVRA Hamfest, Box 382, Wausau, Traffic: (Feb.) W9FFC 680, KQB 192, SAA 89, GOC 56, GYA 42, YZA 35, OMT 28, AJU 24, SQM 24, AKY 16, GFL 12, IQW 12, RTP 12, OVO 9, RKT 8, RQM 7, BVG 2, EFX 1. (Jan.) W9WBV 40, PJP 1.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Elmer J. Gabel, W6KTZ—The Red River Amateurs of Fargo elected the following officers: LXB, pres.; NQI, vice-pres.; and OAB, secy-treas. Past-pres. TXJ is chairman and QWZ is corr. secy. The 1956 North Dakota Hamoree will be held in one of the Fargo parks Sun., June 10th. With the daytime fade-out of 75 meters you now find the locals enjoying their ragchews on 40 meters. PVG's brother, K9DIX, is a new ham in Goodrich. RGT now is running a Viking II. Traffic:

W0UBG 76, LHB 63, BFM 48, KTZ 44, FVG 42, WRK 30, VQC 26, IHM 20, DNJ 15, KLP 13, K0BEA 11, W0YMS 11, GJJ 4, JBM 4, SDN 4, PHC 2.

SOUTH DAKOTA—SCM, Les Price W6FLP—SCM assistants: APL, YKY, HOH, GQH, FKE, RMP, MZI, and GDE. PAM: UVL. RM: SMV. The 75-meter C.W. Net, SMV NCS, 13 sessions, reports QNI 104, high 11, low 3, average 8. The 160-meter Phone Net, FKE NCS reports QNI 349, 5 formal and 17 informal; The S.D. 75-meter Emergency Phone Net, GDE and UVL NCSs, report 31 sessions in 29 days having both morning and evening sessions on the two holidays with QNI 1152, high 52, low 9, average 37.16, traffic 108, high 10, low 0, average 3.483, informals 163, high 13, low 0, average, 5.62. The Weather 75-meter Net, ZWL NCS, reports average check-ins 16. New hams reported: KN0CDX, Colman; WN6DYR, Sioux Falls; K0DXQ, Hermosa. The Sioux Falls Club now is incorporated. O0Z is building a kw. with a pair of 4-125s. The SFARC is holding a WAS contest and now has 15 members in the Novice class. BJH swapped his HQ-129X for an NC-300. SMV swapped his HQ-129X for an NC-183D. RREN swapped his HQ-129X for a 183-D. SCT made 140 sessions out of a possible 150 in all nets in Feb. Huron ARC's new officers are VMM, pres.; TXK, vice-pres.; VME, secy-treas. NCM, act. mgr. Jim Winter, of Huron, is now K0DPD. ENS has a new call, K4HFC. Jimmy Adams, Lead, received the call KN0DTH. Ray Brockhouse, Sioux Falls, received the call KN0DTP. New officers of the Lead ARC are EQV, pres.; Henry Allen, vice-pres.; DVB, secy.; LBO, treas.; TMM, act. mgr.; Mrs. Ed Erickson, pub. mgr. Traffic: W0ZWL 713, SCT 266, K0ARF 64, W0GWS 57, UVL 50, KXZ 46, OII 22, FLP 21, SMV 18, NNX 17, RTD 15, BQH 13, K0WBW 11, W0BLZ 11, QKV 5, ARC 3. (Dec. & Feb.) RREN 97. (Jan.) W0ZWL 747, SCT 210, RRN 58, OVL 33, GWS 18, W0E 11, K0WBW 6.

MINNESOTA—SCM, Charles M. Bove, W0MXC—We have a new YL on the air from Mound, Minn., K0BFS. She is a member of the Pi Net. WMA has worked 31 countries on 15 meters since September, also 5 continents and 30 Maritime Mobiles. He now holds a Maritime certificate. Ken also has worked KH6UL on 75 meters at 0500 CST. TQO was host to the YLs on one of their board meetings for the North Star YL Convention. All YLs are invited. Announcement will appear elsewhere in this issue. KN0DVC and DVB, new Novices, are twins. QXA and QXF, please note. ANY, of Anoka, is now ANY/VO4 in Newfoundland. HYE has been in touch with Loren on 10 meters. HYE also has been in contact with 5CTN/VO4. HYE, SV, JES, and HKF are on the air every evening using teletype on 2 meters. The St. Paul Radio Club now has the call AGF. VBS worked 14 countries during the DX Contest and on 7 Mc. He worked G5RI, UN4UF, VP3YG, PY6FI, VP4LL, KJ6BN, and VK2V1. Bob now has ideas of building a grounded grid kw. TCF has moved his QTH to St. Paul and is no longer portable 6. WQY passed his Conditional Class exam and is representing New Ulm on the nets. NUL is operating s.s.b. on 75 meters. ITQ and his XYL spent a long vacation visiting hams in Texas, Alabama, and Florida. LUX has a new Collins KVS-1 on the air. WMA traded his SX-100 for a new NC-300. Your SEC now has 70 EC appointments in Minnesota. The St. Paul Radio Club voted to investigate the possibilities of putting on a Dakota Division Convention in the near future. ZEL now has his General Class license and is checking into the MSN. WDW purchased DQL's SX-28 receiver. The St. Paul Mobile Radio Club's v.h.f. group will make another determined assault on DX records during Field Day from the Mississippi River bluff at Red Wing. Horizontally polarized arrays will be used on 50.1 and 145.08 Mc. Traffic: W0WVO 581, ITUS 282, KLG 245, KJZ 196, RLQ 178, IRJ 91, UMX 67, QVR 61, VEP 55, KFN 54, QVQ 41, VEM 40, ZBL 34, TCK 33, RVO 32, ALW 28, OSJ 28, PBI 26, QDZ 26, RQJ 26, GTX 25, NNG 24, HMV 20, QDL 19, MXC 18, WDW 18, PBK 17, TQO 16, WMA 15, UBD 11, FGP 10, OJG 10, LIG 9, MVH 8, VEZ 8, VOA 8, OPA 7, VJS 7, YNY 7, ZMK 7, KNR 6, BUO 5, TCF 5, GGQ 4, IIV 4, UMJ 3.

DELTA DIVISION

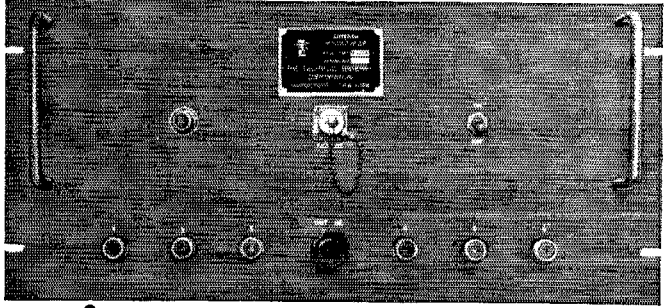
ARKANSAS—SCM, Owen G. Mahaffey, W5FMF—The new SEC is VKE at Fayetteville. ECs for the month are YHC, KRO, and UEC. New Novices on in Van Buren are KN5DKU, DQH, and DXK. TIA, who is OES, reports tests with a five-element yagi on 435 Mc. He also reports working EUQ, HNU, and HOT in Ft. Smith on 6 meters, about 50 miles through the mountains. KN5DKT is busy with a code class and organizing a radio club in Booneville and has an HQ-140X receiver on order. EOP has transferred to St. Louis. VYM has a new Globe King. MED has a Novice net started with 8 or 10 reporting on 3705 kc. at 5 p.m. We need more c.w. men on the traffic net on 3695 kc. at 7 p.m. Mon. through Fri. We would like to have enough to cover the State. We were all slow once, so check in and we will help your code speed and be glad to do it. Traffic: (Feb.) W5CAF 87, FMF 47, JZL 18, MED 18, FPA 4, KN5DKT 1, W5YHC 1. (Jan.) W5PX 6.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—

(Continued on page 98)

AN/CU 5013 () /SRR

ANTENNA MULTICOUPLER AMC-6



WHAT VALUE FERRITE TRANSFORMERS? GROUNDED GRID?

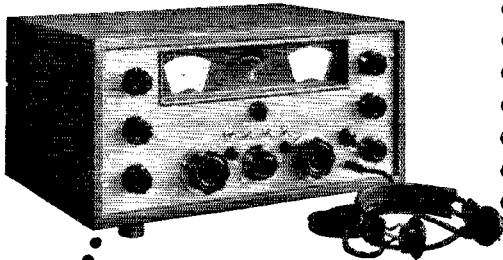
Full information on the AMC-6 is available, on request, in Bulletin Q-155A. Request Bulletin Q5-179 for details of the GPR-90 Communications Receiver.

Our mail on the ferrite transformer-grounded grid arrangement in the GPR-90 Communications Receiver has been increasing—and the boys are commenting on the low noise figure.

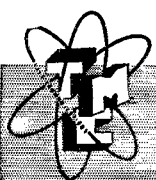
Here is an example of the application of the same feature we use in the GPR-90, to our commercial Antenna Multicoupler the AMC-6, which has been Government Nomenclatured AN/CU 5013 ()/SRR without any change.

This coupler actually improves the operation of any Receiver to which it is connected. As a matter of fact these couplers may be used in cascade to provide 36 or more outputs from one antenna without degradation. For those interested in such things as intermodulation, isolation and what have you, the following specifications will be of interest . . .

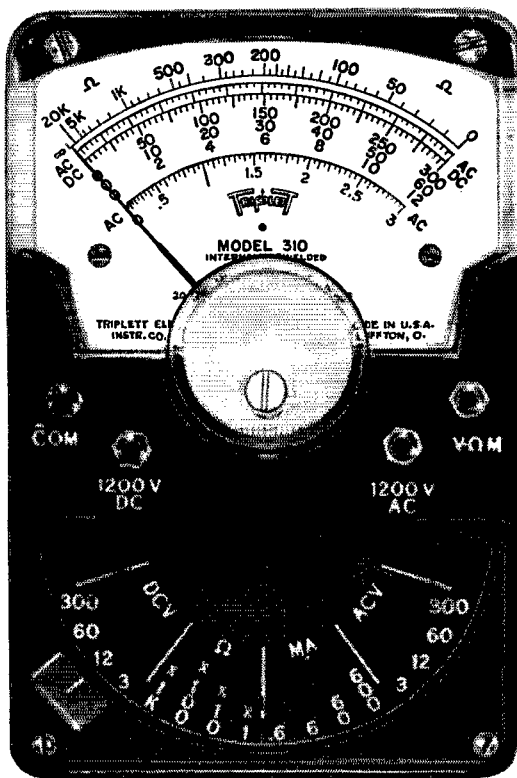
MAIN FEATURES:



- Frequency range2-30 mcs
- Gain10 db ± 3 db
- Noise factorLess than 4.5
- IntermodulationAt least 55 db down
- Harmonic distortionNegligible
- Input filterSwitchable BC Filter
- Isolation
 - Output to outputMore than 70 db at 2.5 mc
More than 45 db at 28 mc
 - Output to inputMore than 80 db at 2.5 mc
More than 60 db at 28 mc



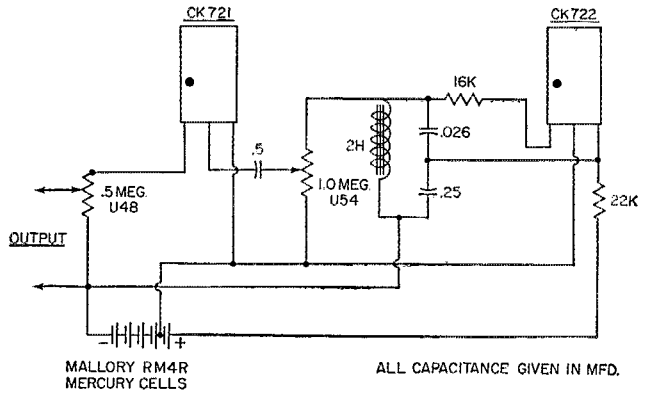
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The circuit shown here is the final result. A few checks with a 'scope proved it could put out a reasonably good square wave. Then, based on a measurement of load current, we worked out an estimate of how long the

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The figure—believe it or not—turned out to be almost two years! And that's on the basis of 24-hour duty *every day!*

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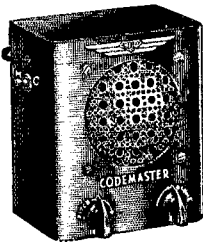
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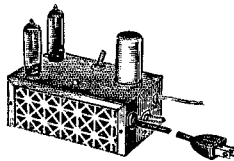
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Convention still is recent history, let me extend congratulations from all of the members of the Michigan section to all of the Grand Rapids gang for a fine job well done. They seem to come up with a better program every year. Much was accomplished and a fine time was had by all. Of major import to all was the meeting on AREC/RACES in which much was accomplished. Perhaps the most important move was the agreement that the 10-meter allocations embodied in the Michigan RACES plan be used as the *prime* local frequency for all local nets. This will provide necessary depth of communications for mutual support between communities. It is felt that this one decision will do much to activate the whole AREC/RACES organization. There still are a few difficulties that are impeding the RACES organization and it is felt that an *active* AREC organization will provide the push needed to implement the RACES program with the AOC D organization. Let's get our organization in shape as a well-trained facility that will be wanted by the RACES people. All Area ECs will be advised on details in the very near future and they will pass the information to their County ECs for local units. New officers of the Central Michigan Amateur Radio Club are EOK, pres.; SFA, vice-pres.; OCK, secy.; TJJ, treas.; and PVI and CCK, dirs. FGB now has eight countries worked on 160 meters. At this writing, many of the organizations are reporting plans for Field Day, which is just over the horizon. Here's hoping that conditions will be as favorable as they were last year. Traffic: (Feb.) W8ELW 418, WGU 174, NUL 167, LLP 133, JYJ 114, RVZ 114, ZLK 112, QOO 111, QIX 67, SCW 41, GKT 34, WOX 32, NOH 27, SJF 24, SRK 24, PHM 23, FX 22, TBP 21, FWQ 17, RAE 17, IKX 15, EGI 12, TQP 9, FGB 7, AUD 6, HKT 5, HSG 5, DSE 3, AILR 2, (Jan.) W8PHD 70, SCW 40, KOX 36, SJF 29, IKX 20, FSZ 14, MPD 14, SRK 11, AUD 9, FGB 6.

OHIO—SCM, Wilson L. Weckel, W8AL—Asst. SCMs: J. C. Erickson, 8DAE; J. E. Siringer, 8AJW; and E. F. Bonnet, OVG, SEC; UPB, RMs; DAE and FYO. PAMs: HPP and HUX, The OC'ARC's next meeting will be held Apr. 28. The Ohio Valley Area's 1956 officers are CEG, pres.; 4OAIW, vice-pres.; BOJ, treas.; EV, treas. Dayton ARA's 1956 officers are WYL, pres.; RCA, vice-pres.; QFA, secy.; DHJ, treas.; and ACE and ZOF, board members. Seneca KC's new officers are MYE, pres.; CUZ, secy.; SHE and GLL, alternates. MYV is using a Heath QX'er. A wind storm bent PLQ's 2-meter beam and blew down LA's three towers, DAE's antenna, SVI's 32-element beam, HOH's 64-element beam, and ILC's 5-over-5. The IVEs are expecting a new harmonic. ARO visited DAE. GDQ added DL, HR, YN, and XE and has worked 20 countries on 160 meters. KN8ANX and WN8IBX are a father-and-son team. DCI has a new DX-100. GKL and IUX are going 10-meter mobile. NYS gave a talk on noise generators to the BSWA. HWX and HUX are Toledo's hams of the month. SUT is going mobile. QBO and his XYL, ATB, went to Florida for four weeks. The YOGs have a new daughter. VJO received her nurse's cap. HOP has a Q-multiplier. AOX has a new NC-300. GJM has his Tech. Class license. CMS needs Delaware and Montana for WAS on 6 meters. ILC made WAS. YGW returned from Florida. FZJ built a new rig. SWR worked 160 stations on 2 and 6 meters. IJG worked Scranton, Pa., and Canada on 220 Mc. Santa gave WRP a Ranger and BX4 a D-104. The Harding RC of Warren visited the Astatic factory. IWI is now Tech. Class. UYP, WAF, WTOK and TNS are General Class. ITH has a new NC-300. TTX is on 6 meters. GJM has a new 6-meter rig. The Quaker Radio Assn. of Salem is conducting Novice classes. TND is going on c.w. as he says the phone bands are too crowded. Your SCM is a happy man as his youngest son is KN8AQU and is worried because his mother is gravely ill. Traffic: (Feb.) W8DAE 373, VTP 326, PLV 152, AL 65, ARO 65, DG 63, RO 56, HNP 48, VWX 48, ACZ 33, IIR 26, HXB 20, PLQ 20, AJH 19, AJW 18, WE 16, QCU 15, GZ 14, LZE 14, ZEU 14, INW 12, JDN 12, ET 11, QIE 10, LMB 8, AEU 7, BEW 6, REQ 6, ILC 6, MGC 6, ULN 6, NZC 5, WTO 3, AQ 2, FSC 2, GDQ 1, IBX 1, (Jan.) W8AGZ 126, PLV 77, OBX 1.

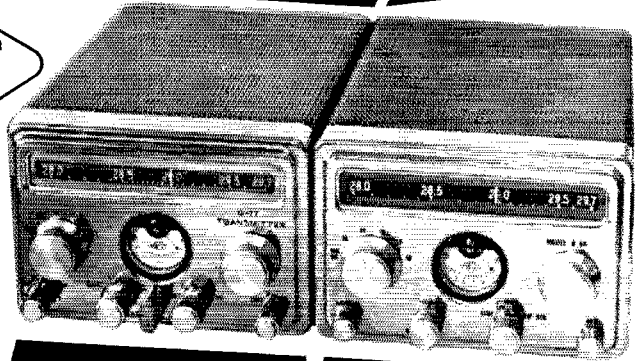
HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: RTE, RMs; BXP and K2BJS, PAMs; GDD and LJG, Section nets; NYS on 3615 kc. at 1830 EST; ESS on 3590 kc. at 1800 EST; NYSEPTN on 3925 kc. at 1800 EST; SRPN on 3970 kc. at 1030 EST; IPN on 3980 kc. at 1500 EST; MHT on 3716 kc. each Sat. at 1330 hours. Your new SCM extends sincere appreciation for member support during the election. The Rip Van Winkle Club meets the first Fri. of each month at the Cairo High School. Schenectady Association officers for 1956: K2HON, pres.; NZE, vice-pres.; K2DIAI, secy.; K2DMR, treas.; and FBS, YIV, K2AXY, and K2CBS, directors. The E.N.Y. Medical Net now has 15 hospital stations with expanded coverage. Our new RM, BXP, was voted the most valuable member of NYS for the last year. NIV spoke on "Audio Amplifiers and Modulators" at the March SARA meeting. Endorsements: TYC, K2BSD, and K2EDH as ORS; K2BSD and K2EHI as OPS; HZZ and WWK as ECs. New appointments: BXP as RM; K2EHI as OBS. All appointments: Please check your expiration dates and forward certificates for

(Continued on page 102)



MOBILE TWINNS

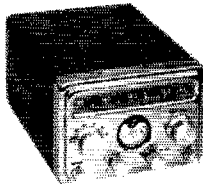


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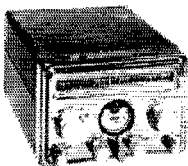
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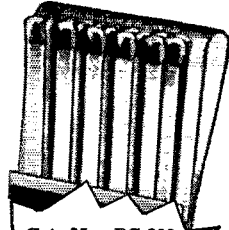
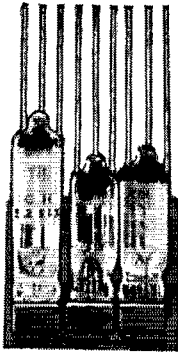
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endorsement. K2PPB made BPL for December. All club secretaries are urged to place the SCM on the mailing list for club activity information. Congratulations to K2AE, who celebrated his 89th birthday and is very active on the air. He and his son, IR, are both members of the old old-timers club, requiring 40 years on the bands. Traffic: (Feb.) W2BXP 423, K2PPB 210, EHI 28, W2DEL 23, K2EDH 14, JEQ 12, BE 11, W2EFU 9, K2HNW 8, EKS 6, AWA 5, CXO 4, W2GTB 2, TYC 2, (Jan.) W2BSH 9, K2HNW 9, W2EFU 6, TYC 4, (Dec.) K2PPB 505.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO, PAM: NJL, RM: WFL Section Nets: NLL, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST. LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. KEB, KFW, and K2s DEM and GHS made BPL, the latter two on originations plus deliveries. The newly-formed Long Island Phone Net, under the management of OBW, is now the official Section Phone Net. All hands are invited to call in on 3908 kc. to clear traffic. NCSS for the LIPN are BHD, UGF, FTV, OBW, KNA, and PDU. All stations handling traffic are urged to report their work regularly. Convenient reporting forms are available for these reports from your SCM. PF is ready to start an s.s.b. traffic net on 75 meters. All interested stations, please contact PF or your SCM. ESO, IJU, IVS, and SUC are using Rangers. VDT received a 2RN net certificate. New members of the NYRC are K2s CON, JDK, MRP, PMB, and QEZ. KN2OZJ is a new call in the Bronx. K2IOC dropped the "N" and has 15 watts on phone. The Central Queens RC now has 15 members. New members of the U.H.F. Club are K2s KGE and KRH and KN2OXI. K2s GCE and HEA are starting a phone net on 147 Mc. each night at 2000 EST for ragchewing, round-table chats and a monitoring frequency for Nassau County 2-meter stations. K2JNE is building a new rig using 807s. KN2QOY is active with a 40-watter. ISDO rejoined the operators at AEE. The latter station now has a Sonar CD-2 for RACES work. ASI and K2DEM are moving to Kings Point. DSC made the WAS award. K2KXZ picked up several new countries and a new continent in the DX Contest. LPJ added a PJ to his countries list on 3.5 Mc. IN is relaying traffic from AEE on 144 Mc. and is looking for additional stations to assist. IAG is installing new 12-volt gear in his '56 Pontiac. K2AED reinstalled his old rectangular dipole on 75 meters. K2JTW moved to Levittown. K2DDK added a 100-kc. crystal calibrator. EEN put up a multiband dipole with traps. DUS and LID put up a 20-meter vertical for ELK while the latter was recuperating from a successful operation. HQL passed the Extra Class exam. NEG built a Heath VFO for his Viking II. K2EVE rates an RCC certificate after a contact lasting almost four hours. K2KRC has 100 watts on the air with an SP-400 receiver. K2LDD built a beer-can 7-Mc. vertical which works fine. K2MNS put up a 144-Mc. ground plane. K2PPH is now heard from KA2HQ in Tokyo and is looking for Brooklyn stations on 14 Mc. K2PGE is enjoying VFO operation for the first time. K2ENO now has 45 states and 24 countries. JZX is handling the organization of the radio net for the Powder Puff Derby. K2MGE is now on all bands, phone and c.w., after passing her General Class exam. The "N" was dropped by K2MFD while his daughter, K2PPA, made Tech. Class. K2PWH is a new member of the Nassau RC. With summer around the corner, let's check the mobile gear and register with the AREC. Traffic: (Feb.) W2KEB 1205, KFW 892, K2GHS 278, W2AEE 277, K2VDT 211, WFL 196, K2DEMI 194, CQP 180, W2DSC 169, K2KXZ 119, W2BO 66, JOA 66, K2DVT 66, AMP 65, W2TUK 42, K2ECY 32, W2JGV 30, LPJ 28, GP 26, IN 26, IAG 25, LGR 20, OME 12, DCI 10, HAC 9, OBW 9, EC 8, PF 8, UGF 8, K2CMV 3, W2DUS 3, K2AED 2, W2JBO 2, ZDV 2, K2BDDK 1, ENO 1, IHD 1, (Jan.) K2HYK 30, W2IVS 5, K2ENO 4.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: IIN, PAM: CCS, RMs: MLW, NKD and CGG. CFB has all the bugs out of the DX-100 and is working out very well in the DX department. CVW is very busy with outside activities, but finds time for NJN. GUM is building a new 14-Mc. beam. His new high-power rig is nearly completed, so all you DX men look out. AIW has a six-element 14-Mc. beam up on the 100-foot tower and is feeding the array with a full gallon. K2DSW has just received a WAC certificate. All of this has been done with a Viking Ranger and an HQ-140X with a DB-23 preselector. K2KLR is interested in obtaining a good circuit for the transistor transmitter. All traffic reports from the NJN are passed on through the net to the SCM for inclusion in this report. This method has proved very satisfactory. The Night Owl Net held its second XYL dinner dance night at the Friar Tuck in Cedar Grove. Fifteen members and their XYLA attended and a good time was had by all. Prizes were awarded members as well as a gift to each of the XYLA attending. K2LSX is a new General Class licensee. The Millburn High School Radio Club is giving a course on theory to non-ham members. The club is raising funds to build a 2-meter civil defense station at the school. K2LFO has received General Class license. K2CCD is building a new s.s.b. rig. K2EPM is ready to go with a new 200-watt linear final. K2MTL has a new 813 rig on 20 meters. The TCRA had BDS as a guest speaker at one of its recent meetings. KN2OSP now is

(Continued on page 104)

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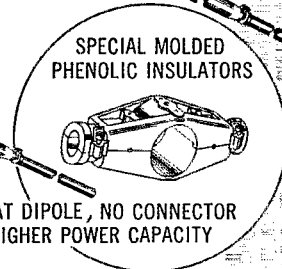
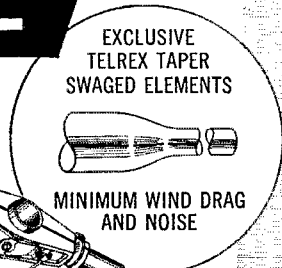
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General Class. K2JOM is off the air for a spell. A wind storm took all of his antennas down. The IRAC had AZA as guest speaker at its recent meeting. The club's annual banquet was held on Apr. 6th with Al Zimmerman as host at the Townley Restaurant. K2BWQ has been appointed official Red Cross station for Clifton. The Raritan Bay Radio Amateurs are planning for a bang-up Field Day this year. The Field Day committee is composed of K2DDM, EQD, TTM, and BEV. K2QHF is a new member of the Raritan Club. At its last meeting the club presented K2OMZ, who gave a very interesting demonstration of radio-controlled model aircraft. K2DDM is building a new s.s.b. exciter. K2DSW has a new electronic keyer. TTM is adding a linear amplifier to a 10B exciter. KN2PSL has been trying his luck at DX on 15 meters. He also has passed his General Class exam. Section Net certificates were awarded NJN members as follows: BRC, CFB, CGG, CQB, DRV, HDW, NAK, NKD, OXL, K2EQP, EWR, and GFX. MLW is putting new life into NJN with his organizational abilities. The Garden State Amateur Radio Assn. held its annual dinner on Mar. 9th. K2ICE is back from a vacation in Florida. K2IPR is having a bit of TVI trouble on 144 Mc. Traffic: W2MLW 433, K2EQP 79, W2BRC 66, W4ZC/239, K2GFX 38, W2CQB 33, K2BWQ 19, W2DRV 7, K2JOM 7, W2OXL 7, CFB 6, CVW 2.

MIDWEST DIVISION

IOWA — SCM, Russell B. Marquis, W0BDR — Appointment renewals: EPI as EC and NYX as ORS. New officers of the Cedar Valley Club are DJK, pres.; KRU, vice-pres.; WKW, secy.; K0ABO, treas. Clinton Club officers are FQU, pres.; KGZ, vice-pres.; 9ZIP, treas.; 9GNJ, secy. Central Iowa Club officers: HWW, pres.; UTC, vice-pres.; EPL, secy.-treas. The Cedar Valley Club helped during a Cerebral Palsy Telethon on a local TV station with 20 mobiles. KGX and CSP used their mobiles to report the progress and location of a Tractor Derby used by a local BC station to raise polio funds. LMM, JDV, QVZ, PIV, and UNZ used a three-element 20-meter beam on a 145-ft. tower in the DX Contest. K0ANL really likes his new NC-300. FMX and DVZ have 75A-4s. VHK has a 75A-3. Activity on the 6-meter Tri-Cities Net is increasing. A new Tall Corn member is K0BAX. AUL is back on the air with a Harvey-Wells transmitter and receiver. KN0DIC has his Novice Class ticket. SMW is vacationing in Florida. CSP is having his in Texas. SCA took two weeks to get broke on his vacation in Florida. Professor Reid, of Iowa State College, gave a talk on antennas at the Spencer Club. QQH and USP are a father and son team at Iowa City. Both have WAS. KGX made WAS on 75-meter phone. Traffic: (Feb.) W0BDR 1819, PZO 1299, SCA 915, CZ 361, LGG 289, BJP 287, QVA 154, SQE 109, LJW 95, BLH 85, WPM 85, KVI 49, NGS 34, K0BDW 28, WAD 22, W0WVF 19, PTL 16, UTD 16, EHH 15, NYX 15, EEG 9, UHO 9, HNE 8, YI 8, JPI 7, ZYC 7, BSG 6, PKT 6, ADB 5, CQS 5, K0BPR 4, W0DPI 4, FDM 4, PHQ 4, IHC 3, PAN 1, (Jan.) W0BQA 12.

KANSAS — SCM, Earl N. Johnson, W0ICV — SEC: PAH, RM; FEO, PAM; FNS, FDJ advises the Kansas-Nebraska Radio Club will hold its annual picnic Aug. 19th with bigger prizes than ever. Arno says a Heathkit DX-35 is on the prize table already. ZUX reports some unusual groundwave DX with UGD, GUL, DQW, and RLV on 15 meters. Some of these were over 60 miles apart. The Johnson County Radio Amateurs cooperated with the Polio Drive Jan. 21st, furnishing communication and pick-up service for the set-up. Mobiles participating were CIA, DEL, DXM, IPQ, LQV, NNY, UNP, RSX, WYK, and YZE. The following assisted mobiles and fixed stations: IJJ, QMS, QYP, LPA, GLN, ZIT, WOD, VBG, WJC, VXA, OYY, CFI, OMR, and others. Over 383 miles were traveled and over \$2000 was collected. Nice publicity was received for a job well done. HL, of St. Francis, reports the Wheat Belt Radio Club boys are planning on giving 6 meters a whirl. TOL, of Manhattan, has a new Ranger. KXB is our new State CD Radio Officer. The Hi-Plains Amateur Radio Club plans to hold its 7th Annual Hamfest at Plains, Kans., May 20th. By the way, did you know that the club issues certificates to those working nine members of the club? For stations outside of the U.S.A. only four members need be worked for the award. Traffic: (Feb.) W0BLI 622, OHJ 511, ERH 437, NIY 294, UVQ 223, FNS 162, ZYN 137, QGG 120, MXG 100, SAF 87, FDJ 66, YVM 63, VZM 32, RXM 26, TOL 23, LIX 21, TNA 17, KN0BXF 16, W0ICV 16, K0AHW 11, W0BET 11, ONF 9, LOW 8, MOU 8, JDX 6, UML 6, LQX 5, THX 5, UAT 4, ITI 3, IYF 3, YYW 3, KN0AQO 3, W0VNL 2, ZUX 2, DEL 1, (Jan.) W0MXG 68, DEL 38, KN0BXF 3.

MISSOURI — SCM, James W. Hoover, W0GEP — SEC: MFB, PAM; BVL, RMs: OUD and QXO. GAR enjoyed a visit from SCA — traffic was the topic, no doubt. RCY is curtailing activities somewhat because of illness. WFF received a CP-25 certificate and an ORS appointment. FXU discussed "Meters and Their Application to Radio Circuits" at the February meeting of the Southwest Missouri Amateur Radio Club. KN0CWN has a 400-watt final ready for use when the General Class ticket comes

(Continued on page 108)

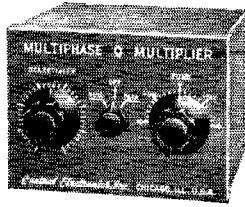
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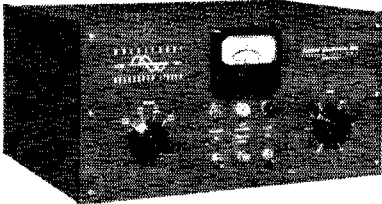
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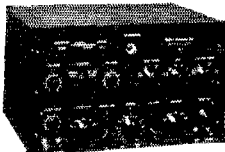
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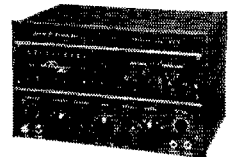
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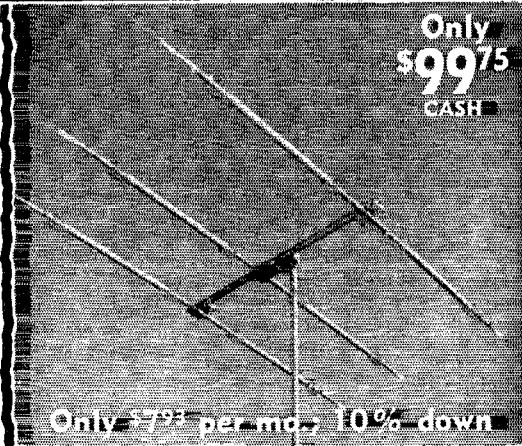
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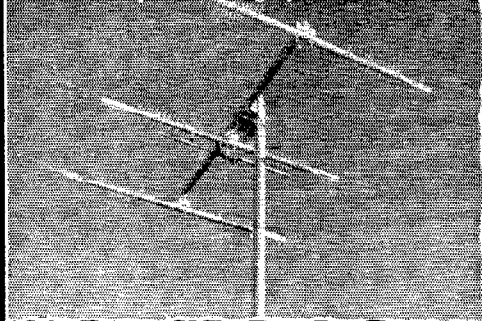
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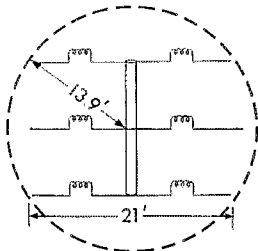
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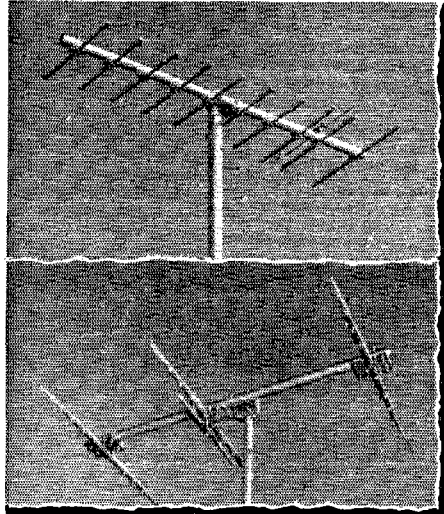
WRL Beam Engineers have insisted on construction of the lightest weight, yet highest quality; — Reynold's aluminum elements, hot-dipped galvanized steel booms, molded polyethylene and krylactic insulation. 2M beams use folded ratio dipole to match any line; 10 and 15M beams use 1" booms; elements are 7/8" telescoped to 3/4". 20M beams use 1 1/2" 16 GA. steel boom and 1" to 7/8" to 3/4" elements. All beams hardwood doweled at all stress points.

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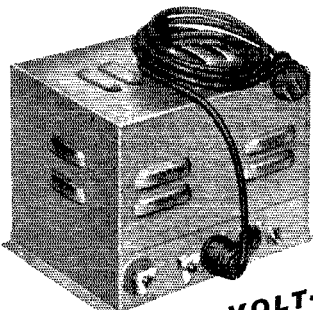
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(Continued from page 104)

through. *Short Rag Chew*, published by the Suburban Radio Club, St. Louis, carried a short article by MUX which described an inexpensive circuit to satisfy Conelrad requirements. WEQ has his 6-meter beam on a new 65-foot tower. OHC has been appointed EC for the Sedalia Area. Traffickers certificates recently were issued to RTW, 1000, and OUD, 5000. Thirty-eight such certificates have been issued to Missouri stations by KXL/NLY. Reports this month indicate a lot of early planning for Field Day Traffic: WQCP 118, GAR 780, GBJ 261, RCY 122, CKQ 112, WAE 93, WFF 85, OMM 83, OUD 69, IIR 54, RTW 44, KIK 42, EEE 28, KA 28, BVL 25, HUT 18, RWG 12, BUL 11, KNOCHE 9, WQWIF 4, VFP 4.

