

April 1958

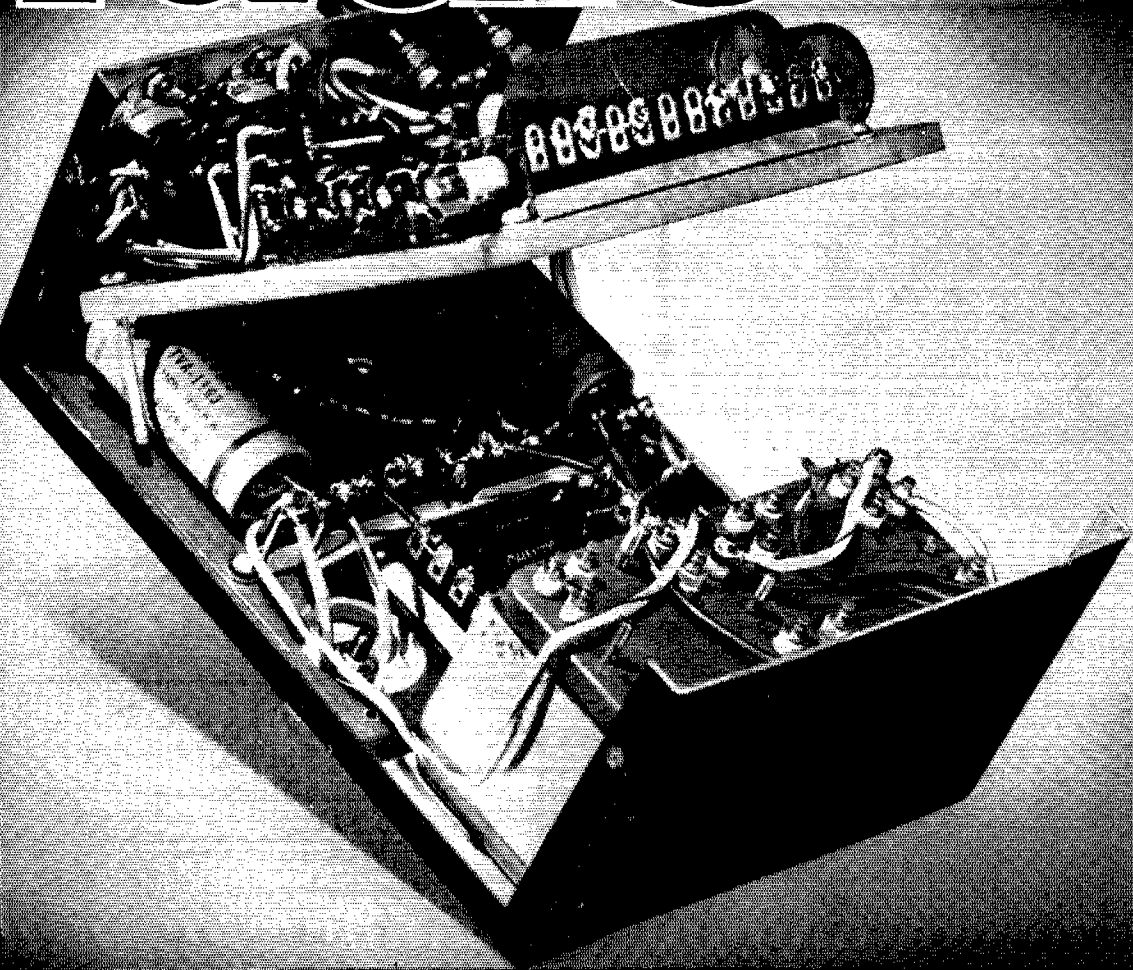
50 Cents

55c in Canada

QST

devoted entirely to

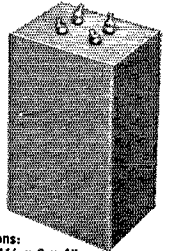
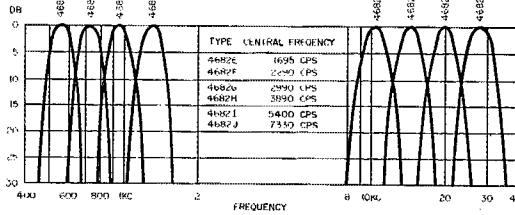
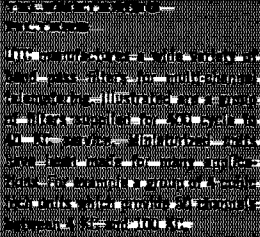
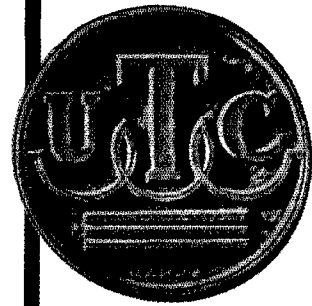
amateur radio



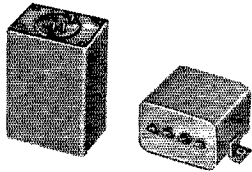
OUR MILLIONTH FILTER SHIPPED THIS YEAR...

FILTERS

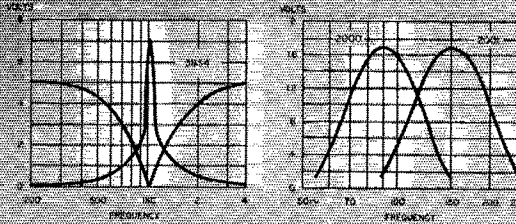
FOR EVERY APPLICATION



Dimensions:
(4682A) 1½ x 2 x 4".



Dimensions:
(3834) 1¼ x 1¼ x 2-3/16".
(2000, 1) 1¼ x 1¼ x 1¾".



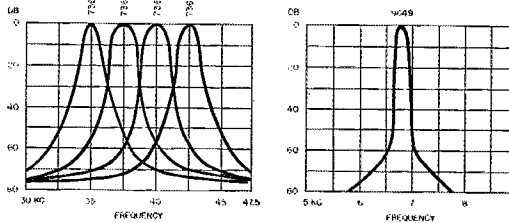
AIRCRAFT FILTERS

UTC has produced the bulk of filters used in aircraft equipment for over a decade. The curve at the left is that of a miniaturized (1020 cycles) range filter providing high attenuation between voice and range frequencies.

Curves at the right are that of our miniaturized 90 and 150 cycle filters for glide path systems.

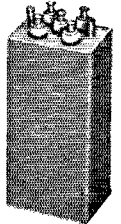
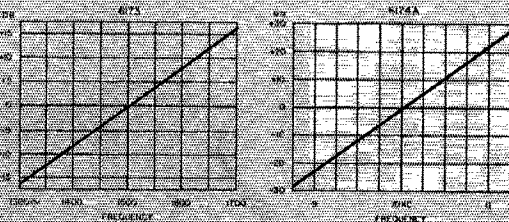
CARRIER FILTERS

A wide variety of carrier filters are available for specific applications. This type of tone channel filter can be supplied in a varied range of band widths and attenuations. The curves shown are typical units.



DISCRIMINATORS

These high Q discriminators provide exceptional amplification and linearity. Typical characteristics available are illustrated by the low and higher frequency curves shown.



Dimensions:
(6173) 1-1/16 x 1¼ x 3".
(6174A) 1 x 1¼ x 2¼".

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two and six meter
transmitter/receiver



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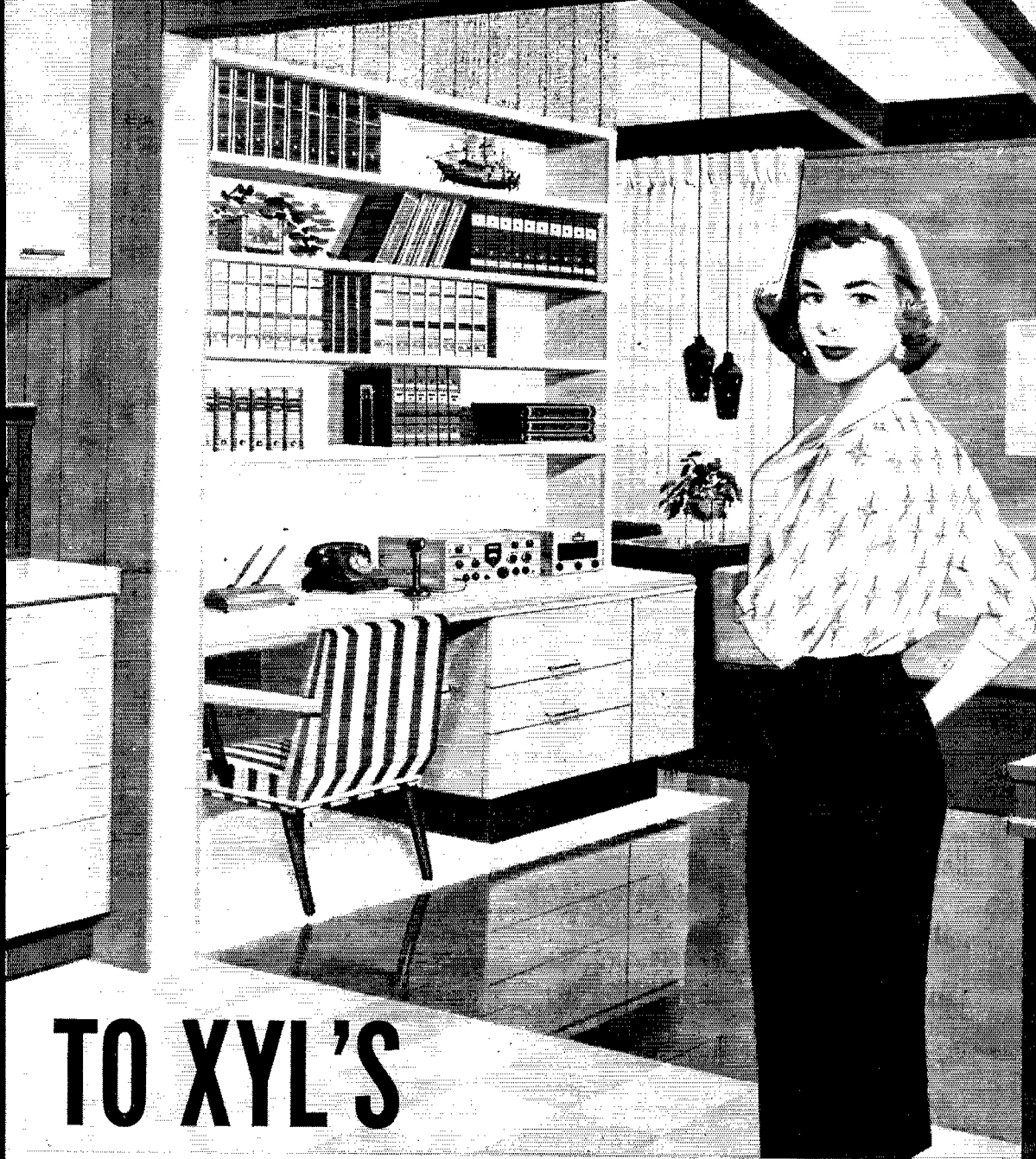


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super-sensitive receiver, outstanding frequency stability and calibration, 14-30 mc frequency range — and, when he is mobiling in the family car, it makes a neat installation, easily removable, not a "shin bumper." Cost? Through the years it will cost him less than anything else he can build or buy. Tell him to call his Collins distributor for the facts about the revolutionary KVM-1 mobile transceiver. Available on easy terms.

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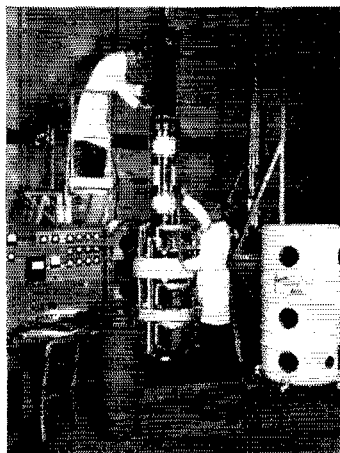
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What's New with the Electron...1958

Eimac Ceramic Tubes Covering the RF Spectrum Displayed at 1958 I.R.E. Show in New York City

More than 40 distinct tube types now enjoy the advantages of Eimac ceramic-metal design. These ceramic types, comprising one-third of the Eimac line, include rectifier, negative-grid, beam-switch, klystron, traveling wave, and receiving tubes. The Eimac display at the 1958 Institute of Radio Engineers Show and Convention in New York City last month emphasized the broad frequency coverage and wide range of power levels offered by these Eimac ceramic tubes. A selection of klystrons was shown, ranging from new reflex types for

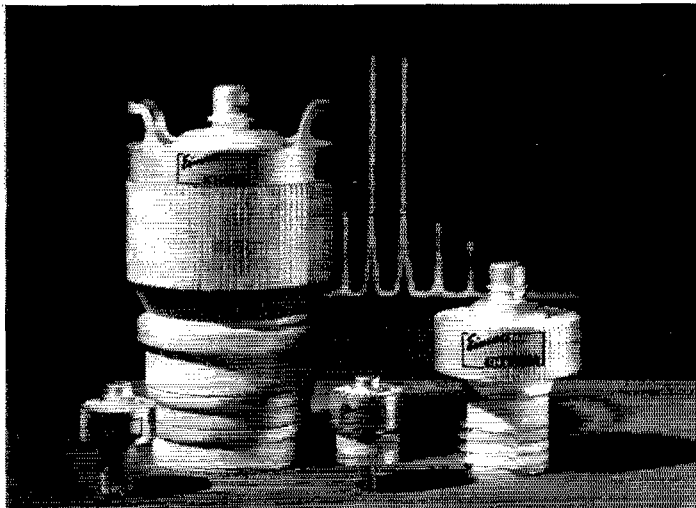


Eimac 1.25 Megawatt Klystron

super-high-frequency applications to power amplifier klystrons capable of megawatt output powers.

Focal point of the display was an impact survival demonstration. Visitors subjected an operating Eimac reflex klystron to repeated 100 to 200G impacts. Performance of the reflex klystron during the tests was monitored on an oscilloscope. Consistent performance and minimum frequency deviation under these rigorous conditions gave dramatic proof of the high reliability and ruggedness of this ceramic-metal tube.

Eimac's entry into the field of traveling wave tubes was announced with the display of the X686, a lightweight, ruggedized, ceramic-metal tube designed specifically for use in severe



Modern Ceramic Tetrodes Ideal for SSB



Ceramic Reflex Klystrons for SHF

air-borne environments. This high-altitude tube covers a frequency range of 4,000 to 7,000 megacycles with an output power of 1 watt and a gain of 50 db.

Of particular interest to the amateur as well as the commercial equipment designer, were the ceramic-metal 4CX250B, 4CX300A, and 4CX1000A, all ideally suited for single sideband applications. Shown also were a number of Eimac's perennially popular multi-grid, internal-anode glass tubes, such as the 4-125A, 4-250A, 4-400A, and 4E27A/5-125B.

For more detailed information on these latest Eimac tube developments, write our Amateur Service Department and request a copy of "What's New With The Electron... 1958".



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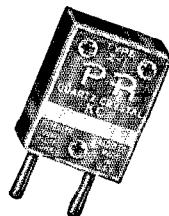
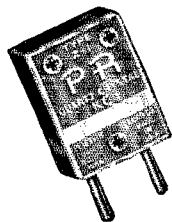
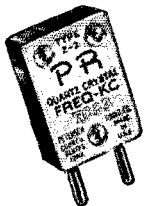
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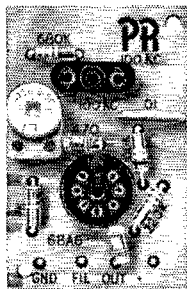
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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (or preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in QNT. **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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for QSO for contest

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MALLORY

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.

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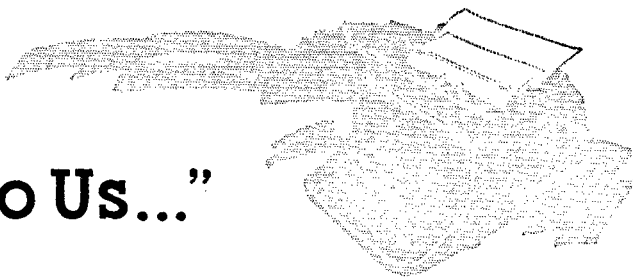
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"It Seems to Us..."



CONFERENCE RUMORS

It must be something in the air.

Every time we approach another of the periodic international radio conferences the world has been holding for thirty years, rumors and crystal-balling seem inevitable.

Without going into detail we'll just say this: Forget any prophecies of doom for the amateur bands you may have just read about or, we suppose, will hear on the air. You can forget them particularly in the latest case for a couple of pretty good reasons: first, not a single country of the 80-odd that will gather in Geneva next year has yet announced what it is going to propose for either the amateur bands or the bands for any other service. That includes the United States, which although it has been working on the subject for eighteen months, still hasn't formulated its proposals. (When it does, a few months from now, we'll let you know what they are; League representatives have been participating in this conference work from the start.) Second, we never think much of crystal-balling by people who've never been there. The author of the current gloom has never attended a world radio conference and isn't participating in the United States preparatory work for next year's affair.

As for "educated guessing" we assume that hints at expert sources. Well, we know all the expert sources on this subject in the United States — in fact, we're supposed to be one ourselves — and we don't know of any of them who would undertake to commit himself to any guesses about the outcome of next year's conference at this point.

There's another angle to this. When you're mixed up in this conference business, as the League has been for the entire thirty years' affairs, you don't sell your own country's position short by telling the other side that you expect to lose, and just what. We think the eventual U.S. proposals for the conference will be pretty fair to amateur radio. This country then goes into a conference fight prepared to do its best to win.

That goes for ARRL, too.

BOARD MEETING

As most League members are aware, ARRL affairs are governed by a Board of Directors nominated and elected by the membership, one from each of the 15 U. S. divisions (see page 6) and one from Canada. The annual

meeting of the Board will be held in Hartford early in May. 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 general 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

(Continued on next page)

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*.

Without the slightest intention of discouraging you from participating in the 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 Directors, 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.

MEMBERSHIP GROWTH

Once again we are pleased to report a continuing growth in League membership, based on the count as of the end of 1957. Full Membership in the U. S. and possessions reached another all time high — 65,215, an increase over the previous year of 12%. Canadian Full Membership spurted ahead by 14%, to a total of 2,151. The total voting membership in the League is therefore 67,366.



(See page 59)

A.R.R.L. MICHIGAN STATE CONVENTION Grand Rapids, Michigan, April 3-4

The Grand Rapids Amateur Radio Association will hold its 11th annual convention at the Manger Rowe Hotel, Grand Rapids, on Saturday, April 26. The total charge for attendance will be \$1.75. Information on registration may be obtained from the GRARA, P.O. Box 333, Grand Rapids.

The convention will feature an address by Lt. General Francis H. Griswold, K0DWC, vice commander of the Strategic Air Command. In ac-

cepting the invitation to speak, the general pointed out that he was coming more as an amateur radio enthusiast than a military leader.

The convention is expected to draw an attendance in excess of 1200 from the states of Wisconsin, Illinois, Indiana, Ohio, and Michigan. Amateur activity seems to be running high in Michigan this year, as this will be the second ARRL convention held in this state in 1958; hope you can make it!

COMING A.R.R.L. CONVENTIONS

- April 26 — Michigan State, Grand Rapids
- May 3-4 — Oregon State, Salem
- May 21-25 — New Hampshire State, Concord
- June 7-8 — Pacific Division, Fresno, California
- June 11-15 — Rocky Mountain Division, Santa Fe, New Mexico
- July 26-27 — West Gulf Division, Oklahoma City, Oklahoma
- August 15-17 — ARRL National Convention, Washington, D. C.
- October 4-5 — Midwest Division, Des Moines, Iowa
- October 18 — Ontario Province, Hamilton, Ontario

A.R.R.L. OREGON STATE CONVENTION Salem, Oregon, May 3-4

The Salem Amateur Radio Club, Inc., will be host to the 21st annual state convention, to be held at the Marion Hotel in Oregon's capital city, Salem, on May 3 and 4. On Saturday morning after registration there will be guest speakers, entertainment and fun for all. Luncheons on Saturday will feature meetings of civil defense, MARS, Red Cross and others. Saturday night the gang will "strut their stuff" on the dance floor.

Sunday morning breakfasts will see s.s.b., v.h.f., DX, and the Oregon Emergency Net and others gathering for their meetings. There will be a swap-shop and mobile hunts. A special program is being prepared for the XYLS. A number of equipment manufacturers are planning displays of their latest equipment.

Convention tickets at \$6.00 for hams and \$3.00 for non-hams, as well as hotel reservations, can be obtained through Herb Harold, W7RHX, Box 142, Salem, Oregon. Our registration deadline is April 15.

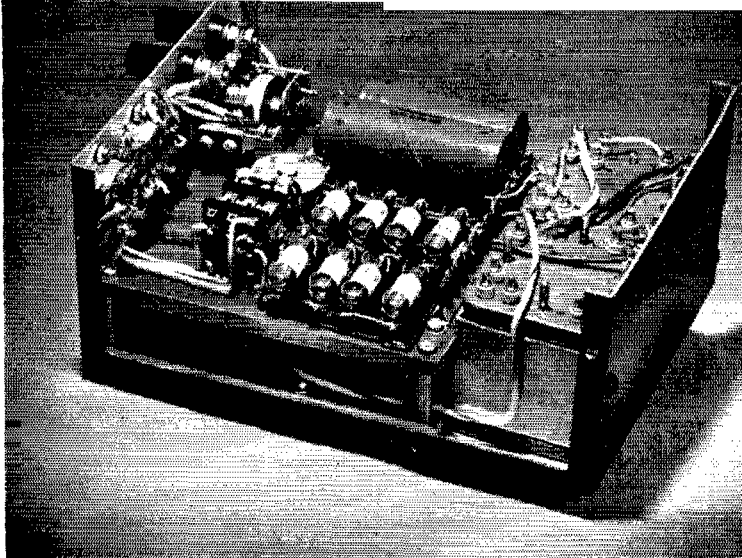
Strays

K6JPG's XYL says that in view of the amount of money they spent for their house, no part of it is going to be called a "shack."

— . . . —

One fine afternoon K9EGJ called "CQ Nebraska" in vain for some time, striving for his WAS. Finally giving up, he called just a plain ordinary old CQ, and back came W0EGJ in Nebraska. How's that for a double coincidence!

An inside view showing the silicon rectifiers, filter capacitors, high-voltage transformers, and control relay. The binding posts on the left wall are for bringing in the primary battery voltage. This view is from the bottom of the unit.



High-Power Transistorized Mobile Power Supply

In a mobile power supply, transistors have something more than novelty to offer — substantial output powers, high over-all efficiency, and exceptionally good voltage regulation. By the same token, there are things to watch out for, too. This article not only describes a husky mobile power supply but also outlines some of the precautions that have to be taken when using transistors in this application.

AS A FAIRLY active radio amateur I have been engaged in mobile operation for the past several years. When I first came on the air I used transmitters of the home-constructed variety with power inputs in the order of ten to fifteen watts. About a year ago I purchased a 60-watt commercial all-band rig which I used for a time in conjunction with various dynamotor and vibrator power supplies.

Last fall, becoming quite interested in several articles I had read on the use of power transistors in high-efficiency d.c. to d.c. converters, I wrote to various component manufacturers in search of a practical circuit that would give 500 volts d.c. for the high-voltage output and about 250 volts d.c. for the low-voltage output. After collecting a notebook full of fine engineering data I found that I still lacked a workable circuit.

The only alternative left was to begin at the beginning of the data and by experimenting with breadboard circuits try to arrive at the desired results. This required two months of

125 Watts from 12 volts d.c.

BY RICHARD P. JOHNSON,* W1YOR

spare time. However, I did come up with very acceptable results which are set down here with the hope they will be of interest to others.

This supply has been in operation in my mobile installation for over two months and the results have been extremely pleasing, to say the least. The transmitter runs between 40 and 60 watts input to the final at all times.