NEBRASKA—SCM, Floyd B. Campbell, W0CBH—Asst. SCM; Tom Boydston, 4VYX, SEC; JDI, NCS C.W. Net; ZJF, KN0CDG has the bugs out of the modulator of his Globe Scout. DDT has a new Viking Ranger driving the 313 final. Von is NCS on Wed. night for NEB and Alternate NCS on TEN Mon. UJK has a new 15-meter beam and four elements on 10 meters. ZJF is the new NCS and RM for NEB. RDN has resigned this post but promises to check in at times. New officers of the Home-steaders Amateur Radio Club of Beatrice are: AQQ, pres.; QNF, vice-pres.; KN0CBV, secy-treas.; KN0CBJ and KN0CIU are the membership committee. AQQ has his rig rebuilt. KN0CBV and KN0CJZ have the DX-100 ready for their General Class licenses. LXH should be a.s.s.b when you read this. DQN is on 2 meters. The Air Force MARS Net is on 1450 kc. with DQN net control. Anyone wishing to check in contact DQN. Rod has two ARC-is on 144 Mc. now. The NSS Net reports QNIs 16 with an average of 11. QTCs 6 averaging 1.7. ULN has a 45-foot tower with a three-element beam for 10 meters and his TV above that. New officers of the North Platte Amateur Radio Club are: UFX, pres.; VEA, vice-pres.; OKF, secy-treas. The new meeting place for the Ak-Sar-Ben Club is the Ak-Sar-Ben 4-H Building. Mobile stations participating in the Omaha March of Dimes were: UIQ, AEM, CQX, AQJ, JJK, QAIW, YMU, PHW, PIZ, and SPE. Traffic: (Feb.) W0ZJF 231, DDT 126, MAC 105, RDN 100, AIM 78, TIP 70, FTQ 51, UJK 43, KN0CDG 40, W0NIK 37, SZL 30, ORW 26, KDW 24, VRE 15, AEM 12, ERM 12, PQQ 12, OOX 7, EQG 6, OCU 5, BEA 4, KLB 4, YWK 4, BQY 3, ZN1 3, HQN 2, IAY 2, NHS 2, PDJ 2, VZJ 2. (Jan.) W0RDN 126, AEM 14.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Milton E. Chaffee, W1EFW—SEC: LKF, PAM: LWM, RM: KYQ, MGN and CN 3640 kc. (0645 and 1845); CPN, 3880 kc. (1800, Sun, 1000); CTN 3640 kc. (Sun, 0900); CEN 29,580 kc. Continuing to exploit good conditions, CN held 25 sessions, which handled 276 messages averaging 11.1 per session. LV and RGB were most consistent, being reported present 23 times, with KYQ 22 and AVS 19. For CPN, LWW reports a total of 117 messages handled, with KGT, YBH, and EVH reporting most regularly. The MGN "early birds" handled 89 messages in 19 sessions, with RGB, RFJ, and IBE reporting to all but 2 sessions. COB is reporting on CPN with a new Viking. TSI is going high power. MHF is busy handling U. Conn. traffic on CPN. TD has dropped his OBS appointment because of a change in working hours. HYF is building a new receiver. AW and YBH made BPL with originations plus deliveries. The Southington ARA conducted a local contest in conjunction with the Novice Roundup. Tri-City (New London) is considering a proposal to form an association of clubs in Southwestern Connecticut. LIM is back on 75 meters with 400 watts. HGE is chasing DX on 15 meters. QPD now has a full gallon in operation and is working to raise his modulation level. The Middlesex RA elected LIM, pres.; QPD, vice-pres.; EGS, secy.; and EGX, treas. The Meriden ARC elected STT, pres.; ZJF, vice-pres.; PTG, secy.; and QGX, treas. WHR and ULL have joined the 300-watt class. NRG has a new DX-100. WEE and IFQ are conducting code classes at Meriden C.D. Code classes also are held at Danbury C.D., led by K2EHL. JEQ was speaker at a recent Danbury Club meeting. Appointment renewals: URC as OBS; TCW, AMJ, ADW, and CUH as PCs; GLX as OPS-00-OBS; RFC as OO; and ADW as ORS. Traffic: W1AW 388, YBH 342, KYQ 167, LV 143, RGB 109, TYQ 76, YNC 74, NJM 62, RFJ 60, EFW 58, BVB 46, ZPV 42, AVS 23, CUH 11, KV 7, HYF 5.

MAINE—SCM, Allan D. Duntley, W1VYA/BPI—SEC: TVB, PAM: WTG, RM: EFR. The Pine Tree Net meets on 3596 kc. at 1900; the Barn Yard Net Mon. through Sat. on 3960 kc. at 0800-0930; the Sea Gull Net Mon. through Sat. on 3940 kc. at 1700-1800; the Teen Age Forest Net Sat. and Sun. on 3900 kc. at 1000-1100; the State C.D. Net Sun. on 3993 kc. at 1100-1200. As you may know by this time, we are starting early on our campaign for call letter license plates. I have appointed, in my estimation and that of others, a very good chairman for that committee—FNT, Al Teel, in Rockland. Although he is a newcomer to our fraternity, he is a "go-getter" and making himself known from Ft. Kent to Kittery. I know all of you will get behind him and give him a lift. The program that Al has outlined is tremendous, but one

(Continued on page 110)

HOW MUCH SHOULD YOU PAY FOR A GOOD ROTARY BEAM?

The only true measure of value is (a) performance and (b) amount of aluminum per dollar cost. Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.).

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. Everything is furnished and the matching is automatic. No electronic equipment or measuring devices are required.

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between $\frac{3}{4}$ " and $1\frac{1}{8}$ ".

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use $\frac{5}{8}$ " and $\frac{3}{4}$ " tubing elements; the deluxe models for these bands use $\frac{7}{8}$ " and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

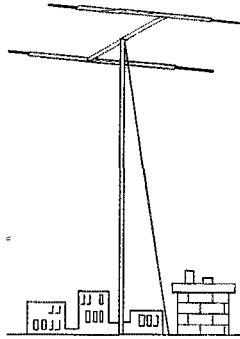
WHAT WILL A GOTHAM BEAM DO ? A Gotham beam will amplify the transmitted and received signal tremendously and will greatly reduce noise and QRM.

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ENGINEERED VERTICAL ANTENNAS for 40 meters, 80 meters, 160 meters. Gotham Hobby Corporation proudly announces three vertical antennas for operation on 40 meters, 80 meters, and 160 meters. Each antenna is absolutely complete with 2-12 foot lengths of tubing and a loading coil, can be assembled in less than two minutes, and requires no special tools or electronic instruments for adjustment and operation. Radiation is omnidirectional, with maximum radiation at the very low angles necessary for DX operation. These three vertical antennas have been developed over a period of three years in response to requests by hams for efficient, fool-proof, small-space, low-cost antennas for 40, 80, and 160 meters. Literature available.

#V40 vertical for 40 meters.....\$14.95
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HOW TO ORDER: Send coupon with check or money order directly to GOTHAM or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted. Some leading distributors who handle GOTHAM beams: Offenbach & Reimus, Curle, M. N. Dutt, Altronic, Purchase Radio, Lew Bonn Co., Henry Radio, Evans, Gib's Ham Gear, Hobe's Radio, Western Electronics, Harris Radio, Capitol Radio, Kinkade, Johannsen, W. H. Edwards Co., World Radio Labs, Graham Electronics, Geo D. Barbey Co., Hudson Radio, Solertronic, Radio Electric Service, Ken-Elis Radio, NRM Wholesale Radio.



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Deluxe 6-Element \$9.95 12-El \$16.95

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 Deluxe 3-El Gamma match 21.95 T match 24.95
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 Deluxe 4-El Gamma match 25.95 T match 28.95

10 METER BEAMS

Std. 2-El Gamma match 11.95 T match 14.95
 Deluxe 2-El Gamma match 18.95 T match 21.95
 Std. 3-El Gamma match 16.95 T match 18.95
 Deluxe 3-El Gamma match 22.95 T match 25.95
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15 METER BEAMS

Std. 2-El Gamma match 19.95 T match 22.95
 Deluxe 2-El Gamma match 29.95 T match 32.95
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 Deluxe 3-El Gamma match 36.95 T match 39.95

20 METER BEAMS

Std. 2-El Gamma match 21.95 T match 24.95
 Deluxe 2-El Gamma match 31.95 T match 34.95
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(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

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Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

Beam #R6 (6 Meters, 4-El).....\$38.95
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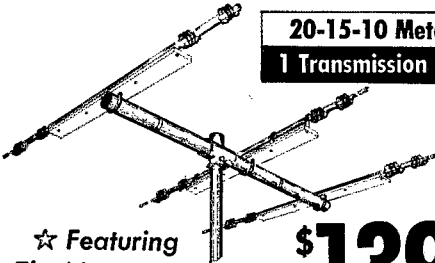
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(a) 14200—30 DB (b) 21300—25 DB (c) 28750—30 DB

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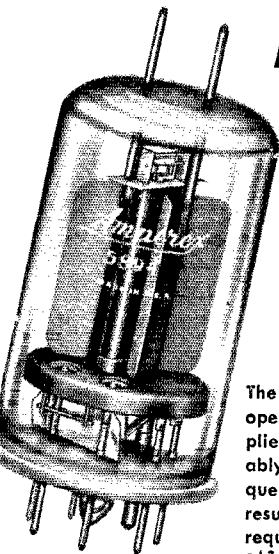
man or a few cannot bring it to a successful conclusion. Everybody must help and by so doing I can see victory in sight. There will be some expense involved in this venture, so contact Al to see how you can help. We all must take our responsibility for contacting the men and women in the State House who can and will help us. Let's not make this a one-man show. Get in there and pitch and let's not fail this time. I seem to have devoted most of the column this month to a pep talk, which I feel is very important. There will be more news next month. Don't forget the Andy Valley Net Sun. at 1000-1100 on 3940 kc. Traffic: WILKP 119, ZUL 45, EFR 35, WTG 35, UDD 26, TVB 24, DTK 17, BX 11, UZR 7, BCB 5, FZK 5, BDP 3, BZF 3.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, Jr., W1ALP — New appointments: ZQM as OBS. Appointments endorsed: DOF Revere, KEK, Lynnfield, LJT Brockton, VRK Swampscott as ECs; DOF and TNK as OFPs; LJT as OES; TNK as OBS and OO. DFS is the new PAM for 75-meter phone. Walpole, YFA, has a RACES license. ALP has received a RACES license for Sector 1-B with headquarters at Stoughton. DOM has a General Class license. YZM has a Viking II. ACB has an SX-100. Heard on 2 meters: SZV, KDF, DFZ, GIK, HHV, ELB, IOD, KO, IOJ, JKR, YDT, TAV, ION and JQ. TZQ/1 had an operation. Heard on 10 meters: MSH, YYJ, FQA, MLL, IRK, YZM, and STW. Heard on 75 meters: CZW, DJK, NOV, WWZ, ENS, DLS, PSS, WTY, CPE, UMC, HFA, IRP, ex-5VXS, 6DGD/1 Boston. ISS is the Scituate High School club call. 21RK/1, in Cambridge, is on 40-meter phone. Area 1 Radio Comm. held its monthly meeting with DWY, KTG, OTK, AR, TQP, ALP, QQL, ZYX, and CQ present. The Braintree Club held a meeting with work on 2-meter rigs and talk about 10- and 6-meter rigs. The South Shore Club held a meeting and MME gave a talk on Gonset 2-meter beams. Radio Amateur Open House heard a talk by Mr. Hallenstein, of F.C.C. WNIETH is QXX's son. Swampscott is getting Gonset 6-meter rigs and has a new tower on the town building. AXA is directing installation. TNE now is in Sharon busy with school. WRIGHT is new and on the air. BHD moved to Malden. CAM is having BCI-TV. Area 1 held a drill. Several Radio Officers couldn't get to Area 1 Headquarters because of a snow-storm but many towns were on just the same. 4URF is doing some operating at KIUSA. JUW has an HRO-50 and is AH: R.O. for Lynn. SHV is R.O. SMO is mobile all bands in the new Mercury sedan. SSZ has a WANE certificate. WU has a new HQ-140X. WNIETH is waiting for General Class license. LM says his hands still bother him. The Eastern Mass. Net on 3660 kc. has the following NCS: Mon, NUP, Tue, ATX, Wed, UE, Thurs, EMG, Fri, EPE, WSN spent some time in Florida and visited 4UAE. AOG has a 2-meter ground plane. WNIHC applied for OES appointment. WN1IAU, Whitman, is on 2, 15, and 80 meters. AJU still is down in Maryland. ZQM has a Viking Ranger and Super-Pro on all bands. The 1-9 Club met at KON's QTH. WN1s ILT and IOA, in New Bedford, have Heathkit transmitters. NXH and his XYL are in California on vacation. AVY was voted a lifetime Honorary Membership in the SEMARA. ØWIN in Denver, came from New Bedford. ME, AZY, and QJR are always looking for that extra country. DIR is doing FB with a DX-100 and beam. MHN is on 3870 kc. quite a bit. HPH is working in a local radio supply house. ZPE is on 20-meter c.w. AUQ has applied for OO appointment. RM has a Viking. SKD has a DX-100. QMU has a baby XL. MJA is working in New York State. NEM is working in New Jersey. PIW has TVI. JOW moved back to Newton. OGU has an 832 on 6 meters. NAV has TBS on 10 meters. LMU is building mobile. CMT has a DX-100 and ARC-4 on 2 meters. UG is boating in Florida. The Newton gang meets Sun. on the high end of 6 meters. SGH is living in Pembroke. TUG moved to Needham. UKA is away a lot. FVK was in Florida on vacation. EK has a new car. GOP spoke at the QRA on "Radio Activities at the National Bureau of Standards." WOS has her General Class license. IKQ is a new call. The North Shore Radio Assn. held an auction. VKF has a new daughter. ENS and ZQM won prizes at the January meeting of the QRA. DEL, DLY, and DPN have General Class tickets. WNIIOO is new in Winthrop. The Winthrop drill had BB, BDU, CMW, DUV, MQB, ORV, EAJ, TEO, and DHY on. THO, our 6-meter PAM, sends in the following news: DTN is on with a 2E26 and NC-57. CAS is on with a 522. VYS is mobile with a Gonset. 8SRO/1 is mobile with 35 watts. YKR is mobile. BFN, Rowley, has 40 watts to an 815. ZLY is on with a TBS-50. TYY is mobile with a Gonset. CQB, ZXH, and WGM are on. QLT is very busy with studies. HIL and QLT sent in appointment certificates for endorsement. WNIHC is a new OES. WN1IAU, in Whitman, is on 80 and 15 meters. KO is Sector 2B Radio Officer. AYN is R.O. for Area 2 and RSE is Alternate. Their headquarters is at Bridgewater. EVX has a Collins transmitter. GSK has a Viking Ranger kit. RACES plans have been sent in for Hull and Randolph. Hingham has a RACES license. Traffic: (Feb.) W1EMG 539, K1USA 512, W1EPE 131, IBE 131, UKO 127, AVY 32, TY 30, UE 30, BY 26, CUW 21, ATX 20, SMO 20, AU 19, NUP 16, BGW 14, SSZ 10, WU 10, ETH 4, DFY 3, AHP 2, LM 2. (Jan.) W1AOG 10, CUW 4. (Dec.) W1WSN 110.

WESTERN MASSACHUSETTS — SCM, Osborne R.

(Continued on page 118)

Amperex Tubes DELIVER MORE POWER...LONGER LIFE... MORE FOR YOUR MONEY



Amperex JAN-type 5894

Special Features that make this tube the
OUTSTANDING SELECTION IN ITS CLASS

- Lower battery drain.
- High power gain.
- No external neutralization necessary.
- Zirconium coated molybdenum anodes for high overload capacity and lifetime gettering action.

The 5894 is a UHF and VHF twin tetrode for wide-band operation, RF amplifier, modulator, frequency multiplier service and wide-band oscilloscopes. Considerably reduced capacities provide higher resonant frequencies. Single cathode and screen grid construction results in low RF degeneration, therefore low drive required. Self-neutralized over entire band. Only 4" x 1 1/2". This tube has proved to be outstanding with 5 years of actual mobile operation.

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PLATE VOLTAGE.....750 volts
ANODE DISSIPATION....45 watts
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ACTUAL MEASURED POWER OUTPUT PUSH-PULL OPERATION

144 Mc.....85 watts
220 Mc.....85 watts
420 Mc.....60 watts

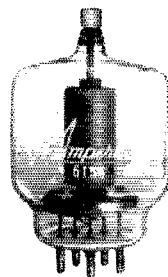


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- 17'3" max. el. length
- 8'4" boom
- Wt., 20 lbs.
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McKeraghan, W1HRV—SEC RRX. RM: BVR. PAM: QWJ. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EST. OES endorsements go to TTL and RVW. GQP is EC for Southampton. TTL is active on 6 meters with a three-element beam and on 2 meters with a five-element beam. JYH is using a new home-built receiver and a 4-250A final and is designing a converter. RO HRV is expecting delivery of a 6-meter c.d. station for Easthampton. RMR is back on the air with a new Ranger after a two-year layoff. BVR is on page 1922 of a loose-leaf log book he started in 1928. VE2AKJ, WI reports continued activity in Western Massachusetts and hopes to report into the WMCW Net soon. Ed Tilton, HDQ, was the speaker at the April meeting of the BCARA. AZW worked hard in the DX Contest. MVF picked up 5 new countries during the first week end of the contest with a new ground-plane antenna for 20 meters. UVI is giving code lessons two nights a week. DWA made BPL again on originations. BYH is doing fine on 15 and 20 meters with 50 watts phone. The HCRA now holds meetings at the Army Reserve Center, East St., Springfield. KUI, has received RACES authorization as RO for Sector 4A. WPW, Athol is active in the Air National Guard. Reports from Sector 3B show excellent activity under the direction of NAX, with assistants ZAM and WCO, with between 30 and 38 members calling into the net every Mon. night at 7:30. They have three ranch wagons equipped with two-way radio and set up to be used as ambulances during an emergency. They also have a radio-equipped sound truck. The Army Reserve Center in Springfield is awaiting radio equipment for its MARS station which is due any day now. Traffic: WIDWA 181, HRV 92, EOB 90, BVR 52, DVW 27, TAY 27, JAH 10, BYH 4, JYH 1.

NEW HAMPSHIRE—SCM, Harold J. Preble, W1HS—SEC: BXU. RMs: CRW and COC. PAM: CDX. The GSPN now operates Mon. through Fri. on 3842 kc. at 1730; also Sun. at 0900. The Concord Brasspounders Club is planning the 1956 New Hampshire State Convention. The tentative date is Sept. 30th. IP is the proud daddy of a new jr. operator. The Seventh N. H. QSO Party was a great success with many stations both in and outside New Hampshire reporting contacts in all ten counties for their WNH certificates. SSK has his 10-meter beam back in the air. THM, formerly of Dunbarton, writes that he will be back on the air at Northwood Narrows early in May. LCD, AIJ, and TDJ had their annual birthday party Feb. 25th. DYE has a new SX-25 and Millen exciter. The RACES plan for the State of New Hampshire has been approved by FCC and c.d. DEN is working on a new 2-meter rig. WBM is manager of the Minute Man Net, 3912 kc., Mon. through Sat. at 0730. WUU is Air Force MARS. GMII is very busy handling traffic for Maine and Vermont as well as New Hampshire. RVQ's code classes are going well. Welcome to Novices HHL, HIE, HJT, HKA, HQX, and HQZ. Traffic: (Feb.) W1GMH 239, IP 58, WUU 39, WBM 23, FZ 18, COC 16, CDX 11, BYS 10, ARR 4, DYE 3. (Jan.) W1IP 45, DYE 12, DEN 10, WBM 10.

RHODE ISLAND—SCM, Walter B. Hanson, jr., W1KKR—SEC: TQW. RM: BTW. PAM: VXC. The Clamdiggers Net is the latest, on 29.0 Mc. at 8 p.m. All are invited. Welcome to KHSY/1, in Newport, who has registered with AREC and can be found on 80- and 40-meter c.w. YNE has a new Globe Scout with YFO and now is a member of the RIN, TCPN, and RIIN. ZXK reports he now is with RCA in Harrison, N. J., and waiting for the Army to call. He's running a DX-100 and HQ-140X in W2 portable. YKQ has a new NC-300 and a new coax antenna. YKQ also is now manager of the RIN. The RIN traffic total for February was 132, with UTA in perfect attendance all month. VXC states that RIIN (29.260 Mc. at 1930) had 26 stations call in during February with an average of 5 stations per session. SBP is doing fine bulletin-reporting on RIIN. See Hamfest Calendar, elsewhere in this issue, for announcement of the PRA Annual Dinner Dance. The SCM wants to thank the section for the spirited interest recently shown in this column and the fine number of reports that are coming in. Please keep it up. Traffic: W1BXN 187, UTA 113, YKQ 56, CMH 39, VXC 29, YNE 29, SBP 21, TGD 17, FTI 2, EKR 1.

VERMONT—SCM, Robert L. Scott, W1RNA—

Amateurs of Vermont were deeply shocked to learn of the passing of Forrest D. Drew, W1BJP. He became a Silent Key at 0005 hours Mar. 1st at his home on 914 East Main St., Newport, at the age of 62 years. Forrest was recovering from a slight heart attack suffered just prior to Christmas, 1955. He had been very active in all phases of amateur radio since approximately 1919. He was a former SCM of Vermont. W1BJP was equally well known on phone and c.w. He took great pleasure in working Novices as well as the fast c.w. fellows. Forrest was never too busy to help a ham who needed aid or a would-be ham to get his ticket. He was one of the best known and liked hams in Vermont. His passing is deeply felt by all who knew him. As one of the VTN members stated on the night it became known W1BJP was a Silent Key, "VTN will not be the same now."

Traffic: W1OAK 118, IT 45, VZE 22, KJG 14, VAIC 14, RNA 12.

(Continued on page 114)

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The new HQ-140-XA offers many new and exciting features—higher usable sensitivity—new, smooth-as-silk tuning with improved dial markings for greater accuracy—further refinements in the already fine superheterodyne circuitry—full 2-watt undistorted audio output—and many other advances.

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- ★ Continuously tunable from 540 KCS to 31 MCS with adequate selectivity to separate crowded signals.
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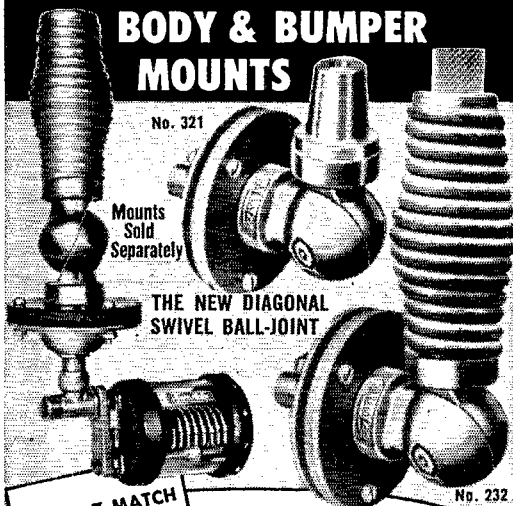
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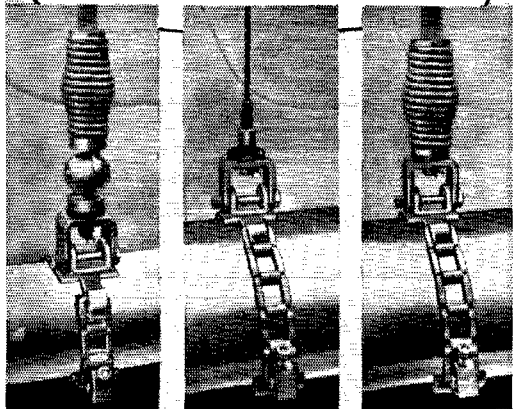
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FIFTH VERMONT QSO PARTY

The Tri-County Amateur Radio Club of Brattleboro, Vermont, announces the 5th Vermont QSO Party and invites all radio amateurs to participate. Vermonters are urged to work as many out-of-state stations as possible, so that interested amateurs can earn credit toward WAW, WANE and W-VT awards. Here are the details:

(1) Time: 24-hour week-end period from 6 P.M. EST Saturday, May 5, to 6 P.M. Sunday, May 6, 1956.

(2) No time limit and no power restrictions.

(3) Scoring: *Vermont stations*: 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian provinces and foreign countries worked during the contest period. *Outside stations*: 5 points for each Vermont station worked and multiply total by the number of counties in Vermont worked during the contest period.

(4) Credit for contacts with the same station on another band will be given this year, in order to promote more activity on the higher bands.

(5) A certificate will be awarded to the highest-scoring station in each state, U. S. Possession, Canadian province and foreign country, and to the highest-scoring station in each Vermont county. In addition, a W-VT certificate will be sent to any station working 13 of Vermont's 14 counties, provided the station has not previously been issued this award. Party logs showing required data will be accepted in lieu of QSLs.

(6) No specific frequencies are recommended. Use as many bands as possible.

(7) General Call: "CQ VT." Vermont c.w. stations should identify themselves by signing *de VT (call) K*. Phones say, "Vermont calling."

(8) Contact information required: Vermont stations send number of QSO, RST or RS and county. All others send number of QSO, RST or RS report, and state, possession, province or country.

(9) Logs and scores must be postmarked not later than June 15, 1956, and should be sent to Tri-County Amateur Radio Club, c/o Vito Rizzi, WITXN, 24 Chapin St., Brattleboro, Vermont.

Vermont Novices are urged to get into the fray. Also, stations in Bennington, Essex, Lamoille and Grand Isle Counties, please plan to be active. Everyone interested, mark your calendars now so you won't forget. Good luck!

NORTHWESTERN DIVISION

ALASKA — SCM, Dave A. Fulton, KL7AGU — On Feb. 8th snow slides took out telegraph lines, cutting communications between Anchorage and the Port of Whittier. During this period BJD and BGZ, in Anchorage, set up phone patches and relayed all messages, instructions, and train orders for the Operations Department of the Alaska Railroad, DD being on the receiving end in Whittier. For this service the general manager of the Alaska Railroad sent letters of commendation to the persons concerned. PIV and his XYL, BHE, returned to Anchorage after spending a year in W8-Land. BDV left Anchorage for the sunny south. We hope to hear Galen on soon from W5-Land. The Kodiak Amateur Radio Club is putting out a very nice publication called the *Ham Bulletin*. This bulletin is published monthly in the interest of amateur radio. Nice going, fellows, keep it up.

IDAHO — SCM, Alan K. Ross, W7IWU — Moscow: A nice letter from VQC reports his activity on 75, 40, and 10 meters. Gifford: Official Observer VWS logged about 20 second-harmonic signals in the region 7400-7500 kc. from Novice stations. It is urged that all Novices have someone check them for such harmonics. Lewiston: GMC reports the Lewiston-Clarkston Amateur Radio Club officers are UJA, pres.; YBV, vice-pres.; and HDT, secy.-treas. Boise: Newly-formed civil defense nets now are in operation each Tue. at 6:30 P.M. MST on 3997 kc. with PIJ as Net Control, and each Wed. at 7:30 P.M. MST on 3509.5 kc. with IWU as Net Control. We are working toward the June civil defense tests with all possible Idaho check-ins. If you still need KACES forms ask MKS, FIJ, or IWU for them. Traffic: W7GMC 176, RSP 4, VQC 2.

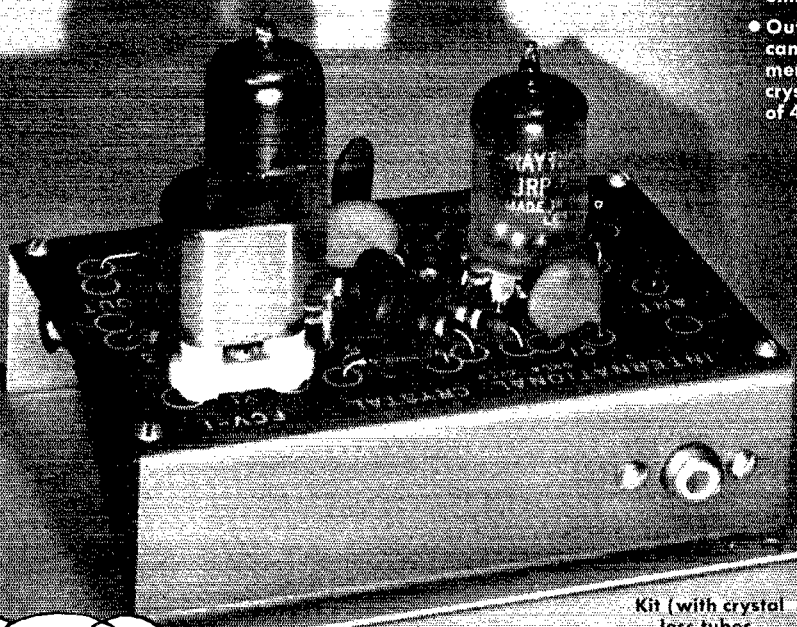
MONTANA — SCM, Leslie E. Crouter, W7CT — The Old Faithful Radio Club of Livingston held its annual election of officers and elected FGB, pres.; YPN, vice-pres.; WN7BRH, act. mgr.; RZY, secy.-treas.; Walter Otto, asst. secy.-treas.; YPN had a bad accident and received a punctured lung. He has a new Globe King. LPL is vacationing in Florida. RDM is back on. LBK is on 75-meter mobile. Th. Brady gang is tuning up its mobiles preparing for another summer. MBH is on s.s.b. THP returned to Brady

(Continued on page 116)

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Sensitivity 1 microwatt or better

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Crystal Frequency 49.4 MC or 43 MC depending on IF desired. (Oscillator range 40 MC to 50 MC)

Plate Power 150 volts to 250 volts DC
@ 15 ma to 20 ma

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Tubes 6AK5 RF Amplifier
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Size (overall) 4" x 3 1/2" x 3 1/2"

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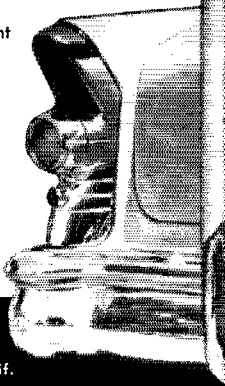
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TGG won a YL Party certificate. FUB has a new 800-cycle filter for his 75A-4 and reports having much better results with DX signals. SWE has moved to Texas. A field trip was made by the Capital City Radio Club to the Holter Laboratories for an interesting illustrated lecture on electronic research. Recent endorsements: TLDW as O1P, FGB as EC. Traffic: (Feb.) W7SFK 71, TVX 25, CT 8, LBK 1. (Jan.) W7FIS 3.

OREGON—SCM, Edward F. Conyngham, W7ESJ—WHE was visiting PFA across town when SMR mobile called and advised WHE that his house was on fire—the rig was saved. QKX worked Capt. Kurt Carlsen on 15 meters. QF has just finished a DX-100. ODG worked 160 meters with a DX-100. PRF is looking for a VFO for 160 meters. PQJ recorded 18 out-of-band second harmonics in one hour and ten minutes! New ORS: YUY. New OOs: FU and PB. New ECs: FBG, SYF, SHG, TMF, and VXC. New OPS: QWE and CJJ. VBF has been hospitalized. VLL is helping with the new club house. WPW is organizing the Springfield Emergency Corps. FRA still is running code practice. SMR has a new mobile rig and is leaving for the East Coast and a new job. UHC reports the Salt Air Net on 3735 kc. for helping newcomers. TIR is chasing DX and is on MARS. ULL is putting the finishing touches on the DX-100. AQK is putting the antenna—twice. LNG is off on a USNR cruise as ETN-2. SDY is taking final exams at M.I.T. The OARS Net has 523 check-ins with 61 stations; 19 net certificates were issued for good attendance. The OARS is publishing an Oregon Call Book. Active on MARS: W7s TYT, VZW, ADX, AYT, COZ, BXU, BEG, EUG, HIF, RPD, FGL, JGH, KM, LT, MAO, NGV, P1L, PZ, PFA, PFI, PGB, PUH, QEL, QF, QFY, QVY, QWE, RCL, RET, RIAL, ROJ, SDW, SEZ, SOE, TAK, TCT, TLO, TMI, TUC, UZU, VIL, VBF, VALK, VBF, VRM, QVN, THV, TWO, SCY, OUC, WGB, WAA, WBS, WHE, WHP, WPW, and WXB, and K7s WAM, WBB, WBH, WCA, and WCQ. A new club, the Beaver MARS Club, is going strong in Corvallis, under RIM. WKP is building a grounded grid final. WVG is redesigning his rig. TAZ is considering modernizing the scope. Traffic: W7QKU 389, VIL 48, SMR 42, OMO 37, PRA 32, BVH 30, QWE 24, WPW 24, BLN 23, YUY 23, AQK 12, HDN 10, SYF 7, UJL 7, UHC 1.

WASHINGTON—SCM, Victor S. Gish, W7FIX—Richland news from UQY, NLI, WXW, and OAF operate a 10-meter mobile session each Mon. night; PKP, VXE, and WN7ABL moved to Massachusetts; BSG has gone to KP4-Land; GWD and YFO are DXing on 20 meters; UQY is working on the rig, the antenna took a 95-m.p.h. wind Mar. 2nd. K7WAT skeds KH6QU, KL7USA, K6WAE, K6WAY, K7FBL, and W7PGY. U7H reports: For the first time in Olympia's history all service organizations and the police department are being informed of services available to them—16 units on 53.29 Mc. FMTR. HDT reports two BC stations 50 kc. apart are wiping out all signals every 50 kc. across the 40- and 80-meter bands. He is working 20, 15, and 10 meters with 144- and 220-Mc. rigs being built. The WARTS Net changed its time to 1800 PST on 3970 kc. USO now is on WARTS and WSN with full coverage of the State. OE checks into WSN from North Bend, Ors., with 30-watt portable—next stop Crescent City, Calif. AHV reports "QRL is working against me" but originates 105 messages. ETO de-TV'd the rig. LVB says "I think WSN is about as efficient as any net I've heard." Me too, Roy. YFJ has an S-85 and says the wrong call was listed for him as sgt.-at-arms of the NSARC. GVV made ORS. AVM reports five stations on 2 meters in a QSO in the Grays Harbor Area. The Skagit Club's new officers are CZY, pres.; YUN, vice-pres.; LVB, secy. TGO is fighting calculus at school. JHX worked cross-band 432 Mc. with UFE on 50 Mc. from Gig Harbor to Seattle (about 25 miles). AIB operated portable from Sequim and is awaiting good weather for work on the antenna. VAZ is experimenting with 15-meter antennas. FZB has a new SX-100. The DX Contest got him ZL, JA, KA, KH6, XE2, KV4, KR6, and VP9 and he heard JA1KF on 80 meters. SJL sends Official Bulletins on 3905 kc. at 1745 Mon.-Wed.-Fri. ZTJ passed the General Class exam. FWD built a Conelrad monitor using the transistor as in Jan. Q87. Although your SCM gave you all the opportunity needed to nominate some other eligible ARRL member for the job, he still is in for another two years. The only other nominee was ineligible. Traffic: (Feb.) W7PGY 1121, BA 1096, VAZ 579, K7WAT 335, W7AHV 105, USO 86, OE 68, GVV 63, APS 48, WOK 39, LVB 27, WAH 23, AIB 21, FWD 19, EHH 16, FZB 11, UYL 10, YFJ 8, EVW 7, UVH 6, ETO 5, AVM 4, TIQ 4, J&Y 2. (Jan.) W7WAH 16, GVV 5.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—KH6BFT is now the EC for the Kona District. AFQ and ABI have their RACES tickets now. DE is out in the lead in the mobile WAS contest run by the Honolulu Mobile Club. EY shifted to 10 joining the rest of the old-timers in the 10-meter mobile gang. AN has joined the s.s.b. addicts on 75 meters. EM is the chairman for the Territorial Ham Convention to be held on Maui this year. ES continues to work VQ2AB. This has been going on for years with week-

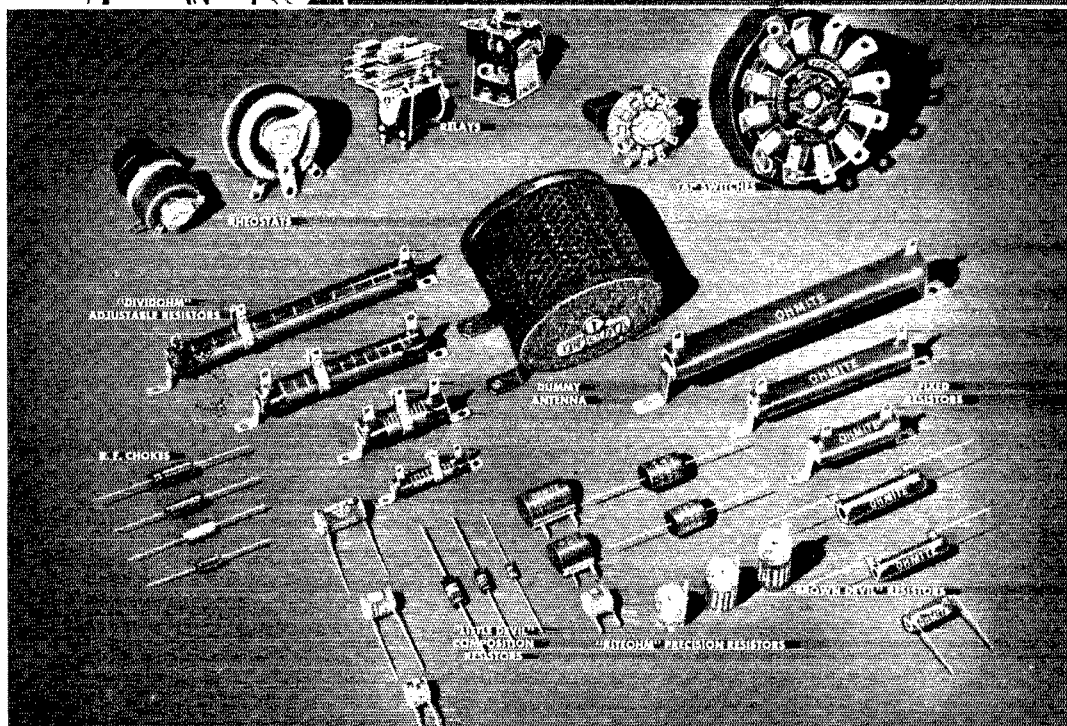
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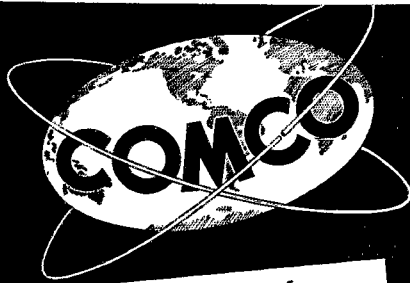
end skeds. KS/AFC, Jim and Hazel, traded in their old-fashioned 75A-3 on an A-4. Very few of you traffic-handlers are reporting your activities. Let your SCM in on the secret, Traffic: (Feb.) KH6AJF 589, KP6AK 96. (Jan.) KH6AJF 839, QU 512, KP6AK 99. (Dec.) KH6AJF 1738, QU 719, KP6AK 102.

NEVADA—SCM, Ray T. Warner, W7JU—Storey County's only ham is KRG, operating 40-meter c.w. in Virginia City. VYC is the newly-appointed EC for the Las Vegas Area. VE4LA/W7 is now active in Las Vegas. TRV, JU, BJY, YKQ, and ZLQ were elected to the Board of Trustees of the SNARC. Eleven mobile members of the SNARC, with PBS operating fixed station from KLAS-TV, did a bang-up job in dispatching and picking up contributions in the recent "Dogathon." ARA, BTC, BRX, LVP, VIQ, VYC, YKQ, YCY, YJB, ZLQ, and JU furnished communications for the "Hare and Hound" motorcycle race, near Las Vegas, which covered a course of 100 miles. Communications expedited assistance to three severely injured riders in remote desert areas, one of whom was picked up by helicopter from Nellis AFB. WN7YNO, the son of VIU, is now YNO. KL7BEA and K4DEN are new hams in Winnemucca.

SANTA CLARA VALLEY—SCM, R. Paul Tibbs, W6WGO—Asst. SCM: Roy E. Pinkham, 6BPT, SEC: NVO. We note by the *Paragraph* that the PAARA is giving some thought to the subject of Field Day. It does seem that the original idea of Field Day has been lost somewhere along the line. It may test the ruggedness of equipment to go to the top of a hill and operate for twenty-four hours, but does it give an idea of what the efficient handling of emergency traffic will be in the case of an emergency? The results, at least in some cases, in the floods at Christmas time in this section and over Northern California did give an indication that operating during Field Day as it has been in the recent past did not give the experience in that type of work that is necessary. It may be the right time to reexamine this important part of our amateur activity, getting back to the work of training operators. K6JJV is now on 50 Mc, running 90 watts to an 829-B. VQV also is building a rig of like construction. OHQ spent a couple of days in the High Sierras near Placerville. While there he made 34 contacts with stations in the Bay Area. K6HGV reports that Novice operators are getting their Technician Class licenses and moving to the 6-meter band in great numbers. OPX reports that more equipment has been stolen from the Stanford University Club and radio propagation station. All amateurs should be on the watch for Collins 310-B exciters, a Gonset 500-watt linear amplifier serial No. 181, and one Super-Pro SP-400. The Collins exciters have been modified for pulse work, the receiver has been modified to use several diodes for pulse work. Traffic: K6DYX 375, W6ZRJ 103, W6YHM 102, AIT 85, BPT 81, HC 78, JCG 27, KN6LSL 11.

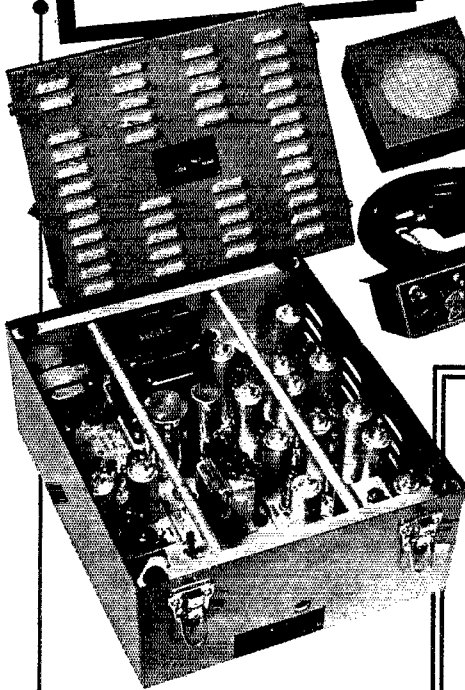
EAST BAY—SCM, Roger L. Wixson, W6FDJ—Asst. SCMs: Harry T. Cameron, 6RVC, and Oliver A. Nelson, jr., 6MXQ. SEC: WGM. PAM: LL. RMs: EFD, JOH, and IPW. The Napa Radio club reports a fine meeting in February. The guest speaker was BV, of the PG&E Co., whose topic was "Radio Interference Problems with the Power Co." The SARO had as its speaker IOT, who was representing USAF. Norm gave an interesting talk on "High Altitude Bombing using Radar." The Oakland Radio Club, Inc., was honored by a most interesting talk given by Dr. Les Reukema, professor of electrical engineering at the University of California. His topic was "The Industrial Use of Atomic Energy." At the East Bay Radio Club, Clay Murdock, of the Eimac Company, gave some interesting dope on high-power Klystrons and forward scatter communications. The Mt. Diablo Club was entertained by Archie McFaul, who gave reports on Coast Guard activities and boating. Activity at the Hayward Club included a talk by PEK, chief operator at the Sheriff's e.d. station at Fairmont. He urged definite action by the club to establish e.d. communications activity on a local level in the civic communities in Southern Alameda Co. Wally Harrell is now KN6QLS. License classes at the Hayward Union High School started Feb. 16th. DKE is chairman of the committee. CFY and ALY are associate instructors and 37 showed up for the first class, ages 9 to 50. K6LCB was elected president of the IIRC. The RTTY-ers met Feb. 24th and discussed the problem of organizing a group to represent the RTTY amateurs of Northern California. VPC and Roger Bunce were appointed as chairmen of the East Bay and San Francisco Area. FDJ gave a technical talk on terminal unit design and filters in particular. The Acacia Radio Club is planning a new and interesting program for the remainder of the year. BF, MKT, VPC, RMN, and FDJ were acting as a steering committee for the new program. Recent reports from WB indicate that preparations for the National Convention to be held July 6-7-8 are going along according to schedule. First prize has been set as a Collins KWS-1. Your SCM urges everyone to go all out for his convention. Let's show the rest of the nation that we really know how to put on a first-class job. Major A. C. Forbes, K6GK, really is doing a job on the UTL and MARS Nets. He reports a total traffic count of 105. ASJ is keeping busy working over some RTTY gear and also is working some traffic on MTN. K6CCQ reports a traffic count of 11 on NCN. ITH reports that DX is getting better rapidly on all bands, especially 10 and 15 meters. Reg is sending out

(Continued on page 120)



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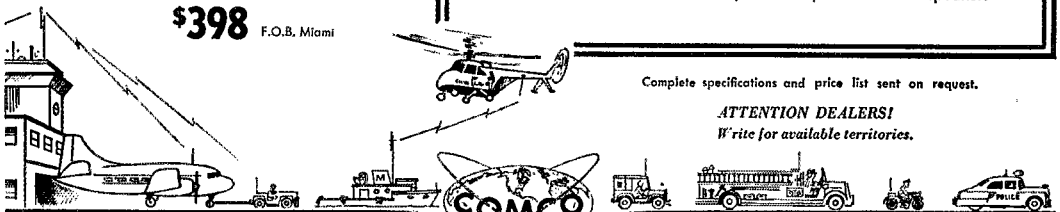
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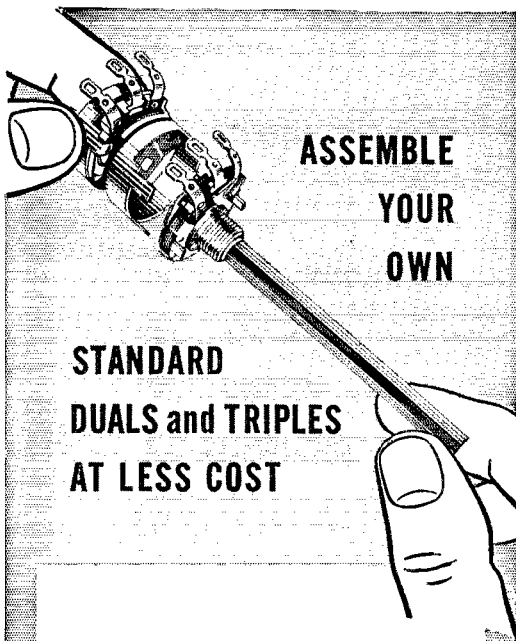
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at least a dozen OO 12.111 reports weekly. IPW reports a total traffic count of 110 picked up on NCN, RRG and PAN. VPC reports a total of 53 from A-6PC/A, on 3245 kc. Wed. at 9 P.M.

SAN FRANCISCO — SCM, Walter A. Buckley, W6-GGC — The San Francisco Naval Shipyard Club members held their February meeting at the QTH of K6IOK with a big turn-out. SLX was passing through San Francisco and joined the club members. The fellows were all glad to meet in person one of the Eureka boys who kept communications going during the Christmas Flood Disaster in Northern California. Ed brought along a list of names of amateurs in the Humboldt Radio Club who handled many messages for the public during this time of emergency. The National Red Cross issued a bulletin in February stating that the San Francisco chapter of the Red Cross had handled over a thousand completed emergency flood messages through CXO. The Young Ladies Radio Club of San Francisco held its February meeting at the QTH of one of the club members and planned many activities for the ladies during the coming National ARRL Convention to be held in this city in July, 1956. It was decided to disperse with long business meetings until after this event and put the time into working up a large program for both the licensed and unlicensed YLs and XYLs so that their memories of the National ARRL Convention will be happy ones to be long remembered. TYP and TDP came in first in the monthly 10-meter transmitter hunt held by the 29ers Club. KFS and K6TDT were the first to find the hidden transmitter on the 6-meter hunt for the month. The San Francisco Radio Club held its annual club auction on Feb. 22nd. ERS is the new alternate member of the Board of Governors in the club. 6JWF, GHI, and the GGC family enjoyed the annual whing-ding held at ZYC's QTH in Wasco, Calif., on Feb. 25th. Each received a "Royal Order of Wasco Whinginghats" certificate for having attended five annual Wasco amateur radio gatherings. WGO Santa Clara Valley SCM, also attended, as did about fifty other amateurs. Best of luck to JAA and SDN on the new business venture, P&K Electronics, in San Francisco. ULA now has an 829B on 6 meters. PHS and QMO are busy building a Heathkit DX-100. URA has completed the job of rewiring the exciter. FEA and WJF are busy with ALN and MARS Army schedules. GQY reports in with a 634 traffic count in spite of being ill and spending two weeks in bed. PHT has had some recent surgery. Best wishes for a speedy recovery, Cyn. PCN and FEA are chairlady and co-chairlady of the ARRL National Convention for YL activities. WB says he is receiving full support from manufacturers and hams and plans are progressing very nicely for the National Convention. K2ACM, son of 2EEO and 2CYK, is stationed at MARS station USA in San Francisco. Sorry to report that SWP's condition is unchanged. Last, but not least, we wish to report receiving a real nice letter from the Governor of California commending the amateurs in California for the good work they did in handling traffic during the flood emergency when regular means of communications were out. Traffic: (Feb.) W6GQY 634, FEA 50, GGC 26, WJF 19, GHI 12, GQA 7, (Jan.) W6FEA 115, WJF 29.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — K6EHT is to be manager of the 8VEN. CMA is working hard to get the 8VEN into operation and is doing a nice job, but needs more check-ins on 3512 kc. nights. The daytime frequency is 7024 kc. We still are waiting for photographs of those who took part in the recent California flood. How about it? Send them to HIC. ZF has been busy with work but soon should have time for a bit of amateur radio. DVD, SLV, and BLW are interested in Emergency Disaster Communication Planning. ESZ has a pair of RK65s with a cool gallon. ASI has a pair of 4-400As on s.s.b. JEQ, our SEC, has a BC-610 on 75 meters. MIW is sporting a Gonset Communicator on 2 meters. HTS and HSB are being tempted by the Chamber of Commerce of Florida to move there and become W4s. ATN is back on the air with s.s.b. on 75 meters. CFF is president of the RAMS, a mobile club of Sacramento. CQK has moved from Fairfield to Redwood City and has a remote-controlled rig on one pair of wires. K6DEO still is recuperating from the flood at Yuba City and is active on MARS. DDC is aiding the Dunsmuir Club in teaching Novices the rules of amateur radio. With the storm in the past the thing to do is be ready for the next, should it come. With this thought in mind, join some net, c.w. or phone. It's very strange how few know the correct way to send a message. Let's dig, fellows. Traffic: W6CMA 154, K6EHT 8, W6JDN 6.

SAN JOAQUIN VALLEY — SCM, Ralph Sarovan, W6JPU — The Fourteenth Annual Fresno Hamfest will be held at the National Guard Armory, May 5, 1956, in Fresno. C.D. checking-in time is at 8 P.M. every Mon. on 3990 kc. All amateurs are urged to check in. MIXJ, VPV, DVI, VBQ, and MWQ are on s.s.b. on 75 meters. K6KFW has a new QTH. K6HWS is on 40-meter phone. CPT is on 40-meter mobile. GQZ is going to retire. The Stockton 6-meter gang is anxiously waiting for openings for DX. EXH is using a Q5-cr for s.s.b. reception. DBH is working 10-meter phone. JPS put up a 35-foot 3" pipe to hang his sky wire on. OWL is building a new final for s.s.b. K6KLE has his General Class license. ZYR is thinking about 6 meters. PXP is sporting a new GMC "Blue Chip" pickup. BAN bought a Chev. panel and it's gonna be a radio truck.

(Continued on page 122)

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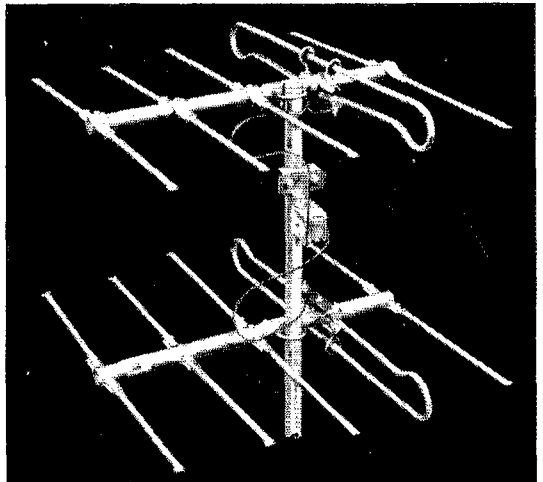
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Chicago: Chicago Radio Appar. Co., 415 S. Dearborn St.
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Chicago: Grove Electron. Supply, 4103 W. Belmont
Chicago: Newark Elect. Co., 223 W. Madison St.
Chicago: Premier Radio & TV, 3239 W. North Ave.
Rockford: H & H Electr. Supply, 519 Kiskwaukee St.
Rockford: J & M Radio & TV Supplies, 1133 Railroad Ave.

Indiana, Hammond: Broadwin Radio & TV Co., 6547 Kennedy Ave.
South Bend: Radio Distributing Co., 1212 High St.

Iowa, Council Bluffs: World Radio Labs, 3415 W. Broadway
Massachusetts, New Bedford: E. A. Ross & Co., 1663 Purchase St.

Michigan, Ann Arbor: Purchase Radio Supply, 605 Church St.
Battle Creek: Warren Radio Co., 308 W. Columbia.
Detroit: M. N. Duffy & Co., 2040 Grand River Ave.
Flint: C&S Electronic Sup., 738 E. Wilberbee St.
Grand Rapids: Radio Parts, Inc., 542 Division Ave., S.
Lansing: Northwest Radio of Mich., 435 Tamarack St.
Muskegon: Bell-Lourim Electr., 1839 Peck St.
Muskegon: Fitzpatrick Electr. Supply Co., 444 Irwin Ave.

New Hampshire, Concord: Evans Radio, P.O. Box 312.

New Jersey, Newark: Variety Elect. Co., 468 Broad St.
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Model HM6-10AK	5-over-5	33.25

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Model CAP-MK2—	4-alongside-4	\$15.00
Model CAP-MK4—	5-alongside-5	22.50

All prices slightly higher Far West and Southwest

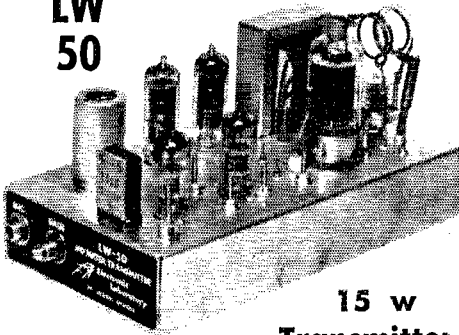
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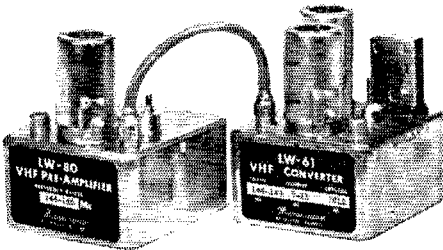
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ROUTE 2, JACKSON, MICHIGAN

Some guys have all the luck. JXY has a new Buick, K6GHG is building a new filter rig for 75 meters. DVL is looking longingly at s.s.b. JUK was a visitor in Fresno. SMS has a new 2-meter station. PPO is on terminal leave prior to his retirement after 30 years at sea. He is going on s.s.b. A 2-meter repeater is ready to go up, still waiting for the license. Don't forget the hamfest May 5, 1956. Traffic: W6ADB 114, EBL 17, K6CLK 7.

ROANOKE DIVISION

NORTH CAROLINA — Acting SCM, A. L. Guin, Jr., W4ZQB — SEC: ZG. RM: VHH. PAM: ONNM. OO: JZG. OBS: GHS. GHS is president of the new Harding High School Radio Club, at Charlotte. KN4DRM has his Novice Class ticket and has worked 36 states toward WAS with 25 watts. JZG reports that KL7BKI is a newcomer to Elizabeth City. Sam has been very busy sending out OO notices. The NCN C. W. Net, which meets at 1900 Mon.—Sat. on 3554 kc., is in need of stations in Fayetteville, Fort Bragg, Asheville, Lincolnton, Ashboro, Rockingham, Durham, Winston-Salem, and Henderson. I wonder if some of you c.w. men can't help these boys out. ZG has appointed K4ECI as Cumberland County EC. REW has been appointed Asst. EC in Mecklenburg County and is organizing a 6-meter net to help supplement our regular 75-meter C.D. Net here at Charlotte. FKT's 20-meter beam blew down and was badly bent during the last wind storm. He put it back up in the same condition and says it works better than ever. How's this for radiation? GHQ has worked a KL7, CM7, KH6, DJ1, and ZL3 on 40 meters with 50 watts and a BC-457 receiver. The Mecklenburg Amateur Radio Society had a very distinguished visitor in the person of Ray Baly, VR3A-VK3ANB, from the underwater cable relay station at Fanning Island via Melbourne, Australia. Ray is touring the U. S. and visiting the numerous friends he has worked. CEN was host to Ray during his stay here. Ray tells us that he and a few fellow workers will handle all of the wire services on the 1956 Olympic games that are being held in Melbourne this year. Traffic: W4LEL 159, FDP 20, GCJ 2, GHS 1.

SOUTH CAROLINA — SCM, Bryson L. McGraw, W4HMG — The North Augusta-Belvedere Club now has 30-plus members. The officers, THH, pres.; TUN, secy-treas.; PED, pub.; and K4AWG, activities, are working closely with c.d. and the Coastal Emergency Net. Our genial PAM, FFH, is much concerned over needless QRM on the South Carolina Phone Net from within our State. This is our very own net to make or break. Let's give John and his NCSs our help. HDR now is mobile with a shiny new Olds. K4BEG has an FB mobile signal with only 6 watts. K1NRL, the Naval Reserve group in Columbia, is active with K4CKB, K4BEG, W4OAP, and W4CGF and has 500 watts on 75 meters. HCZ is getting a mighty growl from his full kw. Mail me all your spare 75-meter crystals and I will forward them to an up-State station who is 2 kc. off the South Carolina Net. He says he is crystal and cannot QSY. An FB field day and picnic was held by the Charleston gang on Isle of Palms testing their emergency gear, with DOW AWY, CSP, HNH, CDE, FGE, ACG, AAH, EAR, ADJ, CTX, AQB, BPN, UFK, ZRH, TPE, and GOU, and KN4s GDI, EWC, and HVN all doing a nice job with FB signals here in Columbia. Thanks to DWJ for the invitation to the Shaw-Sumter Club meeting. Congrats to the Mississippi Hurricane and Virginia Phone Nets for their smooth operators and good traffic-handling. ZRH, our SE, is going great guns with emergency work and is getting FB results. Orchids to JCP and that smooth-as-silk voice on 75 meters. Sealions to the unmodulated carrier that hunts 3930 kc. We welcome as AREC members, GLU, ZPB, and HQQ. Traffic: W4AKC 165, FFH 43, HMG 28, YAA/4 23.

VIRGINIA — SCM, John Carl Morgan, W4KX — The Va. QSO Party will be held Sun. May 20th. The Rappahannock Valley Club is taking over publication of the *Va. Bulletin*. You should have received yours by now. If not, send a card or message to KX. All club secretaries are urged to send reports on their groups. The PVARC held its own Novice Contest during the ARRL Novice Roundup. The Petersburg Club, via CXQ and K4GEC, is teaching a class of 32 would-be hams. Petersburg YLs KN4EUU and EUW had a 5-column spread with pictures in a local rag. The SCM enjoyed meeting some 80 other old foggys at the February meeting of the Ozone Sniffers at Olney, Md. There was a good turnout from Virginia. BYZ reports the Danville Club is planning to rent the former WBTM-TV transmitter building for a club house. NCS W4TFZ says sun activity is goofing up ODN. IA reports the new Traffic Hounds Net is growing apace (0700-0745 EST on 3540 kc. Mon.—Fri.) and says traffic has been light but service is good. WBC reports KFC pulled a new twist, operating in the DX Contest from Lebanon as an OD3! LW has a new ship, the USS *Rigel*, and is visiting hams while in KP4 and KG4-Land. JUJ added another certificate — WNHL. AAD thinks he's tamed the kw final. K4BBR is having trouble with neighbors tearing down the antenna. That's a fine way to welcome him back to Falls Church. CWB is tickled with the home-brew 20-meter beam. TYC is back in Roanoke hard at work at a local college. KX temporarily dismantled so the painters could waterproof the basement. Traffic: (Feb.) W4SHJ 539, IA 223, K4DBC 162, W4HMK 153,

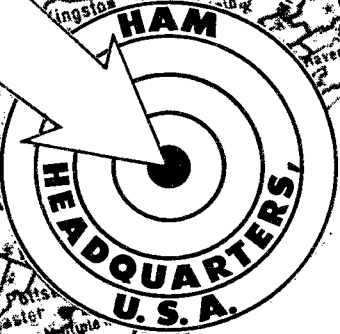
(Continued on page 124)

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Fair enough? Let's go! **73**

Bill Harrison. W2AVA

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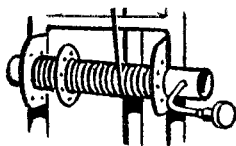
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FKP 71, K4AET 51, W4CZB 37, AQA 34, K4DKA 25, DWP 25, W4AAD 24, TYC 17, BYZ 15, CVO 15, K4CZB 14, W4CXQ 12, ZM 9, K4BBR 5, W4WBC 4, JUJ 2.

1956 VIRGINIA SECTION CSO PARTY Sunday, May 20th

A QSO Party, open to all Virginia hams, will be held from 1800 to 2200 EST on May 20th. Any band or mode may be used, but only one QSO per station per band (except for mobiles) is allowed.

Information to be exchanged consists of Number of QSO, RS or RST report, County in Virginia, and operator's "handle." Example: W4YYY, working W4XXX for his tenth contest QSO, sends him "NR 10 W4YYY 599 (CLARKE (COUNTY) IGNATZ." W4XXX then sends a similar message in return.

Scoring: Between General Class or higher licensees, score 1 point for each message sent and for each received, or a maximum of 2 points per contact. For each message sent and received where at least one end of the QSO is a Novice (i.e. Novice to Novice, or Novice to higher class licensee), score 5 points, or a maximum of 10 points per contact. Multiply total number of contact points by the number of different stations worked, and multiply that in turn by the number of different counties, to determine final score.

Call "CQ VA" on c.w. and "CQ Virginia Section Party" on phone. General or higher class licensees should call "CQ VA WN" to indicate they intend to listen within the appropriate Novice sub-band. Novices should listen outside the nearest sub-band limit for calls from higher class licensees.

Mobiles operating in more than one county may be worked once in each different county by a fixed station. Similarly, a mobile operating in more than one county may count the same fixed station as another contact from each new county.

Good rallying points include the Virginia Net frequencies, 3680 and 3835 kc.

Abstracts of logs should be mailed to SCM W4KX not later than June 15, 1956.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: GEP, PAMs: FGL and GCZ, RMs: DFC, GBF, HZA, and JWX. GBF is to be congratulated on making BPL this month. The following information came from the Elkins group: NTY is on 75-meter s.s.b. and is building RTTY gear. GIU is on 80 through 10 meters both A-1 and A-3. New Novice KN8AGA is on with ARC-5 and Adventurer rigs. WNSHINK, of Bluefield, is on 40 meters. OQC, ex-3QKD, in Fayetteville, is active on 7 Mc. with a Globe King. GEC is doing a good job on 14 Mc. KWL is back on 28 Mc. with a beam. The hams in Morgantown sure contributed to the success of their hobby show and handled a lot of traffic. RXP has a new SX-100. FMU has one on order. IXG is very active on several frequencies. VBD got his General Class ticket. DDQ is on 50 Mc. with a beam and also has a 10-B exciter and 75A-4. ORT has a 75A-4 and Globe King. HI and GHP have 20-A s.s.b. exciters. DDE has a KWS-1 to go with his 75A-4. USO has a 75A-4. TMI has a new kw. s.s.b. amplifier using a pair of 813s and is building 6-meter equipment. PQQ worked two new countries lately, PS7RT and FB8BR/FB8 on Comoro Island. He also is building 6-meter equipment. ZJS had a knee operation. While home he is building 6-meter gear. VOI and WSL visited Charleston hams recently. UQP is working lots of 14-Mc. stations. KXD is back from the hospital. Active 6-meter stations in or near Charleston are HI, HTU, DDQ, and TVK. Traffic: (Feb.) W8GBF 872, PBO 163, HZA 122, SEV 104, BWK 90, PZT 61, FUM 53, KXD 36, UYR 22, DFC 14, NYH 11, TGL 8, PQQ 3. (Jan.) W8NYH 12, (Dec.) W8NYH 20.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, James B. Simpson, W0HEM — SEC: NIT, RMs: KQD and MYX, PAM: IUF. The Northern Colorado Radio Club, Greeley, is rolling, with activities on 6 and 10 meters. WAKK is president. The Annual ARRL Rocky Mountain ARRL Convention, sponsored by the Denver Radio Club, will be held June 9-10, 1956, at Elkhorn Lodge, Estes Park. Plans include technical talks, transmitter hunts, a VT-XYL program, and entertainment for the entire family. Join in the Rocky Mountain QSO Contest. Register early and get special rates. John Reinartz, K6BJ, of Eimac, Inc., will address the Denver Radio Club May 29th. Subject: Instrumentation in the Ham Shack. All hams are invited. PKY is busy debugging a new 6-meter converter. TVI is doing a good job with CSSN. SGG picked up four new countries with his new Ranger. Lots of interest is stirred up in the ragchews on 10 meters every

(Continued on page 126)

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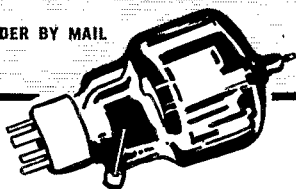


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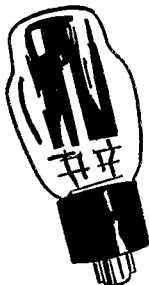
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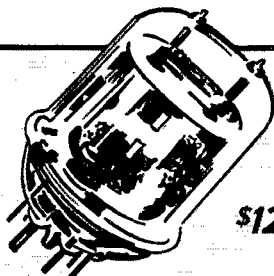
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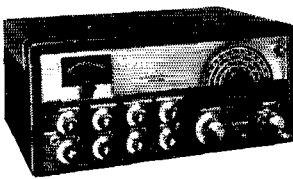
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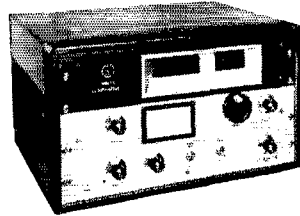
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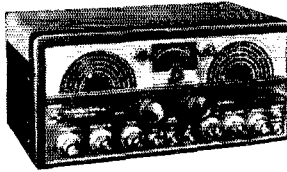


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Tue. evening by members of the El Paso Radio Club, Traffic: K0WBB 942, W0KQD 276, TVR 265, TVI 209, NVU 155, EKQ 114, KHQ 66, FAM 55, OYQ 52, SWK 42, IA 35, AGU 33, HOP 31, DRY 30, DRA 24, DGP 15, K0DMN 15, W0TVB 12, DXF 7, SGG 4.
UTAH—SCM, Floyd L. Hinshaw, W7UTM—ZJJ found that his trouble was in his modulator, and now is looking for more contacts near 3865 kc. BLE's work has him traveling in Colorado, but he keeps in touch via mobile with an F3 signal on 75 meters day or night. 6ZJRJ, of the Sixth Region Net, would like some Utah check-ins on 3615 kc. They need help with Utah traffic and would appreciate some of us checking in on their net either nightly or on a rotating basis. NAY is working 10 meters on Sun. and 75-meter mobile through the week. LQE and VTJ have a new phone patch. MOP, WN7AUX, and WN7AAN are converting GF-11 rigs. TAE is very proud of his son having received his Novice license and the call WN7CRZ. The roster of the Weber County Emergency Net includes the following: LRP, LQE, GPN, OCX, SAZ, WN7AAN, WN7BUX, and WN7ZDE. Traffic: W7UTM 2.

**THIRD ANNUAL
ROCKY MOUNTAIN DIVISION QSO PARTY**

All amateurs in the Rocky Mountain Division and surrounding states are cordially invited to take part in the Third Annual QSO Party to make and renew acquaintances and to publicize the Division convention to be held at Elkhorn Lodge, Estes Park, Colorado, June 9 and 10, 1955.

Rules: 1. *Time and dates:* Contest begins 0800 MST May 12th; ends 2300 MST May 13th. 2. *Where:* All bands. Suggested gathering places: C.w. 3600-3710, 7140-7160; Phone 3880-3900, 7240-7260 kc. Use other bands, too. 3. *General call:* C.w. "CQ RMD"; Phone "CQ Rocky Mountain Division." 4. *Contacts permitted:* You may work for credit the same station once on each amateur band, i.e., one contact credit will be given for a QSO anywhere in the band 3500-4000 kc., either phone or c.w., and one contact credit for QSO in the band 7000-7300, etc. No cross-band QSOs will be counted. 5. *Exchange:* Each party to a contact will give his name, location and whether registered at the convention ("yes," if registered, "no," if not). 6. *Scoring:* Score 1 point for complete information sent and 1 point for complete information received, a total of 2 points for each complete contact. 7. *Reports:* Logs must show time, date of QSO, call of station worked and information received. Total your score, give your name, location and whether registered at convention, and mail to your SCM (see page 6 of this QST for address) postmarked not later than May 19, 1955. 8. *Prizes:* First, free de luxe treatment at convention for one person, registration, meals and room with bath; second, free registration and meals for one person; third, free registration for one. Send your convention registrations to Taylor S. Shreve, W0CXW, 1230 Valentia St., Denver, Colorado.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4MI—SEC: TKL. Asst. SEC: COU. RM: KIX. New officers Muscle Shoals Club: ZUP, pres.; VY, vice-pres.; K4DFZ, secy-treas.; MEM, trustee. VDK received a Public Service Award for service during the Ky.-Tenn. blizzard. EVD now has CP-25. WOG loses antennas as fast as they can be erected to high winds but now has the beam up and a new wire for 80 meters. DTT moved into his new home without missing a day on the air! YNG is running 70 watts from Auburn on 80, 40, and 160 meters. FEC and HTP have plans for a half-gallon on 2 meters. EJZ has the 350-watt final going but still no phone. K4BEQ and TXO are working the bugs out of the new DX-100. CRY is mobile in the new Buick. YFN, new Huntsville EC, with the cooperation of the Huntsville Club has a very good local emergency plan underway, including a 2-meter net. The club plans an assembly line for a small 2-meter job for local emergency coverage. CIU tells me that Jasper now boasts nine active amateurs with more coming. K4GKD, ex-CPE, has a Globe King and his two jr. operators now have tickets. Alabama teen-agers are invited to join AENT on 3910 Mon., Wed., and Fri. at 4:30; Sat. at 0800 and Sun at 1400. AVX is net manager. Traffic: (Feb.) W4KIX 151, RLG 104, YRO 90, EVD 72, WOG 57, DTT 56, K4AOZ 55, W4YAI 46, CNU 43, YNG 39, ZSH 35, FEC 27, HTP 27, EJZ 24, K4ACO 20, W4MI 19, AVX 18, K4AJG 14, W4VAZ 14, RYJ 13, TXO 6, SXS 5, WHW 5, RTQ 4, CRY 3, TKL 3. (Jan.) W4YAI 14, K4DSJ 5.
EASTERN FLORIDA—SCM, Arthur H. Benzee, W4FE—SEC: IYT. Miami: A simulated airline crash brought DEN into action in cooperation with the Sheriff's Dept. The following took part: K4ENN/m, ATO/m,
 (Continued on page 128)

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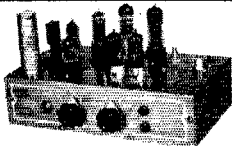
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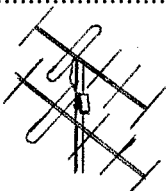
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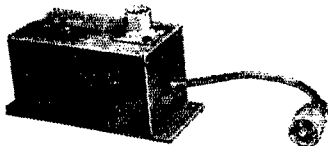


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WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/W4RE — SEC: PLE. ECs: HIZ and MIF. K4AKP turns in an FB traffic total, 6TOR/4 has a new SX-100, B&W 5100B-51SB-B combination. HJA has a new SX-100. JLV has a new 60-ft. tower with three-element 20, six-element 15, and six-element 10 stacked. CCY has the power and is now working on beams. UCY is giving 10 meters the works. DAO has a new Ranger going. YUU, CHZ, and ZAE are new Class IV OOs over Tallahassee way. AXP is QRL participating in LO and CD Parties. ZHP and EQK are on over in Chipley. Eix-5JNC is now K4EYL. KN4HSL, KN4GVZ, KN4GXV, KN4HSM, W4ACB, W4YUU, W4BKV, W4CHZ, W4EKM, K4AGM, and W4GMS met with the SCM in Tallahassee to promote ARRL activities in the eastern part of the section. BGG lost the driver transformer so works DX with c.w. ZLF has been busy helping the gang with antennas. HBK is fighting DX on 15 meters. PQW meets the 10-meter gang. K4DDD is hunting a tower for his beam. KN4CLJ is studying for his General Class license. The Pensacola Amateur Radio Club is moving to new quarters at the Municipal Airport. K4AFF, at Pensacola High School, has ordered a new transmitter for the club. UUF has temporarily deserted 144 Mc. for 28-Mc. DX. QK meets the Hurricane Net. VR keeps to 7 Mc. FHQ does more listening than transmitting. K4AH is enjoying meeting old friends. MS has 813s in GG for the s.s.b. rig. ACB has a new 10-meter beam ready to fire. JPD is getting ready for the summer activity. RDC runs low power on 10 meters. ART is dusting off 144-Mc. gear. PAA wants a bigger beam for CQ DX. KN4ECP is after General Class. How about some more OBS, ORS, and OPS? K4AKP is getting ready for the RM appointment. Traffic: (Feb.) K4AKP 509. (Jan.) K4AKP 296.