Features

There are several outstanding features of this type of mobile power supply in comparison with either the dynamotor or vibrator supplies.

The first of these is the high over-all efficiency attainable at the higher power outputs. Assuming we have a mobile rig requiring 100 watts of d.c. plate power, there is a 20 per cent saving in

* Avco Electronic Research Lab., Boston, Mass.

OUR COVER

This month's cover shows another inside view of W1YOR's transistorized power supply, with the phenolic sub-panel raised to show the construction underneath. The toroidal transformer and low-voltage electrolytic capacitors are underneath the phenolic panel that holds the other small components. The collector stud of one of the transistors is visible between the capacitor at the left and the small transformer in the foreground.

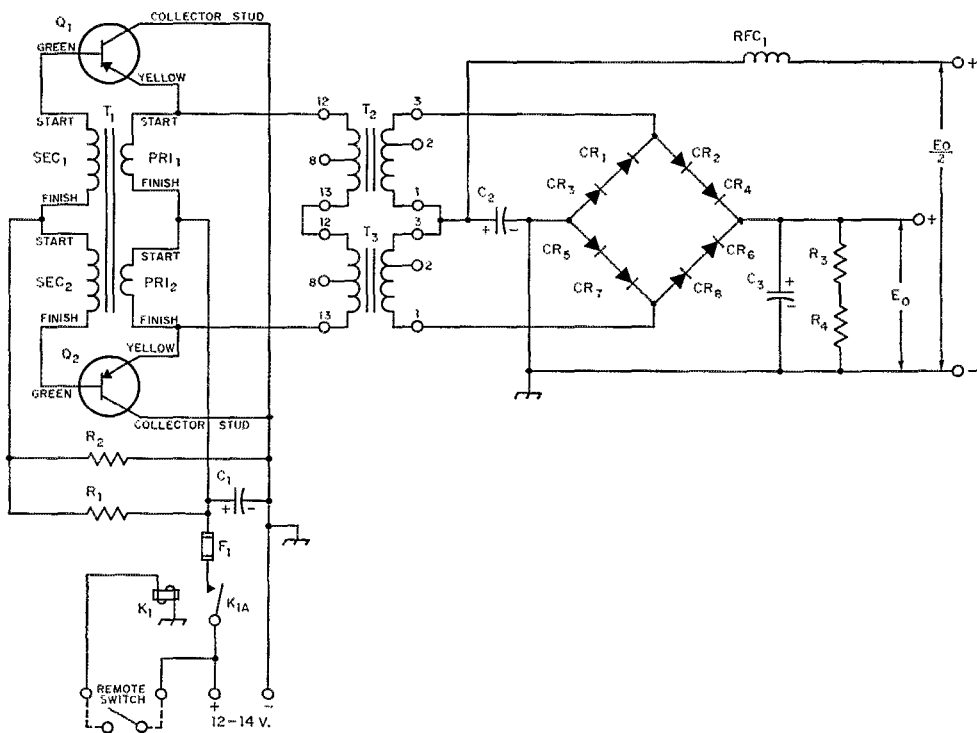


Fig. 1—Circuit of the heavy-duty transistorized mobile power supply.

- C₁—2000 μ f., 15 volts (2 paralleled 1000 μ f. electrolytics, Sprague TVA 1163).
 C₂—20- μ f. electrolytic, 350 volts.
 C₃—20- μ f. electrolytic, 600 volts.
 CR₁—CR₈, inc.—Silicon power diodes 400 v. inverse peak, 500 ma. d.c. (Sarkes Tarzian M500 or 1N1084).
 F₁—Approx. 12-amp. rating (see text).
 R₁—3.3 ohms, 30 watts (3 paralleled 10-ohm 10-watt wire-wound).
 R₂—150 ohms, 2 watts, carbon, 10 per cent.
 R₃, R₄—0.12 megohm, 2 watts, carbon.
 RFC₁—20 millihenrys, 125 ma. d.c. (Miller No. 691).

- K₁—Starting relay, s.p.d.t., 12-volt d.c. coil (Potter & Brumfield MR series).
 T₁—Special bifilar-wound toroidal transformer (see text). Core: 4-mil tape-wound "Deltamax" (Arnold Engineering Co. No. 3T-4178-D4). Windings: (See text and Fig. 2). Pri: 64 turns (total) No. 14 Nyclad wire, bifilar-wound. Sec: 88 turns (total) No. 26 Nyclad wire, bifilar-wound.
 T₂, T₃—High-frequency filament transformer (see text).
 Q₁, Q₂—PNP power transistors (Delco type 2N278 or equivalent).

input power with this supply over conventional methods.

The second feature is its reliability. Since there are no moving parts there are no maintenance problems. Of course, capacitors and resistors occasionally need replacement, but if the transistors are operated within their electrical and thermal ratings engineers have predicted a life expectancy in terms of years rather than hours for them.

Third, the supply is inherently self-protecting against overload. The fundamental circuit operation is such that when a short circuit or heavy overload occurs the oscillatory action ceases and the input current goes to a low value, where it remains until the trouble is corrected.

A fourth feature is the extremely good output-voltage regulation. This makes it especially attractive for use as a source of plate power for a single-side-band mobile rig.

Circuit

Fig. 1 shows the complete basic circuit of the unit, which is intended for use on a 12-volt negative-grounded automotive system.

The transformer labeled T₁, a specially wound toroid, is the heart of the supply. Fig. 2 shows how the bifilar windings are arranged on the toroid.¹ The winding method is as follows:

First, wrap the entire nylon-covered toroidal core with a layer of Scotch electrical tape, overlapping each turn about half the width of the tape. Keep the tape tight when winding.

In cutting the lengths of wire to be used for the primary and secondary windings allow 3½ inches per turn. This leaves plenty of wire left over for circuit connections.

¹The toroidal cores may be obtained from the Arnold Engineering Co., Marengo, Ill. The price is \$3.95 each, but they must be purchased in lots of three because of minimum-order requirements.

Wind the primary first. For this winding, cut two lengths of No. 14 Nyclad wire each 112 inches long. Holding the wires parallel to each other, tape them together at their centers. Place this center mark against the core and begin winding the two lengths of wire side by side in both directions away from the center. Keep the wires tight and square off the turns around the core. Use even spacing and turns distribution so that the entire core is covered. Since there are only 16 turns in both directions away from the tape mark it is not difficult to end up with the correct number of turns on the core at the point directly opposite the starting mark. Cover the entire primary winding with two layers of Scotch tape.

Then, with two lengths of No. 26 Nyclad wire each 150 inches long, wind the secondary directly over the primary in the same direction as the primary, using exactly the same method. Cover the entire secondary with a single layer of Scotch tape. You should finish with 8 wires protruding from the tape. The designations and circuit connections for each are shown in Figs. 1 and 2.

In my model the toroid is held down to a piece of 1/4-inch thick phenolic by means of two plastic cable clamps. The wires are brought out to a lug-type terminal strip.

When dealing with this type of tape-wound toroidal core it has been found that the magnetic characteristics are affected by extreme heat or physical stress. We need not be concerned with the effects of heat since the maximum allowable operating temperature, about 200 degrees F., is well in excess of anything likely to be encountered in an amateur installation. However, the effects of physical stress are important because the windings can distort the core unless proper precautions are observed. Be careful not to crush the nylon case up against the core by using too much tension on the No. 14 wires when winding the primary. The secondary winding is wound with much lighter wire and is not apt to cause core distortion.

When the magnetic characteristics of the core are altered, improper switching of the transistors occurs and the over-all efficiency is lowered, resulting in increased transistor dissipation.

The step-up transformers T_2 and T_3 are surplus

military-type high-frequency filament transformers. Their normal primary voltage is 108/115 volts a.c., single phase, with a secondary rating of 6.3 volts a.c., center-tapped, at 9.5 amperes. Their operating frequency range is from 380 to 1000 cycles per second.²

The remainder of the circuit is fairly straightforward and warrants little more discussion. The rectifiers employed are of the silicon type which are extremely efficient. Selenium rectifiers with proper ratings can be used with a slight drop in efficiency. The configuration is a center-tapped full-wave bridge.

Temperature Effects

Using the values and parts shown in Fig. 1 for the filter circuits, the ripple voltage at either d.c. output is extremely low at room temperatures. It was found, however, that after the supply had been left out in the cold weather for a time there was a noticeable increase in the ripple voltage at the d.c. outputs of the supply. The reason for this is as follows:

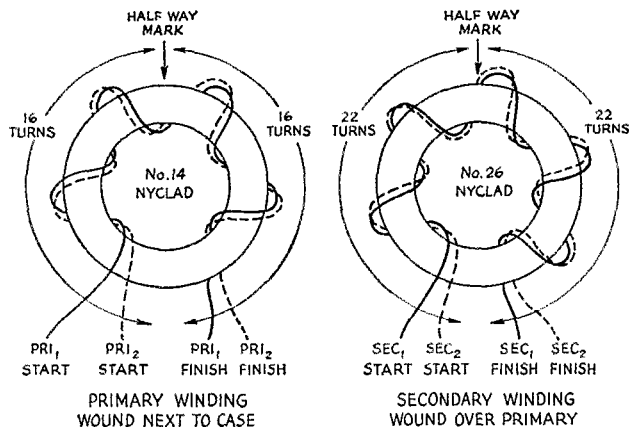
Since we are dealing with square-wave voltages, the harmonic content is high. If the capacitor used to bypass the ripple components has too high an internal impedance at the higher ripple frequencies, small voltage spikes will remain on the B+ leads. These spikes will get into the low-level audio stages of the receiver or transmitter and will be heard in the loudspeaker or over the air. The addition of RFC_1 in the circuit of Fig. 1 reduced this effect.

If the difficulty in filtering persists, the builder could also try adding a suitable r.f. choke to the d.c. input lead. This choke should be capable of handling the normal full-load d.c. input current. In my installation I found that the ripple voltage on the battery leads did tend to creep into the audio circuits when the supply was very cold. This effect disappeared after the rig had been operating a short time.

One of the more serious problems with this

² Transformers of this type can be obtained from the Electro Sales Co., 50 Eastern Ave., Boston, Mass., at a cost of \$5.00 per pair f.o.b. Boston. Their stock number is 1070-4WA2, and the shipping weight is 4 lbs. There are several other windings on the transformers which are not used.

Fig. 2—Transformer winding details.



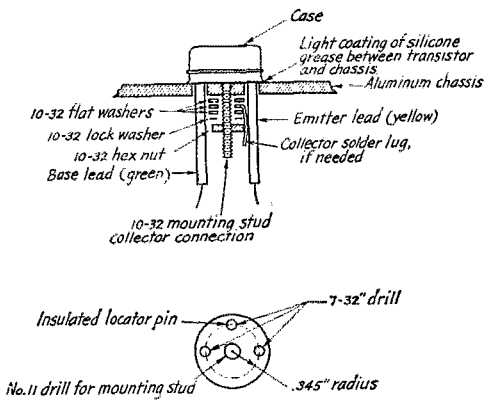


Fig. 3—Method of mounting the transistors on the chassis.

type of power supply is failure to oscillate at low temperatures upon application of d.c. input voltage. This is because the current gain of the transistors is lowered as the temperature decreases. Resistors R_1 and R_2 are used to overcome this. These resistors bias the two transistors in the forward direction so there is a small initial current flow from emitter to collector when the input voltage is applied. Any small circuit unbalance will cause one transistor to conduct more heavily than the other initially, and since feedback is developed immediately, the oscillations begin. No difficulty whatever has been experienced in starting this supply, even under full load, when the car has been left out in near-zero temperatures for extended periods of time.

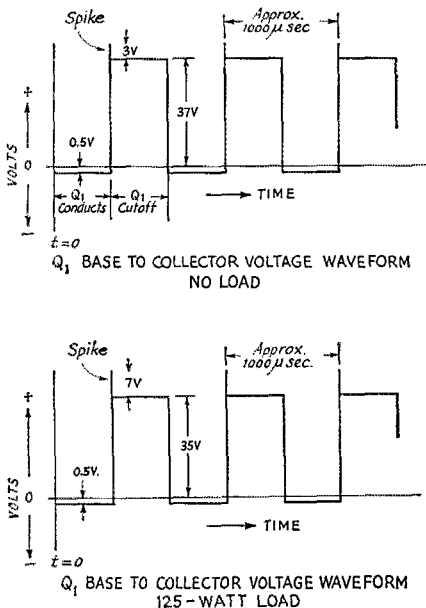


Fig. 4—Wave forms of base-collector voltage observed at the transistors. Note small "spikes" on the leading edges of the square waves. Rise and fall times for the square waves are less than 10 microseconds. Voltages shown are for 14 volts input.

"Spiking" and Voltage Ratings

An oscilloscope connected across the base and collector of either Q_1 or Q_2 in Fig. 1 will show a square-wave voltage which has small spikes on the leading edges of the waves, as in Fig. 4. In a circuit that has not been properly designed these spikes can become extremely large in amplitude. Even though they are of short duration they can cause punch-through of the junction if the total voltage exceeds the transistor rating. The collector-to-emitter voltage wave forms are shown in Fig. 5. These voltage spikes represent switching transients and are due mainly to the effects of the leakage inductances in the windings of T_1 .

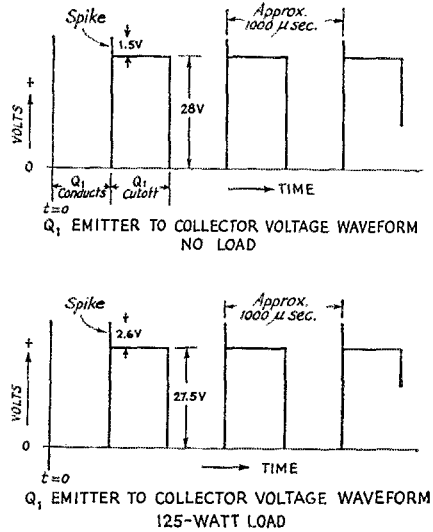
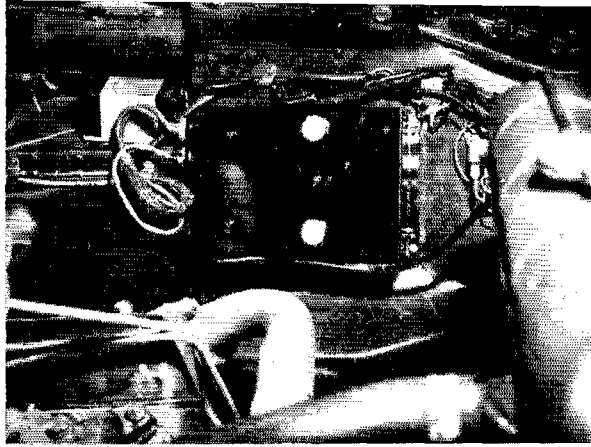


Fig. 5—Wave forms of emitter-collector voltage, under conditions corresponding to those of Fig. 4.

The importance of maintaining the transistor operation within the manufacturer's ratings at all times cannot be overemphasized. The Delco type 2N278 transistors have a maximum collector-to-base voltage rating of 50 volts. If this rating is exceeded, even for very short periods of time, gradual deterioration or instantaneous punch-through of the junction will occur and sooner or later the transistor will be useless. If this were to happen in the circuit shown in Fig. 1 the defunct transistor would conduct very heavily from emitter to collector and the base current no longer would control the conduction. Thus the circuit would remain in one state continuously and the d.c. current flowing from the battery through the primary winding of the transformer would become extremely large, since it would be limited only by the very low d.c. resistance of the primary winding.

For the above reasons it is evident that a fuse rated for the maximum normal input current (about 12 amperes for this supply) should be installed in the positive d.c. input lead, even

Mounted inside the front fender well of WYOR's car, the transistorized supply is contained in a standard box measuring 8 by 6 by 3½ inches. Maximum total d.c. power output is 140 watts at 14 volts d.c. input—enough for a really husky mobile rig. Output and control connections are taken through the octal plugs on the left side of the box. The transistors are mounted on the box surface facing the reader.



though in normal operation the supply is inherently self-protecting so far as short circuits or heavy overloads on the d.c. output side are concerned.

It should be emphasized, however, that trouble of the above sort is not to be expected in this supply since the amplitude of these spikes is kept to a safe value by means of the bifilar windings on T_1 and the large capacitor C_1 . Also, the circuit uses the Delco 2N278 transistors instead of the 2N277 type which are rated for 40-volt collector-to-base voltage.

Construction

The model shown in the accompany photographs is built in a Bud Minibox No. CU-3009 which is 8 inches long, 6 inches wide, and 3½ inches high. After the supply was constructed, masking tape was used to cover the transistors, power sockets, and terminals, and the entire case was sprayed with several coats of glossy black Krylon paint. This helps to radiate more heat from the supply.

Speaking of heat, a word is in order concerning the mounting of the transistors. It is extremely important to provide good heat transfer from the mounting bases of the transistors to the chassis. Their junction temperature must *never* be allowed to exceed the manufacturer's ratings or thermal runaway will occur and the transistors will become useless.

When mounting the transistors on the case be sure that the case is free from paint and dirt. Coat both the chassis mounting areas and the copper bases of the transistors lightly with silicone grease (Amphenol No. 53-307 compound) before drawing them up snugly to the chassis. The detailed mounting method is shown in Fig. 3.

Actually, the layout of parts is not critical. A conventional box-type chassis may be used if desired. However, the larger the surface area the better, since that means better heat dissipation for the transistors.

Good construction techniques should be used. This includes good solder joints and the use of proper wire sizes and insulations for the various voltages and currents encountered in the circuit.

Installation

As mentioned before, heat is the prime limiting factor in high-power transistor operation. I have had my supply mounted in the engine compartment of the car since its completion. In the summer when the outside temperature is high this location may prove unsuitable. It has, however, one big advantage over any other location (other than one between the radiator and grille work) and that is that there is constant movement of air.

At this time I cannot prescribe the best location for the supply other than to say that maximum power outputs should be obtainable safely at ambient temperatures up to approximately 140 to 150 degrees F. This figure is based upon calculations only, and would involve amateur-type intermittent duty.

Performance Data

Fig. 6 shows how the output voltage varies with load current, for input voltages of 12 volts and 14 volts, respectively. The excellent regula-

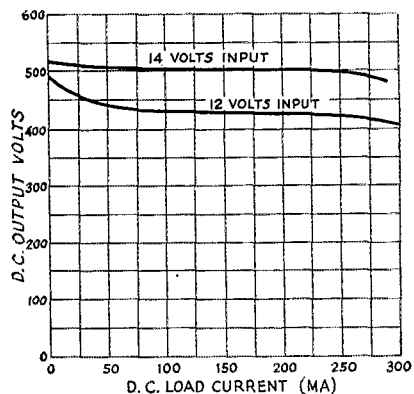
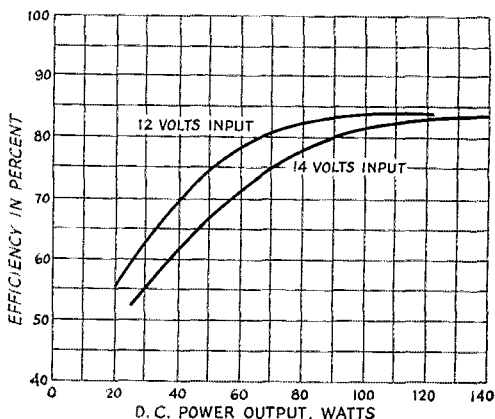


Fig. 6—Output voltage vs. load current, with primary d.c. input voltage held constant at the values shown. Output voltage measured at the high tap (E_2 in Fig. 1). Output currents may be taken from either the high or low taps, or both, so long as the total power does not exceed 125 watts at 12 volts input or 140 watts at 24 volts input.

tion characteristics are evident. Fig. 7 gives over-all efficiency curves for the two input voltages. These curves illustrate the tremendous advantages inherent in this type of power supply. In the author's view, it is well worth the money invested to obtain them.

I would like to offer my thanks to Messrs. M. B. Haslam, C. A. Phaneuf, and A. Leverone, W1MGL, for their assistance during the experimental work conducted. The excellent photographs are the work of Ollie Noonan, W1FZO.

Fig. 7—Conversion efficiency vs. d.c. power output.



Strays

The Voice of America has resumed its amateur radio program, devoting 15 minutes every Tuesday to the latest DX news, interviews with hams around the world, propagation forecasts, and technical notes. The show is written and voiced by Bill Leonard, W2SKE, and produced by Gene Kern, W2BAK. The propagation forecasts are by George Jacobs, W3ASK. The programs are beamed to Europe, but are capable of being received almost all over the world. The show is presented between 2100 and 2130 GMT on the following frequencies: 7110, 9635, 15,130, 15,250, 17,875, 21,485 and 21,500 kc. At 2230 GMT it is repeated on 173 kc. in Germany, and every Wednesday it is again repeated from Tangier on 11,875 and 15,205 kc. These schedules are subject to change, of course.

Reports of reception are desired, and you may



This is Bill Leonard, W2SKE/H18SKE, writer and narrator of the VOA amateur show. See the accompanying text for the latest schedules.

send these to "Amateur Radio, IBS/EC, Voice of America, Washington 25, D. C." Use that address also to get the latest schedules.

W9UBJ sends a news item datelined Syracuse, N. Y. Thieves hacked away at a big black box at the home of Mills Van Bergen, but didn't get any money out of it — it was his ham radio rig.

K2TSW recently helped two people get their Novice licenses. One received the call WN2GRG, the other WN2RGR.

From a Chicago paper W9ZFN sends the report of a man who decided to discover what made radio tick. He made a set which includes "zinc casings (which) have induction coils fitted into them made from fusing raw materials after intense heat forms the raw material into ingots. . . . The only purchase part of the entire setup is a crystal diode which holds the volume and creates a playback through a regenerative circuit to the induction coils."

Odd coincidence — W2YYY and W2III are both named Don Smith.

K8BLL takes his old call letter license plates, dresses them up, and uses them as decoration around the shack.

The past few months we have had a couple of reports of electrocution. In both cases the amateur concerned was putting up an antenna which inadvertently came in contact with a commercial high-voltage line. Let's watch that, OMs.

W3HQO reminds us that overseas amateurs are wonderful hosts when you are traveling abroad.

High Power on 220 Mc. with the 4CX300A

300 Watts Phone,
500 Watts C.W.,
with High Efficiency

BY V. L. CLARK,* W6ZW

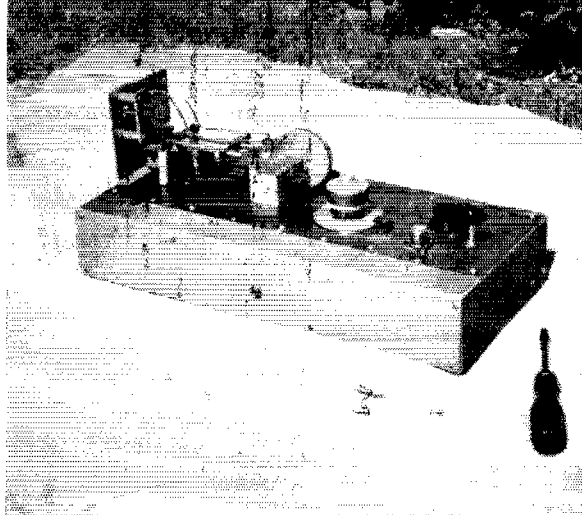
ANYONE WITH the urge to put a really potent signal on the 220-Mc. band will find this amplifier relatively easy to build and a pleasure to operate. It was built around one of the new Eimac 4CX300A ceramic tetrodes, but the same physical arrangement could be used with the 4X150A or 4X250B. It will take up to 500 watts with c.w. or f.m., and 300 watts on a.m. phone, and it will deliver output on the order of that expected with this power on much lower frequencies. The driver is a 5894 amplifier stage, running only 30 watts input.

Details of a construction job like this are best conveyed with pictures and drawings, so the essentials are presented in this way. The amplifier was built on a used chassis, 8 by 17 by 3 inches in size. A plate of copper was laid over the chassis holes, and the amplifier built on this. The bottom of the chassis was fitted with a more-or-less airtight cover, so that the air from a surplus 100-cu. ft. blower would flow up through the tube socket, for more than adequate cooling.