GEORGIA — SCM, George W. Parker, W4NS — SEC: YTO. PAMs: LXE and ACH. RM's: MTS and PIM. Nets: The Georgia Cracker Emergency Net meets on 3995 kc. Sun. at 0800, Tue. and Thurs. at 1830 EST. Georgia State Net (GSN) meets on 3590 kc. Mon. through Fri. at 1900 EST. BXV, in Quitman, made Bata Club, a high school honor. APS is rebuilding his rig. K4BXD is a new General Class licensee in Jackson; his dad is now KN4HUC. K4NCR, the Naval Reserve station at Brunswick, is being put in shape by GCU for use in the coming hurricane season. We are all saddened to learn of the passing of the XYL of our SEC, YTO. The Atlanta Radio Club Hamfest will be held at Robinson's Tropical Gardens on June 3rd. In addition to the 21-inch color television console the usual ham-gear prizes and special main prize will be awarded at this hamfest. All contests and games at the get-together will be under the direction of the teenagers of the club, headed up by HBO and AJI. This is the last report from this station. CFJ is your new SCM as of Mar. 18th. We want to thank all the fellows for the fine support and encouragement we have enjoyed in the past two years and to wish Bill all the best during his term of office. Cordial 73 to all and SK from NS. Traffic: W4PIM 408, ZUF 48, BXV 15, FZO 6, IMQ 5, MA 4.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: HZ. KD renewed his ORS appointment. HZ has been reappointed as SEC. QA is EC for San Juan District. Insular Police Headquarters have a Viking KW, Viking Ranger, NC-300, and 20-meter Telrex beam; purpose, to organize a police auxiliary amateur radio system on 75-meter phone with selected stations around the Island to take the traffic load off the v.h.f. system in times of emergency. QS is the call of the C.A.P. Radio Club. US and RM are using Mon-Keys. ABI is using a cathode modulator. ABF, now KP4, is on 75-meter phone. QR put up the old Elincor 10-meter beam. MV is building 10- and 20-meter beams for the local gang. KD is using a Heathkit AT-1 and a 65-foot antenna on all bands. IS returned to 75-meter phone.

(Continued on page 130)

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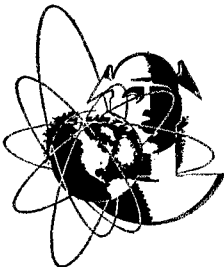
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AZ has a 15-meter beam on the tower now. JE has a footswitch control and new 20-meter vertical. MC and MP, of the local c.d., are active on 75-meter phone. MP is using s.s.b. on 75 and 20 meters. DV is getting acquainted with his new NC-300 receiver. YM joined the Silent Keys. IV sends 73 from Seattle. Major FF sends 73 from Germany. CJ returned to the States. TF, ex-SCM of North Carolina, and PK, ex-SCM of Eastern Florida, are returning to the States. WR is back on 75-meter phone. HZ is operating fixed portable on 10 meters from Dorado. ABN, HZ, and CX have a 2-meter net using Communicators. RE is heard frequently on 75-meter phone. RM has a new 80-meter antenna and is using a Signal Shifter as a transmitter until the Globe King is repaired. CN, DP, and MP use s.s.b. exclusively on 11 Mc. ZV has a daily traffic sked with W4ZIR. ZW QNTs the Early Bird Net on 0645 on 3845 kc. ZN is waiting for a beam antenna to get on 10 meters with a Viking II. ABA is heard on all bands from 160 to 10 meters with a new Globe Scout transmitter. KD received WPR-N40 certificate. ADM is club photographer of the PRARC. ABO now is KP4. Traffic: KP4ZW 13.

CANAL ZONE—SCM, Roger M. Howe, KZ5RM—The KZ5 gang has been out chasing a raft in the Pacific. Amateurs from the Canal Zone, Panama, Mexico, Peru, Costa Rica, and the United States helped the U. S. Navy establish contact with the raft *Canuta* to lend assistance to the crew of five, including one woman, who had been adrift in the Pacific for about three months. The KZ5s known to have been active are AS, GB, VR, and WA. They were assisted by neighbor HPIJF. The SS *Greenville Victory* and USS *Rehoboth* were the two vessels involved. GH has invested in a Johnson 10-20 interlaced beam and expects to get it on the air soon. New licenses were issued as follows: KG to Seymour Strauss and DP to David H. Powell. VR checks into the Hairpin Net on 10 and the YLRL Net on 15 meters. BR has left these shores and wills his beam to his successor, WISUF. Traffic: KZ5GB 124, VR 96, DG 64, HA 44, WA 27, BR 18, RM 9, KA 3, AE 2.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, William J. Schuch, W6GMN—Asst. SCM: Albert F. Hill, Jr., 6JQB, SEC: LIP, PAM; MEP and PIB, RMs: BHG and K6DQA. From all reports the section was very well represented in the first section of the DX Test and some of the scores should be way up there. DJE still is very QRL work and UTL, GYH is busy on TXN, MBW now is /7. See BHG for his QTH. K6KCI says there is nothing new but turns in her highest traffic score so far. RNY is pitching on the SCN Net. JQB turns in a nice traffic count and has a new QTH in Rialto. LYG is mostly 75 meters now. KTZ is QRL traffic. MEP is emulating the one-armed paper hanger, what with traffic and MCing the 2x1x6 Net. K6LYF is QRL traffic on MTN, SCN, and PAN. USY is back in school. ORS reports that new officers of the San Bernardino Microwave Society are VIX, pres.; IPE, vice-pres.; K6LXI, secy.; ORS, corr. secy.; and K6GMV, treas. TDO is finishing up the new shack and test gear. K6CJUZ is QRL traffic and DX. CK has a daily sked with BHG. The Lockheed Amateur Radio Club still is running code classes; contact GED for

LOS ANGELES SECTION QSO PARTY

All California amateurs are invited to participate in the First Los Angeles Section QSO Party.

Rules: 1. The party will start at 6 p.m. PDST May 12th and end at 12 midnight PDST May 13th. 2. Any and all bands and modes may be used. QSOs must be c.w.-to-c.w. and phone-to-phone and crossband work is not allowed. Entrants may use c.w. and/or phone as desired. 3. General call will be "CQ CF" on c.w., CQ California on phone. 4. A station may be counted but once regardless of band or mode of operation. 5. Exchange: QSO number, signal report, ARRL Section and California county. 6. Scoring: Add your code-proficiency credit to your total contacts (2 points per contact), multiply by 1 for each ARRL Section worked, and multiply this result by 1 for each California county worked; for example, CP-20 plus 10 contacts (X 2) equals 40, times 5 sections equals 200, times 33 counties equals 6600 total score. 7. Logs must show dates and times as well as QSO numbers, RSTs, sections and counties sent and received. Logs must be legible and none can be returned. It is suggested that the form shown in the Sweepstakes log on page 45, November 1955 QST, be followed. 8. Special recognition will be given to the highest-scoring Novice and Technician. All decisions of the contest committee will be final. 9. Stations should avoid interfering with traffic nets during this party. 10. Mail logs, postmarked no later than May 20, 1956, to K. I. Albrecht, K6BWD, 1252 North Detroit St., Los Angeles 46, Calif.

(Continued on page 132)



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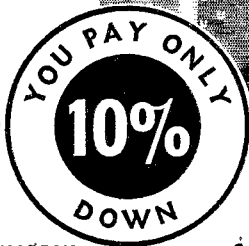
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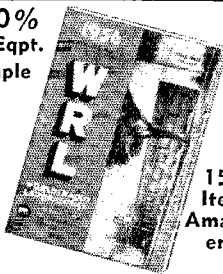
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information. MLZ is very active with the interference committee. K6DDO has a 60-ft. tower with a three-element beam. The Hamilton High Club is well along with Field Day plans. WT has been on the sick list but is OK now. K6KJN has a new 28-Mc. beam. K6ELX is DX'ing. BUK is back on the air. K6BEQ now is Radio Officer for District 22 in L. A. C. D. LVQ has a new 28-Mc. beam. UED has a new 250TH final. A new KN6 is QPN. YSK is QRL work and club. K6EIA is recovering from a back injury. K6ELX has a kw. on the air. K6MON has a new Viking II. Traffic: (Feb.) W6DDE 755, GYH 449, BHG 329, K6KCI 249, W6RNY 233, JQB 189, LYG 144, KTZ 94, AIEP 88, K6IYF 80, W6USY 70, ORS 49, TDO 48, K6GUZ 36, W6CK 29, K6DDO 22, IQF 21, W6CMN 16, WT 12, K6HOV 9, KJN 8, ELX 4, W6CBO 2, K6COP 2. (Jan.) K6MON 156, W6WRT 42, K6DDO 17 ELX 6.

ARIZONA — SCM, Albert H. Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZII; and Dr. John A. Stewart, 75X. PAM: KOY, RAM; PKW, SEC: VRB. Arizona Phone Net: Tue, and Thurs. 7 p.m. MST, 3865 kc. Arizona C.W. Nets: Tue, and Thurs. 8 p.m. MST, 3690 kc. and daily Mon. through Fri. 4 p.m. MST, 7115 kc. A new net in Arizona, the Grand Canyon Net, meets Sun. at 9 a.m. MST on 7210 kc. ANM is NCS. Everyone is urged to join. During February the Maricopa County V.H.F. Club held its first monthly transmitter hunt with 15 participating and YVD acting as NCS. The OPRC had as its guest speaker, Mrs. Dobler, of the Tucson Civil Defense and the only woman in Arizona to witness the recent H-Bomb explosion in Nevada. Father Clem, ROZ, has been transferred to St. Mary Indian Friary at Tohatchi, New Mex., but still will check into the Arizona Net. KOY and LVR were the first to receive their WAA certificates. AMH got his Conditional Class license, and CPQ got her General. SUJ has a new Telrex beam. PME is leaving Arizona for New York State. It is with regret that we announce the passing of MQE, Don Rostek, who was secretary of the OPRC and very active on 10, 15, 20, and 160 meters. Again a reminder of the Annual Arizona Hamfest, which will be held June 15th, 16th, and 17th at Montezuma Well. Contact OAS, George Olsen, in Phoenix, or LVR, in Tucson, for tickets (\$1.00 per call), reservations, and details. Traffic: W7NBK 23, LVR 18, PUV 18.

SAN DIEGO — SCM, Don Stansifer, W6LRU — IAB now skeds KRGMD daily for traffic and phone patches. K6LKY dropped the "N" from his call. K6JGX and W6RIG are having a 10-meter phone mobile contest, each using 7 watts. RIG recently worked a ZL on 10-meter phone with his QRP. JVA was active in the DX Contest on all bands with his new DX-100. A mistake in this column was made. It was stated that DEY in Santa Ana had 400 watts on 144-Mc. s.s.b. It should have said a.m. not s.s.b. DEY also is active on 50, 220, and 420 Mc. The Orange County Amateur Radio Club started code classes in mid-February. Orange County shows an increased amount of activity on 6 meters. K6DWH and IHF are interested in starting a club in the Alpine Area. The San Diego DX Club held an interesting joint meeting recently with the Tijuana, Mexico, Club. BZE needs only one more QSL from a new country to make 200 confirmed. He now is top man in the area with 216 worked. HZN is back on the air getting some good DX with an FB rig. KSE is Field Day chairman for the Helix Club. K6ICT is a new member of the Helix Club. The AREC group, under the direction of VPT, SEC for the section, put on a demonstration of emergency communications as part of the kick-off for the Red Cross drive in San Diego. SEG was given special permission by the FCC to operate phone on 14,004 kc. and acted as both a monitor and liaison contact in helping to find a lost raft in the South Pacific recently. Reappointments have been made to the following: DLN, EC Imperial County; IBS, EC 2-meter AREC San Diego; KSI, EC South Bay; K6DBG, OBS; LRU, OBS; LRU, OO; K6GHI, OO. A few ARRL appointees in this section are missing monthly reports to the SCM. As this is often the only contact it has to be assumed they no longer are active or interested in holding appointments. In the future, any appointees who make no effort to communicate with the SCM by Form 1 card, over the air, or by telephone a minimum of once in three months will lose their appointments. These can be earned back, of course, by three regular reports. Traffic: W6YDK 1981, IAB 1768.

SANTA BARBARA — SCM, William B. Farwell, W6-QIW — Asst. SCM: Betty Wilson, 6REF. SEC: KPQ. Suggestion by AGO: How about a Field Day trophy as an incentive for all tri-county clubs, to go to the club having the highest point average per man each year in our Santa Barbara section? NKT is keeping skeds with ENR on frequency measuring. AGO and MSG were active in the DX Contest. PWK gets a wife and a new house. GFZ moved to a new location. DOB, OJZ, KZO, and GGQ are sporting new DX-100s. LUC (SBAREC) is checking in on ALN, plus 10- and 2-meter nets. QIW and KGGGQ now check into MCAN4 and MCAN7. QKO and his wife, K6EJE, are sporting a new mobile rig. CGX is having a "field day" on the air while recovering from a broken leg. Traffic: K6NBI 104, W6QIW 52, KLR 50, K6KPU 9, W6YCF 4, K6JRT 2.

(Continued on page 134)

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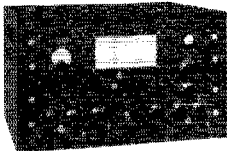
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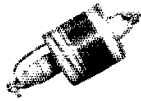
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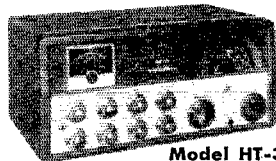
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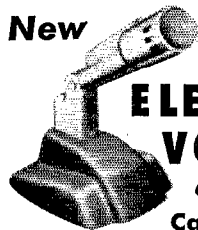


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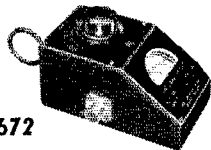


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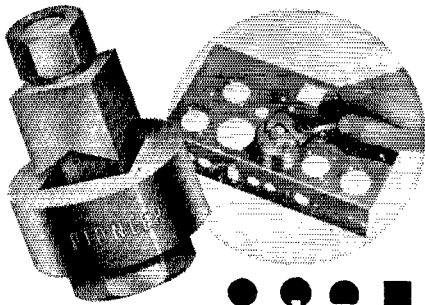


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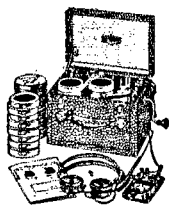
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WEST GULF DIVISION

NORTHERN TEXAS—SCM, Cecil C. Cammack W5RRM — SEC: YPI, PAMs: TFP and IWQ, RM: PCN. Twenty-seven stations on N7EN had 31 scout leaders, 55 scouts, 68 cubs, and 5 bluebirds for the annual Hamboree, with Wichita Falls taking the lead. WTP, VEZ, UXY, K5ASZ, and KN5CZA assisted Haltom City police with snowbound traffic as a c.d. exercise. GHU reports the Mineral Wells club house is coming along fine. I.R. is editor of the Dallas ARC monthly newsletter. South Plains ARC's new officers are KPJ, pres.; VGC, vice-pres.; UJO, secy.; JXG, treas.; PXL, program; K5BFG, TVI, and CVS, publicity. FII has completed WAS. The Odessa ARC got a big spread in the local paper on its public service activities. East Texas ARC elected K5AQD pres.; W5SDT, vice-pres.; BNK, secy.-treas. Tyler ARC has organized with WVI pres.; AGC, vice-pres.; IBR, secy.-treas.; and will hold a weekly ragchew on 3940 kc, Sun. at 9:30 p.m. Average attendance of NETEN for Feb. was 82 per cent. CF and RRM as visitors, with 28 from Waco and 15 from Temple, enjoyed the big feed the Waco Club gave to pay off the wager lost to the Temple Club last Field Day. JGY and KGV have dropped the "N." KPBB has a new 75A-4. K5BQL, a blind XYL, would appreciate QSOs on 7250 kc. An old-timer who had a half-kw. spark outfit on the air by 1908 has renewed as JXU and is active on 6 meters. Fort Worth amateurs gave a good account of themselves during the recent search for lost airmen. Feb. NTX: 25 sessions, 159 check-ins, 166 messages. The Central Texas Amateur Radio Club (RDL, pres.; DSG, secy.) has a first-class station, ZDN, and meets the 1st and 3rd Thurs. at McLennan Co. Civil Defense Hq. Traffic: (Feb.) W5UBW 342, KPBB 232, AHC 97, FJB 97, BTH 73, BKH 44, TFF 31, RP 27, YPI 25, ASA 16, GHU 14, NEW 14, SMK 12, RRM 10, JFX 7, ZTG 7, OCV 4, (Jan.) W5BETH 90.

OKLAHOMA—SCM, Dr. Will G. Crandall, W5RST — Asst. SCM: Erving Canady, 5GIQ, SEC: KY, RM: GVS. PAMs: PML, SVL, and ROZ. The Lawton Ft. Sill Hamfest held on Feb. 12th was a grand success with many new and old acquaintances present, many ragchews, a minimum of long-winded speeches, good food, many prizes, and a few jokes. A good time was had by all. Our OPEN net manager and PAM, PML, is having to take his tour of Army duty overseas. We commend him for the excellent job he has done as net manager. Things seem to be shaping up for better cooperation with the Weather Bureau for authentic data to the existing Amateur Tornado Warning Net and evident reciprocal benefits. I suggest that a prize be offered for the best answer to the ignoramus who suggests that you are in your second childhood because you are a ham (physical report barred). Which outfit will be the first to offer a complete, all-band, a.s.b. exciter and VFO with voice control and T-R switch at a reasonable price, either in kit form or completely wired? We can dream, can't we? Next month should be this SCM's last report as the ballots are out and should be counted by then. We are going to have a good one whichever man wins. Traffic: K5AOV 546, W5ADC 52, GIQ 48, JXM 41, PML 39, MRK 37, PNG 29, FEC 26, RST 21, QAC 20, FU 16, DFF 12, SWJ 12, GXH 6, PAA 3.

SOUTHERN TEXAS—SCM, Morley Bartholomew, W5QDX — SEC: QEM. Make your reservations now for the West Gulf Division Convention to be held in Galveston June 15th, 16th and 17th. The annual STEN Convention will be held in Kerrville May 19th and 20th, with a pre-convention barbecue the night of the 17th. GQN is organizing the Texas Novice Traffic Net. The net meets each Tue. at 1930 on 7164 kc. The Corpus Christi ARC received a letter of commendation from the MOD for its assistance during the 26-hour Telethon. A group met at the home of BD to plan its Emergency Corps. AIR, RPW, and ETA attended as representatives of the Houston ARC. DDT talked to the group on c.d. New officers of the Corpus Christi Club are AQK, pres.; LW, vice-pres.; HJM, secy.; DSY, treas.; HQR, act. dir.; QKF, publicity. The Lamar ARC now has a club station, K5DMS, using a Lyseo 600. HJL has a 75A-4. GQW has a new HRO-50, KN5s APX and CRN are on 40 and 15 meters. ETA has been attending club meetings at LaMarque, Port Arthur, Orange, Pasadena, LaPorte, Angelton, and Houston. Membership in the Houston ARC now totals 230. EPV is president of the recently-organized Baytown Club. YXH moved to Milwaukee and then right back to El Paso. Vince is now with Western Electric Company at White Sands, New Mex. OIK has a new Ford, LVE, KQG, DKF, and FND ended up in a dead heat for first prize in the mobile contest conducted by the San Antonio gang. DKK, KLW, EDZ, OZQ, THU, and VPQ were close seconds. DCV is on 7 meters with a home-brewed a.s.b. exciter driving a pair of 807s. Traffic: W5TFY 180, ZWR 52.

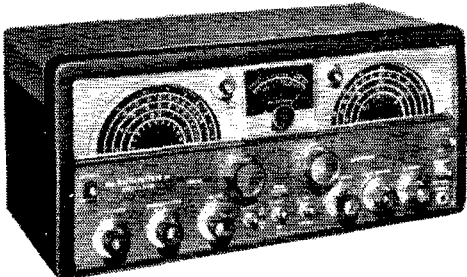
NEW MEXICO—SCM, Einar H. Morterud, W5FPB — SEC: FHP. The NMEPN meets on 3838 kc. Tue. and Thur. at 1800 MST, Sun. at 0730; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700-0800 MST. Approximately 60 amateurs reported into the Feb. 7th c.d. communications alert. K5ECQ is a new amateur in La Mesa. K5ECP is the XYL of DWX. AKR moved to New Jersey to work for Collins Radio. FHAM/M worked ZL2CY on 10 meters. LEF has a 10-15-meter vertical for working

(Continued on page 136)

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S102-S106			99

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QUICK QUIZ

Q. How do U.S. amateurs obtain authorization to operate in Canada?

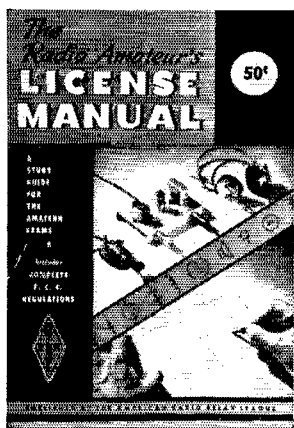
Q. Who may operate an amateur radio station?

Q. What are the procedures to be followed in obtaining an amateur station and operator license?

Q. What are the requirements for portable and mobile operation?

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mobiles. JWC, POI, and SB received Old Timers Club certificates. WKW, previously confined to c.w., is now on phone. PBV has rebuilt his mobile. The Totah Radio Club of Farmington is being incorporated as a non-profit organization. NQG has an NC-300 and a 2-meter converter on order. He has a 522 with five-element beam 50 feet in the air. SUY is organizing a Novice class. GRI has a stacked coaxial 2-meter antenna. Congratulations to ADX and his XYL ADY on the birth of a daughter. The State Hamfest will be held in Portales in May. The Alamogordo Amateur Radio Club is working on a portable emergency rig. The club members would like to pass on their best wishes to GQA, who is no longer in the vicinity and whose address is unknown. Traffic: (Feb.) K5FHU 172, W5MYM 21, BZB 19, ZU 18, AK 16, GEM 12, DMG 10, KKW 10, NQG 10, ARD 9, CTN 9, FJZ 7, FPB 6, UAR 5, (Jan.) W5GEM 6.

CANADIAN DIVISION

MARITIME—SCM, Douglas C. Johnson, VE1OM—Asst. SCMs: Fritz A. Webb, 1DB; Aaron D. Solomon, 1OC. SEC: RR. New appointees are UY as ORS and W4ZUS/VO2 as OBS. PF was the winner of the Second Annual VE1 Contest. AV and XN were next in line. ABT is back on 14-Mc. c.w. UL and CL are sporting new DX-100 rigs. Active hams in the Bathurst Area are JU, DJ, UV, UL, ACT, PH, VC, and WF. WB is getting good results from a new TR switch. Don also reports the incorporation of the NBARA. LS has his phone endorsement. Car owners note: Canadian Assemblies Ltd., Amherst, N. S., will send you free call letter plates on receipt of your QSL card. ADH is a new Halifax ham. The Dartmouth ARC executives are VB, pres.; FK, vice-pres.; ADA, secy.; and OC, treas. WL, LY, DB, VE, ADAM, and OM are active on 28-Mc. phone. MR, ex-3DKT, is on 80-meter c.w. OU is a new Dartmouth call. WL is putting out a good mobile signal with a converted ATR-5 rig. KMI brought his DX total to 126 countries before leaving for VE3-Land. KZ sent in an FB report on emergency communications on P.E.I. ZS is temporarily located in Halifax. AAQ is the XYL of AO. W4ZUS/VO2 is active on the phone band from the Argentina Area. Logs for the Goose Bay Amateur Radio Club's QSO Party, held April 14th through 20th, should be sent to VO6AH. Traffic: (Feb.) VE1FQ 254, VO6U 100, VE1AO 45, OM 30, UN 20, DB 18, OC 16, YB 16, VO6AH14, VE1ME 13, VU 10, YO 9, BN 2, VC 2, (Jan.) VE1WB 13, ABT 12, PF 6, W4ZUS/VO2 2.

ONTARIO—SCM, G. Eric Farquhar, VE3IA—The 6-meter net, operated by public-service-minded members of the Ottawa ARC, again has taken its winter task. Rigs located on the trail and in an ambulance take a means of supplying quick assistance to skiers. The club also has some twenty 75-meter mobiles available for emergency work. 1956 officers of the Gateway Club in North Bay are TX, pres.; DRK, vice-pres.; EAW, secy. Our condolences to DNK on the loss of his father. DIL now in Ottawa, has completed WAS and is well on the way to WAVE. Anytime now we may expect s.s.b. signals in large doses from our Capital City, following the excellent talk given by KF. DNJ enjoys a new mike. A new club is the Metro ARC with BUT, pres.; DSM, vice-pres.; TA, treas. At its first meeting in new quarters the Hamilton ARC was treated to a most instructive demonstration on transmission lines and wave guides given by RCAF personnel from the Clinton Communication School. The Gold Belt Net, 3750 kc. on Wed. at 1900, solicits traffic for Northern Ontario and Northwestern Quebec. DSX and DQL alternate as control. HE is our latest Official Observer. DLS is honeymooning in the New England States. EBX is a graduate of Nortown's code class. BXP and DEO are welcome additions to the airways, following a long silence. The Belleville gang participated in a civil defense meeting and received plaudits of officials. BUR and his XYL vacationed in Florida. BCY, AAS, and CAB have transistor rigs. To Mr. and Mrs. BRM, a son. The "Care and Feeding of Grid Dip Meters" was an enjoyable topic presented by TO at a London Club meeting. Through the efforts of AVS and DVE the family of Anglican Bishop has kept in touch with its children who are attending high school miles away from the home fireside. BDI enjoys all-band operation from a new shack. Brantford 6-meter participation increases, and AJQ, VL, and TO invite information contacts. BSW with eight years in ham radio, averages one country per year! VZ now is located in Hamilton. Traffic: VE3BUR 227, VZ 91, AJR 66, DPO 44, EAM 44, NO 42, AML 38, AUV 31, KM 27, CJM 16, BZB 9, DH 7, APL 6.

QUEBEC—SCM, Gordon A. Lynn, VE2GL—Notice has been received from Headquarters regarding my reelection as SCM for another term. Thanks for your confidence, gang, but back it up by some activity reports. Congratulations to YU and his XYL on the arrival of a jr. operator, the first and a boy, on the 20th. This cuts into his ham activity, but he did manage to take part in the Frequency Measuring Test. FL reports bad weather and curling delayed the annual AREC meeting of his district. AOL and AGI maintain a daily sked on 3740 kc. at 1845 to 1915. AAP has a new rig on 20 meters with a pair of 6146s in parallel. The South Shore AREC had a nice write-up with pictures in the *Montreal Herald* on March 2nd, with GD,

(Continued on page 138)

**"Your BEST DEAL
is Right Here!"**
SAYS MR. T

**"All the New and Best Known Gear
and BEST BUYS on Everything is Here
So Tune in TERMINAL, We're on Your Band
What You Need Is Always on Hand!"**

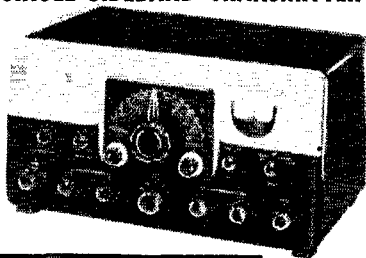


**Johnson's
NEWEST! VIKING Pacemaker SINGLE SIDEBAND TRANSMITTER**

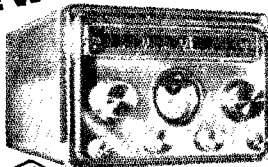
Unique in engineering design, the 'Pacemaker' is completely self-contained, TVI suppressed and flexible in operation. VFO is accurately calibrated, temperature compensated and extremely stable over the entire range. Covers 80 — 40 — 20 — 15 — 10 AM-CW-SSB. P.E.P. input 90 watts, output exceeds 60 watts. High efficiency output pi-network tank circuit, will handle 50 to 600 ohm resistive antenna loads and will tune out large amounts of reactance. High impedance microphone input, crystal or dynamic. Speech filter restricts audio range to 3500 CPS for maximum communication effectiveness.

Attractively styled cabinet in maroon and gray with illuminated VFO Dial.

Wired and tested, including tubes and crystals **\$495.00**



NEW!



**GONSET G-66
MOBILE RECEIVER**

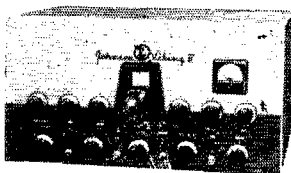
A COMPLETE MOBILE RECEIVER . . . with superior sensitivity, selectivity, stability. Superlative performance on AM, SSB, CW, comparing favorably with that of an excellent communications receiver. Equally outstanding when operating from DC or AC power sources.

Six Bands including broadcast: 540-2000 kcs. 3500-4000 kcs. 7000-7300 kcs. 14,000-14,350 kcs. 21,000-21,450 kcs. 28,000-29,700 kcs.

G-66 is a sound investment that fully meets today's — and tomorrow's — mobile requirements. Less power supply **\$165.50**

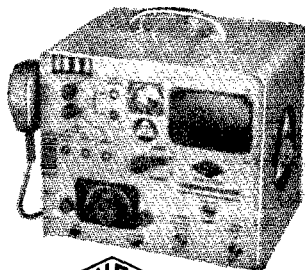
Universal "3-Way" (6V.12V.115V.AC) Power Supply with Built-in Speaker **\$39.95**

FCDA  APPROVED



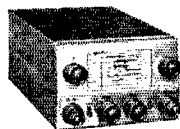
**JOHNSON VIKING II
CDC TRANSMITTER**

135 Watts AM or 180 Watts CW on any frequency from 1.7 to 30 mc. Eligible for Civilian Defense Matching Funds . . . suitable for many industrial operations as well. Not a kit! Fully tested complete with tubes. Push to talk, modulation limiting and many new features. Send for dope sheet.



**Now! GONSET 2 and 6 Meter
COMMUNICATORS—LINEAR
AMPLIFIERS**

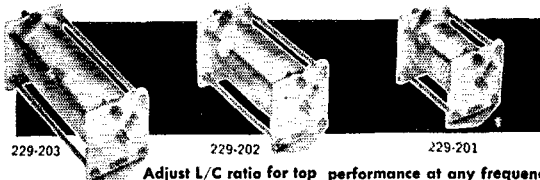
Eligible for Civilian Defense Matching Funds Contact W2BUS for further information. Standard Communicators and all Gonset gear regularly stocked as usual.



**ELMAC
PMR-7 RECEIVER**

New slide rule dial • Improved sensitivity, selectivity, Signal-to-Noise Ratio • 7 Bands—10, 15, 20, 40, 80, 160 m. plus Broadcast • Dual Conversion • Variable Beat Frequency Injection for SSB Reception. **\$159.00**

JOHNSON PROFESSIONAL ROTARY INDUCTORS



229-203

229-202

229-201

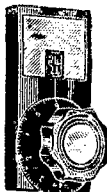
Adjust L/C ratio for top performance at any frequency!

For peak efficiency from pi-networks and other tank circuits! Two new models, variable pitch, wound with heavy #12 wire — for AM transmitters operating up to 500 watts, or for SSB transmitters up to full kilowatt. Windings mounted on grooved steatite form — contact wheel is spring loaded for smooth, reliable inductance throughout entire range.

New 25UH
229-203 Net **\$11.50**

New 15UH
229-202 Net **\$9.75**

10UH (#14 Wire)
229-201 Net **\$8.95**



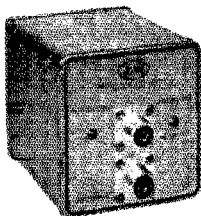
Groth TURN COUNT DIALS

Registers fractions to 99.9 turns. For roller inductances, Inductances, fine tuning gear reducers, vacuum and other multi-turn variable condensers. One hole mounting, handy logging space. Case: 2" x 4".

TC-2 (2 1/8" Dial) **\$3.90**

TC-3 (3" Dial) **4.20**

Either with Spinner Handle, add 75c to price.



**B&W AUTOMATIC T-R
ANTENNA SWITCH**

FULLY AUTOMATIC electronic antenna changeover from receiver to transmitter and vice-versa. Suitable for all powers up to legal limit. Ideal for voice-operated SSB-AM phone and break-in CW — all with one antenna. No tuning, no adjustments. Power loss on transmission almost immeasurable. Net **\$23.70**

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What Is This Thing Called the "Hump" in CODE?



THE hump (around 8 words) is the thing that tells you you have wasted your time by starting out wrong. Thirty years ago when we started teaching Code our students too ran head-on into the hump. We went to work to find out why. TWO-PHASE, STEP BY STEP instruction is the perfect answer. In this method dotdash is not A. The SOUND resulting from dotdash is A. There is also the important factor of correct timing. If the signals are not timed correctly the resulting sound will not be correct. There are many, many things connected with proper Code instruction, many of them so small they seem inconsequential. Others are so technical that many so-called experts fail to understand them. It's a long story but I have it all written up and will be glad to send it to you. A postcard will bring you the full story.

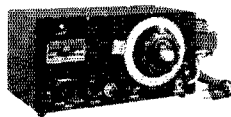
TELEPLEX CO. 415 G. St., MODESTO, CALIFORNIA

HOW TO HAVE THE FINEST RIG

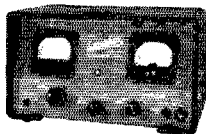
Without Hurting the Family Pocketbook!

Hundreds of hams are making their hobby pay for itself—by making FCC-required checks on commercial mobile-radio equipment. It's one of the fastest growing fields in electronics . . . and you can work right from your home!

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105-B MICROMETER
FREQUENCY METER
Price \$220.00 net.



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To learn more about tapping this cash, write today for free booklet "HOW TO MAKE MONEY IN MOBILE RADIO MAINTENANCE."



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Free Booklet Technical data on Lampkin meters

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ALW, and NY prominent in the news. Traffic: VE2DR 119, CP 42, EC 13, GL 8, FL 5.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD, RM: XG. Don't forget to mark your calendar pads for July 28-29 for the Alberta Hamfest to be held at Masonic Temple, Edmonton. Stan Mitchell is the general chairman in charge of arrangements. HQ and GID have been presented with life membership certificates in the C.A.R.A. Members of the C.A.R.A. aided in controlling the ski runs at Banff recently with their 2-meter equipment. GE has his rig on 3.5-Mc. phone. EI and EZ are new calls in Lacombe. PQ has plans for a 700-watt rig on 144 Mc. IZ confines his activity to Sunday morning with the C.D. Net. AL is building an all-band converter. CI, at Grande Prairie, has a new p.p. 813 rig perking. Congratulations to AS and his XYL on the birth of another harmonic. Friends of VE6ZR (now VE2YU) will be pleased to hear that he and Barbara have an 8-lb. baby son born on Feb. 20th. NX led the race in the SS Contest in the c.w. section. MA was the runner-up. In order to stimulate interest, Section Net certificates will be issued to all those who have 50 or more check-ins in a six-month period. Traffic: VE6HM 162, PQ 28, YE 24, OD 21, AL 18, XB 12, IZ 4, WT 2.

MANITOBA — SCM, John Polmark, VE4HL — PAM: GE, OO: RB, OBS: KG. Anyone interested in high-power v.h.f. "scatter propagation" for experimental work or the forming of a trans-Canada v.h.f. net, contact 4HL or 3GI (Ottawa) by radio or letter. Lots of luck to 4CV, who now is 4CV/7 at Williams Lake, B. C. W9EAM/4 has left for the South. Hope your stay was enjoyable. 8OB has been away and is expected back shortly to set up a rig and a 4 call. RC and DU have new frequency standards if interested in getting your frequencies checked. JW has most of his receiving problems settled with a new 75-A. MN has a new Viking and eight new states confirmed. EF picked up nine new countries and the highest score in the section in the last DX Sweepstakes. PE has been active on 10-meter phone and is getting her share of DX. Traffic: VE4GE 55, KN 30, QD 28, EP 27, JW 16, RB 16, RR 14, TE 9, JY 8, AY75, AN 4, VE5Q0 4, VE4MN 3, GB 2.

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — With the increase in activity there should be plenty of news, so let's have some, please. IJ is located at La Ronge. TM and MC were snowbound at Saskatoon on their holidays. LM and JN are both on with a DX-100. EO is moving to Winnipeg and will be with the D.O.T. TH went to Arrapong on a c.d. course. FV is a new licensee, having just passed his exam. LT is building a plate modulator for his 807s; he graduated and received a certificate as c.d. auxiliary fireman. BD has a new two element 14-Mc. and 28-21-Mc. beam. VL does well with his new three-element beam and 300 watts, having worked about 70 countries since the first of the year. RQ, NML, and KH are heard from Saskatoon, SL and DR have rebuilt their mobiles. UC is heard on 28 Mc. again. BI has a new NC-300. XX took a business trip to the Coast. AJ does an FB job on the code practice session on 3740 kc. at 7:30 p.m. LY landed in the hospital, breaking some ribs when he fell into the pit at the garage. Traffic: (Feb.) VE5HN 30, BZ 27, HJ 25, LM 25, DS 19, QL 13, RE 10, EX 7, GO 7, CI 6, BF 4, BI 4, GT 4, PQ 3, VL 2, (Jan.) VE5HR 17, DS 15, HJ 15, BZ 14, RE 14, LT 9, DD 6, KX 4, GT 4, LM 4, PJ 4, BF 2, EQ 2, PQ 2.

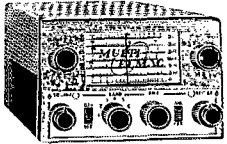
Strays

W6DYQ just sent us a most interesting clipping which proves that the people in California are continuing to uphold their reputation for doing things in a big way. It seems that some fellow in Ventura was arrested for having stolen about \$10,000 worth of radio equipment for a proposed ham station. He said he needed the gear, and stealing was the best way he knew of to get it. Apparently the detectives have put a crimp in his plans to apply to FCC for a ticket.

Thanks to W5THI for sending us a copy of the Fort Worth telephone directory. In the white alphabetical pages, 29 of the local hams have their calls listed under the "K" and "W" headings. It's a pretty handy way for the visiting hams to strike up an acquaintance over the land-line. This listing has been similarly made in several other directories around the country, but this is the largest listing we have run across.



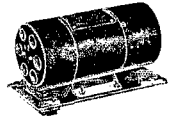
"Albert wouldn't miss his 9 o'clock schedule for anything."



NEW ELMAC PMR-7 RECEIVER.
Less power supply. Net \$ 159.00
PSR-612 Power Supply, 6-12
VDC. Net.....\$ 34.00

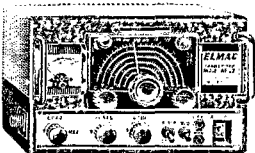
SUMMERTIME IS MOBILE TIME

Is your mobile gear ready for that summer driving? Whether it's your vacation, a trip to the mountains or the seashore, or just a short hop across town, there's nothing like the thrill of operating from your own car with a good, reliable mobile installation. Walter Ashe has a full line of the finest mobile equipment designed expressly for the roving ham. Go mobile the easy and inexpensive way - Walter Ashe is offering bigger-than-ever "Surprise" trade-in allowances on your used (factory-built) test and communications equipment. Use the handy coupon and get your trade-in deal working today.

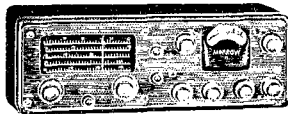


DYNAMOTOR

Brand new, government surplus. 12 VDC input, 440 VDC, 400 ma output. Can be filtered with 2 mfd paper condenser. Starting relay not included. Has snap-on mounting plate with Jones S-412-AB socket for input and output leads. Size 5 3/4" x 4 1/2" x 9" W, and weighs 13 1/2 lbs. Net.....\$ 14.95



ELMAC AF-67 TRANS-CITER.
Net.....\$ 177.00

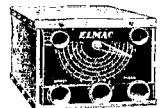


MORROW MATCHING RECEIVER AND TRANSMITTER

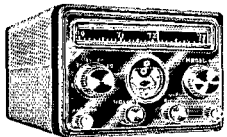
- MODEL MBR-5 RECEIVER.** 80 thru 10 meters. Dual conversion. 13 tubes. Less power supply and speaker. Net.....\$ 224.50
- MODEL MB-560 TRANSMITTER.** Same appearance and size as MBR-5 receiver, 80 thru 10 meters. 6146 final. Built-in VFO. 65 watts input. Net.....\$ 214.50
- MODEL RVP-250 Vibrator Power Supply.** For MBR-5 receiver. Also supplies low voltage for MB-560. Net.....\$ 39.95

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Special



ELMAC PMR-6A RECEIVER.
Covers 160 thru 10 meters plus BC band. 10 tubes. Dual conversion. Checked and reconditioned. While they last.....\$ 74.50
PSR-6. 6 VDC power supply for above receiver. Reconditioned. Only.....\$ 12.50



GONSET G-66 RECEIVER. Less power supply and speaker.
Net.....\$ 169.50
Power Supply, 6-12VDC-115VAC.
Built-in speaker. Net.....\$ 39.95

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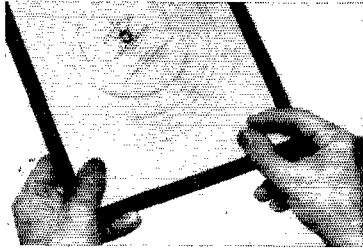
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WALTER ASHE RADIO COMPANY
1125 Pine Street, St. Louis, Mo. Q-5-56

Rush "Surprise" Trade-In Offer on my.....
for.....
(show make and model of new equipment desired)

Rush new free 1956 Walter Ashe catalog.

Name.....
Address.....
City.....Zone.....State.....



Time Savers . . .

BESET with a knotty technical problem? Why not let an ARRL Lightning Calculator provide solution and save hours of operating time, or time you might better spend in constructing that new rig.

IF YOU'RE trying to figure out how many turns to wind on a coil for a particular band, you'll find the answer more quickly by using the Type A Calculator, designed especially for problems involving frequency, inductance and capacity. Direct-reading answers to Ohm's Law problems involving resistance, voltage, current and power may be obtained rapidly on the Type B Calculator. Be sure — and be accurate — with one of these dandy time savers.

ARRL LIGHTNING CALCULATOR

Type A or Type B

\$1.25 *postpaid*

THE AMERICAN RADIO RELAY LEAGUE

West Hartford 7, Conn.

West Coast Flood

(Continued from page 55)

down at midnight but opened at 0900 the next day and operated again until midnight, and during the evenings for the next two nights, closing up the operation on December 28th. W6ZRJ lists the following also as having had some part in the RN6-NCN operation: W6s ZF JQB YIJ ADB AIT IPW CMA RNY JOQ VTC QR ASH NHF RE MIJ MLZ, K6s PSI EPC CNA GID ORT GZ DYX HAA CNE GPI, W7s. QFQ JLU ADU KZQ, KN0ANZ/6.

Red Cross Station W6CXO carried an especially heavy load during the emergency, having the almost-impossible task of handling Red Cross traffic with all the local chapters in the state. Operating under the jurisdiction of W6JWF, trustee for the station, were W6s OPL GHI GGC ZLQ NL and PSI.

Although W6GQY appears to have been the outstanding traffic station during the emergency, W6HC reports the following additional stations operating from that area: W6s AXW BJO BME BWV CNG CWR CXE EQQ FKP FYY FYX GDV HBI JSY JTD KTV PKJ PYL QLZ TEX YQZ YUH ZSE ZZK, K6s ARJ BBR CEI CNV DGA DVV EKC HTF KGI MNW. Additional operators from the Chico area were W6s CKV QJD HNL GUV GUX HRZ QWD OKK QIV JRY, K6s IHK BYS ANX BAT BMU BWC, KN6s OQI MIK MEN PJN MZR. Stations in farther outlying districts that helped in relays to and from Chico were W6ZPJ/m and W6TSR in Orland, W6DPS and W6SLV in Oroville, W6s SYY SIA TMP SBH in Red Bluff and W6s ZQD JBP PTX, K6s GIB ACN CBY and EPK.

Stations of the U. S. Naval Reserve were extensively used during the emergency. Although most of this work was done on naval frequencies, the amateur liaison aspect and the work done on amateur frequencies make it of interest for this summary of emergency operations. Naval reserve stations were activated at Eureka, Santa Cruz, Yuba City and Yreka. Control was exercised from NDW on Treasure Island. In addition, circuits were manned on the amateur bands until c.d. facilities could take over. K6USN controlled these circuits. Liaison was maintained with Hamilton Air Force Base (AF6AIR) and with Sixth Army Headquarters (A6YUH). Health and welfare messages, as well as official relief traffic, were handled by all stations in the network. All in all, good use was made of naval reserve facilities.

Epilogue

Many amateurs who participated one way or another in these extensive operations no doubt have not been mentioned. Therefore, as customary, we have prepared a "catch-all" list of amateurs known to have been active but not mentioned above. Here it is: W6s CGJ CXB CF DDC DMA DBP DEE FKI JDN KYO KDJ LGW MWR MLU NL OFJ PHD SBN

(Continued on page 148)

FREE!

LAFAYETTE

CATALOG



132 PAGE ELECTRONIC CATALOG

Packed with the largest selection of Electronic, Radio and T.V. Parts, and equipment. PA, Hi-Fi systems, tubes, antennas, Transistor Kits, parts and components, Test Equipment, new build your own kits, tools, books, Microscope, drafting equipment, Binoculars, Telescopes, All Radio, TV and Ham supplies — ALL AT GREAT SAVINGS — For the economy minded servicemen, dealer, engineer and technician, **CHUCK FULL OF BUYS! SEND FOR YOUR FREE COPY TO-DAY.**

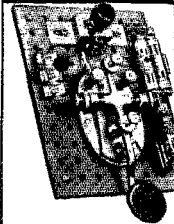
2 TRANSISTOR POCKET RADIO KIT



Packed into a 2 1/2" x 3 1/2" x 1 1/4" plastic case. This Two Transistor plus crystal diode radio kit offers many surprises, utilizing a regenerative detector circuit with transformer coupled audio stage, gives you high gain and excellent selectivity. Pulls in distant stations with ease with more than ample earphone volume. Kit comes complete with two transistors, crystal diode, loopstick, Arbonne transistor audio transformer, resistors, condensers, plastic case, etc. Including schematic and instructions.

- KT-68A Complete Kit less earphones. Net 11.80
- MS-260 New Super Power Dynamic Earphone, ideal for Transistor Circuit Imp. 8000 ohm, D.C. 2000 ohm 3.95

TRANSISTOR CODE PRACTICE OSCILLATOR KIT



For those interested in mastering the international code, an audio tone oscillator is essential. The circuit of this transistorized feedback oscillator has the simplicity of the neon glow, the signal strength of the vacuum tube, and requires only two penlite cells for weeks of service. It may be used for solo practice, or two may send and receive with the same unit. Kit comes complete with Transistor, Telegraph Key, Resistors, Condensers, Masonite Board, etc., and Schematic Diagram.

- KT-72 Net 2.99
- Cannon ECI—Single Headset Net 1.13



SLIM HIGH OUTPUT DYNAMIC MICROPHONE

Reg. Price ~~47.50~~

A pencil-stim design, high output PA Dynamic Microphone of exceptional quality, at a price that is 1/3 of the price of any comparable microphone on the market today. Very smooth response, 60-10,000 cycles, Omnidirectional, tiltable head. Switch on side gives choice of either high impedance (50,000 ohms) or low impedance (250 ohms). Instantly removable bracket permits use either on stand or as hand mike. Features exceptional mechanical strength. Cast case with satin chrome finish, 5/8" -27 thread, Acoustically-treated grille head, 3/8" long; 1/4" barrel diameter. Shipping weight 2 lbs.

- PA-29.....In lots of 3, Each 9.25
- Singly, Each 9.95

CRYSTAL MICROPHONE



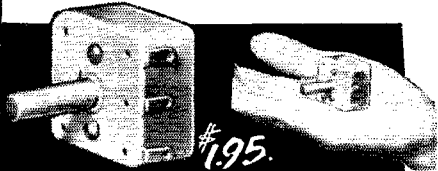
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SIY TEE WIS YZT; K6s AAW BDJ BJV CNL DPS EWO GL HVM HPR HDE IZC KAB KTI MIB NCG (Oprs. W1AOU W4GMX W4WMS W4VYR K6IED W8PCH W6SDI); W7NH. Undoubtedly a few of the above calls are wrong, and others who were active are left out entirely. This is unavoidable.

So there you are. Another credit in the annals of amateur radio, another service performed, another series of lessons learned to make our service better "next time," which we hope will never come but which we know *will* come. Wherever disaster strikes, there will be a need for emergency communications; and wherever such a need exists, there will be amateurs available, in an increasing state of organization, to fulfill it.

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. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-address 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.

- W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
- W2, K2 — E. F. Huberman, W2JIL, P. O. Box 62, Station P, Brooklyn 12, New York.
- W3, K3 — Jesse Bieberman, W3KT, P. O. Box 400, Bala-Cynwyd, Penna.
- W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
- W5, K5 — Robert M. Roden, W5UXY, 5929 Bertha Lane, Ft. Worth 11, Texas.
- 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.
- W0, K0 — Alva A. Smith, W0DMA, 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 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, 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, 883 10th St. N, 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, 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.

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Write fully to Howard Fleming, Director of Research, who will expedite an interview appointment for worthy applicants, travel costs arranged.

MONROE CALCULATING MACHINE COMPANY, INC.

Orange, New Jersey

World Above 50 Mc.

(Continued from page 61)

Television is a good bet, too. If you have a reasonably sensitive TV set you should have no trouble seeing the effects of aurora on any of the lower channels. Aim the TV array north and tune in any relatively weak signal on the low channels. Aurora will make pronounced streaks across the picture, and it may hash up the sound.

With all the talk of late about the various forms of scatter propagation, we sometimes get the idea that scatter work is something brand new. Actually, tropospheric scatter has been exploited by v.h.f. men for some time, though we didn't know it by that particular name. The coauthors of that fine long-Yagi article in January *QST* may have been the earliest to work via tropospheric scatter. It was during the winter of 1950-51 that W2NLY and W3QKI (now W6QKI) found that they were able to get through to each other on 144 Mc. regularly, regardless of weather conditions. This was a 350-mile circuit. Anyone have an earlier claim?

An almost identical distance was being spanned regularly on 50 Mc., at about the same time, by W3OJU, Washington, D. C., and W1CGY, East Longmeadow, Mass. Both the W2NLY-W3QKI and W3OJU-W1CGY circuits were maintained with powers under 100 watts, c.w. only.

Utah contacts are not made every day on 144 Mc. from the Los Angeles area, so March 11th was a big day for W6s ORS DNG NIZ and DQJ. All these fellows worked W6COH/7, at Twin Peaks, near Cedar City, Utah. W6COH does the portable job up brown. He was running 500 watts, feeding a 32-element array! The distance from Cedar City to the Los Angeles area is around 400 miles.

220 and 420 Mc.

Not all the activity is on 50 and 144 Mc. by any means. Here are some random reports of doings on the higher bands. W9GAB, Beloit, Wis., has a 9903 final on 220, running 70 watts input. He works W9EQC, Aurora, Ill., regularly, and has had a few contacts in Indiana.

W6ORS says that there is more life on 220 around Los Angeles of late. W6SOD and K6GCA are promoting a 220-Mc. roundtable every Friday night. Anyone is welcome.

W6NLZ reports extensive 420-Mc. activity also. W6BUT, Taft, copies W6MMU, Los Angeles, over high mountains. W6s TMI and SDMI are working Los Angeles stations from Oxnard.

Amateur TV has come alive again on the West Coast, as the result of surplus TV cameras now selling for around \$90.00. W6OJF says that 8 stations are on 420-Mc. TV, with some of them putting their audio on 50 or 144 Mc. to attract attention.

Two amateur TV enthusiasts looking for company: W6s ASMI and UHC, Hartley and Spencer, Iowa.

News of the UHF Club of Jamaica, courtesy of W2QPQ: Flying-spot scanner demonstrated by K2DNC and W2NLI (18 and 17 years of age, respectively) was featured at a recent UHF Club session. The club has a novel idea for promoting 420-Mc. interest. A yearly contest is held in which 420-Mc. rigs are judged on the basis of efficiency. Power supply and measuring device are supplied by the contest committee. No restrictions are imposed on the design, except that it be limited to 4 watts input.

Helpful hint from *Grid Leaks*, the paper W2QPQ gets out "occasionally" for the UHF Club: The frequency of any u.h.f. TV channel can be found by multiplying the channel number by 6 and adding 386. Example: Channel 60 x 6 plus 386 = 746. Channel 60 starts at 746 Mc.

Bright idea for spotting directions to local communities in densely populated areas: W6NOB notes that many Los Angeles area v.h.f. men are newcomers, and therefore do not know where to aim their beams for the communities they hear mentioned on the air. He points out that if you have a telephone book you've got a reasonably good map, with almost nothing but community names on it. Should be a good cure for the "Say, I've only been out here three years; where is Lomita?" inquiry so often heard. We just checked the Hartford book, and it has an area map, too — though we don't have quite the profusion of community names to worry about here.

No OES Notes this month. We're saving the current reports for an OES Bulletin that holders of the appointment will be receiving shortly.

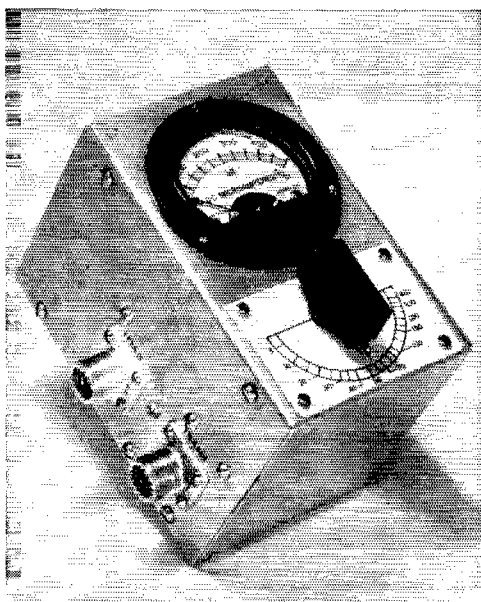


Fig. 21-41—An RC bridge for measuring unknown values of impedance. The bridge operates at an r.f. input voltage level of about 5 volts . . .

This handy unit is just one of the many devices you can construct from directions in the big 1956 Radio Amateur's Handbook: 760 pages, over 1350 illustrations, charts and tables.

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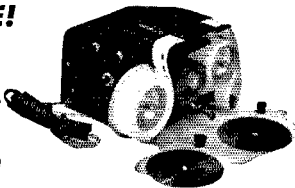
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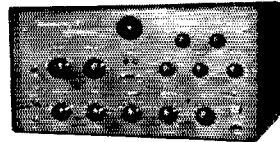
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Completely wired and tested with tubes:
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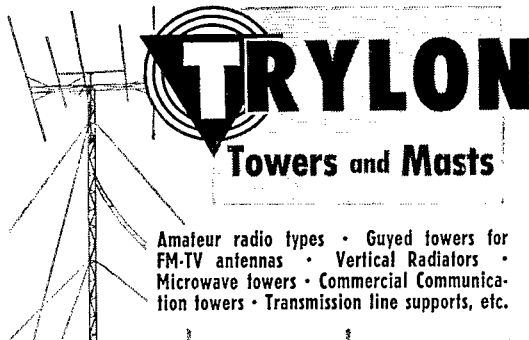
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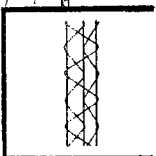
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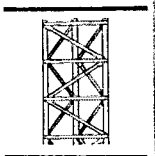
TRYLON

Towers and Masts

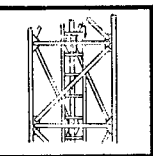
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Width—6.5"
10' section—
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SERIES 2400
Height to 280'
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Trylon Rotary
Beam, AM
Broadcast, and
Microwave
antennas



SERIES 6000
Height to 600'
Width—60"
10' section—
653 lbs.
Use—TV Broad-
casting and
curtain antennas
for International
Broadcasting

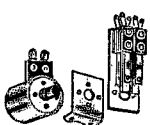
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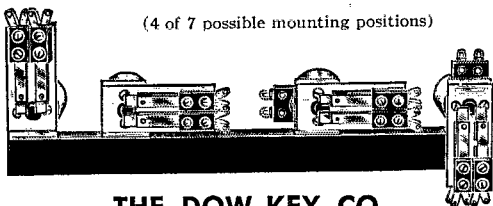
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How's DX

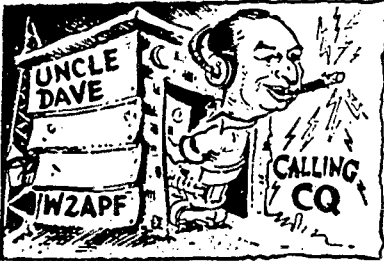
(Continued from page 67)

later than May 31st, and must bear this signed statement: "I certify that my station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decisions of the Council of the USKA will be final in all cases of dispute." Fair enough. Certifications will be awarded to the two highest entries from each country, and don't forget that USKA offers a shnazzy II-22 sheepskin to each amateur who can submit proof of contact with all of Switzerland's 22 cantons. Sharpen your pencils, dip your finals, and have fun! Certificate-hounds, now hear this: Marking the 10th anniversary of formation, the Tops C.W. Club and GW8WJ announce world-wide availability of Worked All Welsh Counties diplomas. This award is attainable through accumulating proof of contact with all thirteen counties, and submitting same to GW8WJ, enclosing 40 cents in stamps if you're a nonmember of TCWC in the U.S.A. QSLs must confirm QSOs dated between August, 1946, and December, 1956, and must be all-c.w. or all-phone. An interesting project, indeed—dig yourself a good U.K. map, check your QSL file, then go after the counties you need, bearing in mind that hams in Monmouthshire County sign G as well as GW calls W9LYA-DL4TM, now stationed in Italy, finds it impossible to obtain operating privileges as an I1 but he hopes to step over into Grace Kellyland for a bit of 3A2ing in August or September next.

Hereabouts—K2BZT is in favor of a "Worked All W2BBK" certification after Doc's most recent Caribbean bandiwork as FP8AK/VP2 and FS7AA. W4IE commends the FS7AA operating procedure wherein the St. Martin station, transmitting on 14,140 kc, and listening for replies around 14,010 kc, had monitors posted near 14,140 to wise up on-frequency callers. This of course wreaked havoc on low-end QSOs in progress but it did produce clean shots at FS7AA Yes, they *always* come back, sooner or later. W8BMX now has a Lyeco 35-watter on the air to replace the 860s he signed off with back in the 1930s. Carl finds his homespun super, built after an article in October 1938 QST, still capable of pushing rare ones through the 'phones Ex-VR3A paid personal calls on many W/K DX buddies while en route New York City Y13WW tells WI1KE the story of dramatic and successful 1955 efforts by OE13USA, F7s CZ and DB, F9BA, HC1FG, OE2SP, TA3US, 4X4AS, 5A2TZ and other 20-meter phones to help requisition desperately-needed serum from Paris for the dangerously-ill brother of OA4AN. Y13WW designates Doug of OE13USA as deserving most of the credit for a job well done KP1KD, now settled in his new P.R. location, reports on doings among the KP4 DX gang. KP4ACM returned north, KP4RL is back at W2DIN, KP4UW now signs K2GA, and KP4TF should be W4JPY again by the end of this month. Ev gave KP4CC's 8-year-old daughter the Novice quiz and she made it—WP4AEN. KP4KD, with a 212/203 tally, has new DX certifications on hand from England, Israel, Finland and Germany to help dress up his new bulkheads W3LC desires a good mail QTH for JA6AA; W2KJZ likewise for ex-AP2N Ws 9FGX and 4EPA continue to pound out lively DX columns for Tri-State ARS's *Sparks* and Ohio Valley ARA's *Ether Waves*, respectively Calls Behind the Calls Department: K5BVU taps brass at TF2WAS. EX-EL2X (K2RAR) tried a bit of ARRL DX contesting at the installation of W3ECR. Famed U. S. DX contestant W4KFC squeezed in some 50 Test QSOs at OD5BS while passing through Lebanon on a late-winter tour of Europe. Vic also stopped in on many DLs, IIs and EA4CH before heading back toward Annandale NCDXC patter: W6s MHB (of TI9MHB) and HNX draw Caribbean assignments from RCA and look forward to possible rare emanations with accompanying Ranger rigs. . . . Avid family stamp collectors made a shambles of the W6PYH QSL file one day while the OM was away at work—oh NO!

Strays

This suggestion to Novices comes from KN2QYC: "Frame your first QSL card as a memento of your beginning in ham radio."



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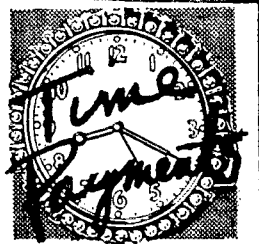
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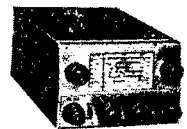


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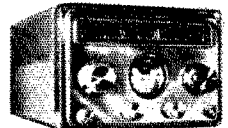
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HAM HEADQUARTERS IN THE WEST.

Tribute by Hoover

(Continued from page 49)

out an impressive signal — for a short distance. I shudder to think of the consequences if some of those early signals were to bounce back from cosmic space into the present era!

Since those early days of radio, the character of our activity has passed through many phases. The pioneers — Maxim, Kruse, Godley, Deloy, Schnell and Hull — to mention only a few — marked impressive milestones in the development of short wave communications. To them went the incomparable thrill of exploring beyond known horizons.

The early experimenters, though still small in number, were a world-wide group. The short wave tests which they pioneered across the Atlantic in 1921, 1922 and 1923 — and across the Pacific soon thereafter — turned out to be epoch-making events that revolutionized the entire concept of radio communications. We had no way of knowing the full import of our work at the time — that was to come later. But we did know we were on a new frontier.

I remember that during these early tests I got permission to put up an antenna on the top of the old Bureau of Standards building on Connecticut Avenue, and to use their storage batteries to power a homemade rig. The signals from 3ZH were reported in Scotland — along with many others — to the complete amazement of the whole staff — and including myself.

As the result of a common technical interest, together with a pride of achievement, there grew up a bond of friendship among thousands of amateurs the world over. It created an understanding that has increased and multiplied as the years have gone by.

Amateur radio in the last two decades, however, has become something else besides the pursuit of a hobby and an outlet for technical experiments. From its earliest inception it rested upon the rigorous definition that it must be an activity of "a personal aim and without pecuniary interest." With this foundation it was no accident that the people who were attracted to its ranks should feel an obligation to be of public service to their communities whenever the opportunity arose.

There are today 140,000 licensed amateurs in the United States alone. As their numbers have increased, so has the opportunity to be of service by means of communication with others. Hundreds of nets have grown up, extending into virtually every town in the country, and the public service of the amateur operator is a continuing endeavor of immense value.

As we have seen so clearly demonstrated recently, in time of emergency or disaster, they are ready to help out by providing communications for local, state or national rescue operations. The more stations there are, the more effective becomes their coverage in the event of necessity.

The radio amateur contributes to the safety of our country in still other ways. In these troubled

(Continued on page 150)

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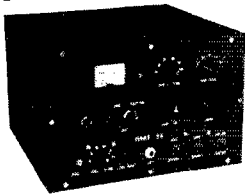
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times we must remain strong and alert for that is the only way that we will ultimately find true peace. In the great reservoir of our technically minded members, our emergency and traffic nets, and our armed forces reserves, we have a patriotic group that contributes mightily to the strength of our nation.

Tonight we pay tribute to all amateurs, everywhere, for their public spirited avocation. And on behalf of them all, I wish to say to Mr. Gunderson that we are proud of him, and happy to be in his company on this occasion.

T-R Switch Variations

(Continued from page 23)

2-foot cable (link output) shows a point of large attenuation at the high end of 7 Mc., with gain at the low end. On the other hand, the 2-foot cable (pi output) had attenuation at the low end and gain at the high end of the band!

The resonant frequency of the final tank had a marked effect on the curves. If the final tank

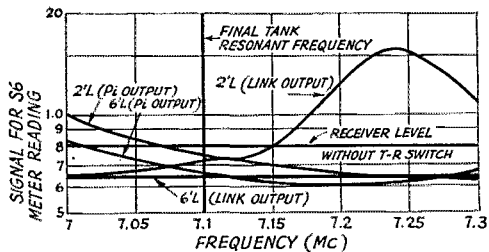


Fig. 3— Curve showing voltage input (micro-volts) for a constant S-meter reading in the 7-Mc. band, using different connecting cable lengths and outputs (pi or link).

tuning were changed the curves took on entirely new shapes, which means there is an infinitude of possibilities when using a T-R switch. Such things as the length of connecting cable between T-R switch and transmitter, resonant frequency of the final tank and band of operation all have a marked effect on the operation of the receiver. Operation on more than one band will increase the probability of attenuation because the best cable length for one band may not be the best length for another. The T-R switch seems to give more gain (or less loss) as the frequency band of operation goes lower. If the T-R switch is used in connection with c.w. break-in on 80 meters, or with single sideband on 75 meters, little or no loss of gain might be experienced, but performance will depend on the individual station.

The conclusion that can be drawn from these tests about the use of a T-R switch is that the connecting cable length, the transmitter tuning and coupling circuit, and the band operation all contribute to the attenuation or gain through the T-R switch. If a T-R switch is going to be used successfully, it may require some "cut-and-try" in each individual station.

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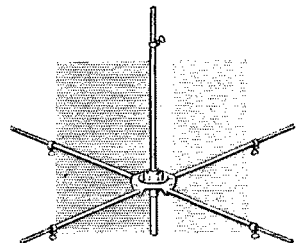
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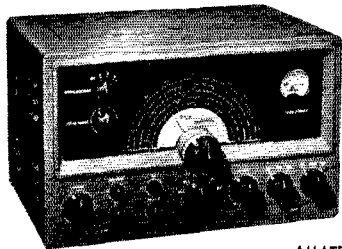
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Receiver-Tracking V. F. O.

(Continued from page 37)

output circuit will cover 7-7.2 Mc. adequately. Since primary interest centered on the use of the receiver-tracking v.f.o. over the most widely used c.w. frequencies — the low-frequency portion of the band — no further efforts were expended to obtain additional bandwidth. Adjustment of the tuned-circuit L and C values and the interstage coupling would permit a bandwidth of 7-7.3 Mc. were it desired.

The unit described was built largely from parts which were available from the junk box. No particular difficulties were experienced in obtaining the desired performance. No heterodyne other than the desired one was detected. L_8 , R_2 , and the amplifier plate tank-coil shield were found necessary in the particular circuit layout used in order to suppress parasitic oscillations. L_9 is the usual parasitic choke used with tetrode amplifiers.

Adjustment

Adjustment of the unit is reasonably straightforward. Capacitor C_1 is adjusted for balanced input to the mixer grids by observing the 9755-kc. signal present in the mixer output, as by means of an indicating wavemeter, and adjusting for a minimum. With the unit connected to the receiver, the slug-tuned r.f. coils are first adjusted for maximum output at 7.1 Mc. A small neon bulb may be used for initial adjustments. Better still, the grid current of the stage following the 2E26 amplifier may be observed. Then the receiver frequency is varied in steps and the slug-tuned coils readjusted and stagger-tuned. Successive observations and readjustments are made until the grid-current readings vary but slightly over the 7-7.2-Mc. range, falling off rapidly below and above this range. When the unit is performing properly, there will be no output signal when the key is up and only the frequency corresponding to the setting of the receiver when the key is down.

Operation

The receiver-tracking v.f.o. is intended to be an auxiliary device in the station, and hence some suggestions as to use of the equipment are in order. One useful arrangement is illustrated in Fig. 4. In this case, the output from the receiver-tracking v.f.o. is link-coupled to the grid circuit of the output stage of a manually-tuned v.f.o. exciter. Both v.f.o. units make use of grid-block keying, and either may be selected by switching the key. When the receiver-tracking v.f.o. is keyed, only the output stage of the manually-tuned v.f.o. unit operates, the output signal being coupled to the antenna or to the grid circuit of a following amplifier. When the manually-tuned v.f.o. is keyed, the receiver-tracking v.f.o. is, of course, inoperative, and the manually-tuned v.f.o.-exciter operates in normal fashion.

(Continued on page 154)

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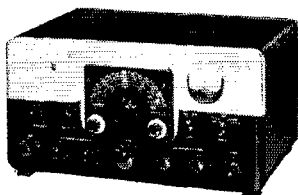
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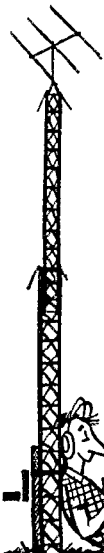
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Precautionary Checks

Before putting a device such as this on the air, it is wise to check the output signal very carefully. With the output fed into a dummy load, the output frequency should be checked with an accurate frequency meter. Only the desired output signal should be observed as the receiver is tuned across the band. A second test may be conducted with the aid of an amateur in an adjacent town. The unit described was checked in this fashion with the aid of WIJSM, who verified the results of tests and frequency checks made earlier in dummyload work.

This v.f.o. has been in operation for somewhat over two years. It has been used seriously in two SS contests and in one FD exercise. The unit has added much to the enjoyment of amateur radio operating, and it has, indeed, reduced fatigue during contest operating.

Hamfest Calendar

(Continued from page 68)

will begin at 1330 with mobile hunts, code competitions, display of radio gear, and entertainment for the ladies scheduled throughout the day. In the evening, there will be a banquet, special entertainment, and dancing. For further information and ticket sales, contact Al, W7GUS, Box 103, Port Orchard, Washington.