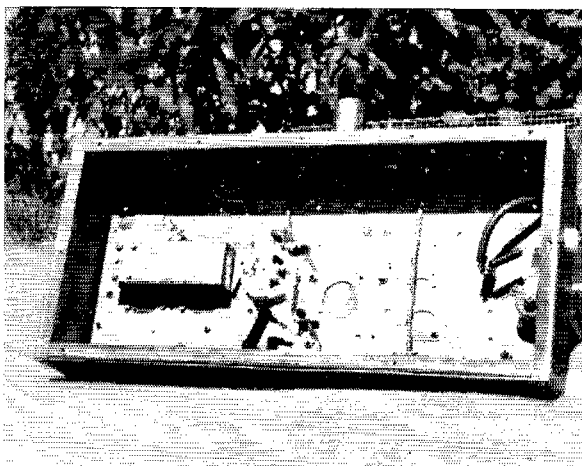
Tank Circuits

The grid circuit is a half-wave line, details of which are shown in Fig. 1. The input capacitance of the 4CX300A is approximately $30 \mu\mu\text{f.}$, a high value for this frequency, so only a very low-inductance grid circuit can be made to resonate. As may be seen from the sketch and bottom-view photograph, the line is a wide copper strip attached directly to the tube socket at one end and the tuning capacitor at the other. Coupling to the circuit is done with a wire loop, with a small variable capacitor in series, also shown in Fig. 1.

Plate line details are given in Fig. 2. Parts are of brass, which should be silver plated after the mechanical work is completed. A shorting bar is used to adjust the line approximately to resonance, and fine tuning is done with a disk capacitor. Connection to the tube plate is made by

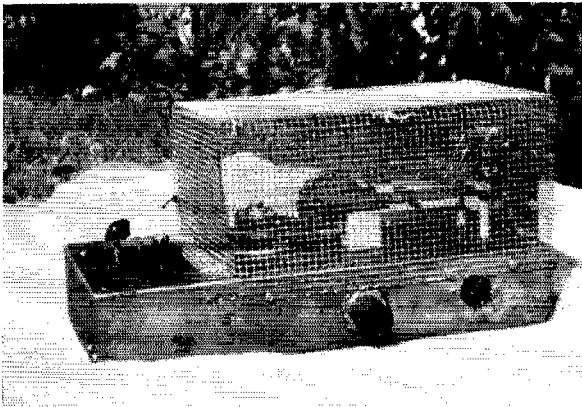


Interior of the W6ZW amplifier, showing plate line construction.



Bottom view of the 220-Mc. amplifier. Half-wave grid tank circuit is at the left.

The 220-Mc. amplifier with its wire mesh shield cover in place.



* 2821 W. Henrietta Ave., La Crescenta, Calif.

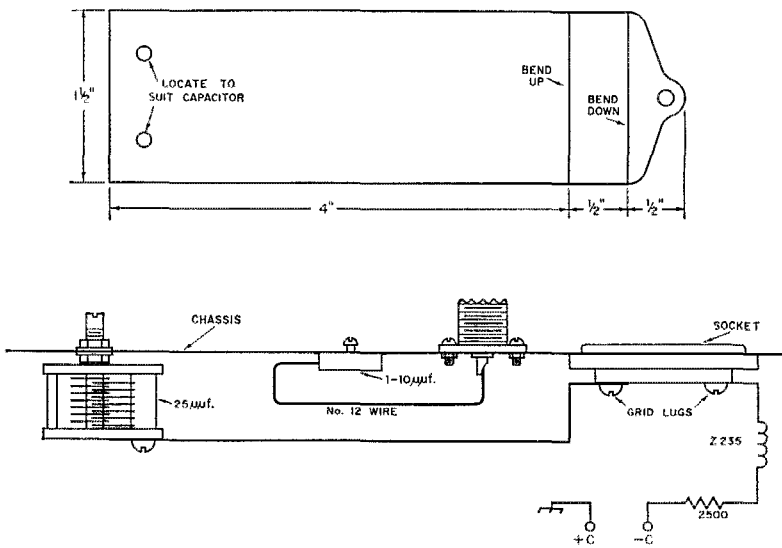


Fig. 1— Details of the grid circuit for the 220-Mc. amplifier. It is a half-wave line made of sheet copper or brass, mounted directly on the tube socket and the tuning capacitor. Input coupling is by means of a wire loop having a small variable capacitor in series.

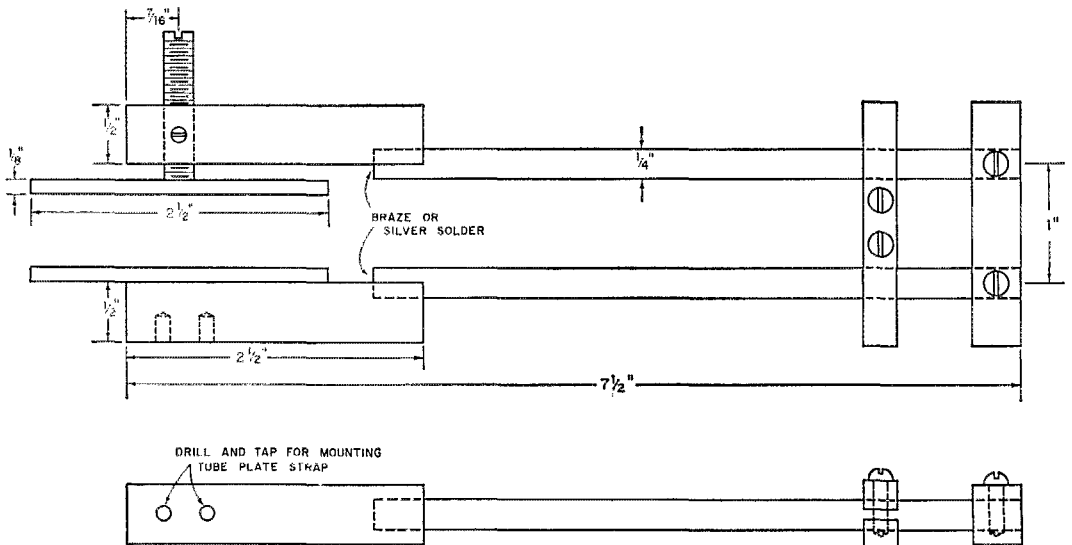
means of a thin copper or brass strap. This can be spring loaded, if desired, as a refinement that will permit easy removal for tube changing. Note that a balancing capacitor to ground (Fig. 3) is added to the line at the end opposite to that connected to the tube plate. This is adjusted to make up for the tube's output capacitance, appearing at the opposite side of the line.

The tube end of the plate line is terminated in two brass blocks that serve as mounts for the disk tuning capacitor. These were made from a single

piece of brass $\frac{1}{2}$ by 1 by $2\frac{1}{2}$ inches in size. The block is drilled about $\frac{1}{4}$ inch deep at the center of one end. It is then sawed lengthwise, to make two blocks $\frac{1}{2}$ inch square and $2\frac{1}{2}$ inches long. The $\frac{1}{4}$ -inch tubing of the line is silver soldered or brazed into the half-round slots produced when the block is sawed. (See Fig. 2.)

The shorting bar is made in a similar manner. A piece of brass about 2 inches long, $\frac{1}{4}$ inch or more wide, and $\frac{1}{2}$ inch or more thick is drilled with a $\frac{1}{4}$ -inch drill at two points, $\frac{1}{2}$ inch each

Fig. 2—Top and side views of the plate circuit assembly for the W6ZW amplifier. Tuning is by means of an adjustable shorting bar and a variable disk capacitor. Parts may be silver plated after mechanical work is completed.



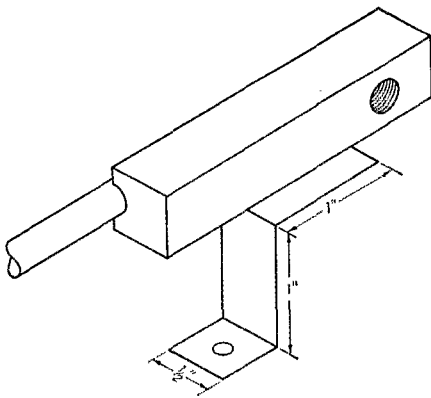


Fig. 3—Balancing capacitor mounted under the brass block at the end of the line across from that connected to the tube plate is used to simulate the output capacitance of the tube.

side of the center, and then sawed lengthwise. The two grooved portions so made are clamped to the line by means of machine screws that thread into the bottom portion and turn free in the upper. In adjusting the line these screws are set up "finger tight" and the assembly is moved along the line until resonance is found with the disk capacitor set near the middle of its tuning range. When the amplifier is set up for the usual

operating frequency at W6ZW, 220.9 Mc., the shorting bar is $5\frac{3}{4}$ inches from the tune end of the blocks. The disks of the tuning capacitor are about $\frac{5}{8}$ inch apart.

The line is supported on ceramic standoff insulators $1\frac{1}{2}$ inches high. The balancing capacitor (Fig. 3) is mounted under the block that is at the open end of the line. Its effect is to balance out the tube output capacitance that appears at the opposite terminal. In practice it should be adjusted to the setting that gives the highest tank-circuit efficiency. When the position of the capacitor plate is changed, the setting of the tuning capacitor must be readjusted for maximum output.

Operating Conditions

Regulated screen and bias voltages are musts. A VR90 handles the bias, and a VR150 and a VR105 in series are used on the screen. Modulation is supplied by a pair of 811s, using an ART-13 modulation transformer, modulating both plate and screen. This circuit was evolved after considerable wrestling with a 4X150A amplifier that did not want to modulate properly with any of the other arrangements commonly used with tetrodes. The resistor across the screen winding can be a slider type of 5 watts or more.

A cover for the tank circuit was made from wire mesh. Perforated aluminum sheet, now com-
(Continued on page 150)

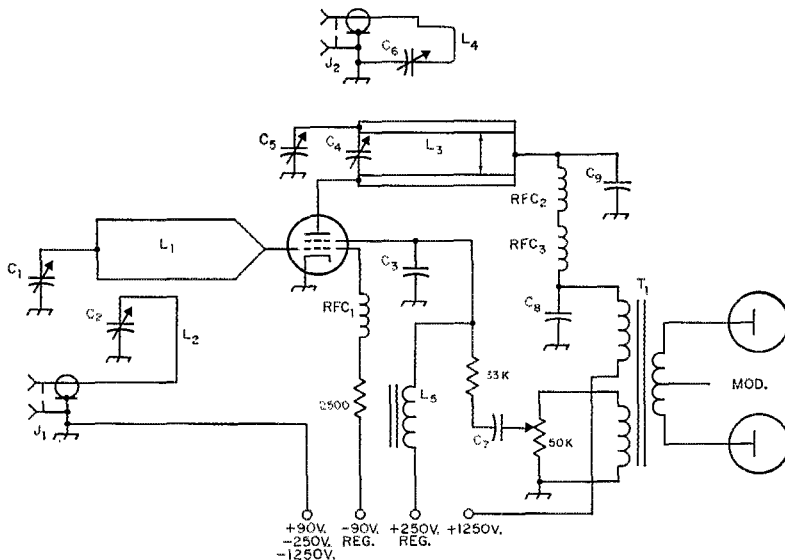


Fig. 4—Schematic diagram and parts information for the 220-Mc. amplifier.

- C₁—25- μ mf. variable, ceramic insulation.
- C₂—1-10- μ mf. ceramic trimmer.
- C₃—Part of Eimac SK-710 socket.
- C₄—Plate line tuning disks—see text and Fig. 2.
- C₅—Balancing capacitor plate—see text and Fig. 3.
- C₆—15- μ mf. variable, double spaced.
- C₇—4- μ f. 1000-volt, oil or paper.
- C₈, C₉—500- μ mf. 20 kv. bypass (TV replacement type)
- J₁, J₂—Coaxial fitting, female.
- L₁—Half-wave grid line—see text and Fig. 1.

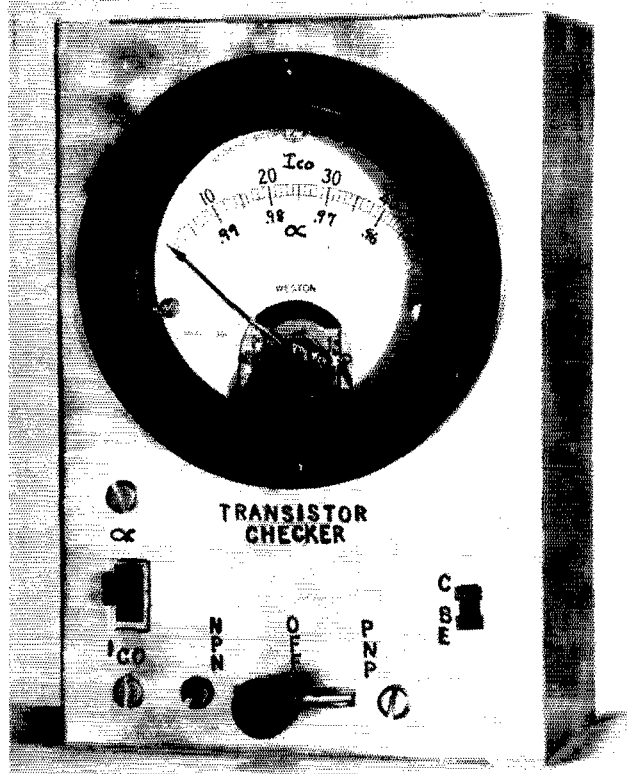
- L₂—Coupling loop—see Fig. 1.
- L₃—Plate line—see Fig. 2.
- L₄—Loop No. 10 wire 5 inches long and 1 inch wide.
- L₅—50-hy. 20-ma. choke. (Thordarson 20C51 usable).
- RFC₁—0.8- μ h. r.f. choke (Ohmite Z-235).
- RFC₂—1.8- μ h. r.f. choke (Ohmite Z-144).
- RFC₃—7- μ h. r.f. choke (Ohmite Z-50).
- T₁—ART-13 modulation transformer.

Checking Transistors

A Simple Unit for Testing Junction Types

BY H. F. PRIEBE, JR.,*
W2TGP

The transistor checker is built into a 4 × 6 × 2-inch aluminum chassis. S_2 is to the left, S_1 at the center and the transistor socket to the right.



WITH THE INCREASE in transistorized electronic gear finding its way into amateur use, the radio ham will find it necessary to supplement his present test equipment to more readily service these items. One of the most important problems confronting him is a means of testing transistors. Although the complete and thorough test of junction transistors can be quite difficult, as well as requiring extensive test equipment, the approximate values of two of the more important transistor characteristics can be readily obtained with modest test gear. Making use of this fact, the transistor checker described here is an extremely useful and adaptable instrument despite its simplicity.

The rather delicate nature of the transistor so far as power dissipation is concerned is an essential factor when considering the importance of a transistor checker. In servicing electronic equip-

*192 Mills St., Morristown, N. J.

With new uses for transistors in the ham shack being found almost daily, some method of testing these units becomes essential. The checker described here by W2TGP is easy to make and doesn't cost a fortune.

ment that utilizes vacuum tubes, many technicians have relied on the substitution method of determining whether a tube was good or not; that is, if a particular stage in the device was inoperative and the tube was suspected, the trouble shooter would substitute a good tube and observe whether operation was restored. Now, if by chance, the tube was not at fault and another component was defective, this good tube might be subjected to abnormal operating conditions. However, the nature of the electron tube is such that many of these overload conditions for short periods do no damage to the tube. The technician then is satisfied that the tube is probably not at fault and the other components of the stage must be scrutinized.

The nature of the transistor is such that many overload conditions, even if for only short periods, are damaging to the transistor. Therefore, before the substitution of a good transistor is made in an inoperative circuit it is advisable first to determine that the operating conditions are satisfactory.

The two characteristics or parameters of the transistor that provide the best indication of the over-all performance of the unit are the collector current with emitter open (I_{co}) and the current multiplication ratio (α or β). The current multiplication ratio gives us a figure for the gain or amplification capabilities of the transistor, and the collector current with emitter open provides

a figure that enables us to determine the transistor's performance in the presence of temperature variations and various circuit bias conditions.

Circuits

The collector current with the emitter open is sometimes referred to as the reverse current or saturation current. The symbol I_{co} is used quite often and it is the designation used on the transistor checker to indicate the position of the switch which provides this measurement. This current is measured in a manner similar to the connection shown in Fig. A. An N-P-N transistor

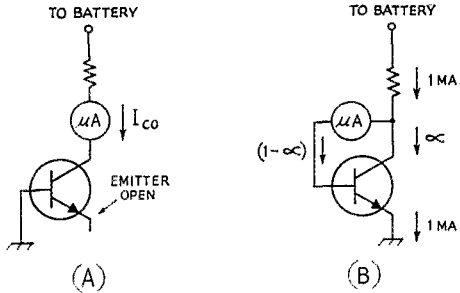


Fig. 1—Basic circuits (A) for checking the I_{co} and (B) the α factor.

is connected with the positive terminal of a battery connected, in series with a microammeter, to the collector and the negative terminal of the battery returned to the base. A P-N-P transistor is connected in a similar manner except that the battery and meter polarities are reversed. The resistor does not enter into the I_{co} measurement; its purpose is to limit the current through the microammeter when a defective transistor is checked. Most present transistors have an I_{co} of approximately 10 to 20 microamperes at room temperature. Also, I_{co} is very temperature sensitive; that is, it increases approximately two times for every ten degrees centigrade rise in temperature. Many transistors measured to date show a tendency for I_{co} to increase with age. The amount of increase depends largely on the temperature at which the units were aged. Most units display a tapering-off characteristic so that after a finite period a more or less final value for I_{co} is reached. In many cases this leveling-off has been at a value of approximately 20 to 30 microamperes. So normally one could expect a slightly higher

I_{co} from a transistor that has been in service a year or two than would be obtained from a new unit.

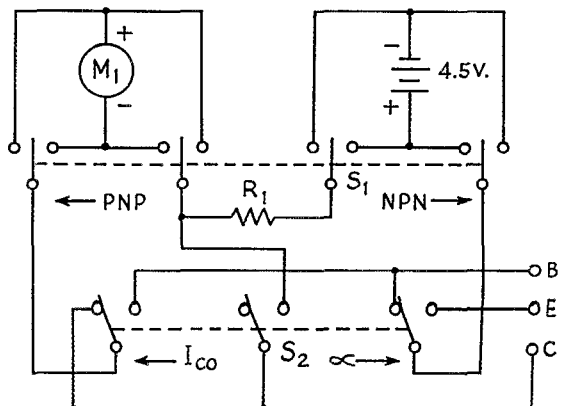
The gain factor α for the common base connection (which is also used to determine the gain factor β for the common-emitter connection) is evaluated with a circuit configuration similar to the one shown in Fig. 1B. The operation of the circuit is as follows: The total current (which is the emitter current) is one milliampere as determined by a 4.5-volt battery and a 4.5K resistor. The meter connected between the base and collector of the transistor provides a path for the base current and indicates the amount of base current necessary to maintain the emitter current of one milliampere. Thus, the meter reads $1 - \alpha$, and subtracting this value from 1 gives the value of α . The value α is the portion of emitter current that is flowing in the collector circuit and for most present transistors is between 0.95 and 0.99. The term β , which is the current multiplication ratio for the common-emitter

connection, is equal to $\frac{\alpha}{1 - \alpha}$ and is therefore between 19 and 99. It can be seen that as α approaches unity the current multiplication ratio of the common-emitter connection becomes very large and consequently the transistor is capable of high gain. In the majority of circuits in use today the transistor is operated with a common emitter.

Construction

The transistor checker is entirely self-contained in a 4 × 6 × 2-inch aluminum chassis. The top of the chassis serves as the front of the checker. There is sufficient space inside the case to include the 4.5-volt battery. The useful life of the battery is essentially the same as the shelf life of the battery. The circuit diagram is shown in Fig. 2. The parts required are not many and no doubt little difficulty will be encountered in obtaining them. A 4-pole 3-position lever-action switch is used for the "test" switch; one side is the N-P-N position, the other side is the P-N-P position with the off position located in the center. The properties of N-P-N and P-N-P transistors are similar with the exception of the polarity of the applied voltage. In switching from one to the other it is necessary to reverse the polarity of the meter as well as the battery polarity. A rotary switch

Fig. 2—Complete circuit of the transistor checker. M_1 —0.50 or 0-100 microammeter (see text). R_1 —4500 ohms total (1200 and 3300-ohm units in series, or equivalent), ½ watt. S_1 —Four-pole double-throw switch, center off position (see text). S_2 —Three-pole double-throw switch (see text). Battery—total 4.5 volts (three penlite cells).



having the necessary 4 poles and 3 positions would serve as well. A 3-pole 2-position slide switch is used to transfer between I_{∞} and α measurements. A rotary switch could be used here too, but the slide switch is more desirable because of its small size.

A 0-50 microammeter is used in the unit described and it permits α readings between 0.95 and 1. For those who might want to substitute a meter of different sensitivity a second choice would be a 0-100 microammeter. The range of α measurement would then be between 0.9 and 1. Other ranges of meters would not be as desirable because the more sensitive ones would not give enough range and the less sensitive ones would not provide enough accuracy in the high α region.

The calibration for the meter is given by the list of figures in the table. For the unit shown the actual calibration was scribed in ink on the face of the meter. Those who do not want to dismantle the meter or alter the meter scale can obtain the α or β values from the list according to the meter microampere readings.

Operation

The operation of the transistor checker is simple and straightforward. The only point to watch is the condition that might result in repeated meter overload. If a transistor with an open collector is checked for α , the meter would have 1 milliampere passing through it. Also, if a transistor with a shorted collector is measured for I_{∞} , the meter will again have a possible 1 milliampere

Meter Reading (μ a.)	α (Common Base Current Ratio)	β (Common Emitter Current Ratio)
10	0.99	99
20	0.98	49
30	0.97	32½
40	0.96	24
50	0.95	19

passing through it. The N-P-N/P-N-P switch should be in the off position when a transistor is inserted in the socket to prevent the meter from being subjected to the 1 milliampere should the leads to the transistor be shorted during this operation.

The transistor checker is designed particularly for the checking of junction transistors. The check of point-contact type transistors requires a slightly different approach. However, since there have been practically no point-contact transistors appearing in consumer electronic gear it was felt that the inclusion of the check of these units in the transistor checker would not be worth the effort.

The simple circuitry and the few components employed have resulted in a very useful and valuable instrument. The radio service technician, as well as the radio amateur and experimenter, will find the transistor checker a most worthwhile project.



April 1933

... Jim Lamb told how to cut the cost of single-signal reception by converting a t.r.f. to an s.s. superhet.
 ... George Grammer talked about the essentials of transmitter tuning and how to cure rotten signals.
 ... Then back to Jim Lamb for the description of a modulation monitor for phone transmitters.
 ... "The Cruise of the *North Light*" was recounted by William Crabbe, while W3DR discussed weather forecasting and amateur radio.
 ... Then followed nine pages of a special April Fool's section of *QST*, official publication of the American Radiator Delay League. (Subsequent correspondence indicated that such levity was frowned upon by a large number of *QST* readers.) Since that time, of course, we have been very careful about our April Fool humor.)
 ... The editorial pointed out *QST*'s still-standing policy of accepting advertising only from firms of established integrity and whose products secure the approval of the League's technical staff.
 ... DX note of the month was a report of the first transatlantic QSO in nine years on 160 meters — between W1DBM and G6FO. (W1DBM is still well-known in the States as a former League director and a writer of TVI articles, while G6FO is the Managing Editor of the British *Short Wave Magazine*.)
 ... And the National Company announced that the SW-3 receiver would now carry a price tag of only \$24.50, less coils. Small wonder it was so popular!