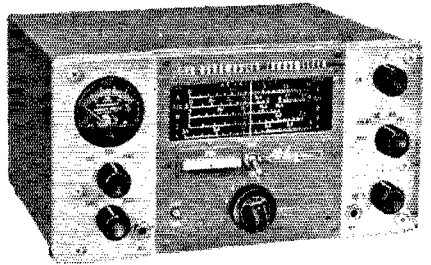
Wisconsin — The Wisconsin Valley Radio Association will hold its annual Spring Hamfest on Saturday, May 12, at St. Theresa's Hall, Schofield. Scheduled for the afternoon is an ARRL Wisconsin Section meeting, followed by a meeting on RACES. Starting with the banquet at 6:00 p.m., a well-rounded program has been arranged for the evening, featuring a technical speaker and entertainment. Club station, W9NUW, operating portable at the Hamfest site, will monitor 29,620 kc. and 3950 kc. for incoming mobiles. Registration \$3.00. For additional information or advance registration, write WVRA, P.O. Box 382, Wausau, Wisconsin.

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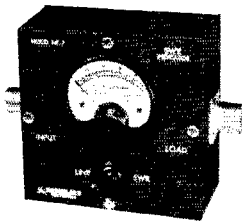
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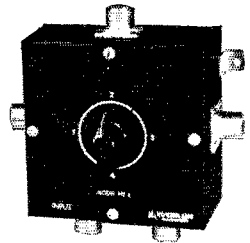
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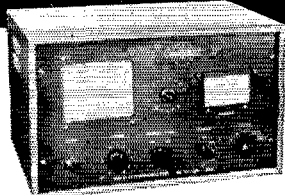
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- FCDA Approved
- Low Cost

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Amateurs January 2, 1957**



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Filters

(Continued from page 31)

course, that the set-up working the lowest band needs only the low-pass filter and the one working the highest band needs only the high-pass.

If the same antenna is used for both transmitting and receiving, the low-pass filter should be installed between the antenna and the change-over relay (or T-R switch) so it is in use both for transmitting and receiving. The high-pass filter should go between the receiver and the change-over relay since it is not ordinarily needed on the transmitter; thus receiving-type components can be used in the high-pass unit. The general idea is shown in Fig. 5. If a separate receiving antenna is

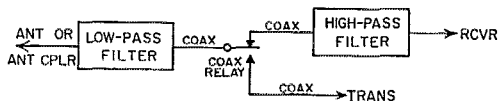


Fig. 5—Filter installation when the same antenna is used for both receiving and transmitting.

used the receiver gets the high-pass and the transmitter the low-pass. The receiver is not protected from transmitters working in higher bands in this case.

Either type of filter should be constructed in the same way as a filter intended for TVI work, using complete shielding and coaxial fittings. The filters may not be effective if the transmitter and receiver are not also shielded in line with the usual TVI-prevention techniques.

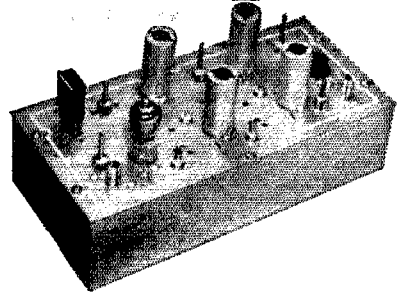
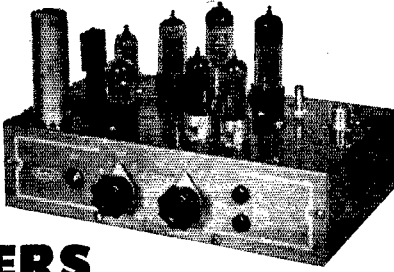
SS Results

(Continued from page 48)

K2GHV...40,125-321-50-A-40	KN2MMK (K2GYY, KN2s
K2GLQ...39,100-343-46-A-26	MMK MMM OUM)
W2NIN...39,015-307-51-A-28	2700-57-20-A-34
K2BZT...38,781-214-73-A-15	
W2DEN...38,260-264-53-A-26	
W2FZY...35,280-252-56-A-34	
W2LSX...33,588-311-54-B-17	
W2LPV...32,588-237-55-A-30	
W2CFW...29,505-281-42-A-26	
W2LRO...28,750-231-50-A-24	
K2KDG...28,575-255-45-A-23	
K2KDW...27,820-215-52-A-23	
K2BJA...27,810-206-54-A-26	
K2JLQ...27,250-221-50-A-36	
K2EGZ...24,565-289-24-A-20	
K2IBF...23,940-200-48-A-40	
W2EIK...21,045-183-46-A-13	
W2ABL...16,100-161-40-A-12	
W2ZXL...15,158-131-47-A-17	
K2GZD...13,875-222-25-A-25	
K2IBO...13,800-138-40-A-20	
W2EBC...12,825-190-27-A-19	
W2NKD...12,670-181-28-A-13	
K2CW...10,781-106-51-B-10	
W2AKR...7175-82-35-A-14	
K2CCF...6750-100-27-A-9	
W2VCK...5825-117-20-A-21	
W2NEP...5600-70-32-A-16	
K2KFF...5600-70-32-A-14	
W2EWZ...5309-69-31-A-9	
W2IPJ...5225-95-22-A-10	
K2GJZ...4875-75-26-A-7	
K2YHS...4275-88-20-A-17	
W2ILF...4250-63-34-B-13	
W2CVW...3685-57-26-A-5	
W2DNL...3240-54-24-A-6	
K2GLS...2874-61-19-A-10	
KN2MEF*...2826-63-19-A-25	
W2KOD...2565-57-18-A-4	
W2LIR...2295-51-18-A-3	
W2COG...2070-36-23-A-26	
KN2PHP...1580-41-16-A-17	
KN2LSX...1530-38-17-A-12	
W2VMX...1500-41-15-A-4	
W2BU...1325-17-10-A-2	
KN2OMP...135-14-6-A-10	
W2NBP...137-11-5-A-3	
W2GNW...28-4-4-B-1	
W6CXN...121,500-675-72-A-37	
W6RYJ...120,320-869-70-B-37	
W6FZO...101,560-602-68-A-38	
W6SOP...98,926-575-69-A-39	
W6FDO...90,675-698-65-B-39	
W6UCE...59,360-433-56-A-37	
W6KYI...55,494-350-65-A-32	
W6NFL...47,520-357-54-A-30	
W6UJC...41,662-302-55-A-28	
W6VXO...38,905-251-62-A-35	
K6AZL...38,138-283-54-A-20	
W6UJD...34,440-247-56-A-31	
W6QKE...28,080-209-54-A-22	
W6TLH...24,544-181-55-A-26	
W6FSF...23,153-173-54-A-2	
K6AKN...20,640-186-44-A-34	
W6SQE...16,200-162-40-A-31	
KN6BIS*...14,092-149-41-A-35	
W6AWN...11,400-151-38-B-12	
K6AKO...8775-90-39-A-25	
W6UJF...7704-107-36-B-25	
W6BGB...6563-75-35-A-12	
KN6AAH...5231-72-31-A-22	
W6FUX...3515-62-25-A-23	
KN6AUT...1378-30-19-A-9	
KN6CER...808-23-15-A-6	
W6YSE...90-9-4-A-2	
W6GXQ (W6s GWE GXQ NAD)	40,765-268-62-A-33
W6DSP (W6s DSP UIT)	28,885-218-53-A-23
W6WDK (W6s WDK YSE)	27,022-240-59-B-38
W6QQH (W6s QJH USP)	26,469-193-55-A-37
W6LNI (7 opfs)	11,266-132-43-B-14
Kansas	
W6IUB...101,360-637-64-A-30	
W6BCT...80,400-480-67-A-24	

(Continued on page 158)

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W0WYV.	41,340-	345-60-B-29
W0YRN.	37,046-	258-58-A-26
W0UAT.	32,445-	206-63-A-17
W0UNT.	32,306-	296-58-B-26
W0LPQ.	32,063-	226-57-A-15
W0CHJ.	32,060-	230-56-A-21
W0VFE.	23,000-	200-46-A-30
W0VW.	22,416-	183-46-A-15
W0VWZ.	22,380-	189-48-A-16
W0LUH.	20,585-	179-46-A-22
W0PKO.	20,273-	159-51-A-20
W0TSA.	14,728-	137-43-A-10
W0FDJ.	11,830-	132-45-10-17
W0GWA.	8,400-	96-35-A-26
W0RXM.	2,970-	54-22-A-9
W0YGF.	2,520-	48-21-A-11
W0GHP.	1,898-	33-23-A-8
W0CFH.	1,650-	32-22-A-8
W0BXP.	1,126-	30-17-A-12
W0JFG.	756-	21-18-A-6

Missouri

W0TDR.	85,444-	549-63-A-39
W0EZO.	85,120-	675-64-B-36
W0CVL.	82,143-	494-66-A-38
W0LLO.	70,204-	418-63-A-38
W0PWN.	68,588-	454-62-A-40
W0FIN.	63,920-	405-64-A-39
W0QWS.	53,796-	378-58-A-40
W0PUC.	53,616-	365-59-A-40
W0YRJ.	52,313-	353-62-A-37
W0TWH.	32,416-	183-46-A-15
K0AEL.	28,928-	200-58-A-40
W0ECE.	11,330-	107-44-A-13
W0YPR.	10,550-	109-40-A-25
W0WVJ.	10,540-	138-31-A-14
K0CCH.	6,724-	67-24-A-30
W0WRB.	3,281-	53-25-A-12
W0KIK.	608-	27-9-A-12
W0ETW.	180-	9-8-A-1
W0M5A (W0S M5A M5H)		
W0EEE (7 028)	68,550-	468-60-A-30
W0FLN (W0SWB, W0S TGI WRB)	193-	11-7-A-2

Nebraska

W0CTO.	92,625-	570-65-A-38
W0DW.	78,894-	489-65-A-40
W0WLO.	24,274-	239-53-B-25
W0BUR.	12,941-	102-51-A-13
W0RY.	11,199-	124-37-A-14
W0ZIN.	7,830-	89-36-A-22
W0UJK.	6,885-	81-34-A-20
W0UJR.	663-	27-10-A-7

Western Massachusetts

W1JYH.	124,200-	691-72-A-39
W1WEE.	38,350-	520-59-A-28
W1BFF.	30,080-	270-47-A-21
W1AZW.	10,266-	194-43-A-17
W1DVA.	6,613-	101-25-A-14
W1HLY.	3,895-	84-19-A-7
W1NFSJ.	23-	3-3-A-2

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Connecticut

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W1B1H.	105,840-	594-72-A-36
W1AW10.		
W1ZDP.	105,000-	750-70-B-32
W1QIS.	82,530-	626-63-A-38
W1LFW.	66,071-	420-62-A-24
W1FTN.	57,550-	315-73-A-22
W1ACR.	48,563-	408-50-A-40
W1LVG.	46,941-	401-47-A-19
W1SVS.	45,045-	347-52-A-27
W1VGP.	40,612-	286-71-B-29
W1CDD.	27,560-	212-52-A-34
W1WEA.	24,271-	307-39-A-39
W1LIV.	23,358-	249-47-B-23
W1LEG.	22,660-	145-63-A-22
W1AMY.	20,900-	224-39-A-22
W1VKZ.	17,508-	149-47-A-23
W1RFQ.	17,000-	200-34-A-16
W1GVK.	16,080-	174-48-B-15
W1NJM.	15,655-	202-31-A-11
W1WVY.	14,280-	180-32-A-18
W1ANU.	13,895-	170-28-A-21
W1ADW.	13,324-	162-39-B-16
W1LML.	12,636-	162-39-B-16
W1HMP.	10,560-	120-44-B-15
W1TCJ.	9,520-	120-32-A-11
W1WY.	8,416-	120-32-A-11
W1BEM.	7,540-	106-29-A-20
W1EFW.	5,583-	77-29-A-6
W1CED.	4,801-	85-23-A-11
W1BDI.	4,260-	71-30-B-7
W1FWS.	2,100-	43-20-A-14
W1CSM.	1,398-	43-12-A-6
W1QJL.	1,328-	40-18-A-5
W1FGP.	1,073-	39-11-A-12
W1RFJ.	930-	31-12-A-5
W1SPX.	784-	28-14-B-6
W1NDHP.	5-	2-1-A-2

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W1WLV.	94,875-	550-69-A-37
W1WCX.	88,987-	610-73-B-39
W1TW.	88,200-	504-70-A-32
W1AQE.	77,675-	478-65-A-38
W1LSM.	68,769-	418-67-A-33
W1SAD.	67,060-	479-56-A-31
W1ONP.	46,480-	332-56-A-38
W1BOD.	45,293-	337-54-A-27
W1PEP.	44,340-	381-60-B-39
W1TVZ.	35,295-	366-42-A-24
W1MGV.	40,800-	272-60-A-28
W1AMQ.	40,328-	285-57-A-28
W1MCF.	39,401-	280-57-A-32
W1HJP.	38,280-	348-55-B-40
W1PWK.	37,040-	252-64-A-30
W1RSZ.	35,295-	366-42-A-24
W1RSR.	27,610-	251-44-A-27
W1NS.	22,063-	180-50-A-18
W1DIF.	19,270-	164-47-A-24
W1PLJ.	19,110-	156-49-A-33
W1RTO.	18,800-	160-47-A-22
W1JYC.	18,484-	142-53-A-22
W1XVT.	14,231-	165-45-A-20
W1WLW.	13,563-	144-38-A-12
W1PZG.	12,580-	136-37-A-20
W1PMT.	10,925-	115-38-A-18
W1AQE.	10,063-	115-35-A-4
W1LQQ.	9,934-	120-33-A-9
W1BFW.	8,156-	116-29-A-22
W1JVZ.	7,268-	86-34-A-14
W1DWH.	6,308-	87-29-A-17
W1VJE.	6,090-	103-24-A-32
W1FEB.	5,930-	96-15-A-9
W1IFM.	4,750-	100-19-A-17
W1JCE.	4,290-	66-26-A-10
W1DFY.	3,185-	50-26-A-7
W1FRR.	1,620-	36-18-A-24
W1EFS.	1,305-	29-18-A-5
W1CMW.	1,255-	173-25-A-14
W1ZES.	1,224-	36-17-B-6
W1IKT.	885-	30-12-A-5
W1KIN.	850-	22-10-A-5
W1IGNN.	438-	28-7-A-16
W1LIE.	325-	17-10-A-9
W1FTT.	254-	7-10-A-9
W1AAC.	195-	13-6-A-3
W1FOG.	158-	9-7-A-4
W1NFMW.	83-	11-3-A-9
W1LNX.	70-	7-4-A-6
W1NFM.	5-	4-A-3
W1ZHA.	3-	1-A-2
W1NEPE.	1-	1-A-1
W1AEG (W18 AEG DW1)	161-	13-7-B-11

Rhode Island

W1CJH.	82,913-	505-66-A-32
W1EZO.	61,620-	522-60-B-39
W1VBR.	52,525-	316-54-A-36
W1LQA.	37,620-	317-48-A-27
W1UTA.	30,625-	250-19-A-25
W1OMC.	25,860-	216-60-B-26
W1RFQ.	19,649-	201-39-A-33
W1B1L.	13,323-	73-73-A-13
W1AWE.	13,200-	110-48-A-24
W1SXX.	8,736-	93-38-A-19
W1CMH.	6,930-	132-21-A-17
W1DPE.	4,355-	67-26-A-15
W1UTZ.	3,556-	66-23-B-7
W1LQ.	2,840-	37-15-A-2
W1TXG (W1S TXG WQ1)	7656-	119-33-B-14

Vermont

W1QMG.	69,912-	456-72-B-39
W1UGW.	46,650-	312-60-A-22
W1RWP.	24,416-	218-56-B-18
W1NFD.	3,813-	26-13-A-11

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KL7EYR.	26,455-	208-52-A-21
KL7CF.	15,850-	164-40-A-18

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W7HAA.	27,216-	257-54-B-20
W7VWS.	15,625-	125-50-A-20
W7WCK.	7683-	100-39-B-15

Montana

W7EYU.	231,593-	1270-73-A-40
W7WAW.	33,630-	302-57-B-37

(Continued on page 160)

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"SCATTER"
GAIN

GONSET'S BIG BERTHA

the new high gain
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2 meter DX.

Recent tests indicate that the multi-element yagi can be used to excellent advantage for scatter propagation operation on two meters. (See QST, March 1956 for full details.)

Gonset Big Bertha is a 13 element yagi on a 24 foot boom, has reflector, folded dipole and 11, wide-spaced directors. It has a power gain of 16.1 db over a dipole, an effective aperture, (capture area) equivalent to an 18' parabolic "dish."

Since bandwidth is exchanged for high gain, this is not a general coverage antenna. It is factory set at 144.2 mcs where VSWR is minimum, gain and pattern optimum. It can also be optimized higher in the band merely by trimming elements.

Q bars, (supplied) permit transforming antenna impedance to 450 ohms for open wire line or to 200 ohms for matching 52 ohm coax via a half-wave balun. The antenna can be mounted for either horizontal or vertical polarization.



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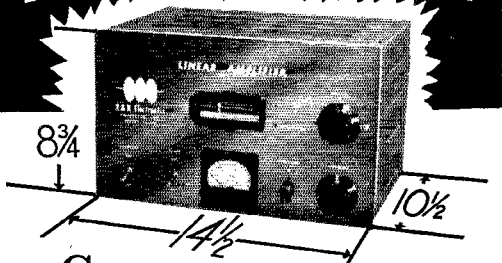
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PRICE \$169.95
(\$19.95 down, \$14.50 per month)
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Modified 1625 Tetrodes \$3.75 each

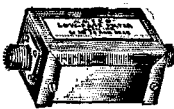
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with the amazing, new AMECO
LOW PASS FILTER

The AMECO low pass filter suppresses the radiation of all spurious signals above 40 Mc. from the transmitter. The filter uses a Constant K Circuit, and is designed for Coaxial cable (52 to 72 ohms). Other features include: • Negligible insertion loss • 35 Db. and more attenuation of harmonic & spurious frequencies above 50 Mc. • Will handle up to 200 watts of RF power • Each unit complete with bracket, and instructions.



Model LN1 with 2 RCA phono jacks..... \$1.95
Deluxe Model LN2 with 2 50-239 Coax. Connectors. \$3.45

HIGH PASS FILTER

The AMECO high pass filter is placed in series with the TV receiver's antenna to prevent the transmitter's signal from entering the receiver. All frequencies above 45 Mc. are passed through without loss. The AMECO high pass filter is designed for use with the common 300 ohm twin line.



Model HP-45

OTHER FEATURES INCLUDE:

- 40 db and more attenuation at 14 Mc. and below; 20 db attenuation at 10 meter
 - Negligible insertion loss
 - Filter uses balanced constant K circuit
- At the amazing low, low price of **89¢** Amateur Net

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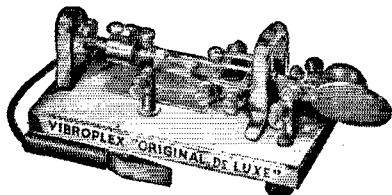
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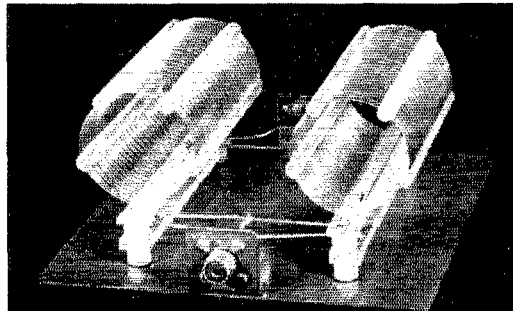
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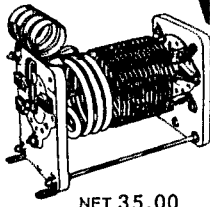
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W5KVP...38,498-	273-57-A-24
W5GXL...26,260-	204-52-A-19
W5ZQU...23,288-	203-46-A-21
W5HAL...10,328-	122-34-A-25
W5LPL...7605-	79-39-A-6
W5PFB...424-	61-29-A-4
KN5CBA...100-	41-19-A-20
KN5BBE...106-	12-5-A-9
<i>Southern Texas</i>	
W5R7S...112,180-	635-71-A-39
W5RZA...97,155-	573-68-A-32
W5R7P...91,817-	483-59-B-32
W5BLA...40,093-	277-58-A-36
W5YXW...32,303-	222-59-A-25
W5ZWR...2760-	46-30-B-3
KN5AXN...1080-	34-16-A-14
K6BSZ...560-	32-7-A-15
W5PMI...270-	12-9-A-3
<i>New Mexico</i>	
W5DWT...176,613-	1008-71-A-39
W5CAW...116,190-	650-72-A-40
W5KVP...56,053-	253-57-A-24
W5R7P...48,589-	144-55-B-16
W5GCL...16,875-	158-45-A-24
W5CA...1540-	28-22-A-2
W5GPMI (W58 KKW SUC IUDM, KBAT, KDRP)	36,666- 508-58-B-39
CANADIAN DIVISION	
<i>Maritime</i>	
W2BRA/V06	16,528- 172-39-A-23
VE1CU...14,430-	158-40-B-23
V06N...12,096-	112-54-B-15
VE1DB...2760-	46-24-A-8
VE1AAF...150-	10-6-A-2
V06U...2	1-1-A-1
<i>Quebec</i>	
VE2YU...70,898-	414-69-A-36
VE2YA...55,880-	421-70-B-32
VE2CP...38,588-	316-49-A-31
VE2LD...37,572-	232-68-A-27
VE2AQ...12,920-	136-38-B-16
VE2PZ...7866-	104-38-B-1

(Continued on page 164)

ELECTRONICS TECHNICIANS • SR. LAB TECHNICIANS

Excellent opportunities
and employee benefits at
SPERRY

a company with an enviable record
of 44 years' growth and expansion.

ELECTRONICS TECHNICIANS Minimum 5 years' experience on construction of complex electronic equipment. Knowledge of pulse, radio, electronic and audio frequency circuits; ability to use common electronic test equipment required. Minimum 2 years' engineering school or equivalent training.

SR LAB TECHNICIAN 10 to 15 years exp. in the design, construction and maintenance of complicated electronic equipment.

LIBERAL COMPANY BENEFITS

Over 1,500 employees have been with Sperry more than 15 years ... ample evidence of opportunity, excellent benefits and fine working conditions.

PLEASE SUBMIT RESUME
to

Mr. E. Williams

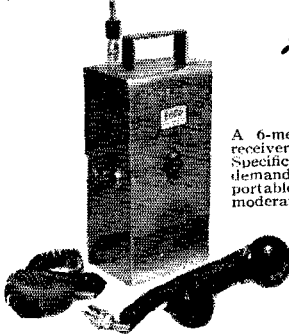
Interviews may be arranged
locally or at plant at
company expense.

SPERRY

GYROSCOPE COMPANY

DIVISION OF SPERRY RAND CORP.
Marcus Ave. & Lakeville Rd.
Great Neck, L. I., N. Y.

CARRY YOUR HOBBY WITH YOU!!



Announcing THE NEW ECCO ER-6

A 6-meter portable transmitter/receiver at a new low, low price. Specifically designed to meet the demand for an efficient amateur portable transmitter/receiver at a moderate price. Also practical for hunting and fishing trips and other outdoor activities. Ideally suited for emergency and disaster operation, handy for beam antenna tuning, etc. The receiver may be fixed tuned to any frequency in the 6-meter amateur band. Designed for head-

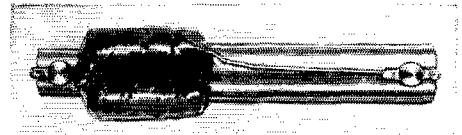
phone operation. Transmitter uses carbon microphone input, high level plate modulation, with power input of 5 watts. Uses two, 45V "B" batteries and two, 1.5V "A" batteries. Range, ground wave, two to ten miles depending on terrain. Push-to-talk operation using miniature relay for antenna switching. Battery life approximately 100 hours. Dimensions: 4" x 6" x 13". Antenna: Stainless steel whip, base loaded, 3' long.

- ER-6 with tubes and antenna..... \$49.95
- Accessories: Y6 transmitter crystal for 6-meter operation (specify frequency)..... \$5.50
- NOTE: (Transmitter and receiver will be tuned to crystal frequency at factory if ordered with unit.)
- M-4 military type mike complete with coiled cord and connector..... \$16.00
- P5-Headset..... \$3.85
- MP7 hand set with cord and connector..... \$25.50

Space is provided on cabinet for a push-to-talk switch in the event a handset is used which has no switch.
25% deposit required on C.O.D. orders

FIVE BAND ANTENNA COILS

Tunes 80 - 40 - 20 - 15 - 10 Meters



Change bands with your transmitter in 20 seconds. Coils weigh 7 oz. each, are weatherproof, and tested for 400 lb. tensile strength.

Specify phone or CW.

- No. 5BC-F Coils for phone \$12.50 postpaid
- No. 5BC-C Coils for CW \$12.50 postpaid

Complete antennas with 88 ft. of KW twinlead, 12 inch insulators, and high strength wire.

- No. 5BA-F Antenna for phone \$27.50 postpaid
- No. 5BA-C Antenna for CW \$27.50 postpaid

All prices postpaid in U. S. A.
MONEY BACK GUARANTEE

If not available at your jobber, write
Don Larimer, W9IYP

GENERAL CRYSTAL CO., INC.

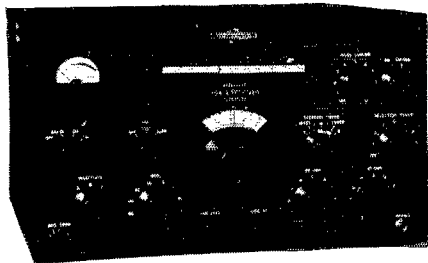
Antenna Division

434 Wilmot Avenue Burlington, Wisconsin

Manufacturers of quartz crystals for all applications

ELECTRO-COMM CO., Inc.
2001 BIG BEND BLVD. • ST. LOUIS 17, MO.

The 75A-4



**Designed Expressly for Amateur
Operation on the 7 HF bands**

The Collins 75A-4 receiver retains time-proved features of earlier 75A series, plus AVC on SSB and CW, separate detectors for AM and SSB. Pass band tuning, rejection tuning, superior selectivity. Many other outstanding features.

Send for complete details in Bulletin 056-0298-00

SELECTRONIC SUPPLIES, INC.

Radio and Electronic Supplies

1320 Madison Ave., Toledo 2, Ohio, W8GDE, Mgr.
803 South Adams St., Peoria 2, Ill., W9YYM, Mgr.

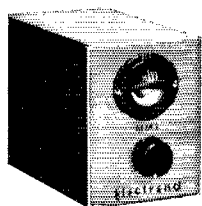


New "CALL-LETTER KIT"

ORDER your call in neat 2-inch die cut letters with base. Just the thing for the shack. You assemble -- Letters: 3/12" showcard stock. Base: Select quality wood.

Price \$1.00 Postpaid

TRUART PRODUCTS CO., Dept. C
Box 676 Spring Lake, Mich.



\$9.95

Electrend MM1 MODULATION MONITOR

... gives you insurance
that you have ample audio
and assurance that you are
legal—FIXED OR MOBILE!!

This easily installed unit re-

quires no direct connection to your transmitter. Compact 3" x 4" x 5". Needs only 250 VDC and 6.3 V.



\$1.00

WHIP-CLIP

Holds that whip down, but
does not short it out! Molded
from practically indestructible
black nylon.

Electrend

PRODUCTS CORP.

21 State St.

St. Joseph, Mich.

VE2OL... 7175-	70-41-A-8	Manitoba
VE2ADG... 1260-	34-16-A-11	VE4RC... 34,350- 232-60-A-31
	Ontario	VE4GB... 2640- 45-30-B-7
VE3DRD... 78,275-	510-62-A-38	Saskatchewan
VE3ES... 73,571-	427-69-A-37	VE5DZ... 24,084- 232-54-B-32
VE3DSU... 67,320-	510-66-B-40	Alberta
VE3EAM... 60,800-	380-64-A-29	VE6NX... 50,820- 363-70-B-31
VE3ASD... 56,513-	411-55-A-35	VE6MA... 24,625- 200-50-A-26
VE3EU... 46,004-	371-62-B-30	VE6SX... 16,720- 153-44-A-30
VE6BHS... 41,828-	255-66-A-25	VE6DU... 2625- 42-25-A-7
VE3BXF... 34,425-	256-54-A-32	British Columbia
VE3ACB... 26,880-	192-56-A-18	VE7ZK... 108,500- 621-70-A-39
VE3YV... 26,562-	233-57-B-26	VE7AC... 22,032- 204-54-B-28
VE3DNE... 14,500-	116-50-A-26	VE7JO... 21,450- 165-52-A-20
VE3DH... 12,510-	140-45-B-18	VE7LB... 3915- 55-29-A-6
VE3BUR... 8738-	117-30-A-6	VE7JL... 2475- 46-22-A-13
VE3UT... 7280-	104-28-A-11	VE7AGN... 2040- 69-12-A-15
VE3WY... 6825-	70-39-A-10	Yukon
VE3AU... 5332-	81-36-B-8	VE5OI... 16,231- 134-49-A-26
VE3BLY... 5688-	91-25-A-19	
VE3DNR... 23-	3-3-A-3	
VE3DSG... 2-	1-1-A-1	

¹ W3PST, opr. ² W3HXN, opr. ³ W2WOF, opr. ⁴ W1AJX, opr. ⁵ W0HAW, opr. ⁶ W2LGG, opr. ⁷ W8DJN, opr. ⁸ W8JIA, opr. ⁹ W0FCL, opr. ¹⁰ W1WPR, opr. ¹¹ Hq. Staff, not eligible for award. ¹² W6CUF, opr. ¹³ W6CRV, opr. ¹⁴ W7VMQ, opr. ¹⁵ W3RNY, opr.

ARRL thanks the following amateurs for submitting their logs for checking purposes: W2DQN, W4EBH, W8*BNL, BNP, EUQ, IQO, W6*HOC, NKT, K6AYB, W7WSE, W8PQ, W9CR, VE3DZB, VE7RU.

FS7RT

(Continued from page 72)

these were worked including F, FL8, FD, FR7, CN8, FO8, FA, FB8, etc.

Ten meters was surprisingly good and a great many phone as well as c.w. stations were worked on that band. Eighty and forty were not of much use except for daytime work in the Caribbean where these bands are excellent. At night both bands are jammed with foreign broadcast, commercial and military stations. Forty was excellent to the States after dawn when the BC stations faded out. More than one 40-meter phone ham in the States was knocked off his chair by FS7RT replying to an idle before-breakfast CQ for a usual contact with the adjacent state. Several efforts were made to break into nets on 75-meters, but most of the boys were too busy asking for "handles" to look for anything less than a 40-over-9 signal.

Before we went to Saint Martin it was just another unworked spot on the DX map. After the short visit there, that lovely little island with its friendly people, magnificent climate and beautiful location, made us really want to stay for a long time. Everyone should visit it, it is really worth while. Commercial plane service is available twice weekly from San Juan and the new hotel at Little Bay is as nice as one can find anywhere. Our trip there will be long remembered and I hope soon repeated.



Be a Radio Ham or Commercial Operator. Pass FCC code test in few weeks. Fascinating hobby. Good pay, interesting work in Commercial field. Same system used by radiotelegraph specialists. FREE book explains how Amateurs and Operators learn code and develop amazing skill and speed. Candler System Co., Dept. 4-E, Box 928, Denver 1, Colo., U.S.A. and 52b, Abingdon Rd., Kensington High St., London W. 8, England

TREMENDOUS CRYSTAL CLEARANCE SALE!

Save Money—Order in Package Quantities!

All crystals tested and guaranteed to oscillate. Please include 20¢ postage and handling charge for every 10 crystals or less. Minimum order \$2.50, No. C.O.D's.

PACKAGE DEAL No. 1

25 Assorted FT-243 45 Assorted FT-241 A
15 Assorted FT-171B 15 Assorted CR-1A

100 Crystals Our Choice **\$8.95**

Assorted.....Regular value \$66.00

PACKAGE DEAL No. 2

FT-241A Crystals for Single Sideband
370 KC-538 KC

35 Crystals Our Choice **\$3.49**

Assorted.....Regular Value \$14.00

PACKAGE DEAL No. 3

HAM BAND CRYSTALS — FT-243

For operating on 80, 40, 20, 15, 10, 6 and 2 meters—on either fundamentals or harmonics.

25 Crystals Our Choice **\$6.95**

Assorted.....Regular Value \$20.00

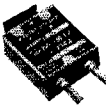
FT-243
RANGE
3655 KC
-8733 KC



FT-241A
RANGE
370 KC
-538 KC



FT-171B
RANGE
2030 KC
-3995 KC



CR-1A
RANGE
5910 KC
-7930 KC



INDIVIDUAL CRYSTALS • Indicate 2nd choice—Substitution May Be Necessary
Low Frequency—FT-241A for SSB, Lattice Filter etc., .093" Pins, .486" SPC, marked in Channel Nos. 0 to 79, 54th Harmonic and 270 to 389, 72nd Harmonic. Listed below by Fundamental Frequencies, fractions omitted.

49¢ each—10 for \$4.00		79¢ each—10 for \$6.50	
370	393	415	485
372	394	416	487
374	395	418	488
375	396	419	490
376	397	420	491
377	398	422	492
379	401	424	493
380	402	425	494
381	403	426	495
383	404	427	496
384	405	431	497
385	406	433	498
386	407	435	501
387	408	436	502
388	409	438	503
390	411	481	504
391	412	483	506
392	414	484	507

79¢ each—10 for only \$6.50		CR-1A		FT-171B — BC-610	
SCR 522-14		Fin. 1/2" SP		Banana Plugs, 3/4" SPC	
5910	7380	2030	2220	2360	3202
6370	7480	2045	2258	2390	3215
6450	7580	2065	2260	2415	3237
6497	7810	2082	2282	2435	3250
6522	7930	2105	2290	2442	3322
6610		2125	2300	2532	3510
7350		2145	2305	2545	3520
		2155	2320	2557	3550

FT-243—.093" Dia.—.486" SPC
49¢ each—10 for \$4.00

4035	5660	6273	6900	7700	8280
4080	5675	6275	6925	7706	8300
4165	5700	6300	6950	7710	8306
4190	5706	6306	6975	7725	8310
4280	5740	6325	7450	7740	8316
4330	5750	6340	7473	7750	8320
4340	5773	6350	7475	7766	8630
4397	5775	6373	7500	7773	8683
4445	5780	6375	7506	7775	8690
4450	5806	6400	7520	7800	
4490	5810	6406	7525	7806	
4495	5852	6425	7540	7825	
4480	5873	6673	7550	7840	
4852	5875	6675	7573	7841	
4930	5880	6700	7575	7850	
4950	5892	6706	7583	7853	
5030	5906	6725	7600	7875	
5295	5925	6740	7606	7900	
5360	5935	6773	7640	7925	
5385	5973	6775	7641	7940	
5397	6205	6800	7650	7950	
5437	6225	6825	7660	7975	
5485	6240	6850	7673	8250	
5500	6250	6875	7675	8283	

79¢ each—10 for \$6.50

1015	6140	6550	7306	8280	8625
3655	6150	6573	7325	8350	8650
3735	6173	6575	7375	8375	8680
3990	6175	6600	7425	8380	8700
6000	6185	6606	7440	8385	8733
6025	6206	6625	8000	8400	
6040	6440	6640	8050	8425	
6042	6450	6656	8125	8450	
6050	6473	7000	8150	8475	
6073	6475	7025	8173	8500	
6075	6500	7075	8175	8525	
6100	6506	7100	8100	8550	
6106	6525	7125	8225	8575	
6125	6540	7150	8275	8600	



514 TENTH ST.
N.W., Wash., D. C. Dept. Q.

Shakespeare WONDEROD

Fiberglass Whip Antenna

Try one with your present equipment.—You'll notice first the shorter length for best impedance match.

—Use it and see how it silences road noises and vibrations. Your Wonderod stands up almost straight at any car speed. Light weight reduces sway as car slows or accelerates.

A surface of full length glass fibers surrounds the conductor metal in Shakespeare's exclusive Howald Process to give greater strength to slim diameter. Wonderod withstands sharp impacts, is extremely flexible. Never takes a set . . . cannot rust or corrode.

Prices (—amateur net) for standard whips 54"-60", 5.75; 61"-90", 6.95. For base extensions 18" —.350 dia, 3.95; .500 dia, 4.80;—36" —.350 dia, 4.70; .500 dia, 5.82. Fittings are 3/8" — 24 thd, chrome plated brass.

Inquire about custom antennas and industrial applications.

Look for the spiral markings, trademark of Shakespeare Howald Process Wonderods.