Silent Keys

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

W11ZI, Leo G. Greanier, Amherst, Mass.
 W1NAF, W4LAB, Newton E. Thompson, Rockville, Conn.
 W1ZKT, Cleon R. Emery, Arlington, Mass.
 W2AYR, Wilton L. Clark, Hackensack, N. J.
 W2BLU, Leslie D. Salisbury, Maybrook, N. Y.
 K2EOW, William H. Cohn, Brooklyn, N. Y.
 W2GSU, J. Nelson Frey, Carteret, N. J.
 K2GWS, Chester H. Dickinson, Port Chester, N. Y.
 W2MB, Lester Spangenberg, Lodi, N. J.
 W2MN, Carlton W. Van Duyne, Boonton, N. J.
 W2QFH, Donald J. MacLean, Buyside, N. Y.
 W2VNV, Harold R. Higgins, Collingswood, N. J.
 W3CCX, Matthew Gelardi, Harbor, Pa.
 W3U1, David C. Boggs, Philadelphia, Pa.
 K5KEG, Robert B. Parrish, Corpus Christi, Texas
 W6CPH, Eldridge S. Adams, Inglewood, Calif.
 W6OHS, Harold W. Reisinger, Dorris, Calif.
 W7JWC, Manila A. Beebe, Seattle, Wash.
 K8AXZ, John R. Henry, Barborton, Ohio
 W8EP, Arthur B. Selwer, Terra Alta, W. Va.
 W8FEE, Arthur West, Detroit, Mich.
 W8KEG, Clement T. Bosley, Detroit, Mich.
 W8NZB, Norman D. Morley, Hartsgrove, Ohio
 W9FG, Jack T. Martin, Chicago, Ill.
 W9ONC, Thomas H. Steffy, Lawrenceville, Ill.
 W9SKE, George F. Getz, Winnetka, Ill.
 VE3BNH, M. E. Channon, Bradford, Ontario

• Recent Equipment —

The Collins KWM-1 Transceiver

THIS IS written in January, 1958. Ten years ago the January, 1948, issue of *QST* devoted three articles, the editorial and the cover to a "brand-new" thing called "single-sideband suppressed-carrier radiotelephony." Three years later it was duly reported in a *QST* column devoted to recording the facts about the handful of sideband experimenters then on the air that one station had worked 100 different sideband stations. During those three years, and for a few years following, the arguments occasionally ran hot and heavy as to sideband's proper place in ham radio; its followers could see nothing else, and its detractors wanted it outlawed, segregated, boiled in oil, banned or made a hanging offense, depending upon whom you listened to. It was not at all unusual to hear an a.m. man literally moved to tears during his more vehement moments, although it must be admitted that this happened most frequently during the late hours and with a probable assist from some of Milwaukee's best.

Many hams prophesied that side band was just a fad to bloom up and then die like some of the modulation schemes that enjoy widespread popularity for a short while. These prophets weren't found among the side-band men; the side banders were too busy enjoying the benefits of their new mode to worry about the future. When it became apparent that multistation QSOs on the same frequency were the standard and logical operating pattern, a few thoughts were kicked around about the possibilities of transceivers utilizing the same filter during the generation and the reception of the side-band signals. We heard rumors that such things were built or being built, but only recently were we able to present a description of one in

QST.¹ And now there is a commercial s.s.b. transceiver, the Collins KWM-1.

Perhaps you have been wondering why we have been sounding off here instead of getting on with the facts about the equipment. We are happy to tell you. Many readers may not know the history of amateur side-band activity and therefore won't be prepared for some of the statements to be found here. For one thing, it is the writer's opinion that the KWM-1 may well mark the end of one era and the beginning of another. This unit is more than another piece of ham gear; it could be a way of life (in amateur radio).

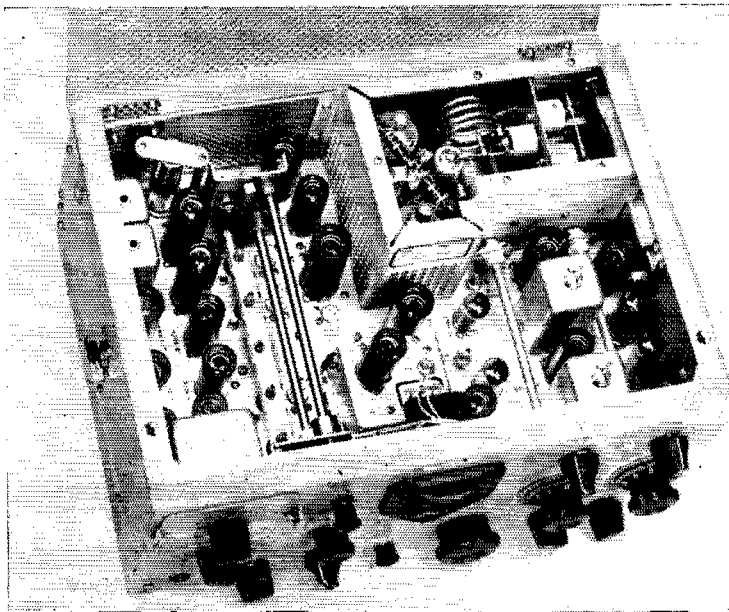
If the previous sentence sounds like advertising copy, consider the facts. The KWM-1 is a very compact s.s.b. and c.w. transceiver for which separate a.c. and 12- or 28-volt power supplies are available. It is no trick at all to remove the 15-pound transceiver from the car and bring it into the shack or vice versa. This package, with mike and antenna and the suitable supply, is your whole station. You don't need anything else.

That is Point 1 in our argument. Point 2 is the simplicity of operation. There are still some hams who claim that tuning in a side-band signal is something that requires the patience of Job, the fine touch of a cross between a surgeon and Michelangelo, the luck of a Croesus and a lot of natural talent. They have never tuned the KWM-1. Combining a slow tuning rate (22 kc. per knob revolution) with a good a.v.c. system makes it no trick at all to tune in a side-band signal. When

¹ Moser, "'Autosync' Frequency Control," *QST*, June, 1957.

See also "Recent Equipment," *QST*, March, 1958 for a description of a commercial adapter.

The Collins KWM-1 is a complete side-band station. Here is the works minus power supply and loud-speaker. The two 6146s in the output (on transmit) have their own compartment (upper right, with cover removed), and the pi-L output network uses adjustable inductors instead of the more usual variable capacitors. The conspicuous shafts at the left are part of the ganged drive mechanism for the permeability-tuned circuits in the r.f. stages. The v.f.o. (little box behind panel center) is also permeability tuned. The mechanical filter, the heart of the system, is in the metal tube held by a clamp at the rear left.



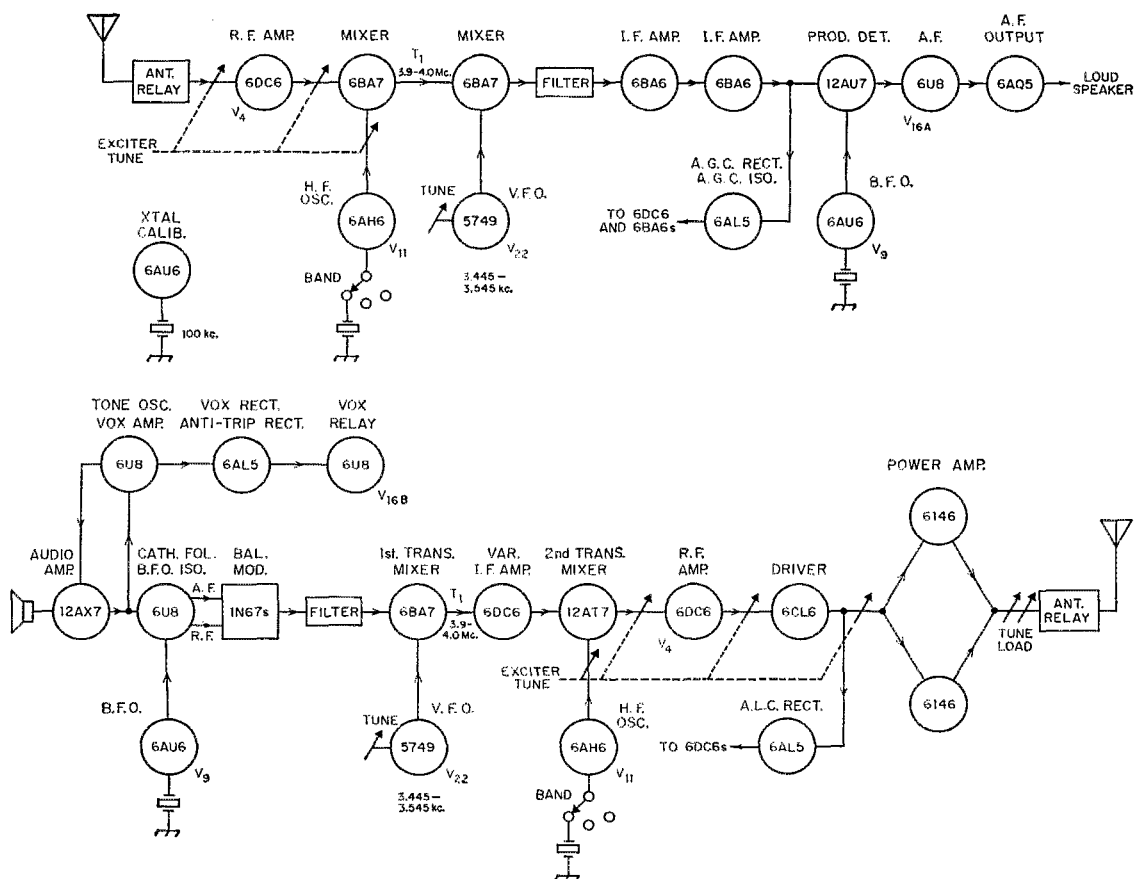


Fig. 1—Block diagrams of the KWM-1 transceiver as (upper) a receiver and (lower) a transmitter. The circuits are shifted by relays.

you have the station tuned in, you are ready to transmit, and your transmitter will be on the frequency you are copying (unless you modify the transceiver as described later). Thus all you have to do is to tune in a round table and you are automatically on frequency with your transmitter. Once you get used to it (two or three QSOs), you are likely to think anything else is old-fashioned. The pair of 6146s in the output stage delivers enough power for you to hold your own in most circles.

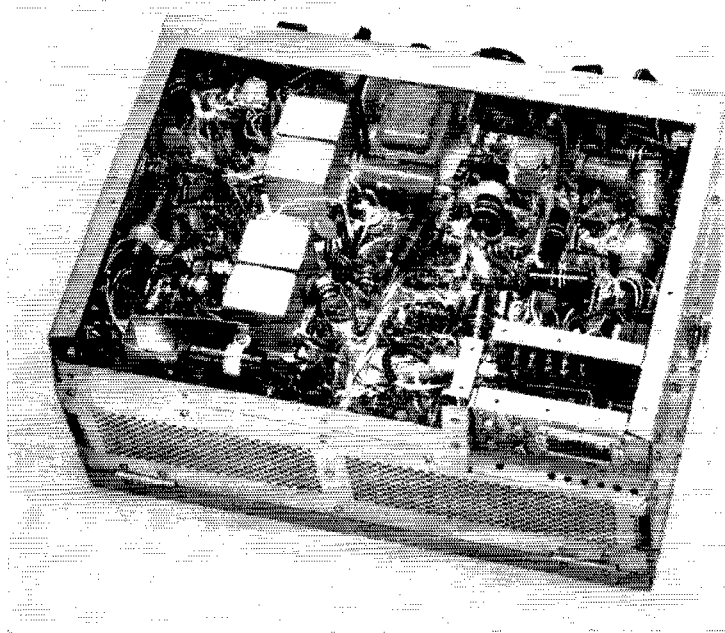
So far everything has been on the plus side of the ledger, but there are a few aspects of the KWM-1 that some hams will object to. For one thing, the KWM-1 is built only for the 20-, 15- and 10-meter bands; if you have a hankering for 75- and 40-meter operation you don't use a KWM-1. Upper side band is all that is available. The band switch isn't a 3-position deal as you might expect; it has 10 positions, which give you 100-ke. segments of the bands. To explain this a little further, the tuning dial is calibrated 0 to 100 (with a 10-division extra at each end). Each division represents a kilocycle; to get the frequency of operation you add the dial reading to the

"band" switch. (The band switch selects various crystals, as described later.) The standard KWM-1 switch is marked 14.0, 14.2, 14.9, 21.0, 21.3, 21.4, 28.0, 28.1, 28.5 and 28.6. Thus on 20 you can operate 14.0-14.1 Mc. c.w. (or non-W side band but not for long!), and 14.2-14.3 Mc. side band. The 14.9 point is for tuning in WWV at 15 Mc. to check the calibration oscillator of the KWM-1. This "band" switch is a crystal switch, as mentioned earlier, and the entire unit is plugged in at the front panel; this makes it easy to change to another set of crystals if you want to operate in some other segments of the bands. A "DX Adapter" can be added to the KWM-1; this provides crystal-controlled transmitter operation within the W bands while the receiver is tuned outside.

The Circuitry

Now that you have a general idea of what the KWM-1 does, we can start talking about the circuit. The block diagrams in Fig. 1 show the tubes that are used during receive and transmit. The tubes that work all the time (receive and transmit) are given the same "V" designation they

No place to be without a road map! The little compartment at the right foreground carries the many by-pass capacitors used to filter the leads running outside the case. Phono jacks at this point are for loud-speaker connections (two impedance levels), key and phone patch.



have on the instruction book diagram. The changes in circuitry to accomplish the transceiver action are obtained through three 4-pole double-throw relays.

Taking the receiver action first, a 6DC6 r.f. amplifier is followed by a 6BA7 mixer which is also driven by a crystal-controlled 6AH6 oscillator. A panel control marked EXCITER TONE controls the resonance of the r.f. amplifier input and output and the plate tuning of the crystal oscillator. These circuits have a tuning range of 14 to 30 Mc. for the r.f. grid and plate and 18 to 32.6 Mc. for the oscillator plate. The crystals range from 9 to 16.3 Mc.

The first mixer couples to a second mixer through a band-pass transformer T_1 that is substantially flat from 3.9 to 4.0 Mc. The tunable v.f.o. heterodynes the desired signal to the mechanical-filter frequency of 455 kc. and the signal is then amplified by two 6BA6 i.f. stages. Filter band width is 3.1 kc. at the -6 db. points. The signal then goes to a product detector which is also driven by a crystal-controlled 6AU6 b.f.o. There is no panel adjustment of the b.f.o.; its crystal-controlled frequency is matched to the mechanical filter at the factory. As a consequence you never have to worry about the proper setting for the b.f.o. Signal for the a.g.c. circuit (shown later) is taken off ahead of the product detector and rectified by a 6AL5 diode. The other diode is used as an a.g.c. isolation tube because the manual gain is applied through the same bus as the a.v.c. If this double talk bothers you, hold on until we show the circuit. The a.g.c. is applied to the r.f. stage and to the two i.f. stages.

The audio amplification following the product detector consists of the pentode section of a 6U8 and a 6AQ5. There is no switch for the b.f.o., so a.m. reception is obtained by zero-beating a carrier. This will probably seem unusual to a newcomer to side band, but anyone

who is familiar with side-band reception through a filter will recognize that this exalted-carrier reception is the best way when a filter capable of passing only one side band is used.

A 6AU6 100-ke. crystal oscillator completes the receiver.

Fig. 1 also shows the tubes that are active when the transmitter is on. The microphone signal is amplified in both sections of a 12AX7 and then applied to the triode section of a 6U8 that serves as a cathode follower to drive the balanced modulator. Some of the audio signal is tapped off and fed to the triode section of a 6U8, where it is amplified and passed on to a 6AL5 rectifier. Output of this rectifier controls the triode section of another 6U8 (its pentode section is the receiver first audio amplifier), and it is this tube that pulls in one of the relays. This relay in turn pulls in the other two relays through one of its circuits. Audio from the receiver is rectified by the anti-trip rectifier and applied as a bias to the VOX rectifier. Panel controls set the levels of VOX actuation and anti-trip. Except for the antenna circuit, the relays switch only bias and other non-rif. circuits.

The r.f. signal for the balanced modulator is taken from the crystal-controlled oscillator that is used for the receiver b.f.o., but it is first amplified in a b.f.o. isolation amplifier (pentode section of 6U8). R.f. and audio are applied to the balanced modulator, a ring of four 1N67 germanium diodes. A carrier-balance potentiometer can be screwdriver-adjusted by lifting the lid of the transceiver, but normally it is not touched because this is strictly a suppressed-carrier single-side-band (and c.w.) transmitter. The old carrier-injection option for "a.m." is not provided.

The suppressed-carrier signal is passed on to the mechanical filter, where one side band is lopped off. To get to the operating frequency, the resultant side-band signal is first heterodyned

to the 3.9-4.0 Mc. range by the v.f.o. and then amplified by a 6DC6. A second mixer brings the signal to the operating frequency by heterodyning the signal against a crystal-controlled frequency (the same one that is used during receive). On frequency, the signal is amplified by a 6DC6, a 6CL6 and then applied to the grids of two 6146s in parallel. Some of the signal is sampled at the grids of the 6146s, rectified by a 6AL5 automatic level control rectifier and applied as bias to the grids of the two 6DC6s. The action is similar to an a.g.c. system in a receiver, of course, but its usefulness here is that it reduces the chances for overdrive (the big bugaboo in side-band operation). A panel meter on the receiver serves as an S meter on receive and an a.l.c. indicator on transmit. The latter function leaves no excuse for running the gain of the system too high. This panel meter can also be switched to read final grid and plate currents.

To insure maximum stability, both the 6CL6 driver stage and the 6146s in the output stage are neutralized. As an aid to linearity, negative feedback is coupled to the cathode of the driver. The usual Collins pi-L output coupling is used between 6146 plates and the antenna, but in this application two continuously variable inductors are used instead of the more usual variable capacitors. These inductors are neat little jobs using roller contacts; presumably their use was dictated by space considerations, since the combination takes up less volume than two variable capacitors, two switch sections and two tapped inductors. Nice reduction counter dials are used with the inductors and they are a cinch to adjust.

If you have stayed with us up to here (and we wouldn't blame you if you got lost once or twice), you will have noticed that the tubes common to both transmit and receive are the 6AU6 h.f.o., the 5749 v.f.o., the 6AH6 crystal-controlled oscillator and the 6DC6 r.f. amplifier.

Referring again to the transmitter diagram, you will note that the 6U8 in the upper left is labeled "Tone Osc." and "VOX Amp." The tone oscillator is the pentode portion connected as a phase-shift oscillator, and it used for c.w. operation and for tune-up on side band. The 2000-cycle (approximately) tone from the oscillator is turned on automatically when a panel switch is thrown to the "Tune" position, and this single tone results in a single output frequency at r.f. Its amplitude is controlled by the setting of the microphone gain control. The keying system is a dandy; the audio amplifier following the tone oscillator is grid-block keyed! Since the VOX amplifier gets its signal beyond this point, on c.w. the VOX serves as part of the c.w. break-in arrangement. This is a break-in arrangement on the order of "Tattoo" or some of the others where you can't be broken during a letter but only at the end of a word or sentence, depending upon your sending speed. It is a perfectly automatic "transmitter turner-onner" type of operation; if the entire system has any apparent drawback it is that one must transmit on a frequency 2 kc. higher from what the dial calibration shows, and of course this is no real drawback at all. The audio tone can be heard in the output of the receiver during transmitting periods, to give a check on your keying.

If you have noticed, quite a bit of time has been spent describing the circuit. That wasn't a result of excess detail; as a matter of fact only the high points were touched. What you have to remember is that we haven't been describing just a receiver or just a transmitter, we have been describing a *station!*

Power Supplies and Accessories

As indicated earlier, two power supplies are available. There is nothing special about the a.c. power supply; it's heavy and it's quiet and

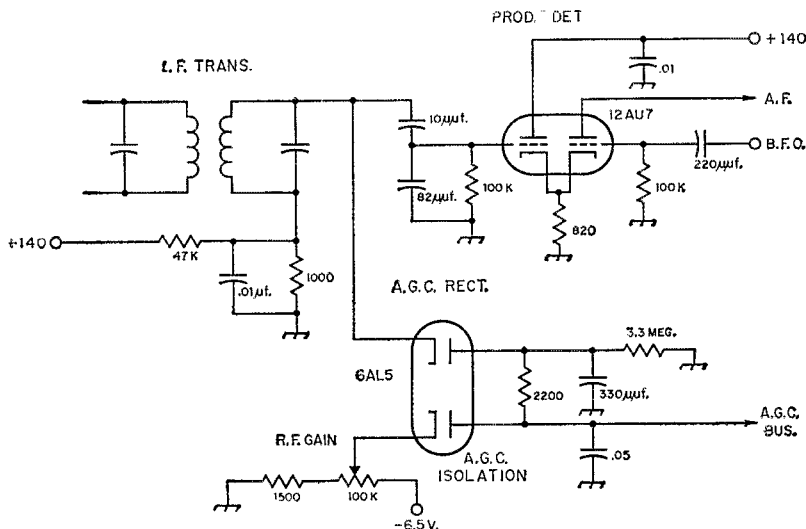


Fig. 2—Details of the detector and a.g.c. circuit in the KWM-1 receiver.

it can be tucked out of the way. The d.c. supply for car operation uses six heavy transistors and a flock of silicon diodes to furnish the 800 volts at 200 ma. and 260 volts at 215 ma. that the KWM-1 requires. The transistors serve as oscillators to provide an a.c. that can be transformed to a higher voltage and then rectified, as is done in the other transistor power supplies described recently in *QST*. Just in case you haven't been keeping up with these developments, it is interesting to note that this particular supply has an over-all efficiency of 85 percent; with a 12-volt source the average current drain on transmit is 16 amperes, and on receive it is only 10.

Of considerable interest to the ham who uses the KWM-1 in his home is the auxiliary speaker console. This unit is not only a loudspeaker but it also houses a directional wattmeter, for indicating the "flatness" of the line running to the antenna or antenna coupler, and a phone-patch unit. With the console and transceiver on a table and the power supply hung under the table, you have just about the most compact 175-watt p.e.p. input side-band station you will find.

Circuit Details

Since many receivers do not have an effective a.g.c. system that is operative when the h.f.o. is on, we thought you might be interested in the a.g.c. circuit used in the KWM-1. As mentioned earlier, the a.g.c. and the slow tuning rate (and the mechanical filter) join in making it an easy job to tune in a side-band signal. The

pertinent details are shown in Fig. 2. The a.g.c. rectifier diode has a bias of about 3 volts and consequently doesn't start rectifying until the voltage at the secondary of the i.f. transformer exceeds the bias. The voltage at the product detector grid is considerably less than the total voltage available, by virtue of the capacitive voltage divider (10 μ f. and 82 μ f. in series). The a.g.c. bus minimum potential is determined by the setting of the r.f. gain control, and the a.g.c. rectifier adds to this when the incoming signal is strong enough.

The KWM-1 we tried was used with a fairly good antenna on 20 meters, and it was found that few times the r.f. gain had to be cut back if we were to handle without distortion some of the loud signals coming through. Under these conditions the S meter doesn't give a useful reading. Since the receiver had to be built to work with a rather poor antenna (as in mobile work), it is probably that the r.f. gain could always be run wide open when the unit was used in a car. When the signals weren't so fat we did run the gain wide open, and it was this experience that prompted the earlier remarks about the effective a.v.c. system.

That's about enough yakking for one sitting. If you get an opportunity to try a KWM-1, keep in mind that this is new-style operating. Tune in the other fellow accurately the first time, resist that old ham urge to dial-twiddle, and relax and enjoy the contact.

— B.G.

Strays

The Navy continues to maintain its reputation for resourcefulness. Vice Adm. W. V. Davis, Deputy Chief of Naval Operations for Air and W5WWR, tooted a CQ on a noisemaker at the Cotton Bowl Ball. He didn't raise another ham, but got a response from a good-looking blonde.

— . . . —

Those of you who work K0CUF will be interested to know that he is a victim of hemophilia and over the past couple of years has received some 411 blood transfusions. His mother is KN0LQS.

— . . . —

One day recently K6BAH worked W6YBU/7 and W7UBY/6. (Anyway, it fills two lines!)

— . . . —

KH6CNG, chairman of the Board of Deacons in the Pearl Harbor Community Church recently worked his first South Dakotan and his first Mexican, W0YEJ and XE2FV respectively, both of whom are Catholic priests.

— . . . —

Wanting to change a gray panel to black in order that it would match the rest of the equipment in his shack, W1AAI took some black "Lesters" decorative enamel and rubbed it on the gray panel with a rag. He got his black panel okay, with the crackle finish unmarred.

WN3KPJ thinks he got a good set of call letters from FCC. He's a 1500-ton hydraulic forge press operator at Kaiser Aluminum, and so figures that his call letters stand for Kaiser Press Jockey.

— . . . —

Major David Simons, W5ZRZ, of high-altitude balloon fame, has recently been chosen by the U. S. Junior Chamber of Commerce as one of its ten outstanding young men of the year.

— . . . —

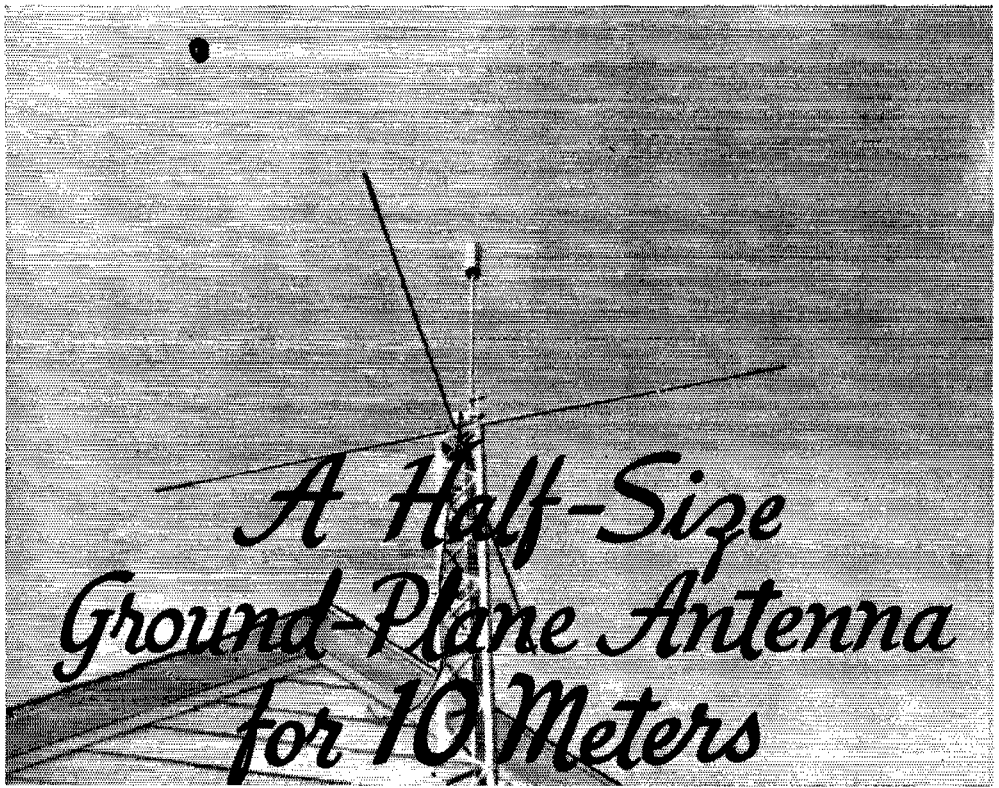
W6LQN worked LU9PA, who was running only 100 milliwatts, a 6AU6 modulated with a transistor. W6LQN learned that, appropriately enough, LU9PA is named Marconi.

— . . . —

Another case of interference with a church p.a. system. W7HYM was calling a VP5 while his wife attended the church at which his brother-in-law was the pastor. Family relationships were strained when W7HYM came over the church p.a. system just as the pastor pronounced the benediction.

— . . . —

K6JPG says he has the most expensive vertical antenna that he knows of. While assembling the last section his screwdriver slipped and punctured his right eye. Since he is a bus driver, he also lost his job.



The maximum linear dimension in any direction from the mast top is slightly over four feet—small enough to be used in almost any location.

End-Loaded Elements for Compact, Self- Supporting Construction

BY PHILIP E. HATFIELD,* W9GFS

FOR several years I have maintained a crystal-controlled receiver and companion low-power transmitter on ten meters for the purpose of working the local mobile stations. The antenna used was, until recently, a coaxial vertical constructed of thin-wall conduit and aluminum downspout. Unfortunately, it was one of a number of masts and antennas that, with their associated guy wires, made lawn-mowing a difficult problem. To reduce the clutter, I decided to mount as many antennas as possible on one

unguyed mast, resting on the ground and fastened to the side of the house. When I thought of topping the mast with sixteen feet of unguyed thin-wall conduit and downspout, I decided that the ten-meter antenna would have to be made smaller.

The present popularity of coil-loaded antennas immediately suggested that form of construction; however, no logical method of coil-loading the sleeve of a coaxial antenna presented itself. Since vertical polarization was required, the ground plane seemed the next best choice for coil loading. A hasty search of the literature turned up one loaded ground plane—a broadcast station antenna. With this encouragement, work was started.

A number of eight-foot lengths of $\frac{3}{4}$ -inch o.d. aluminum tubing and some bakelite tubing of $\frac{3}{4}$ -inch o.d. that would fit snugly over the aluminum tubing were available; this automatically determined some of the dimensions of the antenna. It appeared likely that one-piece opposing radials, consisting of eight-foot lengths of tubing, end loaded, would be easier to mount than separate four-foot lengths of tubing with center loading. With this in mind, a $6\frac{1}{2}$ -inch long piece of bakelite tubing (maximum length available in the junk box) was slipped for a distance of $\frac{1}{2}$ inch on each end of an eight-foot section of aluminum tubing, the bakelite forms filled with

*c/o General Electric Co., Owensboro, Ky.

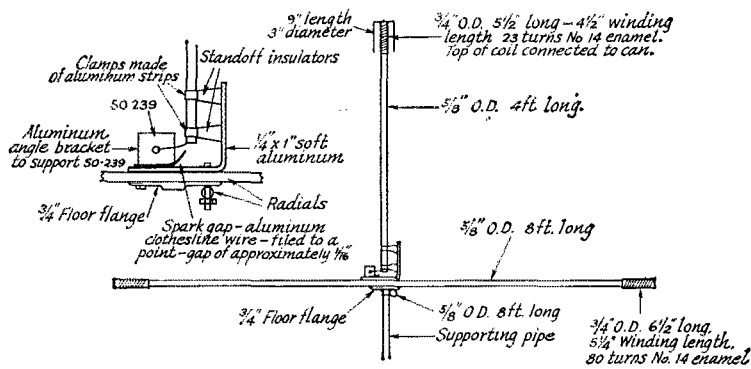
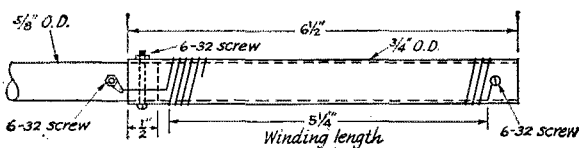
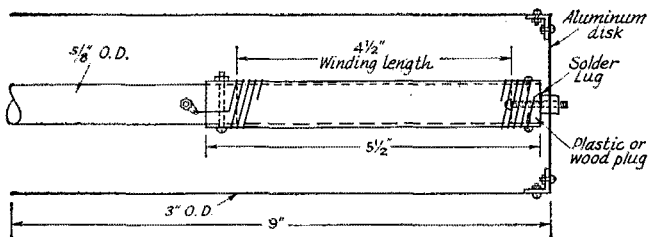


Fig. 1—Construction details of the half-size ground-plane antenna.



DETAILS—RADIAL LOADING COIL



DETAILS—VERTICAL ELEMENT LOADING COIL

a single layer of enameled copper wire, and the resonant frequency of the combination checked with a grid-dip meter. After trying several wire sizes, No. 14 was selected as the size that would just fill the winding space and produce resonance at 28 Mc. This frequency was chosen to allow pruning of the coils after the antenna was assembled. Two of these elements were constructed and then attention was turned to the vertical element.

A four-foot section of the 5/8-inch o.d. aluminum tubing was selected for the vertical element. A 5 1/2-inch length of the bakelite tubing was slipped for a distance of 1/2 inch on the end and a number of coils wound and checked with a grid-dip meter. The thought occurred that some form of capacitive top-loading would reduce the number of turns on the coil and hence some of the losses. Disks, spokes, and cans were tried, with the final choice being a can made from a 9-inch length of 3-inch diameter aluminum downspout, left over from the construction of the coaxial vertical and saved for years.

Assembly and Tuning

The antenna was assembled by using a 3/4-inch

pipe floor flange as a base and mounting the two coil-loaded eight-foot sections of aluminum tubing at right angles to each other, one on the top surface of the flange and the other on the bottom. Galvanized bolts 1/4 inch in diameter were used as fasteners through holes drilled in the aluminum tubing and the existing holes in the floor flange. The vertical section was attached to the top of the flange with insulators and a right-angle bracket, made from do-it-yourself aluminum, using two of the same bolts that held the horizontal elements in place. A small aluminum plate, carrying an SO-239 coaxial connector, was fastened to the bracket holding the vertical element, and a short length of wire was run from the bottom end of the element to the connector. The construction of the antenna was completed by installing a spark-gap made from a piece of aluminum wire filed to a point on one end, grounded to the flange at the other, and bent to within approximately 1/16-inch of the vertical element.

Tuning of the antenna was achieved by measuring the v.s.w.r. on the RG-58/U cable first used to feed it and then removing turns from the

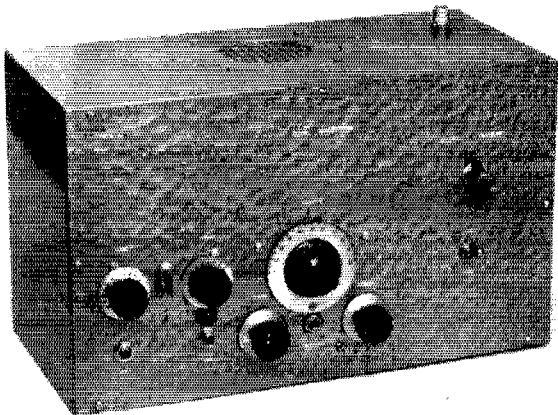
(Continued on page 150)

A 50-Mc. Station for the Beginner

Part I — The Receiver

Getting Started on 6 by the Simple and Inexpensive Route

BY LEWIS G. McCOY,* W1ICP



CONTRARY to what many hams may tell you, getting started on 50 Mc. is not necessarily either difficult or expensive. It's not as simple as putting a one-tube oscillator on 80-meter c.w., but it certainly is within the scope of any newcomer who is interested in trying the band. When you do get on 6, you'll find it inhabited by a type of amateur quite different from those on lower frequencies. The boys on 6 sell the band with zeal, and their search for converts is a continuing one. Why are they so enthusiastic about it? The answer isn't complicated.

Here is a band with much to offer any amateur; particularly the newcomer. Equipment required is relatively simple and inexpensive. QRM-free contacts are the rule, rather than the exception, and they can be made at any hour at any season, if there is activity within range. Cross-country contacts are not unusual, even with low power, and with even a fair antenna consistent local coverage up to 100 miles is quite commonplace. The antenna system required is of moderate size, making it little more obtrusive than the average home TV antenna installation. This means that TV rotators and other TV hardware can be used to good advantage on this band.

In these articles we'll describe a simple station which can be used at the home base or, with a suitable power supply, for mobile operation as well. The entire unit, receiver, transmitter and power supply, is built in one package measuring only 7 × 9 × 15 inches. It has three individual subassemblies, any of which can be used alone, if desired.

The Receiver

The complete receiver requires only three

* Technical Assistant, QST.

The 50-Mc. transmitter-receiver is enclosed in a 7 x 9 x 15-inch aluminum case. The two controls at the left are for oscillator plate and final plate tuning capacitors. The dial is for receiver tuning. Below the receiver knob are the audio gain control, left, and the regeneration control, right. At the upper right-hand side of the panel is the transmit-receive switch that connects the B-plus and the antenna input to either receiver or transmitter. The toggle switch is for turning on the power supply.

The power supply is mounted to the base of the cabinet with self-tapping screws. The chassis and transformer is visible at the left-hand side of the cabinet in this view. Screws through the back panel (not shown) hold the transmitter and receiver (middle unit) solidly in place. Although it was not yet done in the unit shown, holes large enough to accommodate an insulated screwdriver should be drilled in the top of the cabinet directly over the slug of L_1 , and the antenna-series capacitor in the transmitter. This will provide access to these adjustments when the back panel is in place.

The speaker is mounted to top of the cabinet. A piece of perforated aluminum (Reynolds Do-It-Yourself stock) is used for a speaker shield.

Particularly since the Technician Class license was made usable on 50 Mc. in 1955, ARRL Headquarters has been besieged with requests for information on low-cost equipment for use on 6. Lots of fellows want the works — a simple receiver, not a converter that must be hooked to a communications receiver, and a transmitter of elementary design, both capable of being built by anyone who can wield a soldering iron. The station described here is not likely to put you into the upper brackets of the 6-meter DX fraternity in a hurry, but it will get you started in a fascinating new field at minimum effort and cost.

tubes, an r.f. amplifier stage, a superregenerative detector, and an audio amplifier. Admittedly, this sort of thing will not equal the performance of a good converter and communications receiver combination, but it can be used successfully. Not too many years ago, all v.h.f. work was done with receivers that were far less effective than this one. It should be recognized, however, that you do not get something for nothing. The more simple the receiver, the less you can expect from it in the way of sensitivity, selectivity and signal-to-noise ratio.

Let's we over-sell the receiver we have here, let's take a candid look at its limitations. There are two inherent weaknesses in any receiver using a superregenerative detector. At best, it cannot give much selectivity. A strong local

signal may block reception over most of the active portion of the band. Secondly, the superregen in its simplest form radiates a very strong and annoying interfering signal. The detector obtains its sensitivity (which is truly remarkable for so simple a device) through the introduction of an alternating voltage, somewhat above the audio range, usually about 20 to 200 kc., into the detector circuit. This "quench voltage" modulates the oscillating detector, generating a broad squealing signal that was the bane of v.h.f. men in the heyday of the "rushbox" receiver.

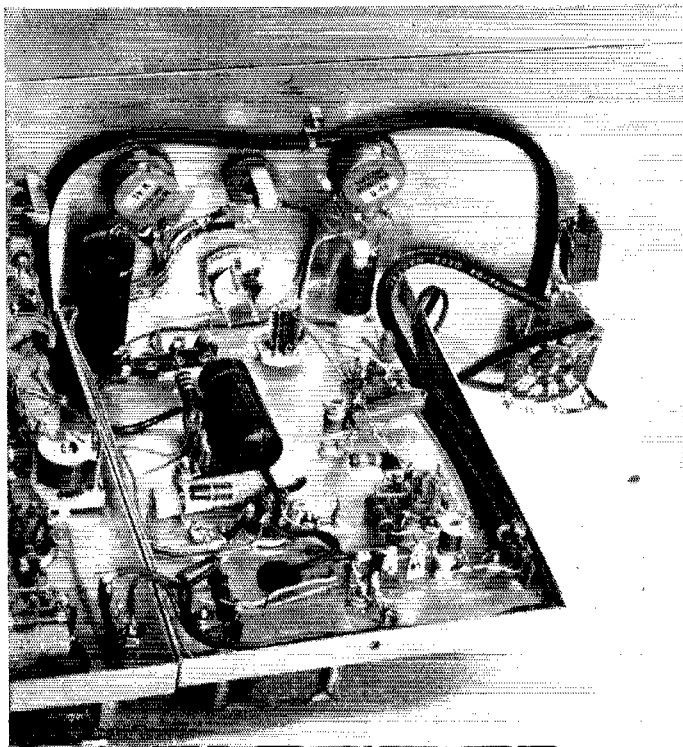
The broad tuning and radiation problems can be minimized by adding a well-designed r.f. amplifier stage ahead of the detector. Such a stage also contributes some gain, and makes the tricky detector circuit easier to control. Selectivity of the receiver described is comparable to that obtained with some single-conversion superhets of simple design. Sensitivity is adequate for reception of all but the weakest signals. Radiation is held down to the point where it is not bothersome, except in the case of another receiver in use close by.

The Circuit

Circuitwise, the receiver is similar to the 144-Mc. job described by W1HDQ in *QST* for November, 1951. (Don't write ARRL Headquarters for copies of this issue; it's been sold out for years, but some of your friends who have been in the game for a while may have it.) The r.f. amplifier tube is a 6AK5. Its grid circuit is designed for coaxial-line fed antennas, either 50- or 75-ohm. Capacitive coupling is used between the r.f. plate circuit and the detector, the latter also a 6AK5. The coupling capacitor, C_3 , should be as small as possible. Here it is made

This view shows the wiring details of the receiver. A terminal tie-point strip at the rear right-hand side of the chassis is used for a connection for the antenna input. A short length of coax connects the receiver to one of the terminals of S_{1A} , visible at the right on the panel. A phono plug and jack in the lead to the speaker simplifies servicing work with the unit out of the case.

One side of the 115-volt a.c. line is connected to the toggle switch (no connections shown in this view) and this switch turns on the power supply voltages.



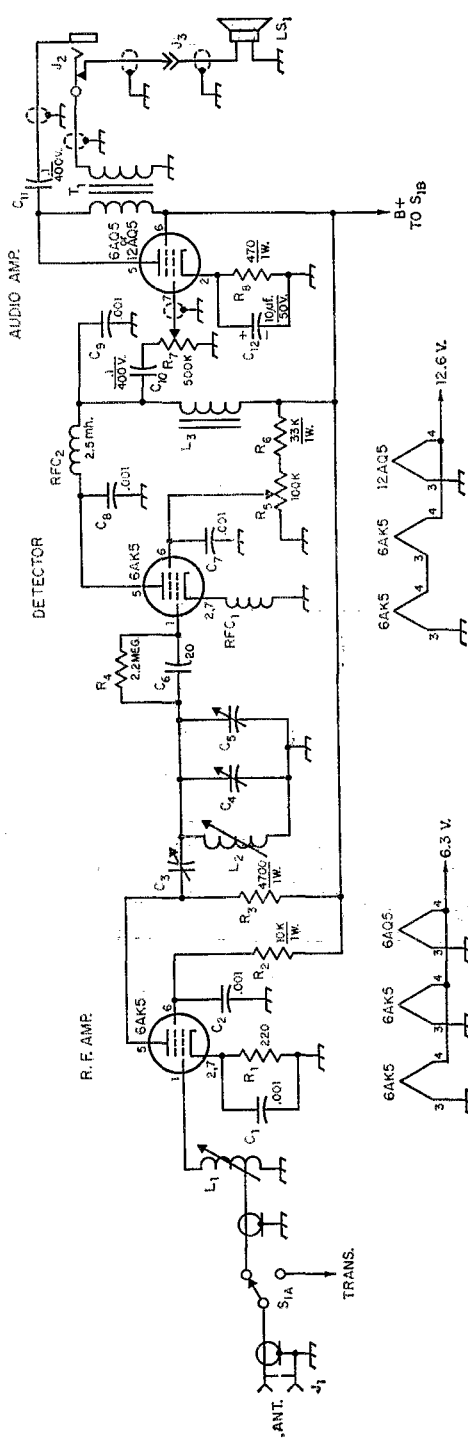


Fig. 1—Circuit diagram of the 50-Mc. receiver.

by twisting two short lengths of insulated wire together.

Three adjustments are provided in the detector grid circuit. First, the coil, L_2 , is adjustable by means of its core, as is the r.f. grid coil, L_1 . Then there are two variable capacitors, C_4 and C_5 . The first is mounted on the panel for tuning. The second is a screwdriver-adjustment trimmer on the chassis, used to set the band so that it will be tunable with C_4 . Regeneration in the detector is controlled by varying the screen voltage, with the potentiometer, R_5 .

Audio output from the detector is amplified by a 6A4Q5. Either headphones or a speaker can be used. When phones are plugged into the jack on the front panel the speaker is disabled. The speaker is mounted under the top surface of the cabinet and is connected to the receiver by means of an inexpensive phonograph-type jack

- C_1, C_2, C_7, C_8, C_9 —0.001- μ f. disk ceramic capacitor.
- C_3 —Two 1-inch lengths of No. 20 to 24 insulated hookup wire twisted together (see text).
- C_4 —Approximately 2 to 10- μ f. variable (Hammarlund MAPC-15-B with one stat-r and one rectr plate removed).
- C_5 —20- μ f. variable (E. F. Johnson 20-M11).
- C_6 —20- μ f. ceramic or mica capacitor.
- C_{10}, C_{11} —0.1- μ f. 4(0-vcit paper capacitor.
- C_{12} —10- μ f. 50-volt electrolytic.
- J_1 —Coax receptacle, chassis mounting, SC-209.
- J_2 —Headphone jack, closed circuit.
- J_3 —Phono pin jack and plug (see text).
- L_1 —16 turns of No. 26 enameled, close-wound, on $\frac{1}{4}$ -inch diam. iron-slug form. Tap one turn from ground end (North Hills Electric Co. F-1000).
- L_2 —6 turns of No. 26 enameled, $\frac{1}{2}$ inch long on $\frac{1}{4}$ -inch diam. iron-slug form (North Hills Electric Co. F-1000).
- L_3 —10-hy. 50-ma. choke (Triad C-3X).
- LS_1 —4-inch p.m. speaker.
- k_1 —220 ohms, 1 watt.
- k_2 —10,000 ohms, 1 watt.
- k_3 —4700 ohms, 1 watt.
- k_4 —2.2 megohms, $\frac{1}{2}$ watt.
- k_5 —100,000-ohm potentiometer.
- k_6 —33,000 ohms, 1 watt.
- k_7 —500,000-ohm potentiometer.
- k_8 —470 ohms, 1 watt.
- kFC_1 —7- μ h. v.h.f. r.f. choke (Ohmite Z50).
- kFC_2 —2.5-mh. r.f. choke (National R-100S).
- S_{1A}, S_{1B} —2-pole, 3-position switch, two positions used (Centralab 1472).
- T_1 —5000-ohm primary-to-voice coil output transformer (Triad S-X or equiv.).

and plug, in order to provide a convenient means of breaking the connection for testing the receiver outside the cabinet.

Power for the receiver is taken from a supply that will be described later, but any supply that will deliver between 90 and 250 volts will serve for testing. Even two 45-volt "B" batteries in series can be used, if a 6.3-volt filament supply is available. The power supply to be described handles both transmitter and receiver. It is intended for use on the a.c. line. For operation from a car battery a small vibrator-type supply, such as the Heathkit VP-1-6 or VP-1-12 may be used, though additional filtering may be necessary. More about this later. The wiring of the heater circuits will depend on the battery voltage available, when mobile service is planned. Connections for both 6- and 12-volt batteries are shown in the schematic diagram. For 12-volt service the two 6AK5 heaters are connected in series, and a 12AQ5 replaces the 6AQ5 in the audio amplifier.

Building the Receiver

Study the circuit diagram, photographs and layout drawing before attempting construction. The layout drawing, Fig. 2, gives the locations of all holes for mounting the parts on the chassis. A 5 X 7-inch aluminum chassis with half-inch sides is shown. This can be cut and bent from sheet aluminum, if facilities for such metal work are available, or a standard chassis with 2- or 3-inch sides can be used. The principal reason for the narrow-sided chassis shown here was to obtain a clearer view of all components for the photographs. Depending on the panel layout it may be necessary to cut away part of the standard chassis to make room for the potentiometers, or mount them through the front wall.

Use the layout drawing for marking the chassis for drilling. When drilling is complete you are ready to mount the components and begin wiring the receiver. If this is your first wiring job, here are a few pointers that may save you some headaches.