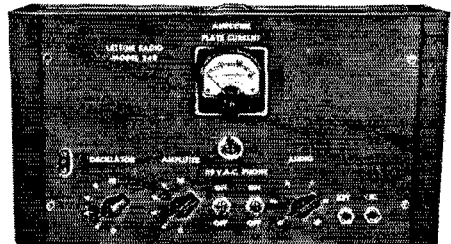
COLUMBIA PRODUCTS CO.
Subsidiary of Shakespeare Co.
P. O. Box 5207, Columbia, S. C.

Pat. Applied for.



XMTRS FOR 160 TO 2 METERS

or Special Freq. 500 KC. to 160 MC.



LETTINE MODEL 240 TRANSMITTER WITH MOBILE CONNECTIONS AND A.C. POWER SUPPLY

This outstanding transmitter has been acclaimed a great performer throughout the world. Air wound plug-in coils used for high efficiency. Takes any freq. from 1.6 to 30 mc. Ideal for General Class, Novice, CAP, CD, Industrial. Sold direct from our factory, ready to operate. 40 to 50 watts input, Phone-CW. Complete with 8 x 14 x 8 cabinet, 40 meter coils, xtal, tubes; 6V6 osc., 807 final, 5U4G rect., 6J57 xtal mike amp., 6N7 phase inv., 2-6L6's Pt mod. Wt. 30 lbs. \$79.95. 80, 20, 10 meter coils \$2.91 per band, 160 meter coils \$3.60.

MODEL 130 FOR 120 TO 130 WATTS—\$199.50
807 osc., 2-807's final, 6N7 xtal mike amp., 807 AF driver, 2-807's mod., 2-806A's rect., 6L6 clamper. Wt. only 47 lbs.

MODEL 242 FOR 2 METERS—45 WATTS INPUT—6146 FINAL. Complete with mobile connections, A.C. power supply, tubes, xtal. Xtal. mike input. Uses 8 mc. xtals. Swinging link matches 52 — 300 ohm antennas. Same cab. as 240. \$89.95. Also 6 meter model.

LETTINE VFO & ANTENNA TUNER IN STOCK
Send full amount or \$25 with order — balance C.O.D.

LETTINE RADIO MFG. CO.

62 Berkeley St. Valley Stream, N. Y.

HEATHKIT
DX-100
PHONE AND CW

transmitter

KIT

FEATURES

Design proven through actual signal reports.

★ Only top-quality components used throughout.

★ 5-point TVI suppression, and pi network output to match 50 to 600 ohms.

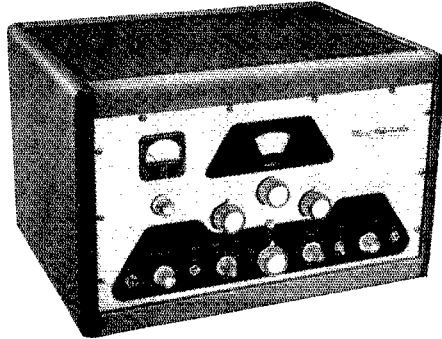
★ Detailed construction manual for simplified assembly.

★ 100 watts output on 160, 80, 40, 20, 15, 11, and 10 meters.

★ Attractive and functional physical design.

The Heathkit Model DX-100 Transmitter is rapidly becoming the "standard" ham rig in its power class. The high quality and outstanding performance it offers can be matched only in equipment costing many dollars more. It features a built-in VFO, modulator, and power supplies, and is bandswitching for phone or CW operation on 160, 80, 40, 20, 15, 11, and 10 meters. The kit includes a detailed construction manual, the cabinet, all tubes, pre-wound coils, and all other parts necessary for construction.

Push-pull 1625 tubes are used to modulate parallel 6164 tubes for RF output in excess of 100 watts on phone, and 120 watts on CW. May be excited from the built-in VFO or from crystals. Features pi network output circuit, illuminated VFO dial and meter face, and 5-point TVI suppression. High grade, well-rated parts supplied. Schematic diagram and technical specifications on request.



**MODEL
DX-100**

\$189⁵⁰

Shpg. Wt. 107 Lbs.

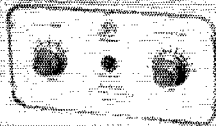
Shipped Motor Freight unless otherwise specified. \$50.00 deposit required on all C.O.D. orders.

HEATHKIT
antenna coupler
KIT

MODEL
AC-1

\$14⁵⁰

Shpg. Wt. 4 Lbs.



In addition to matching a low power transmitter to an end-fed long wire antenna, this antenna coupler incorporates a 3-section low-pass filter, to attenuate output above 36 mc and reduce TVI. Handles up to 75 watts, 10 through 80 meters. 52 ohm coaxial input—tapped inductor and variable capacitor—neon RF indicator. Ideal for use with the Heathkit AT-1 Transmitter.

HEATHKIT
grid dip meter KIT

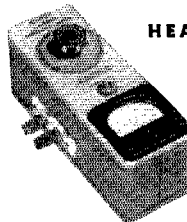
The Model GD-1B is a time-proven instrument. It will enable you to accomplish literally hundreds of jobs on all types of equipment. Frequency range is from 2 mc to 250 mc. A 500 ua meter is employed for indication, and a sensitivity control and headphone jack are provided. Includes pre-wound coils and rack. Indispensable for the ham, serviceman, and engineer. Extra coils available to extend frequency down to 350 kc.



MODEL **\$19⁵⁰**
GD-1B

Shpg. Wt. 4 Lbs.

HEATHKIT
antenna impedance
meter KIT



MODEL AM-1

\$14⁵⁰

Shpg. Wt. 2 Lbs.

Used with an RF signal source, the AM-1 will enable you to match your antenna-receiver-transmitter system for optimum operation. Will double as a phone monitor or relative field strength meter. Uses 100 ua meter, and covers 0 to 600 ohms. Frequency to 150 mc.

**HEATH
COMPANY**

A Subsidiary
of Daystrom, Inc.

BENTON HARBOR 9, MICHIGAN

HEATHKIT

communications-type all band receiver KIT

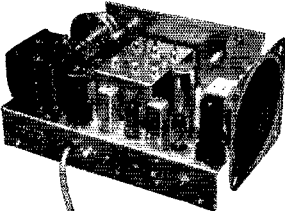
Slide-rule dial
—electrical
bandsread—ham
bands marked.

Slug-tuned coils and
efficient IF trans-
formers for good
sensitivity and
selectivity.

Transformer-
operated power
supply for safety
and high efficiency.

The Model AR-3 receiver features new high-Q slug-tuned coils, new layout, and new-type IF transformers. The result is high sensitivity and selectivity and better image rejection on all bands.

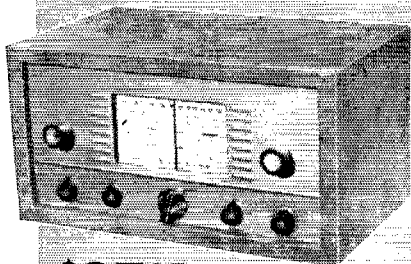
Transformer-type power supply, electrical bandsread, RF and AF gain controls, antenna trimmer, AGC, BFO, headphone jacks, socket for Q multiplier, 5½" PM speaker and illuminated dial.



SPECIFICATIONS:

Frequency Range—550 kc to 30 mc on four bands.

Tube Complement—1—12BE6 oscillator and mixer • 1—12BA6 IF amplifier • 1—12BA6 second detector, AVC, first audio amplifier and reflex BFO • 1—12A6 beam power output • 1—5Y3 full wave rectifier



\$27⁹⁵ (Less Cabinet)
• MODEL AR-3
Shpg. Wt. 12 Lbs.

CABINET: Fabric-covered cabinet available. Includes aluminum panel, speaker grille, and protective rubber feet. Measures 12¼" W. x 6¼" H. x 7¼" D. No. 91-15. Shpg. Wt. 5 Lbs. **\$4.50.**

HEATHKIT

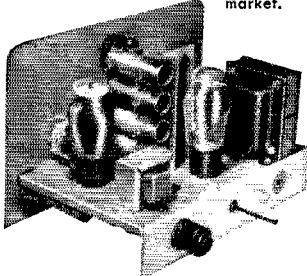
CW amateur transmitter KIT

Single-knob
bandswitching
for 80, 40, 20, 15,
11, and 10 meters.

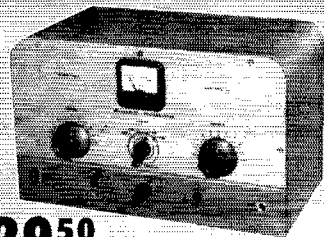
Plate power
input
25-30 watts.

Panel meter monitors
final grid or plate
current.

Best dollar-per-
watt buy on the
market.



The AT-1 is complete with its own power supply, and covers 80, 40, 20, 15, 11, and 10 meters with single-knob bandswitching. Designed for crystal or external VFO excitation. Incorporates key-click filter, line filter, copper plated chassis, pre-wound coils, 52-ohm coaxial output, panel meter, and high quality components throughout. Easy to build, even for the beginner. Employs 6AG7 oscillator and 6L6 final. Up to 30 watts power input.



\$29⁵⁰ • MODEL AT-1
Shpg. Wt. 15 Lbs.

SPECIFICATIONS:

RF Amplifier Power Input . . . 25-30 watts
Output Connection . . . 52 ohms
Band Coverage . . . 80, 40, 20,
15, 11, 10 Meters
Tube Complement: . . . Rectifier
5U4G . . . Oscillator—Multiplier
6AG7 . . . Amplifier—Doubling
6L6 . . .

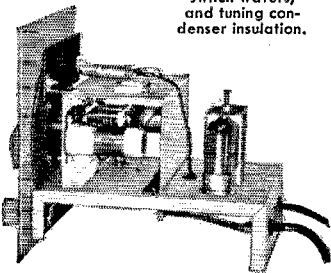
OA2 voltage
regulator tube
for stability.

6AU6 electron-
coupled Clapp
oscillator.

Covers 160-80-40-
20-15-11-10 meters.

Copper plated
chassis—aluminum
case—profuse
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coil forms,
switch wafers,
and tuning con-
denser insulation.

Smooth-acting,
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calibrated dial.



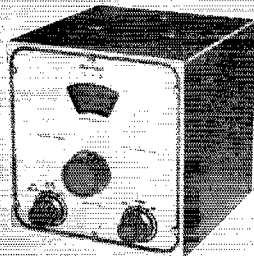
HEATHKIT vfo KIT

The Model VF-1 features illuminated and pre-calibrated dial scale. Cable and plug provided to fit the crystal socket of any modern transmitter. Covers 160-80-40-20-15-11 and 10 meters with 3 basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Derives operating power from transmitter power supply. Has VR tube for stability. Go VFO for more operating enjoyment.

MODEL
VF-1

\$19⁵⁰

Shpg. Wt.
7 Lbs.



SPECIFICATIONS:

Output Frequencies—1750-2000 kc, 7000-7425 kc, 6740-6808 kc. Calibrated Bands—160-80-40-20-15-11-10 meters. Tube Complement—6AU6 Oscillator OA2 Voltage Regulator. Power Requirements—250-350 VDC @ 15-20 ma. and 6.3 VAC @ .45A.

ORDER DIRECT FROM THIS AD . . . OR WRITE FOR FREE CATALOG. Describes more than 65 interesting "build-it-yourself" projects. Amateur equipment, hi fi amplifiers, and the complete Heathkit line of test instruments. Get yours today!

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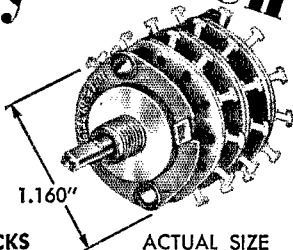
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3ENTON HARBOR 9, MICHIGAN

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series 7000 sub-miniature rotary switch

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POSITIONS
PER DECK
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Maximum versatility, 1 to 3 decks, wide range of contact arrangements. Specially impregnated glass melamine wafer. Solder type lugs. Positive indexing.

Write FOR ENGINEERING DATA SHEETS ON ROTARY SWITCH AND:

1½" Ruggedized Meters; 1" and 1½" Panel Meters; 1½" VU, Db and Illuminated Meters; Miniature Multitesters; and Side Indicators.

international instruments, inc.

P.O. BOX 2954, NEW HAVEN 15, CONN.
Cable "INTERINST"



Correspondence

(Continued from page 76)

found this "serious-minded" amateur suggesting that 3600 to 3700 kc. be given to Extra-Class phone!

I am very much looking forward to the day when I will hang an Extra-Class ticket on my wall but for pete's sake, if the middle of 80 were turned over to phone, all the section and regional level nets would be driven down below 3600 kc. The resultant QRM would be fatal to the National Traffic System that we all work so hard to maintain.

This is to say nothing of the casual QSOs that we like on 80. I think the Extra boys deserve some special privileges, but if it's to be phone — take some of 75 away from the lids and leave 80 alone!

— Tom Feeny, W3KOX

3732 S.W. 12th St.
Fort Lauderdale, Fla.

Editor, QST:

Mr. Blanchard suggests the old theory of band partitioning which, in my opinion, accomplishes nothing except to bolster the ego of the Extra-class licenseholder. If the said holder were to be given a sufficient portion of the spectrum to rid him of the spectre of QRM he would then place us all in the position of losing these very same portions for lack of occupancy. If he were not given so great a portion, what is gained?

I agree with Mr. Blanchard that the advanced amateur deserves some reward for his efforts and suggest that the FCC be petitioned to authorize the addition of the slant bar plus the letter E to the call sign of the Extra-class licensee. This need not entail extra work on the part of the Commission, as the basic call would remain the same and we could very well police the bands for the misuse of the designation.

Perhaps there are better solutions to the problem, but I am quite sure that band splitting is not one of them.

— William S. Nemeth, W4LRM

Strays

The "Ham-Reps," a group of active hams who are manufacturers' representatives handling electronic lines, will hold their second annual get-together at 8 p.m., May 22nd, at the Radio Parts Show in Chicago. Further details are being mailed to those on the roster. If you are an active ham, and a manufacturer's rep, and are not on the roster of the "Ham-Reps," get in touch with John A. Benz, W9DYZ, P.O. Box 217, Angola, Ind. Also, pre-registrations are urged. The cost of the affair will be \$5.00 per man.

Speaking of unusual announcements, KN2LXJ and K2IQX log the reception of their second harmonic with a CQ that describes the new arrival as a v.f.o. (very fine operator), 6 lbs. 12 oz. power, 100% modulation (healthy lungs) and the antenna a 50-foot clothesline. Hours of operation are given as "every four, beginning at 0200" and mobile operation is from a baby carriage. Kenneth John, now only about two months old, is already entitled to the RCC (rattle chewer certificate) they claim.

RADIO COURSES

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A-27

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• Q-MAX provides a practically loss-free insulating coating for VHF and UHF components of every variety. Q-MAX penetrates deeply to seal out moisture, imparts rigidity to coil windings and promotes stability of electrical circuits. It scarcely alters the "Q" of R-F windings.

• Q-MAX is easy to apply, dries quickly, adheres to practically all materials and has a wide temperature range.

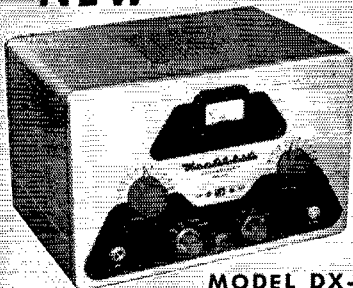
WRITE FOR ENGINEERING LITERATURE

Communication Products Company, Inc.

MARLBORO
NEW JERSEY



HEATHKIT **DX-35** NEW



MODEL DX-35

\$56.95

Shpg. Wt. 24 Lbs.

phone and cw transmitter KIT

- Built-in modulator for phone operation.
- Bandswitching on 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling.
- Switch selection of three crystals—provision for external VFO excitation.
- Attractive and functional physical design.

This brand new transmitter model provides phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Plate power input to 65 watts on CW and controlled carrier modulation peaks to 50 watts on phone. Completely bandswitching.

Employs two-stage 12AX7 speech amplifier, 12AU7 modulator, 12BY7 oscillator, 12BY7 buffer, and 6146 final. The buffer stage assures plenty of drive to the final on all bands. Pi network output coupling employed for easy antenna loading. Switch selection of crystals. Crystals changed without removing transmitter cabinet. Husky power transformer and choke are potted, and the circuit is well shielded. Meter indicates final grid or plate current.

Truly a remarkable transmitter package for the price. Ideal both for the novice and for the more experienced operator.

Send for free 1956 Heathkit Catalog describing more than 65 interesting "build-it-yourself" projects.

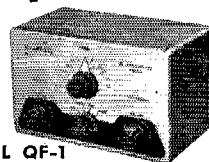


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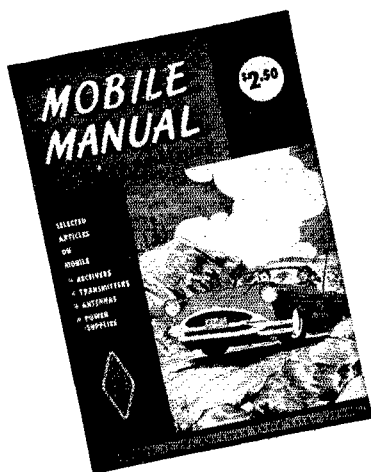
HEATHKIT "Q" multiplier KIT

Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of 4,000 for sharp "peak" or "null." Tunes any signal within receiver IF. Operates with 450 to 460 kc IF. Will not function with AC-DC type receivers. Requires 6.3 VAC at 300 ma, and 150-250 VDC at 2 ma.



MODEL QF-1

\$9.95 Shpg. Wt. 3 Lbs.



\$2.50

U.S.A. Proper
\$3.00 Elsewhere

LAATEST addition to the family of widely-read ARRL publications, this manual is a useful and informative guide to mobile radio. It is a collection of many articles on tried and tested equipment, presented in an orderly fashion for easy reading and reference.

CONTENTS include a section on receiving, with valuable information on automotive noise suppression; a group of articles describing over 30 different mobile transmitters; sections on mobile antennas and power supplies; and excerpts from FCC's regulations governing mobile operation. The Mobile Manual for Radio Amateurs should be on the bookshelf of everyone interested in the installation, maintenance and operation of mobile stations.

American Radio Relay League, Inc. WEST HARTFORD 7, CONN.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly. Typewritten copy preferred, but handwritten signature must accompany all authorized insertions.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9VYL, Troy, Ill.

CODE slow? Try new method. Free particulars. Donald H. Rogers, Irvland, Penna.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0800 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 605 Church St. Ann Arbor, Michigan. Tel. Normandy 8-8696. Normandy 8-8262.

WANTED: All types aircraft & ground transmitters, receivers, ART-13, RT18/ARCI, R5/ARN7, BC610E, BC221 mounts and parts wanted. Highest prices possible paid. Dames, W2KUU, 308 Hickory St., Arlington, N. J.

PANORAMIC Adapter AN/APA-1 Tech. Manuals \$2.75 postpaid in U. S. A. Electronicraft, 27 Milburn St., Bronxville 8, N. Y. DX-O-GRAPH. The DX man's guide for band conditions. Know when, where, and what band. Foremost DXers use it. \$2.50. Request flyer. Box 4596, Winston-Salem, N. C.

RECEIVERS repaired and aligned by competent engineers, using factory standard instruments. Hallicrafters, Hammarlund, National, Collins authorized service. Our twentieth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

MULTI-BAND Antenna, 80-40-20-10, \$18.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky. UFO Patrol data. W5CA.

ATTENTION Mobilesters! Lece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, \$45.00. Also Lece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, \$85.00. Good condition. H. A. Zimmermann Jr., K2PAT, 570 Jamaica Ave., Brooklyn 8, N. Y. Ulster 2-3472.

U. S. A. DX QSL Co-op. Free information write: Bill Tagan, W0DVN, P. O. Box 5938, Kansas City 11, Mo.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gensert, Hallicrafters, Hammarlund, Johnson, Lyco, Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 500 Kishwaukee St., Rockford, Ill.

MIAMI and vicinity: Communications receivers repaired. Bryant Electronics, 13341 N.W. 7th Ave. Phone 84-4001.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

CLEANING Shack! Have equipment for AM, SSB, Power supplies rotator, Hi-Fi, air conditioner, books, magazines, test equipment for TV-Radio repair, few TVs and radio-phonos. Consider trades. Stamp for list. W4API, 1420 South Randolph, Arlington 4, Va.

FLORIDA Bound? Stop at Tamishaw Motel, a Ham's Haven. North Iral, Ft. Myers, Fla. "Eb" Long, K4GEW.

CASH for BC-610E, BC-614E, BC-939, BC-729, BC-221, BC-312, 348, TCS, AN/GWC-9 and higher, and parts for all these. Amber Industrial Corporation, Surplus Div., 75 Varick Street, N. Y. C. 13, N. Y.

DELUXE Chart "Amateur Bands at a Glance". All the amateur bands illustrated. Band limits, Privileges, emissions, etc. Send 50c to Amband Co., P. O. Box 632, Boston 2, Mass.

RUBBER Stamp: Call, name and address, \$1.00, includes inking pad. Richard's, 2029T Bradley, Chicago 18, Ill.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

QSL'S SWLS? Finest and largest variety samples 25¢ (refunded). "Callbooks" (latest) \$4.00. "Rus" Sakkars, W8DED, P. O. Box 218, Holland, Mich.

QSL — Something new! Different! Rainbow colors on glossy stock. Order today and get pleasant surprise. \$3.85 per 100 or \$7.50 for 200. Satisfaction guaranteed. 2 days service. The Constantine Press, P. O. Box 157, Bladensburg, Md.

QSL'S-SWLS. Meade W0KXL, 1507 Central Avenue, Kansas City, Kans.

QSL'S-SWLS. 100, \$2.85 up. Samples 10¢. Griffith, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSL'S. Nice designs. Samples. Reseparis, W3QCC, 207 S. Balliet St., Prackville, Pa.

DELUXE QSL'S — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSL'S-SWLS. Samples free. Bartnoski, W2CVE Press, Williams-town, N. J.

QSL's of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lyn, Penna.

QSL'S "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL'S-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

WOODY'S QSL'S. Box 164, Asher Sta., Little Rock, Ark.

QSL'S. Western states only. Fast delivery. Samples 10¢. Dauphinee, K0JCN, Box 66009, Mar Vista 60, Calif.

QSL'S. Taprint, Union, Miss.

QSL'S. Postcard brings samples. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

QSL'S. SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 404 Adams St., Rutland, Vt.

QSL'S Multicolor, all kinds, all prices. Samples dime. Fast service. DX Cards, Kulik St., Clifton, N. J.

QSL'S: Comic, rural, Doctors!! Samples 10¢. C. Fritz, 1213 Briar-gate, Joliet, Ill.

QSL'S. sharp, 200 one color, three bucks. Multi-color samples dime refunded. Edward Green & Sons, 4422 Marquette Drive, Ft. Wayne, Ind.

ENGRAVING: Call letters white on black, 2" x 8", \$1.50; Key-chaina 1" x 3", 50¢; also signs, trophies, plaques, nameplates, panels, etc. Inquiries invited. "Cliff" Head, W2PKH, 343 Fayette St., Bridgeton, N. J.

QSL'S samples 10¢. Bob Morris, W2IHM, 230 Rose St., Metuchen, N. J.

QSL'S-SWLS. rubber stamps, letterheads, bargain prices. Craigprint, Newark, Arkansas.

QSL'S-SWLS. Samples free. Backus, 5318 Walker Ave., Richmond, Va.

QSL'S. SWLS, 2-colors. 100 for \$2.00. Bob Garra, W3UQL, Lehigh-ton, Penna.

QSL'S. Samples free, W3EHA, Jones, 840 The Terrace, North Hagerstown, Md.

QSL'S. Samples, dime. Printer, Corwith, Iowa.

QSL'S. Attractive samples free, Rogers, 737 Lincoln Avenue, Saint Paul 5, Minn.

FOR Sale or trade: 450-watt grounded grid 4-837 or 4-1625 linear amplifier. Want: Ranger, Elmac 67 or Viking II. Make offer. Complete information and pictures. Also PE-110 and TA-12B. Balun coil and low pass filter: \$8.00. B. J. Webb, Belton, Mo.

TRADE for ham gear: "Classroom 16 mm" sound projector in two leather carrying cases, 35mm Mercury II camera and exposure meter. Want commercial smttr or receiver. Will take clean home-built smttr or what have you to swap. All inquiries answered. Will ship. L. L. Thomas, W5VUU, 1609 LaSalle St., Amarillo, Texas.

SELLING: 10-meter phone/cw smttr. Can easily be adapted for multiband operation. 300w. input. Meissner VFO, 5881 quadrupler, 813 final, 811 modulators. \$250 or best offer. W8GME, 600 Moreley Ave., Akron 20, Ohio.

CENTRAL Electronics 20-A factory-wired, complete with QT-1 anti-trip unit and VFO 80 through 15. All like new, \$250. W5DA, 4425 Bordeaux, Dallas, Texas.

COLLINS Recv'r 75A1, with spkr. Bill Orr modifications. Perfect condx, \$249 F.o.b. Chicago, Ill. Dave Sandine, W9TUG, 10537 Hale Ave., Chicago 43, Ill.

FOR Sale: Viking II, VFO, and Balun coils, \$260; SX-71 receiver with speaker, \$140. All in excellent condx. Luther Norris, 1855 W. Morris St., Indianapolis, Ind.

NC-183 receiver, w/matching spkr, \$175; Central Electronics Mod. A Sideband Slicer (factory-wired) and AP-1 adapter, \$45.00; D-104 mike and Atlas DS-T stand \$10; all equipment in new condx, guaranteed satisfaction, other equipment see ad last month's QST. F.o.b. Houston, W5AYZ, 3719 Zephyr, Houston 21, Texas.

HAM Guest Register Books, \$2.00 in U. S. A.; \$2.25 in Canada, postpaid. Gratton George, W4PJU, Clewiston, Fla.

CONDUCTANCE Curves, book, \$1.25; sheets, 15¢/1.00. Sample 15¢. Pullen, Kingsville, Md.

WANTED: QST May 1916, \$25 or will swap Dec. 1915 or Feb. 1916. W0MCC, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

FOR Sale: Meck T60-1 transmitter (60 watt) with 40, 20, and 10 meter coils and with ten crystals, \$35.00. Harold Eskin, W2PYK, 416 Barry Rd., Rochester, N. Y.

SELL: AT-1 Heath transmitter, \$25.00 postpaid. Bushbaum television servicing, \$3.50 postpaid. Model 200 signal generator, like new, \$20 postpaid. L. M. McGee, 501 East Wyatt, Herington, Kans.

FOR Sale: Complete 2-meter station. Write or call for details. H. Weintraub, 1475 Walton Ave., Bronx, N. Y. Tel. Jerome 6-8114.

TELEPHONE Transmitter. Hand-set type. Suitable for inter-house phones, speakers or any communication purpose. Delivered two for \$1.00. No C.O.D.s! Telephones Dept. C-130, 1760 Lunt, Chicago 26, Ill.

SALE: Collins 75A2, \$290; good operating and mechanical condx. M. B. Chatfield, Redstone Arsenal, Huntsville, Ala.

WANTED: SX-25. State price, condx, etc. John Hughes, 1150 Woodland Lane, Glenview, Ill.

SELL: 2-SCR 522 with plugs and tubes, 2-BC602, 1-PE94C with plugs, and EL312. Good condx, removed from plane. Best offer for all or part. W5HSE, 110 W. Second St., Elmira, N. Y.

DXCC Directory Complete alphabetical listing, 2900 calls, 125 countries. Individual scores. Beautifully printed. \$1.00 postpaid anywhere. Norman Thompson, W8YHO, 1368 Roslyn Ave., Akron, 20, Ohio.

SSB-Central Electronics 10A with QT-1, BC457 VFO, 811A linear amplifier with 2000V power supply, varic controlled, 26" steel cabinet, \$200. Eric Johnson, W1RKA, East Rocks Rd., Norwalk, Conn. WANTED: Coils for Millen 900810, 900811, 829B amplifier W4UBB.

WANTED: Transmitter, 40, 20, 15, 10 CW and AM phone 750 to 1000 watts input to final, no overloading, must be within published ratings, TVI suppressed, well metered, mounted in cabinet. Also speech amplifier, 3-element beam with rotating EQ-T. Require price, full description, circuit and photos in first letter, circuit and photos will be returned if desired. P. O. Box 271, Fry, Arizona.

SWAP or sell: M5 generating unit. One and three phase, 125 volts 60 cycles, 3KVA gasoline operated, complete with panel board, skid-mounted. Hardly used. Asking \$500. F.o.b. White Plains, N. Y. or accept counter value in receivers or xmitters of standard brand. Write W2BIB, P. O. Box 244, Grand Central Annex, N. Y. C. 17, N. Y.

FOR Sale: ICS Course in Radio, TV and Electronics. You start immediately. \$180. Konn Gann, W1FGE, c/o AKRL.

BC348-N, \$65; RME-69, \$50; DB-22, \$25. James Devlin, W1CKS, RFD, Ridgeville, Conn.

GLOBE Scout Model 40A, one owner only, factory-built. Make an offer. K2JQI, Sam Gowan, 4 Quade, Glens Falls, N. Y.

SELL: 7 HV supplies. Outputs: 3000v, at 250 Ma., and 1750/1500v at 1000 Ma. \$50 each. Lv. supply in cabinet. Output: 800v, at 120 Ma. and 270 v, at 100 Ma. Arden Henry, Canisteo, N. Y.

6-PE-103A, \$15 each; 2-ARC7A, \$14 each. A. Johnston, W4YEN, 222 Carnegie Hall, Maryville College, Maryville, Penna.

MICHIGAN Hams! Now you can purchase W3DZZ coils for long wire antennas, all bands \$12.50 pair, plus tax, also 10, 15, 20 meter beam in one, \$195. Hassell Radio, 403 East Mount Hope, Lansing, Michigan. Ben Hassell, W8VPC.

WANTED: Collins 51J or R388URR, K4AET, Arnold, Gwynn, Va. RUBBER Stamps with your call, name and address: \$1.50. Stamp pad, 35¢. El Jay Stamps, Box 5-WT, Toledo 12, Ohio.

OUTSTANDING ham list revised monthly. Our prices are realistic and attractive. Standout values in used Barker & Williamson, Collins, Central Electronics, Elmac, Gonset, Hallicrafters, Hammarlund, Harvey-Wells, Johnson, Morrow, and National units. We deal easy and often time payments tailored for you. All leading brands of new equipment always in stock. Write immediately for this month's Bulletin and our new exclusively amateur catalog just out. Stan Burghardt, W0BJV, Burghardt Radio Supply, Inc., Box 746, Watertown, S. Dak.

WANTED: Two-way FM equipment. Ronald Phillips, Communications, 1312 McGee, Kansas City, Mo.

NATIONAL AERL Convention Flash! Civic Auditorium, Hotel Wintoncomb, San Francisco, July 6, 7 and 8. Plan now for a really terrific show! Exhibits first-time technical talks, entertainment, music, dancing, banquet, golf, D.X., SSB, VHF traffic, mobile, Novice. Complete ladies' program. Write Bud Bane, W6WB, Chairman.

VIKING I, TVI-suppressed transmitter and Viking VFO in excellent condx for sale: \$200. John M. Pincomb, W2SJM, 2 Great Oaks Road, Roslyn Heights, N. Y. New York City hams please call RO 3-0574.

CONELRAD Alarm. To comply with new FCC regulations every amateur will have to monitor for alerts after January 1957. Complete diagrams and instructions on simple Conelrad alarm, \$1.00 postpaid. Requires no power. Works on any superhet. New parts cost less than \$5.00. Can build out of junk-box free in 30 minutes. Guaranteed. Circuit used satisfactorily at broadcast stations over 2 years. Requires no tubes, transformer, relay or rectifier. B & M Electronics, Box 246, Lewisburg, Tenn.

WANTED! ARC-1, ART-13, ARN-7, APR-4, ARC-3, BC-610, BC-614, BC-939, TDG, BC-221, BC-342, BC-312, BC-348, 32V, 75A, TS-173, Test Ept, Teletype, Tech Manuals, Boehme. All types transmitters, receivers. Cash, or trade for NEW National BC-300, Hallicrafters SX-100, Hammarlund HQ-140, Pro-310, BRW #510B, Johnson Viking, Ranger, Gonset, Elmac, Morrow, Telrex, Kuehne, Fisher Hi-Fi, Pentron, Etc. Stores: 44 Canal St., Boston, Mass. 60 Spring St., Newport, R. I. Write or phone: Tom, W1AFN, Richmond 2-0048, 2-0916. Alltronsics, Box 19, Boston 1, Mass.

VACATIONS! Ham with my equipment. American plan. Modern cabins. Nice for children. Lighthouse Lodge, Big McKenzie Lake, Spooner, Wis. A. Martorano, W9HC.

SELL: SX-71, \$135; HRO 57A1, four coils, speaker, power supply, and new A-82V, \$450; 57A1, four coils, speaker, power supply, and new A-82V, \$450; 57A1, four coils, speaker, power supply, and new A-82V, \$450; 57A1, four coils, speaker, power supply, and new A-82V, \$450. Also sell Marconi mobile, new with 12v dynamo, best offer. David K. Trumper, W3MCO, Summit Lane, Bala-Cynwyd, Pa.

MAGAZINES: Will sell for \$1000 complete set QST—Vol. 1, No. 1, to Vol. XXXX, No. 1. In excellent condition. W6SN, 525 So. Westgate, Los Angeles 49, Calif.

WYOMING DX QSOS: WHYW, W7PSO, W7UFB monitoring 14050, 21050 daily 1400 and 1915 GMT.

TAPE Recorded code courses. None other comparable. Full course. \$20.00. Tapes alone worth \$9.00. Send stamp for particulars. Tape-code, Box 31, Langhorne, Penna.

MEDICAL Hams! Swap Burdick EK-2 for Globe King 500-A, C. R. Faulkner, M.D., K4AXE, 106 No. Main, Somerset, Ky.

MEISSNER 150-B; excellent condx; little used; final professionally modified. Covers 8 to 10 meters. Meissner VFO, 275w. phone & c/w. \$150 or with gud. S.S. \$200. Also sell Marconi mobile, new with 12v dynamo, best offer. David K. Trumper, W3MCO, Summit Lane, Bala-Cynwyd, Pa.

MAGAZINES: Will sell for \$1000 complete set QST—Vol. 1, No. 1, to Vol. XXXX, No. 1. In excellent condition. W6SN, 525 So. Westgate, Los Angeles 49, Calif.

SELL, Trade: radio magazines. QST solid 1935 thru 1946. Bob Farmer, Plainview, Texas.

WANTED: AWT-13 transmitters, ARC-3 equipment, test sets, BC-788 transceivers. Other military and aeronautical surplus. Advise price condition. We pay freight and C.o.d. James S. Spivey, Inc., 3908 Hamden Lane, Bethesda, Md.

MAIL order amateurs! Get fast action on all the ham gear you need. Parts and equipment. Send for our Ham catalog. NEM Wholesale Radio, Inc., 286 Teanack Road, Ridgefield Park, N. J. Tel. HUBbard 7-0715.

FOR Sale: Hallicrafters HT20 xmitter, \$300; Collins 75A-1 recvr, \$200; Precision EV10A VTVM with RF10A probe, \$50. R. E. Cocklin, 2202 St. Elmo N.E., Canton, Ohio.

SELL Viking I with VFO, TVI-suppressed. In perfect condx. Best offer. John Gillen, 912 South 57th St., Phila. 45, Pa.

WANTED: ART-3 receivers, ART-13 transmitter, radio altimeters. Advise price. Bill Spivey, 3117 Rolling Rd., Chevy Chase, Md.

SELL Black 1947 Ford Fordor Sedan equipped with Elmac xmitter, Gonset Super Six converter and Zenith car receiver, Web-Wip band spanner mobile antenna, Leeco-Neville alternator, rectifier and voltage regulator. Xmitter works 10, 11, 20, 40 and 75. Extra Leeco-Neville alternator, rectifier and voltage regulator goes with above. Alternators 80 amp. type. All tires have less than 10M miles. New tire chains. \$490 complete. Will deliver within 500 miles. W3EQK "Art" Plummer, 3804 Rexmere Road, Baltimore 18, Md.