In soldering, be sure that all leads and terminals are clean. Beginners sometimes even attempt to solder enameled wire without first scraping off the enamel, and even the best workmen may be lazy about scraping wires completely clean. Use resin-core solder for radio work. Hold the tip of the soldering iron against the work, and let the area to be soldered get hot enough to melt the solder, which will then flow around and into the joint, assuring that a good connection will be made. Don't use more solder than necessary.

There are two schools of thought on soldering and wiring. One favors the wrap-around method, where each component lead is wrapped around the terminal or lug before the soldering is done. This is fine if you're not planning on taking the connections apart. The writer belongs to the opposite school. If you allow the work to heat up, so that the solder will flow around and through the joint, you'll find that connections made without wrapping will hold as long as you

will want in amateur service. Most important, you won't accumulate a lot of gray hairs if you have to unsolder a few connections here and there. Taking equipment apart after joints have been wrapped is a real chore, particularly where miniature sockets are involved.

An important point to remember is that all r.f. leads should be as short and direct as possible. This is an absolute must in v.h.f. work. Start wiring anywhere. Many builders believe in wiring the heater circuits first, but in simple equipment like this there is nothing sacred about this practice. If your components and wires are placed parallel to the chassis sides you'll find that the finished product looks much better than a hodge-podge method of wiring — and it will be easier to service.

After all components on the chassis itself are wired it can be mounted to the panel and the wiring to the two potentiometers, C_4 , and the headphone jack added to complete the job. The headphone jack should be insulated from the chassis with fiber washers. The chassis top should be positioned $4\frac{1}{2}$ inches from the bottom of the panel, and $4\frac{3}{4}$ inches from the left side of the panel, as viewed from the front. In this position there is plenty of room left for the transmitter and power supply. Note that power wiring is done with shielded wire. This is not absolutely necessary, but it is good practice, as it helps to prevent feedback troubles and radiation from power leads. Do not use it for r.f. leads!

The tuning capacitor, C_4 , has one stator and one rotor plate removed from it to provide more band spreads. This can be done after the band has been found, if extra band spread appears desirable. Removal of plates is easily done if the builder is careful. Using a pair of long-nosed pliers, work the outside stator plate back and forth until it is loosened; then repeat the process with the outside rotor plate. Do this with the rotor plates in the all-out position.

Adjustment and Testing

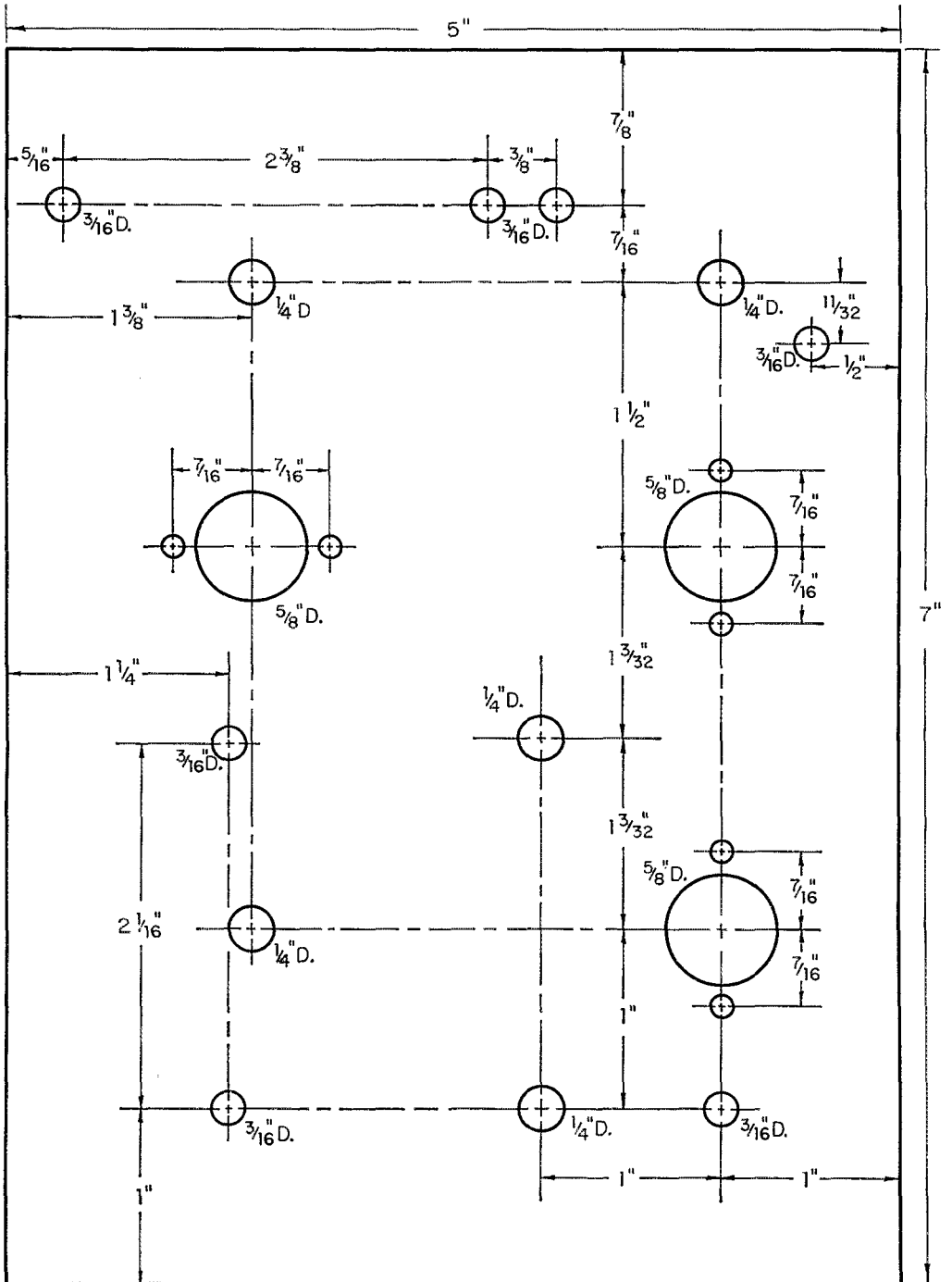
The heater lead is connected directly to the 6.3-volt terminal on the power supply. (Only one lead is needed because the other side of the heater circuit is grounded and the circuit is completed through the chassis.) The B-plus lead from the receiver is run to one of the terminals on the send-receive switch, S_{1A} , S_{1B} . The B-plus lead from the power supply runs to the arm on the same side of the switch, S_{1B} . Note that the antenna lead from the r.f. amplifier grid coil is brought out to a terminal strip, shown on the right side of the bottom view of the receiver. From this terminal a length of RG-58 coax is run to one of the terminals on the opposite side of the switch, section S_{1A} . The arm of this switch section is connected to the coaxial antenna fitting on the top of the cabinet, also by means of RG-58 coax. Be sure in making these connections that they are brought to the switch in such a way that the antenna and B-plus are both connected to the receiver with the switch in the "receive" position.

Before applying any voltages to the receiver, check the wiring to be certain that you have made no mistakes. The power supply shown in the interior photograph will be described next month. Apply heater voltage and be sure that

the tubes light up. Next, apply plate voltage and turn up the regeneration control, R_5 , until a rushing noise is heard in the phones or speaker.

The regeneration control should work smoothly, with the rushing sound coming in gradually. If

Fig. 2—Dimensions and placement of holes in the receiver chassis. The holes adjacent to the tube socket holes are $\frac{1}{8}$ -inch diameter



regeneration starts with a sudden "plop" try a different 6AK5 in the detector. Select the 6AK5 that gives the smoothest control. There may be a marked difference in tubes in this respect, even though they are satisfactory for other types of service.

Adjusting the receiver is easy if there is local activity on the band. If nobody is on the air, a signal generator or a grid-dip meter may be used to generate a test signal. Set C_4 with its plates about 75 to 90 per cent meshed. Now adjust the slug in L_2 so that it is nearly all the way into the form. Adjust C_5 until you hear a signal near the low end of the band (near 50 Mc.) with the tuning capacitor about 75 per cent meshed. If 50 Mc. does not appear at this point adjust either the slug or C_5 until it does. Now check where 54 Mc. comes on the dial. If it is not close to the all-out position, plates can be removed from C_4 as mentioned earlier, removing one plate at a time until the band is spread over most of the dial.

The slug in L_1 should be adjusted for maximum signal strength. Use a relatively weak signal for this, and one that is near the middle of the band, if uniform response across the band is desired. If you have no activity in the upper portion of the band, the slug can be adjusted on a signal around 51 Mc., in which case the response will be

fairly flat across the first two megacycles. In making adjustments use a fairly weak signal and tune for greatest quieting of the receiver noise.

What To Expect

Naturally, a three-tube receiver cannot be expected to perform as well as a good converter-receiver combination. It will, however, do a good job on all but the weakest signals. You should be able to hear anything that is workable with the low-powered transmitter to be described as a companion unit. The coupling capacitance, C_3 , should be set at the lowest value that will give satisfactory performance, as the lower it is the less will be the receiver radiation. Keeping the regeneration control at its lowest usable setting will also keep radiation down. Set it just above the point at which the rushing noise begins to appear.

With some care in adjustment of regeneration it will be possible to receive c.w., and to get a beat note that will help in locating weak voice signals. The control in this case will be set just below the point at which the superregenerative hiss begins to be noticeable.

Part II will describe the transmitter and power supply, and will include ideas for effective antenna systems for 50-Mc. work.

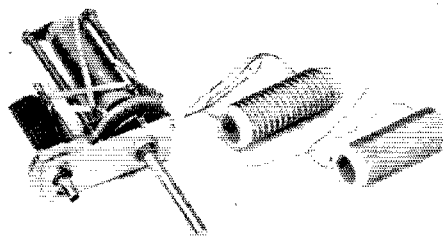
• New Apparatus

Baby Tank Circuit

THE Type GP-20 tank circuit shown in the accompanying photograph is a lower-power cousin of the GP-50 tank produced by the same firm, Harrington Electronics, Topsfield, Mass. It is intended for use in exciter and similar low-power stages where the power level does not exceed about 20 watts.

The assembly is a simple parallel-tuned circuit using a single coil appropriately tapped for covering 80 through 10 meters. The coil, wound on a ceramic form and mounted on a band switch, is associated with an air-padder type variable capacitor, the two being assembled on an aluminum bracket. The capacitor and coil are insulated from the bracket so the circuit can be used with series plate feed or, in case it is installed in the grid circuit of an amplifier, series grid feed. The same feature lends itself to the use of the bridge neutralizing arrangement when the circuit is used as a grid tank. The tuning capacitor has a shorter control shaft than the switch so an insulated coupling may be used.

A mounting bracket drilled for fastening under the band-switch nut is supplied for chassis mounting. Furnished straight, it can be bent to the desired mounting height.



New low-power transmitting tank for interstage use and (right) ceramic-form v.f.o. coils.

Also shown in the photograph are coils separately available for use as v.f.o. tank coils, wound on $\frac{3}{4}$ -inch diameter ceramic forms $2\frac{1}{4}$ inches long. The one with the smaller number of turns resonates at 14 Mc. with 80 $\mu\text{mf.}$ across it, and the larger one resonates at 3.5 Mc. with 100 $\mu\text{mf.}$ These inductances are suitable for the series-tuned Colpitts oscillator circuit on the frequencies mentioned.

VH.F. MEN who use any of the popular makes of grid-dip meters know that they all leave something to be desired when it comes to convenience above about 50 Mc. The coil for the highest range is a stubby loop of such dimensions that it is difficult if not impossible to couple it closely to many of the circuits one wants to check. In addition, at least one manufacturer divides his scales in such a manner that the 144-Mc. band comes close to the ends of the ranges on the last two coils. This makes for frequent coil changes when working in the vicinity of that band.

One method of working in cramped quarters with the coils that come with the instrument is to use a short transmission line, with loops at each end. This link-coupling is likely to be awkward. It also may be confusing, due to resonances in the line.

The plug-in inductor shown in Fig. 1 takes into account the fact that a given length of wire formed into a circle or semicircle has a lower

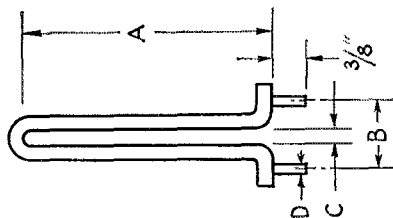


Fig. 1—Dimensions of modified v.h.f. inductor for Heathkit and Millen grid-dip meters. See table.

Improved V.H.F. Coil for Grid-Dip Meters

BY A. J. NEULAND, * W2IHW

resonant frequency than the same length made into a hairpin loop. As the sides of the hairpin are brought closer together the resonant frequency for a given setting of the tuning capacitor goes higher. It is thus possible to make a loop of considerable length that will tune the same frequency range as the stubby loop that is part of the original coil complement of the grid-dip meter. A loop 3 inches long will enable you to couple to many converter and transmitter circuits that cannot be reached with the tiny loop that came with the meter.

The copper wire used in the loops shown in Fig. 1 has a rectangular cross section 0.31 by 0.19 inches. Rectangular wire or rod makes a neater looking inductor than round wire, and it is easier to drill, but the same idea may be used with round stock. Inductance for the same loop spacing will be higher for round wire of the same

area of cross section. The table gives dimensions of several inductors made for use with Millen and Heathkit grid-dip meters.

It will be seen that Coil 2 duplicates the highest range of the Millen meter, but it is more than 21½ inches long, as compared with the Millen coil that is only about a half inch in length. Coils 3 and 4 give a more useful frequency spread for the amateur who is frequently called upon to work around both 144 and 220 Mc. They hit both amateur bands, with convenient leeway on either side of each band.

To make the loops it is well to start with a piece of wire about 10 inches long, for ease in handling. Secure the wire in a vise, with 5 inches extending. Bend the wire 90 degrees, using a block of wood as a cushion for the hammer. Using a spacer of a thickness determined from the table, bend the other side down and squeeze the sides together in the vise. Bend the ends at right angles, using the hammer and wood block. Drill the legs for proper pin spacing, insert pins and solder them in place. Trim the legs to a suitable length for the instrument.

The finished inductor may be sprayed with clear lacquer, to prevent shorts when using the meter near live circuits. The insulating quality of the lacquer coat should be tested at frequent intervals. It goes without saying that the meter should never be brought close to circuits carrying dangerously high voltages.

The new tuned circuit must now be calibrated. This can be done in several ways. Perhaps the simplest is to borrow another grid-dip meter that tunes the same frequency range. The oscillator may also be monitored in a receiver that tunes the desired range, if one is available. Lacking either of these facilities, calibration at a few points can be made with Lecher wires. As the calibration requirements for grid-dip meters are not critical, any of these methods should give satisfactory accuracy.

Dimensions and frequency ranges for Heathkit and Millen grid-dip meters are given below:

Coil	Freq. Range	A	B	C	D
1 (Heathkit)	85-240 Mc.	2.69"	0.75"	0.125"	0.116"
2 (Millen)	125-300 Mc.	2.69"	1.25"	0.05"	0.125"
3 (Millen)	120-270 Mc.	2.5"	1.25"	0.125"	0.125"
4 (Millen)	110-260 Mc.	3"	1.25"	0.125"	0.125"

* 206 S. Highwood Ave., Glen Rock, N. J.

The "Transimatic"—A Transistorized Automatic Keyer

BY CECIL R. COALE, JR.,* W5VHO

An electronic key using transistors instead of tubes, designed especially for portable and mobile operation. Power can be taken either from the internal flashlight-cell supply or from an external 6-volt source. Dots and dashes are self-completing.

THE "Transimatic" is an electronic key that features self-completing dots and dashes, complete portability, low stand-by power consumption, no warm-up period, and a key lever at ground potential. It is primarily intended for battery-operated field-day operations, automobile mobile, and other portable operations. Its speed range is about 10 to 30 w.p.m. When operating on internal power, the normal battery life is about four hours.

Operation of the Transimatic is simplicity itself, as the speed and ratio of the dashes and dots are controlled by a single rotary switch. The "weight" of the code characters is set initially by the relay contacts with one adjustment for the entire speed range.

The transistors, Fig. 1, act as switches that turn the relay, K_1 , on and off as dictated by the timing networks, C_1R_{3-5} (dash) and C_2R_{7-10} (dot). The actual operating cycle of the keyer is as follows:

1) Assume the key is pressed in the dash direction.

2) Capacitor C_1 charges very quickly to 6 volts.

3) Current flows through the current limiter, R_1 , into the base of the dash transistor, Q_1 , causing contacts K_{1A} to close very rapidly.

4) Contacts K_{1B} open, disconnecting the key-lever from the charging battery.

5) C_1 gradually discharges through the base resistor R_1 and one of the timing resistors on S_{1A} . This continues until the base current drops low enough to cause the relay to drop out.

6) Contacts K_{1A} open and contacts K_{1B} close, reconnecting the key lever to the charging battery and completing the cycle.

7) The keyer is ready to start the same cycle over, make a dot in like manner, or remain neutral, depending on the position of the key lever.

Notice that as soon as the relay locks in, the key lever is disconnected from the charging source, thus making it impossible to cut a character short, or make one too long by running a dot and dash together.

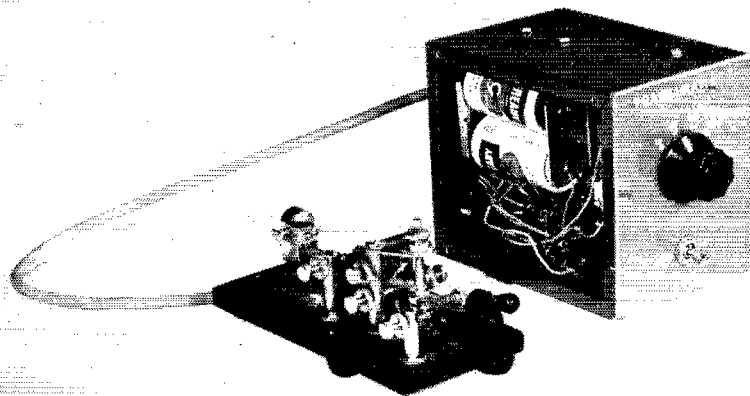
Construction

Placement of the parts is not critical, and any suitable chassis may be used for construction.

The transistors are mounted in moulded bakelite 9-pin miniature tube sockets, with all the socket contacts removed except for 1 and 5. The socket is mounted $\frac{1}{8}$ inch above the chassis using a 1-inch 6-32 machine screw and spacer, with the screw head countersunk below the upper surface of the tube socket to prevent it from touching the transistor. When inserting the 2N256 in the socket, orient it so that the base pin goes in contact 1 and the emitter pin goes in contact 5. The collector connection is made with

* 909 Montgomery St., Fort Worth, Texas.

The "Transimatic" is housed in a 4 × 5 × 6-inch box. Four switch-selected speeds ranging from 10 to 30 w.p.m. are available. The key is a Vibroplex modified to bring out separate circuits from the dot and dash sides.



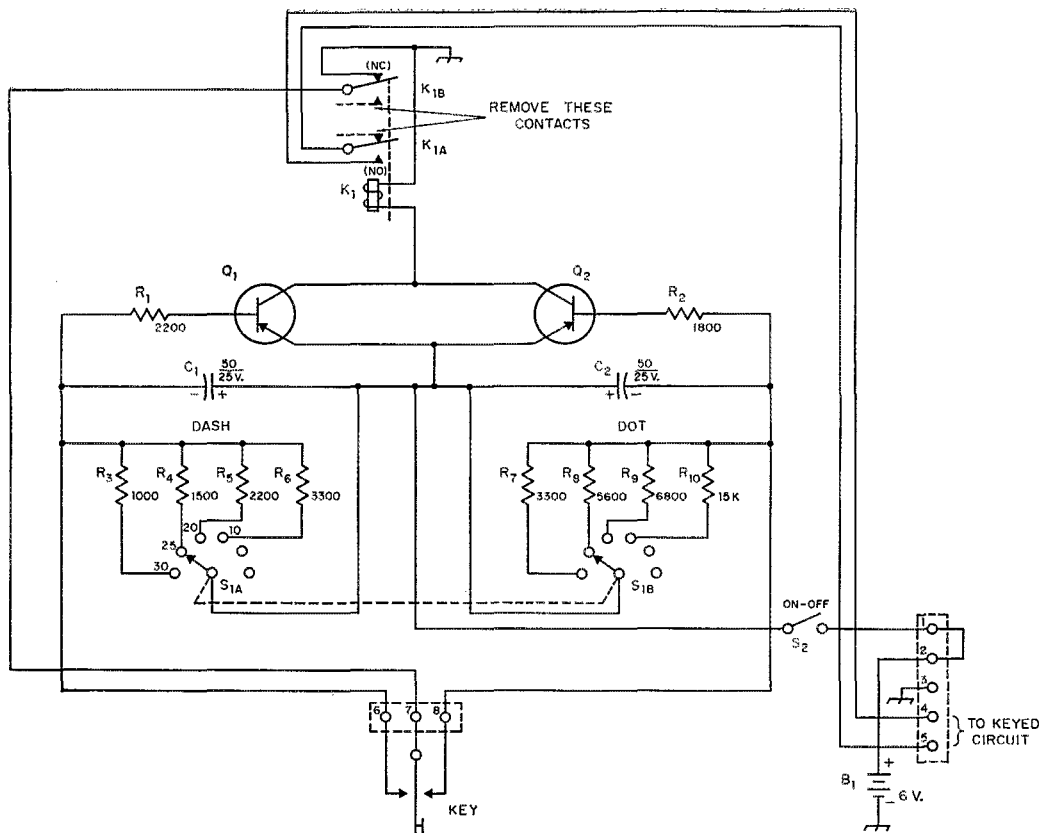


Fig. 1 — The "Transimatic" circuit. Capacitances are in μf , resistances are in ohms.

B₁—6 volts; 4 size "D" flashlight cells.

C₁, C₂—50- μf . electrolytic, 25 volts.

K₁—6-volt d.c. relay, 2-pole, double-throw (Potter & Brumfield KA-11D, modified as described in text).

Q₁, Q₂—2N256 or equivalent.

R₁-R₁₀, inc.— $\frac{1}{2}$ -watt carbon, 10 per cent tolerance.

S₁—2-pole 6-position rotary, 4 positions used.

S₂—S.p.s.t. toggle.

a wire soldered to a $\frac{1}{4}$ -inch 6-32 screw inserted in either end of the heavy flange on the transistor, with a 6-32 nut to fasten the screw in the flange. Be sure that this flange is isolated from the chassis. Also, when wiring the transistor sockets make certain that the positive end of the battery goes to the emitter pin; otherwise a transistor burnout is certain.

The relay must be modified before it is suitable for use in the keyer. Remove the lower contact from one set of the fixed relay contacts; the remaining normally closed contacts are the "disconnect" contacts. Likewise, remove the upper fixed contact from the other set of relay contacts; the remaining normally open contacts are the keying contacts. Now connect the relay coil in series with a 6-volt d.c. source, a d.c. milliammeter (500-ma. range) and a variable resistor of about 1000 ohms. Then, by a process of bending the relay frame spring mount and stretching the spring, adjust until the relay drops out at no more than 15 ma. The maximum relay current

in the keyer will be about 250 ma. This difference between the maximum and drop-out currents is necessary for proper operation of the keyer, and insures that the timing capacitors will be about 98 per cent discharged between the time the relay drops out and the next cycle is initiated. This means that if the word "TOM" were sent on the bug the difference in length between any pair of the dashes would be less than 2 per cent. The same idea holds for dots and combinations of dots and dashes.

The dry-cell holders are mounted on a small piece of wood so that the frames of the mounts are insulated both from each other and from the chassis.