WANT: DM-240 Decimeter 13 CM oscillator. W8BSU.

NOVICES: Complete station. S-40A; AT-1, AC-1, \$90. K2JZR, Athanasiou, 8 McLean, Belport, N. Y.

ELMAC Receiver PMR-12 with Sherrick TWS, in excellent condx: \$75 F.o.b. Atlantic City. Irv Fishelberg, 2427 Boardwalk, Atlantic City, N. J., W2ZLD.

MIMS Rotator, make offer. Rack model 10A, excellent, coils for 75, 20, \$20, \$25; Collins MBF; RCA BC224, like new, \$65. Want good PFC adaptor. No surplus, King, W7NRB, Box 489, Kirkland, Wash.

SELL Brand new ART-13/ATC, Collins transmitter, dynamotor, accessories. Lead sheathed overseas packing—\$425. Four new Western Electric type 357-B transmitting tubes, \$75 each. Like-new Ampro Hi-Fi model 756 tape recorder, \$150. Knochel, W9CO, Lincoln, Ill.

FREQUENCY Standard, Western Electric Mod. TE1048B. Sell or swap for receiver or Panadaptor. W2JTE, 290 Mosley Rd., Fairport, N. Y.

EXCELLENT Low Power phone c/w. buy: Viking Adventurer with B-90Gs 25 watt modulator including all circuit diagrams and instruction book, \$75; VF-1 wired and operating with above rig, \$20. K20PF, Jansing, 58-23, 218th St., Bayside L. I., N. Y. Phone: Bayside 9-3249.

NOVICES! Heath AT-1 xmitter, AC-1 coupler, AR-2 recvr, w/case. All in xnt condx. \$40. F.o.b. Balto, Md. C. R. Avery, 129 Hopkins Rd., W3ARB.

DX-100 Heathkit transmitter. Electrically and physically perfect. Will not ship. Can be seen at QTH anytime. Best offer over \$200 takes it. W1EAS, 753 Mendon Road, Woonsocket, R. I.

FOR Sale: 75wt 40 meter c.w. rig w/VFO and ant. tuner built in, \$35; all-band 6146 rig (May 1953 QST), w/ps, \$30; 834" rack cabn. u3. Chas. W9VNV. Home Q1H or 106 Haven Hall, Beloit College, Beloit, Wis.

FOR Sale: 1-503 Telrex 3-element 20-meter beam, \$90; 1-21 ft. vertical whip in 3 ft. sections with 5 lb. insulator, \$8.50. Vy gud condx. Express extra. Carl Raymond, Bunker Hill, Ill.

WANTED: Viking II in gud wkg condx, best buy for cash. W8HWH, Pohanka, 1116 California NW, Grand Rapids 4, Mich.

FOR Sale: Globe Scout 40A, guaranteed excellent condition. \$70 F.o.b. Chetek, Wisconsin. Reginald Olson, W9ZQA.

HEATH VF-1 like new, \$15; power supply for same with matching cabinet, \$5; National Selecto-O-Ject 110; TR-1000 TR switch \$4; Billey CCO 10-6-2 meters, \$5; Hammarlund 100 Kc xtal calibrator, \$5. John Gowen, W0FLK, Route 1, Grand Rapids, Minn.

SELL: Power supply 600V, 200 Ma. DC. Bob Kirk, W0RQR, 615 So. 16th, Parsons, Kans.

VIKING Ranger with mike, wired perfect, \$225; Lyaco 600s with modulator and antenna, coupler, new condx, \$95; D-104 mike and parts and rig; Hallicrafters 76 with aprk, beautiful, \$125; DeForest 2" scope, \$20; Babcock mobile xmitter and pwr supp, \$95; Gonset Triband Convrtr, \$35; Heavy duty Master Mobile Mount & 96" antna, \$10. M. D. Welch, 2749 49th St., S.W. Seattle 16, Wn.

SELL or trade: Excellent Eldico TR-757A, complete with 80, 40 meter coils and new Eldico Model VFO-2. Best deal for \$50 cash. TVI suppression excellent if used with ground plane. Will ship F.o.b. W4BXV, Box 123, Quitman, Ga.

CLEANING House: SCR-522, \$40. Unmodified. Makes a dandy 2 and 6 meter rig; 1-14D/TH-1 telephone carrier transmitter, \$75; BC-221A unmodified, \$65. Original boxed new \$138, \$60. Equipment like new. W4FHV, P.O. Box 178, Elizentown, Pa.

WANTED: RCA KW modulator transformer; Amertran special transformer, 6200v., CT @ 750 Ma; Jap mike AIWA-M18. Box 02, Brooklyn 12, N. Y.

WANTED: Instruction manual for National NC120 recvr (Navy RAO-2 Type CNA 46187). Will pay cash. W4EHV, 2226 N. Y. 98th St., Miami, Fla.

SELL: TR-75-TV \$38, XE10, \$12; S38C, \$28. Ed, W9MRZ, 2648 N. Meade, Chicago 39, Ill.

LYSCO 600S and tuner. Best offer takes them. Both in top condx. Write W0QVO, 1400 Poyntz, Manhattan, Kans.

SALE: SCR-522, xmitter & recvr, unconverted, with dynamotor and fittings, \$90; SCR-522, xmitter & recvr, recvr converted, \$75; BC-191, unconverted, with tuning units, \$80; PE-110C, power supply units, unconverted, each \$30. Power tubes 872-A, each \$1.50. N. Greene, 1015 Gates Ave., Brooklyn 21, N. Y.

20A, QT-1, \$180; HQ-129X, \$165. Both like new. Model A Slicer, new, \$40. 600D mobile mike, \$17.50. D104 10. Richard Pippert, Dysart, Iowa.

BC-610E with 614E speech amp. and HT-18 VFO for sale. Dolly base and spare parts also \$525. Tom Gettelman, W9IZO, Circle Drive, Elm Grove, Wisconsin.

WANTED: Amertran 6200 volt c.t. xformer. K2EJG Jarvis, 5 Stratford Pl., Babylon, L. I., N. Y.

SELL: Collins 310-B1 exciter, perfect, \$200; B&W HDA 10 through 30 coils and 10 bar, new #7. Prices F.o.b. W71V, 16833, 19th St. S.W. Seattle, 66, Washington.

SELL: BC-221 with AC pwr supply, \$75; KW pwr supp. components, \$60; PE-103, \$15; PP 812 amplifier, with 500 watt Johnson coils with 200 watt pwr supply and antenna coupler, \$40, never used Eimac 4-250-A, \$35; components 500 volt 500 MA. supply, \$25; components 450 volt 200 MA. supply, \$15; 125 watts audio MultiMatch mod xfrmr \$8 with slatler choke, \$10; TTY 255A relay, \$5; Toroid coils \$8MH, \$1; Toroid coil forms 12 in., 2 1/2". Other tubes, condensers meters, etc. State your requirements. W4MVM, M. Molyneux, So. Bell Tel. & Tel. Co., Anniston, Ala.

SELL: Heath AT-1 wired and tested, complete with one xtal and key; \$30 F.o.b. Oklahoma City. Henry S. Enders, W5PP, 2418 N.W. 34th, Oklahoma City, 12 Okla. Phone W1 3-7901

WANTED: National NC-101XA receiver. Please state price and condition. Donald Cameron, 1619 Milburn Ave., Toledo, Ohio.

FOR Sale: Viking I, Heath VFO, 10 pass, antenna relay, completely TVI suppressed, \$160; Brand new HQ-140X, \$198. W2OAJ, 151 Atlantic Ave., Lynbrook, N. Y. Tel. LY 3-7118.

COLLINS 75A3 and 32V3; recr includes spkr, xmitter includes filters in new case. Slashed to \$800 for both or good deal separately. Write me in care of D. J. Meade, W2UVC, 111-25 202nd St., Hollis 12, L. I., N. Y.

SSB: All band, factory built 458 VFO, 20A exciter, matching 1/2 Kw linear. Complete, \$385. George W. Korper, Jr., WICFE, Northrop Rd., Woodbridge 15, Conn.

CLEANING Shack. Write for bargain list. W4BA, Box 266, Aniston, Ala.

FOR Sale: HQ-129X receiver, like new, \$140; Central Electronics 20A, QT-1 unit with VFO kit and cabinet, \$240. W6BLZ, 528 Colima St., La Jolla, Calif.

FOR Sale: BC-221 frequency meter. Built-in 400 cycle modulation. Complete with calibration book: \$75.00. Lewis G. McCoy, 38 LaSalle Rd., West Hartford, Conn.

TRADE: Kilowatt CW-AM for 32V3 or will sell. WIHEZ, 7 Kirk Springvale, Maine.

FOR Sale: Transmitter. Johnson Viking II, Viking VFO, Matchbox, low pass filter, AC line filter. In gud condx. W8HPB, Box 205, Canal Winchester, Ohio.

SELL: Like-new factory cartons: Speaker Collins 10 in., \$15; B&W 450 TR switch, \$15; B&W 4600 grid pp, \$27; Coax relay 115 volts, \$6; 3-way Ray 400 relay DPDT, \$27; Coax modulation, \$4; Jones SWR equipment coupler MM4 for 52 ohms, coupler MM5 72 ohm and indicator 2/500 watts, \$65 value for only \$35. W5DA, 4425 Bordeaux, Dallas, Texas.

ANTENNAS and materials. 2 meter 6-element, \$6.95; 6-meter 5-element, \$14.95. "Do it yourself" castings, stampings, tubing, etc. to make your own. Wholesale Supply Co., Lumburg, Mass.

SELL: QST file from 1922 to date. 15¢ each postpaid. Also a few copies R-9, CQ, Radio, R. O. Goettmann, 3435 Gass Ave., Pittsburgh 12, Pa.

SELL: R4/ARR-2, nine tubes and dynamotor, \$9.00; 300 volt, 55 Ma. home-bult pwr supp., \$4; Four 316Ae 20 cents each; two 48As, 50 cents each. Box of "odds & ends". Includes surplus r.f., i.f. and other transformers. A few valuable components, coil forms and many other items. About 20 pounds, \$2.00. Receiving and transmitting units removed entire from APN-1. Latter has capacitance modulator used in var. freq. generator described in Radio & Tel. News Dec. '51. With tubes, \$3. Cecil Baumgartner, Box 343, Milton, Penna.

SELL: Morrow 5BR-1 converter, \$50; Vaaro 10-75 mobile coil and 60 ft. whip; \$12. W9ACU, Browning, Ill.

SELL: Gonset Super-six converter, \$32.50; Gonset Superceiver, \$70.00; HRO receiver with five coils and power supply, \$65.00. W6DOT, 27 Gaviota Way, San Francisco 27, Calif.

VIKING Adventurers, new, wired, perfect, \$62.95. Funk, W0THK, 1209 Iowa, Rolla, Mo.

FOR Sale: Electro-Voice 600DL microphone, \$15; Premax Prod. 10m. whip and mount, \$6; Sonar MK-3 receiver and a Link Radio Corp tube VPA-3A 6 v. power supply, \$40; Sonar MB-611 10m push-to-talk xmitter with 2 xtal selector, 3 xtals, control box, cables and 6v power supply (homemade); \$35; a 300 watt 813 c.w. xmitter with VFO, set of 20m coils, low pass filter, and some 52 ohm coax, \$175. Will consider a trade. Richard W. Jennings, W4DCI, 39 Old West UNC, Chapel Hill, N. C.

FOR Sale: Viking Ranger, filter, Matchbox, Sentinel, all for \$225 F.o.b. Dumont, N. J. Two 4-125A Eimac, in original cartons, \$35; 829-Bs, \$5 each; 5763s, \$1.00 each; UTC CVM-2 60w. mod. xfrmr, \$10; 200-250 watt phone/c.w. rig, RF same as "Gold plated Special" with National MB-150 multiband tank Ckt. 811-A modulator. No pwr supp. Will trade for 6 meter Communicator. Picture on request. L & N Wheatstone bridge. Make offer. W2DTS, 109 De Long Ave., Dumont, N. J.

COLLINS 32V-1, excellent, extra shielding and filtering for TVI suppression plus spare 4D32 for final. \$299. Collins 35C-1 low pass filter, \$12. John Foster, W9YDX, 517 Eighth St., NE, Waseca, Minn.

SELL: Heathkit 3" scope, \$30; Nationa. SW-54, \$35; SCR-522, \$30; BC-458A, power supply, \$25. Alan Rosenthal, 23 Schenck Ave., Great Neck, L.I., N. Y.

SSB Phasemaster II, factory wired, \$260; PA-400 (push-pull 811As with 1500 V pwr supp in table-top cabinet) rewired, 20 and 80M coils included, \$160 (10 A will drive); Phasemaster tubeless 6-band switching TR switch, \$9.00. Have KWS-1. Rest must go F.o.b. W9VCL, 1815 N 4th St., Sheboygan, Wis.

BARGAINS: With new guarantee: S-38D \$37.50; S-40A or S-77 \$69.00; S-47C \$49.00; Lyaco 600 \$69.00; S-27 \$79.00; SX-28A \$49.00; S-76 \$19.00; SX-71 \$39.00; SX-96 \$189.00; SX-83 \$375.00; HQ-140X \$189.00; SX-42 \$139.00; HRO-50T1 \$279.00; SOJ \$90.95; Collins 75A3 \$349.00; Collins 75A2 \$299.00; Sonar VFX \$60 \$14.95; Eldico TR75TV \$35.00; Meck T-60 \$39.50; HT-17 \$29.95; EX Shifter \$35.00; Globe Scout 40A \$69.50; Globe Trotter \$49.50; HT-18 \$49.00; Harvey Wells SR, \$69.00; Harvey Wells VFO \$25.00; Eimac 414 recr \$89.00; PSA-500 \$24.95; Viking I \$129.00; Viking VFO \$32.50; Viking II \$229.00; Globe King \$75 \$249.00; Globe King 400A \$299.00; J3V1 \$275.00; 32V2 \$349.00; 32V3 \$475.00; and many others. Free trial. Terms financed by Leo, W6GFO. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

WANTED: Bilexy xtal controlled oscillator, Mod. 1-A, B or C. must be clear with all xtals and manual. A. H. Glines, 46 Winter St., Quincy 69, Mass. Tel. MAYflower 5-5152.

WRITE for list of bargains to Box 573, Church St. Station, New York City.

SELLING RME-45 and speaker plus Heath VFI for best offer. Orville Braaten, W0NYI, 406 E. 9th St., Morris, Minn.

SELL: NC-88, \$60; Johnson Adventurer, \$45; Heathkit VFO, \$15, all in excellent condx; P. Merikie, 23 Norman Pl., Tenafly, N. J.

FOR Sale: Viking II plus VFO, factory-wired, in perf. condx; about 25 hours service with Balun coils, Vibroplex key, filter. Unable to use gear drive travel. Sell as complete unit only. First offer of \$200 free delivery 250 miles. G. Bird, W2CZ, 238 Rutgers Place, Nutley, N. J.

SELL: Eimac AF67 trans-citer, PS2V 115 AC pwr supp; Eldico L.P. filter, \$165. Local only. W2DL, Cynrax, Tel. BU 8-8507, NYC.

WANTED: Multi-Match modulation transformer capable 600 watts audio. Have B&W HDA coils, 10 thru 80 for sale. W1TYQ, "Vic" Crawford, RFD 5, Danbury, Conn.

FOR Sale: 75A3, \$375; S-76, \$125; FB7X, \$10; Millen 500 W. amp \$60; Sencor 150 W. trans \$50; Sencor mod. trans \$20; Thord, 300 W. m. m., \$25; 813 mod. trans, \$5; Sonar SKT 120P, \$150; Howard 438 REC \$25; Sonar VFX 680, \$20; HT-18 VFO, \$40; Collins 310C-2, \$75; BC-342 as is, \$20; Silver 2 & 1 1/4 Rec. & trans, \$15 each, etc. D. Vettesse, W2OTI, Box 4, Pomona, N. J.

SELL: HQ-129X, \$140; Viking Ranger, \$190; Signal Sentry, \$17.50; Baluns, \$6; 150 watt antenna tuner, \$15; Heath VTVM, \$20; Heath GDO, \$15; BC-454B, \$10; JT-30 mike, \$6; misc. parts and tubes. List. W6EBA, Byron Engen, 1815 University Ave. SE, Minneapolis, Minn.

SELL practically new Johnson Adventurer, at sacrifice. Excellent condition. (Just replaced with DX100). Steve Lyons, 77-35 113th St., Forest Hills 75, L. I., N. Y.

VIKING II, like new, VFO, LP filter, Matchbox, SWR bridge, SX-42, speaker, recently aligned, beautiful condition. The whole works: \$400 F.o.b. Sacramento, Calif. John Brownston, W6LPN, 116 Volz Dr.

BARGAIN Sale: All units guaranteed: Collins 75A3 and speaker \$395.00, 32V1 \$325.00, 32V3 \$595.00; B&W 5100 Like New \$395.00; Gonset 500W \$275.00; Eldico SSB-100 Like New \$395.00; SSB-100 Like New \$395.00; Central Electronics 10A \$110.00, 20A Like New \$199.50, "A" Slicer \$49.95; Hallicrafters HT-18 \$75.00, SX-99 and Speaker \$125.00, SX-96 \$225.00, S-53 \$75.00; National NC-98 \$125.00, NC-125 \$130.00, NC-183D \$250.00, HRO-7 \$175.00; RME64 \$85.00; and many others. Easy terms, write for details. Radio Equipment Company, Inc., 819-823 West 21st Street, Norfolk 10, Virginia.

FOR Sale: Viking II and VFO. Perfect. \$225. Operate it. Will not ship. K2EP.

HAMMARLUND HQ140X, matching speaker, Johnson Viking Ranger, both like new with instruction manuals, original cartons, NEI professional all-wave radio servicer signal generator volt ohm ammeter; 15-watt all-band mobile transmitter, cabinet for R/F assembly per Oct. 1954 QST; 12-in. GE PM speaker; General Industries home disc recording-playback assembly 33-78 rpm; BD86 Dynamotor 600V-300MA; Coyne Radio Course, 5 volumes; Write to Egon M. Freese, W5EJA, P.O. Box 208, Forrest City, Arkansas.

REVOLUTIONARY! Personalized rubber door mat with ur call, handle (hams, SWLs) 18" by 28". Red, green, blue, black. Limit: 13 2 1/2" characters. Sorry, no 1/8. Beautiful, durable welcoming committee. \$6.50 postpaid. Brownie, Box A126, Marblehead, Mass.

FOR Sale: New Eimac PS2V dual power supply, 110 volt. In original carton with manual. Never been used. \$38.50. J. L. Manwaring, W2ZHU, 16 Delano St., Pulaski, N. Y.

WANTED: Gonset Super Six Converter. W8QBR, 2036-25th St., Detroit, Mich.

SELLING Out: 400 watt VFO c.w. band tuning xmitter; 3 element 20 meter beam; 18 ft. aluminum ladder boom, 40 ft. aluminum tower, prop pitch rotator, QST, CQ, QSO through 1956, complete, 4 ft. 1-in. aluminum pipe vertical; Alliance VLF transmitters with indicators, many chassis and cabinets; National PWO-C dial; lots of transmitting and receiving tubes; lots of small parts. The whole works: \$225.00. G. E. Roof, W8OPC, 5235 Harper Rd., Solon, Ohio.

GIBSON Girl, \$10; GN37 hand-crank generator, \$7.50; good surplus 4 wire curl up microphone cables with PL 55 and 68, 75¢ each. Middleton, W0NIT, 920 West Adams, Pueblo, Colo.

HOUSE building and need more cash! Have list, photos of miscellaneous fixed, mobile gear for sale (such as TVI-suppressed 813, 300 w phone rig, \$150, etc.). Chas. Dutton, W9QLK, Rte. 3, Box 99, Elgin, Ill. Tel. SH 2-1436.

SELL: 300 watt phone transmitter, \$125. Two PP 35Ts in final. Prefer sale in the NYC-Conn. area. Write for details. Maryknoll Radio Society, Maryknoll, N. Y.

SELL: National NC-100 ASD recr with instruction book, \$50. K2GPI, "Mike" Michaels, 2865 University Ave., Bronx 68, N. Y. Tel. KINGSbridge 6-2208.

HIGH Power rotary inductors: 30 microhenry ribbon. Rugged commercial type. No arcing under load. Handle well over 1 kw. Dimensions 10 x 5 x 5 1/2 in. Ideal for high power pi-network or antenna tuning. 300th several times price \$19. F.o.b. Clifton, N. J. Satisfaction guaranteed. Paulson Electronics, 138 E. 6th St., Clifton, N. J.

WANTED: 15 meter coil set, no. AC, for HRO-50-TI. Charles B. Price, W4ZQA, 401 W. Blvd., Charlotte 3, N. C.

DUAL Quad beam antenna 10/15 meters, \$49.50. Fiberglass and aluminum construction. Send stamp for specifications. W8RWW, Magagna, 2010 Miller Road, Flint 3, Mich.

FOR Sale: SX-100. Two months old. Still under factory guarantee, \$255. Like deal for 75A-4. Don, K4DBH, 2819 Plantation Dr., East Point, Ga.

WANT to buy: AUL-1008 oscillation transformer, JUR542 sockets, #PR-535 rheostats, all made by General Electric Co., for RCA, during 1921. Also 1/4 or 1/2 K.W. spark transformer, any make. Old battery radio sets and speakers. George N. DeLaplaine, P.O. Box 861, New Brunswick, N. J.

WANTED: RME69, RME70, HQ129X, SX16, SX17, SX28, Viking II Ranger, DX100, PME76A, MT5B or equivalent. Sell new factory wired Globe Scout 65A, \$79.50. W0ZJH, 2444 D., Lincoln, Nebr.

SELL: Coils for HT-9; good DeForest 852. Need: 2200 volt xfmr. C.T. unnecessary. WZABM.

COLLINS 30 K-1 250 w. phone, used slightly, cased \$850 F.o.b. H. Sherwood, Park Crescent Hotel, 150 Riverside Dr., N. Y. 24, N. Y.
FOR Sale: IRE Proceedings, Jan. 1943-Jan. 1954, 133 issues. 1 take best offer over \$100. F.o.b. J. T. Stampalia, W4VUB, 404 Stone Road, Knoxville, Tenn.

SELL: ARR-7 rcvr (airborne SX-28A, 0.55-42 mc.) with LS-3 spkr, pwr supp., manuals, \$85. Command rcvr, broadcast \$18. National precision 4-gang capacitor, micrometer dial, \$10. W4LAM, 1848 Winston, Charlotteville, Va.

3' Rd. meters, \$1.00; 30 amp. mercury relay, \$4.00; QSTs, 20¢. T. E. Burmeister, 1052 Woodview, Cleveland 21, Ohio.

FOR Sale: One UHF 20 meter pre-tuned 3-element wide-spaced beam; excellent condition at \$50; one 4-element UHF 10-meter wide-spaced beam, \$25; ready to install and use, complete with detailed instrux. No tuning required! Assemble, mount and you're on the air. Also 1 Kw. all-band antenna tuner, Beautiful cabinet and design. Complete, \$50. Write W6IOSS, 901 S. 86th St., Omaha, Nebr.

SELL: Lyco 600 transmitter, \$55. In excellent condx. JSW VFO/xtal. TVI-suppressed. WIGVI, 218 Berlin Ave., Southington, Conn.

FOR Sale: Collins KW-1, perfect condx, like new; 110 ft. special heavy duty Aermotor tower. All offers considered. K2HLB.

FOR Sale: Heath AT-1 xmitter, like new: \$25. W6OIV, Box 133, Lancaster, Mo.

75A3, 3Kc filter, excellent. \$350. Take cheaper trade. Going overseas. Local preferred. W4EDO/9, 109-A California, No. Chicago, Ill.

FOR Sale: Heathkit ATL, \$25; Peerless transformer 4500 v. CI 500 Ma. \$22; 12 h. choke 500 ma. \$5; 866 filament transformer and 5 tubes, \$7; Johnson condensers 150DD45 and 100DD70, each \$5. Send card for list. Many other items. R. L. Fossett, W6PTA, 1031 Allen Dr., Garden Grove, Calif.

PERFORATED Aluminum sheets, .051, 5/8" OD holes, 1/4" centers, \$1.20 sq. ft.; cut to size. Send for listing on beams, aluminum tubing, etc. Kadcliff's, Postoria, Ohio.

COLLINS 75A-1 receiver, \$225; Viking II xmitter with Johnson VFO, \$225. Both as package, \$400. No bargaining please. Mitchell Katz, 147-11 76th Ave., Flushing 67, L. I., N. Y. BO 8-0672.

CRYSTALS, Novice and all frequencies from 3500 to 8600 kilocycles FT-243 holders \$1.00. New marine crystals, specify holder pin spacing. \$2.75. Air-milled. Crystals since 1933. C-W Crystals, Box 2065, El Monte, Calif.

TRANSmitters-filter. Filter condensers 6000 W 2 ufd. \$5.50. ARC-5 xmtrs, 4.0, 5.3 Mc. Used good, \$3.75, 8.3 to 7.0 new. \$5.75 plus postage 12 lbs. All unmodified complete with tubes, 28 V; Command dynamotors, \$1.00, 4 lbs; 28 V. ARC-5 or Command dynamotors, \$1.00 9 1/2 lbs. New 800 and 203-A tubes, \$1.75; 2 lbs. New 800 tetrodes, \$2.75, 4 lbs; BC-654-A 80-meter transmitter-receiver \$9.75, less some tubes. Many other parts. Write for list. W6KEG, Tel. Front 8-3139, 2142 Parkway, El Monte, Calif.

FOR Sale: ARC-4 with tubes, dynamotor, rack, plus grid and control box \$25. Also \$10.52 \$35. BC-458 new \$3.00. C.W. 3 receiver, \$25. Richard Vogeley, W2IPB, 554 7 Ave., New Hyde Park, N. Y.

FOR Sale: S40B, \$70; Type 83-1R connectors 3 for \$1; 6AG7s, used. 50. R. Airgood, W9NSV.

SELL: Eldico TR-75-TV transmitter with Heathkit VFO, like new, \$65. W. E. Dzelsky, 131 Harrison St., Homer City, Penna.

HAMFEST: Another Big Annual Affair for Midwest Hams, their families and friends. Same place as last year. The Starved Rock Radio Club Hamfest, June 3, 1956. For details, see Hamfest Calendar or write W9MKK, Utica, Ill.

FOR Sale: Complete 10 meter antenna system. Beam, rotator, 60 ft. tower, \$95. Beam and rotator only, \$40. Cannot ship. W9PWV, 821 Waveland Rd., Lake Forest, Ill.

SELL: Eico 425 scope, \$25. W2BHZ, Pine City, N. Y.

W5TIG 4713 Cole, Waco, for sale due to change of business connections. Can't operate. This equipment purchased new. Log shows less than 100 hours. B&W 5100 xmitter with connections for SSB, D104 mike push-to-talk stand; Hallcrafters SX-38 receiver, K46B SPK, all in original cartons. Any reasonable offer. Deliver within 200 miles.

SELL: Telrex 2-element 20-meter Super Mini Beam Model 520-B, complete with balun. Excellent price. Can dismantle and ship but if you drive to West Hartford can partially dismantle and put on your car roof. W1VG, 99 Bentwood Road, West Hartford, Conn. Phone ADams 2-2073.

WANTED: 6-meter Gonset Communicator. Local. W3AJJ, Stanley Planka, 4539 Almond St., Phila. 37, Pa.

FOR Sale: Federal FM transmitter, type 103A250V with remote console and two receivers, pair 4-125A final, \$850; Super Pro receiver (BC779), \$100; BC348, \$50, W7KV.

SELL: Gonset Commander and VFO (briefly used home station). Harvey-Wells APS-50 pwr supply. Best offers! John Bradley, 748 Creek, Menlo Park, Calif.

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FOR Sale: HQ-140X, \$175; Slicer model "B", \$60; Ranger, \$150; Communicator II, \$160; Panaadtr, \$28; 4-250-A, new, \$27; Matchbox, \$32. Getting married and need the cash. W2YGA, Clinton Corners, N. Y.

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FOR Sale: Johnson Matchbox, Johnson SWR bridge, both for \$35; mm modulation monitor, \$5; TV rotator, \$12.50. Dr. Marvin Hesch, 315 No. 26th St., Billings, Mont.

COMPLETE Rig including BC-348 receiver (110 V), speech amplifier, modulator, 6146 final, VFO, push-to-talk control, built into attractive rack, clean; entire 60 watt station except mike sacrifice \$125.00. G. D. McKechnie, W8RTC/4, P. O. Box 253, Marianna, Fla.

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PASS Amateur theory exams. Check yourself with sample FCC type questions & Novice and General Class examinations. All for only 50¢. Ameco Electronics, 1203 Bryant Ave., New York 59, N. Y.

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FOR Sale: Instructograph with tapes, \$15; 6V dynamotor 425 volts at 375 Ma., \$15; Master Mobile Mount whp plus 20, 40, 80 M. Hi-O coils, \$15; Morrow converter, Mod. 2 BC (10, 75M), \$10. Walt Ruda, W2MTT, 56 Barbara Pl., Buffalo 25, N. Y.

NEEDED: 1947 June QST to complete my file. Also have 60 issues 1937 on to present for sale or trade. Ron Williams, W9JVF, Box 256, Cumberland, Ind. Send for list.

PE103A dynamotor, unused. Best offer takes it; SX-28A, \$100; complete set 1 KV Bud coils with mtg., 2 links (swinging) and 110 per section butterfly condenser, 1/2" spacing; \$30. Used but good. W2RQH, RD #1, Hastings, N. Y.

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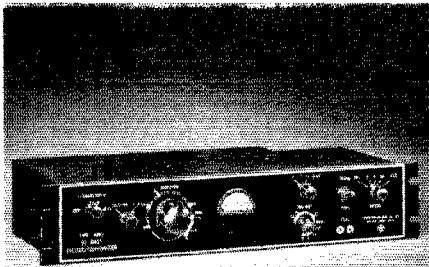
FOR Sale: Complete all band mobile Elmac AF-67 transmitter, Morrow RB converter, FTR receiver plus power supply. All for \$260. K2BBC, Ray Kriesman, 37 Nagle Ave., NYC, SW 5-0035.

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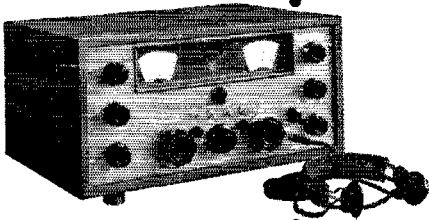
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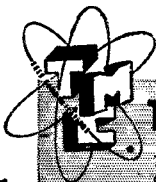
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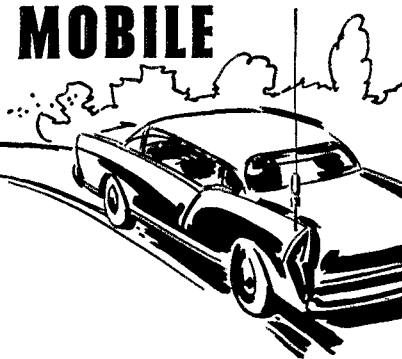


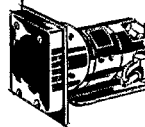
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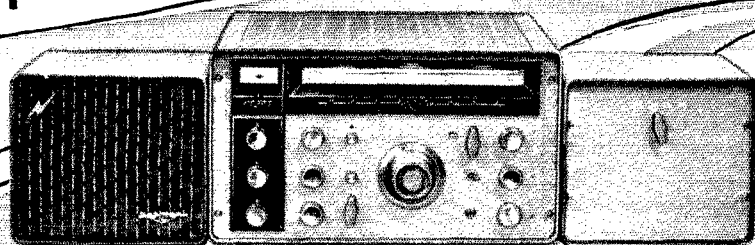


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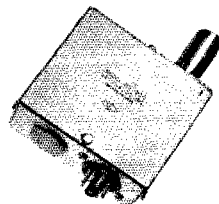
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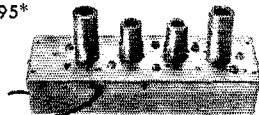
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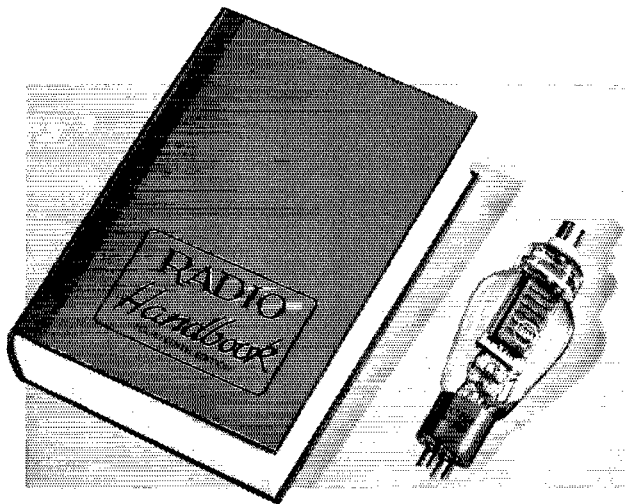
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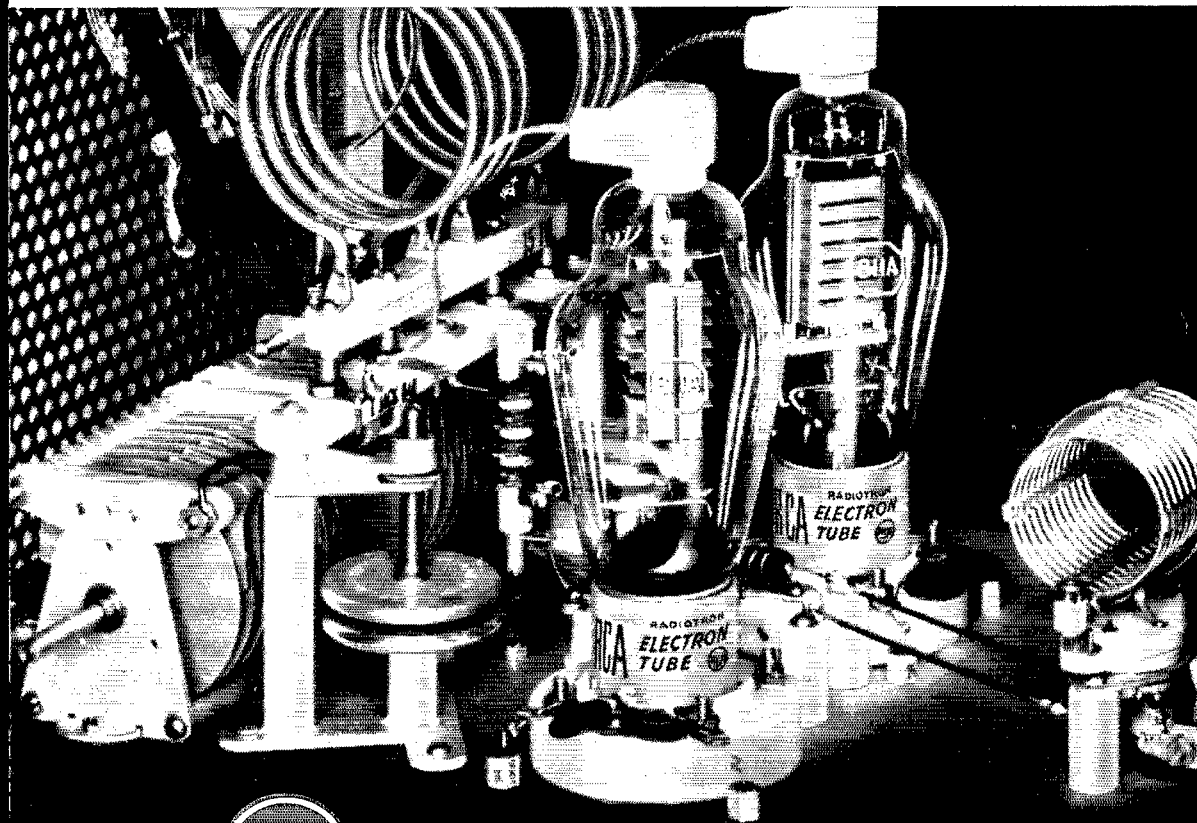
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