A Vibroplex semiautomatic key was selected as a keying switch for the keyer. In order to use the bug as a simple s.p.d.t. switch, remove the jumper between the dot and dash contacts under the heavy cast iron base. Then tie down the vibrator of the bug to the damper. The travel of the keying lever is strictly personal

preference; however, the usual rule is the less travel the better. Clean the Vibroplex contacts periodically to be sure no corrosion forms on them, since corrosion might impair the performance of the keyer.

Adjustment

After thoroughly checking your work against the schematic diagram, the key may be adjusted for optimum performance. With luck, using the specified component values, the keyer should work all right as soon as the power is applied; then the only adjustment is to set the speed selector at a level that can be adequately handled.

However, because of the wide variations between individual transistor characteristics the ratio of dash to dot speed will probably be too short or too long when the keyer is first used. If this is so, varying the value of either base resistor, R_1 or R_2 , a few hundred ohms will make the speed controls track properly. For instance, if the dashes are too long, lower the value of R_1 in steps of 100 ohms until they shorten to the right length. If they are too short, then raise R_1 in like manner. A similar adjustment holds for the dots by changing the value of R_2 . Sometimes interchanging the two transistors helps considerably. If the dash-dot ratio appears correct but the lowest speed setting is too slow, then lower both base resistors in steps of 100 ohms simultaneously. Conversely, if they are too

fast, raise the values of both base resistors.

The most practical way to tell when the dash-dot ratio is correct is to adjust one of the base resistors until the frequency of the dots is twice that of the dashes. This sets the ratio between the dash length and dot length at approximately 3:1, which is the ideal ratio. If this is the first time you have ever used an electronic key, tune in W1AW and adjust your dash dot ratio until it sounds like the machine-sent code from W1AW.

Adjusting the relay spring for a minimum drop-out current of less than 15 ma. automatically should have set the ratio of dot length to space between dots at approximately unity for the 20 to 25 w.p.m. speed range. This should represent an optimum weight setting for this key. However, if more space is desired between the dots, bend the armature contact of K_{1B} slightly away from its fixed contact. Conversely, if less space is desired — i.e., more "weight" — bend the armature contact of K_{1B} slightly toward its fixed contact, thus shortening the travel of the keying contact, K_{1A} .

To use external power, remove the jumper wire and connect the positive side of a 6-volt source to terminal 1 and the negative side to terminal 3. Removal of the jumper disconnects the internal power supply from the keyer.

For mobile work, or extended portable work in remote locations, 6 volts may be conveniently obtained through a plug in the cigarette lighter socket if the car has a 6-volt electrical system.

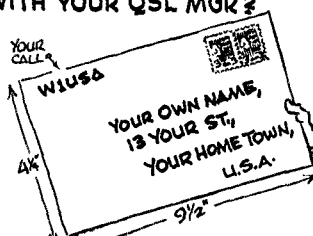
A.R.R.L. QSL BUREAU

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-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

- W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
- W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
- W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
- W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
- W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
- W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
- W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.
- W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
- W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
- W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.

- VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
- VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Pointe Claire, Montreal 33, 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, VE6FO, 833 10th St. N., North Lethbridge, Alta.
- VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
- VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
- VO — Ernest Ash, VO1AA, P.O. Box 8, St. Johns, Newf.
- KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
- KH6 — Andy H. Fuchikami, KH6BA, 2543 Namaau Dr., Honolulu, T. H.
- KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
- KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

**IS YOURS ON FILE
WITH YOUR QSL MGR?**



Optimum Stacking Spacings in Antenna Arrays

Effect of Source Beam Width on Stacking

BY H. W. KASPER,* K2GAL

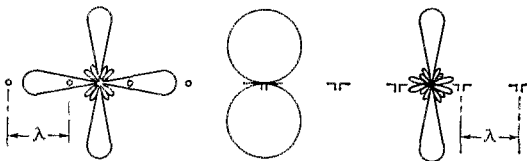
When the "elements" of an antenna array are in themselves beam antennas, as in multiple-Yagi antennas, the question of the optimum stacking spacing becomes of very great interest. Available data covers principally stacked dipoles. This article outlines the principles and presents essential design information in two graphs.

DURING antenna discussions one often hears the remark that stacking two antennas results in a 3-db. gain improvement. Actually, a more accurate statement is that stacking two antennas can result in a 3-db. gain improvement if the proper spacing is chosen. The latter part — i.e., the proper or optimum spacing idea — has been grasped at by many amateurs. For instance, W2PAU¹ and W2NLY² have found that a spacing greater than $\frac{1}{2}$ wave length is needed in order to achieve maximum gain from multiple-element arrays.

The *Handbook* and other literature point out

* c/o Stavid Engineering, Inc., Route 22, Plainfield, N. J.
¹ Brown, "The Wide Spread Twin Five," *CQ*, March, 1950.

² Kmosko, "More Gain with 30 Elements," *CQ*, November, 1950.



THE FIELD PATTERN (array factor) of four Isotropic Sources \times THAT OF A SINGLE DIPOLE = THE FIELD PATTERN OF FOUR COLLINEAR DIPOLES

that maximum gain for two collinear dipoles occurs at approximately $\frac{3}{4}$ wave length spacing. Mention is also made of the fact that large spacings are needed with high-gain Yagis in order to obtain an appreciable increase in gain. The usual explanation for this increase in gain is that the "capture area" has been increased.

Before going on, two important points need clarification. The first of these is the 3-db. gain improvement associated with stacking two elements of an array. This result is the misuse of the often quoted formula for power gain:

$$G = 4\pi \frac{A}{\lambda^2} \quad (1)$$

where A is the area and λ is the wave length. Hence, if we double the area the power gain is doubled. The relative increase in db. is then given by

$$10 \log G_2/G_1 = 10 \log 2 = 3 \text{ db.} \quad (2)$$

This formula was derived for a uniformly-illuminated aperture. In practice, this condition is approached in certain types of antennas. However, it should be evident that the term "area" implies physical area. An array of a large number of dipoles presents a physical area and a corresponding gain. Doubling the physical size of the array does double the power gain. In contrast, a single dipole has very little physical area, and if any geniuses think that doubling the wire diameter will double the area and the power gain — well, they might as well go back to their stringless yo-yo's. This brings up our second point, which is "capture area."

Directivity and Gain

The concept that "area breeds gain" leads one to ask how a dipole, which has an insignificant amount of physical area, obtains its gain. Here we must revert to even more-fundamental concepts. The first is that of directivity, D , defined³ as the ratio of the maximum radiation intensity from a given source to the radiation intensity from an isotropic source radiating the same total power. (An isotropic source is one that radiates energy uniformly in all directions.) Directivity can also be expressed as

$$D = \frac{4\pi}{B} \quad (3)$$

where the beam area B is the solid angle through

³ The subject of gain is well covered in *Antennas* by J. D. Kraus, published by McGraw-Hill, New York City.

which all the power radiated would stream if the power per unit solid angle equaled the maximum value over the beam area. For pencil-beam antennas

$$B = \theta_1 \phi_1 \quad (4)$$

where θ_1 and ϕ_1 are the half-power beam widths, in radians, in each plane. This results in the often-used "gain" equation,

$$D = \frac{41,253}{\theta_1^\circ \phi_1^\circ} \quad (5)$$

where θ_1 and ϕ_1 are now in degrees.⁴

Power gain is defined as

$$G = kD \quad (6)$$

where k is an efficiency factor and is equal to 1 for a lossless antenna. The concept of directivity is universal in that it is strictly a function of the antenna pattern and is independent of losses.

By comparing⁵ the maximum radiation intensity of a dipole with the radiation intensity of an isotropic source radiating the same total power, and assuming a lossless antenna, we arrive at the magic figure of 2.14 db., which is the gain of a dipole over an isotropic source.

Effective Aperture

So far we have shown why a dipole has gain, but the question of area remains. This requires another concept similar to that of "capture area." Kraus calls it "effective aperture," and defines it as the ratio of the power in the terminating impedance to the power density of the incident wave. If the terminating impedance is adjusted to produce maximum power transfer (the reactances of the load and antenna cancel, and the resistances are equal), and the antenna is lossless, this ratio is called the "maximum effective aperture" (A_{em}). By more skillful mathematical manipulation we obtain, for a dipole,

$$A_{em} = 0.13 \lambda^2 \quad (7)$$

Hence, the maximum effective aperture of the dipole is approximately the same as an area $\frac{1}{2}$ by $\frac{1}{4}$ wave length on a side. The physical significance of this aperture is that power from the incident plane wave is absorbed over an area of this size by the dipole and is delivered to its terminating resistance. The directivity of any antenna is related to its maximum effective aperture by the formula

$$D = \frac{4\pi A_{em}}{\lambda^2} \quad (8)$$

Now that we have attached a fictitious physical area to any physically small antenna another question arises (problems, always problems!). Since the effective area represents a so-called power-gathering area, how should dipoles or

Yagis be spaced for maximum utilization of their respective A_{em} 's? Unfortunately, while the formulas above point the way, they do not give the answer. Although formula (7) shows the A_{em} of a dipole to be approximately equal to an area $\frac{1}{2} \times \frac{1}{4}$ wave length, other geometric figures (ellipse, circle, etc.) could just as well be used, so long as the area is equal to $0.13 \lambda^2$. Likewise, formula (8) shows that as the directivity of an antenna increases (as it does when more directors are added to a Yagi) its maximum effective area increases correspondingly. This suggests that the stacking spacing should also keep increasing.

Pattern Multiplication

To show that this is so, and also to determine the optimum spacing for maximum gain, the author employed the principle of pattern multiplication.⁶ It states that the field pattern of an array of nonisotropic but similar point sources (i.e., an array of dipoles, or Yagis, or horns, etc.) is equal to the field (voltage) pattern of the individual source multiplied by the field pattern of an array of isotropic point sources having the same locations, relative amplitudes, and phases as the nonisotropic sources. It should be pointed out that to be called "similar," the patterns of the individual sources must not only be of the same shape, but must be oriented in the same direction. Although these sources may be of finite size (like Yagis) each can be considered to be a point source situated at the point in the antenna to which phase is referred. Fig. 1 illustrates a simple case of four collinear dipoles.

The field pattern of the isotropic sources at various spacings and phases is called the "array factor." Hence, by taking the field pattern of one element of an array (consider two stacked elements, i.e., $n = 2$, where one element has a 30° half-power beam width in the stacking plane) and multiplying by the various array factors corresponding to the spacings chosen, a series of patterns results as shown in Fig. 2. These patterns are the same far-field patterns you would get by stacking two 30° Yagis at the spacings shown (assuming your feeders don't radiate!).

Gain vs. Stacking Spacing

We now have a series of patterns plotted to the same relative scale, and we want to determine which pattern results in maximum gain. Previously we saw that for a 100 per cent efficient antenna the directivity is equal to the power gain, and that the directivity is simply a measure of the antenna's beam width. By measuring the beam widths from the patterns and using the proper beam width in the opposite plane, we can calculate D and, finally, db. gain.⁷

⁶ Kraus, *op. cit.*, p. 67.

⁷ D as given by equation (5) is for pencil-beam patterns. For the special case of doughnut type patterns a much better approximation is given by $D = \frac{1}{\sin^2\left(\frac{\phi_1}{2}\right)}$. The gain

figures given should not be taken as absolute values. Of more importance is their relative value for various spacings.

⁴ Example (from Kraus, *op. cit.*): for

$\theta_1 = \phi_1 = 75.2^\circ$, $D = \frac{41,253}{(75.2)^2} = 7.3$. For this example the

error is about 10 per cent. The error decreases with decreasing beam width.

⁵ This comparison is done mathematically by integration.

These gain figures are valid, but only to a certain point. By looking closely at the trend of the patterns for two collinear dipoles shown in Fig. 5, we see that as the stacking spacing is increased a point is reached where the side lobes approach equality in magnitude with the main lobe. But even before this happens we are "wasting" power and gain (actually redistributing the power in multiple lobes), and eventually a point is reached where diminishing beam width not only is no longer synonymous with increasing gain, but the gain actually decreases. The author has taken a -10 db. side-lobe level as the change-over point. In some applications side-lobe level is an important, if not the dominant, factor in array design.⁸ However, in our case we are simply dealing with sources that are fed in phase and with equal amounts of power.

By drawing the resultant patterns of an array for various element beam widths, and by varying the stacking spacings, the author arrived at Fig. 3. The curves hold for two stacked elements (sources) such as two Yagis.⁹

When the number of elements stacked in an array is increased (individual-element beam width kept constant), the array factor changes. To see what effect this has on the curves given in Fig. 3, the same procedure was used for four elements and the result is shown in Fig. 4. As the number of elements is increased, the array factor pattern becomes replete with minor lobes, and the process of drawing the resultant patterns is no longer a simple task. Because of this, curves were drawn only for $n = 2$ and $n = 4$. Optimum spacings for other values of n can be "guesstimated" from Figs. 3 and 4.

Conclusions

A number of interesting conclusions can be drawn from the curves and figures:

⁸ In such cases other schemes are used to reduce the side-lobe level, the most common being the tapered-illumination method, i.e., the magnitudes of the element currents are set in a prescribed fashion. The Dolph-Tchebycheff distribution is the most popular, since for a given side-lobe level, it gives the smallest possible beam width.

⁹ The individual source patterns used had no side lobes. The results hold very well even with -10 db. side lobes since the multiplication process tends to reduce them.

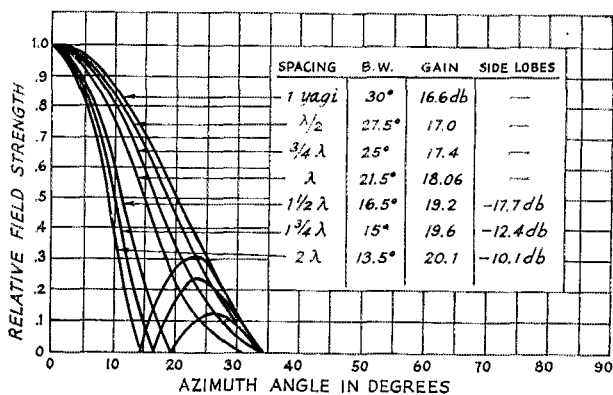


Fig. 2—Theoretical field patterns and gain vs. spacing for two Yagi sources having half-power beam widths of 30 degrees, fed in phase.

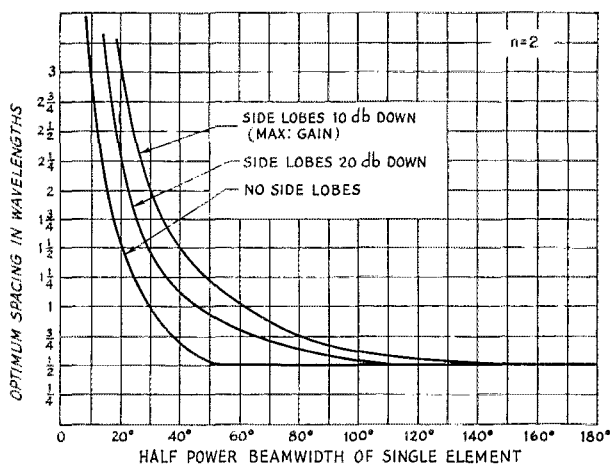


Fig. 3—Optimum stacking spacing for two sources ($n = 2$). The spacing for no side lobes, especially for small beam widths, may result in almost no gain improvement with stacking.

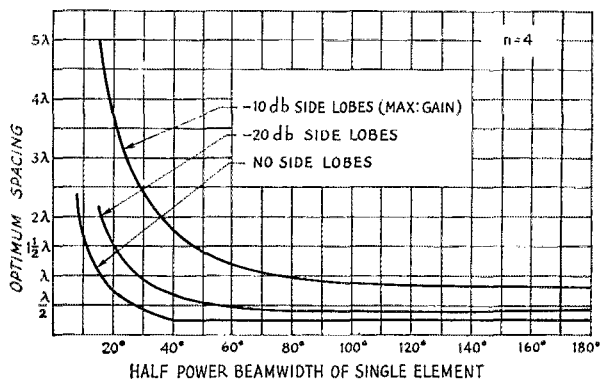


Fig. 4—Optimum stacking spacing for four sources ($n = 4$). Note: Spacings less than $1/2$ wave length are physically possible only for shortened dipoles in the case of collinear elements.

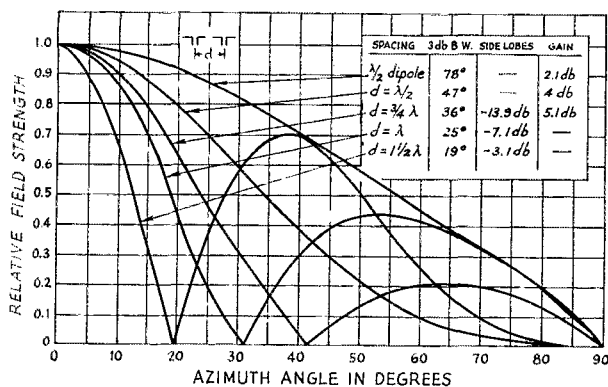


Fig. 5—Field pattern of two-element collinear dipole array.

1) For narrow-beam Yagis (approximately 40° and less) the "E" and "H" plane beam widths are approximately equal¹⁰ and the optimum stacking spacings are the same in either plane.

2) For a given beam width, increasing the number of elements (sources) increases the optimum stacking spacing. Smaller beam widths require a relatively larger increase.

3) For a collinear array of four elements, it is impossible to obtain a pattern without side lobes until the beam width of the individual end-fire elements comprising the array is less than about 28°. For higher values of n , the zero side-lobe condition occurs only for smaller beam widths.

4) Appreciable gain is sacrificed by designing for a -20 db. (or lower) side-lobe level, especially when the individual elements have small beam widths.

5) As deduced from the maximum effective aperture concept, high-gain elements require larger spacings in order to achieve any appreciable increase in gain.

6) It's a tough job no matter how you look at it.

It is always nice to be able to back a theoretical discussion with experimental evidence. Delving back into the September, 1956, issue of *QST*,¹¹ we find patterns and gain figures for a two-element array. The "individual sources" are three-element Yagis stacked in the "H" plane (vertically). Referring to Part I of the article,¹⁰ the H-plane beam width of a three-element Yagi is approximately 75°. Looking at our Fig. 3, maximum gain should occur when the two Yagis are spaced a little over $3/4$ wave length apart. That this is indeed the case is pointed out in the Yagi article.

The generality of Figs. 3 and 4 should not be overlooked. These curves are useful for a dipole or Yagi array or for any type of antenna element, providing the elements are similar. They provide a quick and simple method of optimizing array design.

In practice, slight deviations from the theoretical are quite common. In our analysis, these deviations can be attributed to the assumptions that the elements have no side lobes, are lossless, and the effect on gain of mutual impedance is small. The assumption that the radiation pattern of an individual source does not change in the presence of others leads to errors in pattern shape at low levels of radiation (below -20 db.).

¹⁰ Greenblum, "Notes on the Development of Yagi Arrays — Part I," *QST*, August, 1956, Figs. 3 and 4. The "E" plane is the one containing the individual radiators comprising the source or element and the "H" plane is at right angles to the axes of the radiators.

¹¹ Greenblum, "Notes on the Development of Yagi Arrays — Part II," *QST*, September, 1956.

Strays

KN1BUR overheard W3SEE working KN8III.

K4RFY called CQ and raised W5GWB and K9GWB simultaneously.

K2POO suggests the following sentence as an aid to remembering resistor/capacitor color coding. "Bright Boys Rave Over Young Girls But Veto Getting W'ed." (This is a censored version of the armed forces memory aid.)

W5KF and ZS1AL have been maintaining a c.w. schedule on 14 Mc. since November, 1956, three evenings per week. Only three times during 165 schedules did contact fail because of poor conditions. Two other times contact failed because of equipment breakdown. The last 75 schedules have been maintained without a miss. ZS1AL runs 50 watts with a windom antenna, while W5KF runs 200 watts to a short 2-element beam.

Three Modifications for the NC-300

BY EUGENE H. HASTINGS,* W1VRK

Here are three modifications of a popular receiver that will add to the performance. One job requires a little soldering skill; the other two are easy.

THE NC-300 appears to be a popular receiver, and rightly so. It offers many excellent operating features which formerly were available on only far more expensive units. In using the NC-300 these past few months, however, I have made three changes which I find improve an already excellent receiver.

15-Mc. BC on 28

The first change I made was due to Radio Moscow's several powerful radio stations in the 15-Mc. band. These stations, depending on conditions, would often appear S4 to S7 on the 10-meter band between approximately 28.1 and 28.7. This proved very annoying when trying to ferret out weak 10-meter DX stations! This condition is most noticeable in the summer months. The only way to get rid of these unwanted images was to actually "short out" incoming 15-Mc. signals with a tunable trap. It was found that placing a trap on the antenna terminals worked, but 15 Mc. is so close to 14 Mc. that 20-meter signals were impaired. It was therefore necessary

* 28 Forest Ave., Swampscott, Mass.

to place the trap so that it would only function on 10 meters; i.e., on the 10-meter position of the band switch. The trap will not work with another form of external switch, for the leads become too long and the effectiveness is cut considerably. This is a job that should not be tackled unless the worker is a very careful solderer, and with a very small iron at that, for the necessary spot on the band switch is the most inaccessible area on the

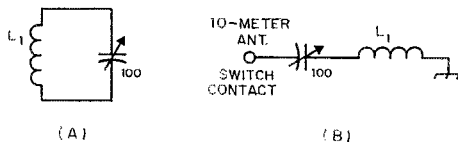
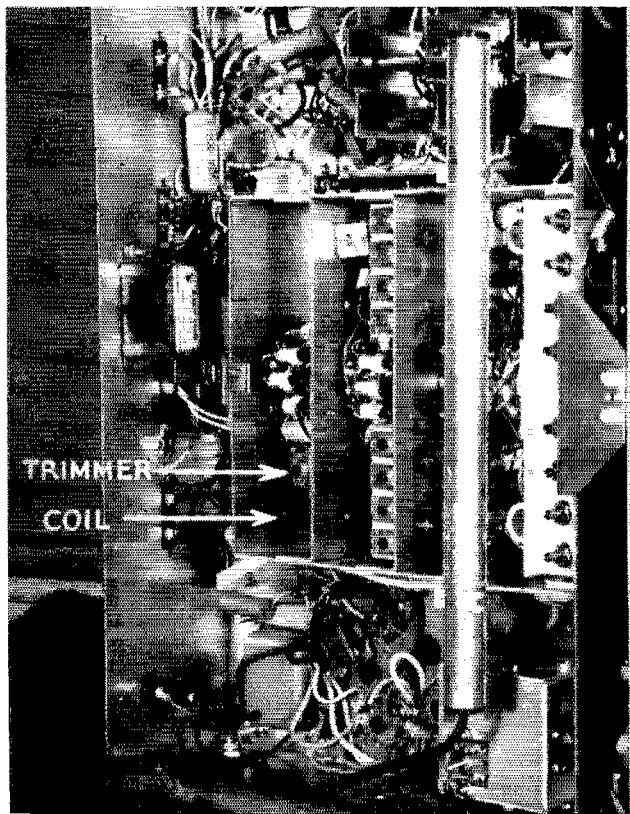


Fig. 1—The 15-Mc. trap is first peaked as a parallel-tuned circuit at 15 Mc. (A) and then connected as a series circuit (B). The coil L_1 is 5 turns of No. 22 wire $1\frac{1}{2}$ inches in diameter.

entire switch! Results are gratifying, however, as nothing is more annoying than the strong voice of Radio Moscow "coming back" to a CQ! The trap uses an ordinary mica trimmer (maximum value at least 100 $\mu\text{f.}$) and a coil $1\frac{1}{2}$ inches in diameter. Use about No. 22 wire or whatever you have handy in that range and dip with a grid-dip oscillator so that resonance is obtained somewhere in the mid-range of the trimmer. Once the coil and capacitor have been installed, the

Modified NC-300, showing the location of the 15-Mc. trap and the heating element. Filter choke mounted on rear apron near antenna terminals is part of an audio filter.



final tuning will have to be made on the Moscow signal itself or with a grid-dip meter used as a signal generator. Make a parallel circuit to determine the coil dimensions, then change to series for the trap. The settings will stay the same.

Audio Change

The second modification consists of a low-pass filter installed in the grid circuit of the 6AQ5 audio output tube. It is an unfortunate characteristic of the NC-300 that audio by-products similar to those generated by clipping in a speech amplifier are apparent in the output to a discriminating listener. It is a good deal like the sound of a signal when the noise limiter is on: a little fuzzy, not really clean. I checked this characteristic on other NC-300s than my own before deciding to do something about it and, sure enough, they all had the same characteristic.

The installation is a simple one: Merely break the lead to the grid of the final audio tube from the plate of the preceding stage and insert the filter, as shown in Fig. 2. This change results in much cleaner signals and you'll be giving "fine business" audio reports to stations whose audio previously was not what it should have been.

Reduced Warm-Up Drift

The third modification is the addition of a "Dampp Chaser" similar to those used in the Hallierafters SX-101. This is an 8-watt heating unit¹ which goes day and night and gives a warm dry-air characteristic to the under side of the receiver. This assures maximum stability of the components used in the NC-300 and minimum

¹ Made by Dampp-Chaser, Inc., Hendersonville, N. C.

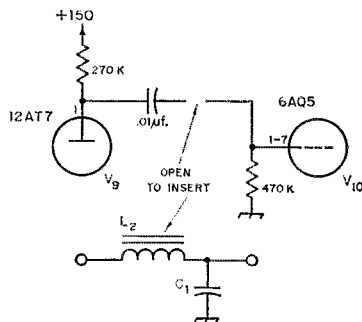


Fig. 2—A low-pass filter in the audio improves the quality.

C₁—500 to 700 µµf.

L₂—20-hy. 15-ma. choke (Stancor C-1515).

warm-up drift, especially in damp weather! It is necessary to cut V notches in the sides of the shielding surrounding the converter coils so that the Dampp-Chaser may be put up enough inside the receiver for clearance. Placed as shown in the photograph, maximum stability is afforded the second converter stage (which is not crystal controlled and drifts about 4 kc. in warm-up) without sacrificing its effectiveness in the rest of the receiver. The line cord supplied with the unit is fed neatly out through the back of the receiver through one of the many openings available. The cord should be physically attached to the chassis with a clamping arrangement to prevent accidental damage through pulling on the cord. Mounting clips come with the Dampp-Chaser; make two small right-angle brackets on which to attach the clips to the sides of the shielding.

[Another modification is described in Leise, "Squeeh for the NC-300," *QST*, March, 1958 — *Bd.*]



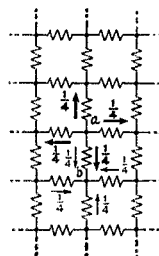
Here's a teaser from Harry Long, W7CQK of Renton, Wash.

You are handed a "black box" that has three binding posts on it. Always fast on the draw, you whip out your trusty pocket ohmmeter and measure the resistance between each pair of binding posts. Each measurement indicates exactly 20 ohms.

Problem: What is in the black box? (When you have worked it out, look on page 164 to check your answers. Yes, there are *two* possibilities.)

— . . . —

To solve last month's fish-net problem, assume a 1-ampere current is put in at knot *a* and taken out along the periphery of the net. The symmetry of the net, and its semi-infinite extent, will cause the current to divide as shown by the heavy



arrows and figures.

Now remove the current described above and connect a battery so that a 1-ampere current is taken out at *b* and put in along the periphery of the net. The currents in the resistors adjacent to *b* will have the values and directions shown by the light arrows and figures.

Now connect both batteries simultaneously; We., put 1 ampere in at *a* and take 1 ampere out at *b*. From superposition, the current on the periphery will be zero and the current in the resistor between *a* and *b* will add to $\frac{1}{2}$ ampere. The voltage drop from *a* to *b* is therefore $\frac{1}{2}$ volt and the effective resistance is $\frac{1}{2} \div 1 = \frac{1}{2}$ ohm.

SIDELINE SIGHTINGS

2895 Arona St.,
St. Paul 13, Minn.

Technical Editor, *QST*:

Here in St. Paul (45°2' North latitude), a number of satisfactory radio "sightings" of the first U.S. satellite were obtained and tape recorded during the first week of orbit.

This project began at W0WVM early last fall in order that the necessary antenna equipment could be added to the collection of ham-band antennas before the snow began to fly. The primary antenna consists of a pair of 4-element Yagis stacked vertically a half wave length apart and rigged to be rotatable in azimuth. This antenna turned out to be almost exactly equivalent in dimensions to the antenna described in the December 1957 issue of *QST*. In anticipation of a high-apogee orbit or a possible high-latitude vertex of the first or later satellites, a seven-element cophased linear array was strung from east to west to provide a fan-shaped pattern on the meridian. The gain of the stacked array is about 12 db, with a horizontal beam width of about 40 degrees, while the collinear has only half as much gain but has a broader nose.

A 417A was built into a converter very similar to the one described by W1VLIH in the November 1956 issue of *QST*. Considerable effort was given to reducing the noise output of the converter by using the little gimmick called a noise generator (see W1HDQ article in July 1953 *QST*). There is no question but that a noise generator is a handy device, as a few short checks and adjustments made with its help gave a 4-db. advantage in signal-to-noise ratio over the signal generator method of alignment.

An intermediate frequency of 6350 kc. was used simply because of the availability of 40-meter crystals which would work easily in the overtone beat-frequency source needed to mix with the 108-megacycle channel. Another receiver was set up to supply WWV time checks, and the outputs of both were bridged into the tape recorder.

The first radio sighting was at 10:45 p.m. CST the next evening after the launching of the satellite. This sighting was of short duration (one minute 55 seconds) and the excitement was so intense at the time that use of the h.f.o. for a Doppler check was forgotten. The result was uncertainty as to whether the signal was actually the satellite, and that meant more hours of listening for another such signal. This signal did turn up the next evening at 8:40 p.m. CST. These two sightings provided a basis for computation of orbital transit time which turned out to be one hour 54 minutes 48½ seconds. This figure was close enough to that given in press and radio to permit a "count down" in reverse to the published time of the initial sighting over San Diego during the first orbit. This check-back agreed to within twenty seconds over a span of nearly 69 hours. It was thus possible to approximate the time of the next possible sighting and thereby minimize the "on watch" periods. During the next four days, seven more passages were heard and taped. It is of interest to note that three of these sightings occurred on the same day, February 6, at approximately 5:22 p.m., 7:23 p.m. and 9:25 p.m. CST.

The collected data from these nine sightings provided a wealth of information useful for further calculations and conjecture. The first and most eye-opening revelation was, of course, the mere fact of reception of signals at this northern latitude. The S-meter readings showed a definite signal-strength relationship to the duration of the radio sighting. The signal strength of the short passages (2 to 3 minutes) was always 16 db. above the receiving system noise level, and the long (8 to 10 minute) passages were always 26 db. above the noise. Obviously the long duration, high-level sightings occurred when the northern vertex of the satellite path was on or near the meridian (93° 10' west). It is of interest to note that, especially during the higher-level passages, the lower-gain antenna gave a very readable signal.

One conclusion that can be drawn from this "either-or" signal strength pattern is that, at the frequency involved, the apparent or radio horizon is quite a few degrees above the actual because of heavy ground attenuation effects at low angles of reception.

The fading pattern of the received signals is noteworthy.

On the short-duration, lower-level and more distant sightings, the rolling effect was more pronounced and had a much shorter period than did the longer passages. On one short passage 18 heavy cyclic fades were observed in a one-minute period as contrasted with only 3 or 4 very light fades per minute during a long passage. It seems improbable that this cyclic fading pattern is caused by multipath propagation in the ionosphere because of the high frequency involved, and the unique position of the satellite with respect to the observer. Possibly the effect can be attributed to some complex relationship in polarization of the wave fronts because of the relative change in velocity of approach and the resulting differences in the polarization pattern of the waves as they hit the horizontal antenna at this location.

Some of the short passages were used to record Doppler effect. The incoming Doppler frequency correction was higher than expected on some sightings, but by calculating the position of the satellite at the start of these sightings it became apparent that the direction of approach could provide a maximum or "head on" Doppler correction. The greatest DX logged was a point in the orbit over the Pacific Ocean, about 500 miles west and a few degrees south of San Diego.

The longer passages provided plenty of time for demodulation and recording of telemetry samples. These telemetry recordings were later run through a band-pass audio filter and onto a fresh tape. The chorded tones came out hearable if not decipherable.

A graph was constructed to see if there was any correlation between the times of sighting, the strength of the signal, and the angular height of the satellite at time of reception. It was immediately apparent that a correlation did exist between the signal strength and duration of sighting as well as between the times of sighting and the estimated time of arrival on the meridian. Construction lines drawn diagonally through the sighting points seem to indicate an apparent horizon line which has an angular difference from the actual. This further confirmed the suspicion, indicated earlier by S-meter readings, that there is considerable ground attenuation at the low angles of reception.

The conclusions that can be drawn from the results indicate that much useful information can be gleaned from a low angle "Sideline Sighting" of a satellite in orbit.

— Chuck Kunze, W0WVM

STILL MORE ON THE HBR-14

Box 755
Route 2
Benton, Arkansas

Technical Editor, *QST*:

For the benefit of those who may be a little uncertain about alignment of the coils in W6TC's HBR-14 receiver (July 1957 *QST*), I have a couple of suggestions to add to the letter from W6TC (February *QST*) in which he clarified the coil-winding instructions. My suggestions, concerned with the adjustment of band spreading, are further explained in the *Handbook* where additional reading will be helpful to those on new ground in constructing the HBR-14.

Upon locating one end of the band with the crystal calibrator or station transmitter, determine the spread to the other end of the band. In my case, some bands were compressed to 60 or 70 scale units while others were spread greater than 100 scale units and could not be held on the dial. Adjust the oscillator coil L_3 as follows to obtain the desired dial spread for each band (I shot for 90 scale units, setting the band edges at 5 and 95 when possible):

- 1) To bring the band edges closer together on the dial, move the topmost turn (or turns) of L_3 away from the bottom turn of the secondary coil.
- 2) To spread the band edges farther apart on the dial, move the topmost turn (or turns) of L_3 toward the bottom turn of the secondary coil.
- 3) Be certain the band-spread coverage is correctly established, as above, before cementing the turns into place and calibrating the dial.

The adjustments of L_1 and L_2 are covered adequately in the original article on the HBR-14 and may be readily peaked in the middle of the bands.

For those still having surplus equipment in the junk box and who haven't yet scrounged the grocery money for the

i.f. transformers, the following tip may be worthwhile. I used i.f. transformers at 1415 kc. and 85 kc. from the Command set receivers, using a 1525-kc. surplus crystal for the conversion oscillator. To overcome the rather poor selectivity encountered in the 1415-kc. types, I put the input and interstage transformers back-to-back with very loose coupling with twisted wire. The 85-kc. b.f.o. transformer is of special design not suitable for the circuit in the HBR-14, but works very well in the Command receiver circuit.

By way of personal comment on the work Mr. Crosby has done in presenting us with the HBR-14, I would like to say that two years ago I started a receiver like his, working from the speaker back to the r.f. stages. I put it aside with the front end unfinished because of uncertainties in my own mind about plug-in vs. coil-switching and such related problems. The July *QST* stirred me to blowing off the dust and getting started again. The finished product has surpassed my expectations so greatly that I say, "Hats off" to W6TC and thanks to *QST*! — Dale Woosley, W5KYQ

— . . . —

Sun Valley, Calif.

Technical Editor, *QST*:

I have often been asked, "How would the 85-kc. i.f. transformers from the BC-453 receiver perform in the HBR-14, as a substitute for the Miller transformers originally specified?" Heretofore I didn't know. Dale's letter answers this question nicely.

However, I am not so certain that the 1415-kc. first i.f. and 1525-kc. crystal oscillator is as satisfactory as the setup specified in the original article. Some low-level background interference from b.c. stations operating on or near the 1415 kc. could be experienced from such an arrangement, especially if the b.c. station is located within a few miles of the receiver. The 14th harmonic of the 1525-kc. crystal falls in the 15-meter band.

The homemade transformer specified for the HBR first i.f. does a good job. The selectivity is exceptionally good, and the image rejection is excellent. Substituting a 1685-kc. crystal for the originally-specified 1675-kc. rock would retain the 1600-kc. first i.f. arrangement when the 85-kc. i.f. was substituted. The 17th harmonic of 1685 kc. falls in the 10-meter band, but this harmonic should be weak by comparison with the 21-Mc. harmonic mentioned in the preceding paragraph and it should be the lesser of two evils. — Ted Crosby, W6TC

QUAD ANTENNA DIMENSIONS

Route 2
Bishop, Texas

Technical Editor, *QST*:

My experience in the construction of two cubical quad antennas for the 20-meter band fails to verify the published data for the length of wire to be used. Both antennas constructed here used bamboo poles for the crossarms, 2 × 2s for the boom. No. 12 wire attached directly to the bamboo poles, and had a spacing of 12 feet between the driven element and reflector. The first antenna used the published figure of 16 feet 9 inches for the length of each side (one quarter wave length). The center of this antenna was about 40 feet above ground, in the clear, and the antenna was fed with 72-ohm coax. Checking for s.w.r. showed practically 1:1 at 14.95 Mc. This check was made using a g.d.o., antennascope, and the station receiver to monitor the frequency of the g.d.o. The s.w.r. in the 20-meter band was still fairly low, something less than 2:1, and the front-to-back ratio was excellent (with proper reflector tuning). The antenna was used without any changes for a couple of years with good results. The first time I had to lower the antenna (a wire broke), I disconnected the feed line, coupled the ends of the antenna together with a short piece of wire with a loop in it, and grid-dipped the antenna at this loop (after fixing the broken wire). With the antenna only about four feet off the ground, the dip was at 14.85 Mc., again using the station receiver to check the frequency of the g.d.o.

Recently another quad was put on top of a 55-foot fold-over mast. Using the factor obtained from the previous measurements, 250 divided by the frequency in megacycles to give the desired length in feet, gave a length of 17 feet

¹ This means connect primary to plate, secondary to next secondary via very low capacitance (the twisted insulated wires), and primary to grid. — Ed.

7½ inches for each side of the quad. Grid-dipping this antenna as before — feed line off, jumper across the ends of the antenna, and the antenna about four feet off the ground — showed a resonant frequency of 14.1 Mc. With the antenna 55 feet in the air and feeding with 72-ohm coax, a s.w.r. check showed as close to 1:1 as I could read at 14.2 Mc. Granted that these measurements were made with the simplest of equipment, the two sets of measurements definitely confirm each other and not the published data. I might add that the tuning of the reflector had no visible effect on the resonant frequency of the driven element.

Both antennas showed excellent front-to-back ratios and seemed to work very well. This information about the lengths versus resonant frequencies is passed along for whatever use it might have. — Paul Elliott, W5GGV

[The constant 250 used to determine the length of one side of a quad antenna is slightly higher than the 216 generally used for a quarter wave length in free space. The difference might be accounted for by the effect of the reflector. — Ed.]

SEVEN RESISTORS

Radio Australia
Shepparton, Victoria
Australia

Technical Editor, *QST*:

Your Quist Quiz in the December *QST* and the reply in the January issue of the minimum number of resistors required to measure each ohm between 1 and 1000 is very interesting. However, it is possible to do this using only seven resistors, of 1, 3, 9, 27, 81, 243 and 729 ohms.

Your method of using 10 resistors is the minimum number in a standard series circuit. It is possible to get the desired result with only seven resistors by sometimes placing one or more of the seven known resistors in series with the unknown value to be measured and then subtracting this value after the reading is obtained.

Attached is a page of typical measurements which should explain fully the method used. For obvious reasons I

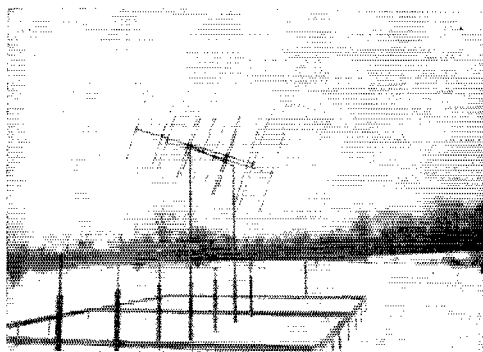
Desired Value	Comparison Resistor	Resistor in Series with Unknown
1	1	
2	3	1
3	3	
4	3 + 1	
5	9	3 + 1
6	9	3
7	9 + 1	3
8	9	1
9	9	
10	9 + 1	
11	9 + 3	1
12	9 + 3	
13	9 + 3 + 1	
14	27	9 + 3 + 1
15	27	9 + 3
16	27 + 1	9 + 3
38	27 + 9 + 3	1

have not included all the 1000 combinations but I assure you it is possible to measure each ohm up to 1093 by this method using only the 7 resistors mentioned.

— A. E. Finch, VK3ABO

Minitrack Station of the Sohio Moonbeam Group

The Sohio Moonbeam Group receiving station. Standing, at left, is K8HYW; at right, W8CWL. W8FKC is kneeling at the left, and K8HYZ is operating one of the ARC-5 receivers.



The horizontal broadside array and ground screen of one bay of the antenna system. The two Yagis, mounted for substantially vertical polarization and aimed south, are commercial f.m. receiving antennas used without modification.

AS REPORTED in March *QST* ("Satellite Notes," page 10) the amateur Minitrack station operated by the "Sohio Moonbeam Group," Cleveland, Ohio, was one of the earliest to report reception of signals from the "Explorer" to ARRL Hq. Although the tracking installation had barely been completed when the satellite went aloft, a satisfactory record was obtained of the rather weak signal on 108.00 Mc. Oddly enough, this signal turned out to be better than the more powerful one on 108.03, and it has been suggested that perhaps the cause lay in the fact that the antenna for the transmitter on 108.00 was linearly polarized while the transmissions on 108.03 were circularly polarized.

The Sohio Moonbeam Group at present has twelve members, five of them amateurs — Ralph W. Burhans, W8FKC (who furnished the pictures and information on the equipment); Warren Jackson, Jr., W8GID; Don Pelton, K8HYW; Dick Brown, K8HYZ; and Roy Rankins, W8CWL. These five and five of the nonamateur members — Dr. A. L. Jones, Dr. P. S. Fay, Dr. W. S. McClenahan, Bob Tupa, and Gino Coviello — all are associated with the Research Division of the Standard Oil Company (Ohio), which furnished the location and facilities as well as a good deal of the equipment. The remaining members of the group are Dr. Forrest Brammer and Dr. Gordon Grant of the Case Institute of Technology. It is expected that the membership will be enlarged as the work progresses.

The receiving system, shown in block form in the drawing, uses surplus ARC-5 receivers as i.f. amplifiers. Output from a 108-Mc. low-noise preamplifier and converter is fed at 8 Mc. into a BC-455, which has a fairly broad intermediate frequency amplifier at 2830 kc. This i.f. is used for solar and stellar noise calibration of the antenna (see *QST* for April, 1957). Output at the same i.f. center frequency is taken from the

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A close-up of the receiver rack. The installation is on property of the Research Division of the Standard Oil Company of Ohio in Cleveland, Ohio.

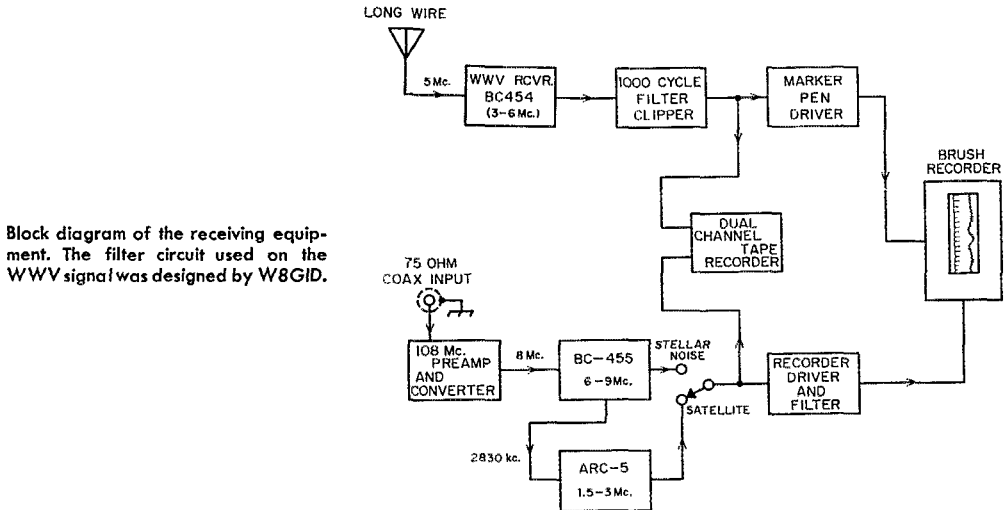
QST for

This is a copy of a recording made on the "Explorer" at 7:47 P.M. EST on February 1.

converter circuit in the BC-455 and fed into an ARC-5 1.5-3 Mc. receiver for narrow-band reception of the satellite signals. A BC-454 is used for receiving WWV time ticks, which are filtered out of the audio-frequency tones transmitted and then run into one channel of a dual-channel magnetic-tape recorder and one channel of a dual-channel Brush ink recorder. The satellite signals are recorded on the other two channels of these recorders. The Brush recorder was loaned to the project by the Brush Instrument Division of the Clevite Corporation.

The antenna system as originally built has eight 108-Mc. dipoles in broadside in each of two bays, with the bays separated about 500 feet.

The dipoles are fed at one end rather than in the center as in the NRL design (*QST*, September, 1957) in the hope of giving a southerly tilt to the pattern and thus increasing the signal output from that direction, since Cleveland is considerably north of the satellite path. Shortly after the "Explorer" was launched, a pair of Yagi antennas designed for f.m. reception was tried in an effort to get more signal, an effort which turned out successfully, and it is now planned to add two more in a double interferometer arrangement. One of the photographs shows the first two Yagis mounted over one of the broadside arrays. Other changes no doubt will be made as experience shows them to be necessary or desirable.



Block diagram of the receiving equipment. The filter circuit used on the WWV signal was designed by W8GID.

Strays

From a newspaper clipping we learn that the IBM Amateur Radio Club plans to set up a Minitrack satellite tracking station in Endicott, N. Y.

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At K2IAP, located at RCA's Harrison, N. J., plant, signals from the first American satellite were monitored by W2PMD, K2JCF, KN2ZON and W2QEX.

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W7GRA, assisted by W7HWO, recorded the first pass of the Explorer on the evening of Jan. 31-Feb. 1. W7YRD and W7EJK, among

others, assisted in the relaying of these radio reports to the Tucson Moonwatch team.

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WISS claims to have been the first to have reported Sputnik I's orbit to the Smithsonian Lab in Cambridge, Mass., and further claims to have been the first to report to them on the reception of Explorer, at 1248:15 EST.

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W6FCX claims that he is the first in the U. S. to have heard the Explorer, by virtue of the fact that he picked it up at 9:41 PST.

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There were other claims, but no times given.

A Radical Method of Amateur Communications

BY THOMAS A. PICKERING,* W9LRA

NEARLY all radio amateurs, particularly phone men, are familiar with the methods of generating s.s.b. and d.s.b. signals, with or without transmitted carrier. Interest in s.s.b. techniques has steadily increased in amateur circles over the past decade, until now s.s.b. commands a place in the amateur's repertoire of types of transmission.

However, another method of transmission, which is outlined in this paper, seems to have escaped many of us. This method is not expensive in its physical realization, and its principles are easily understood by any phone man, even without a good background in s.s.b. techniques. In fact, the method herein set forth draws only lightly on the basic principles underlying s.s.b. transmission. It is possible, with but a modest outlay, to generate the n.s.b. signal, which as its primary feature requires extremely narrow bandwidth; in fact, it will be later shown that approximately 30 n.s.b. stations may occupy a single 3-ke. band of the spectrum without mutual interference! Obviously, such a system is of commanding importance in this age of spectrum conservation and crowded bands.

As an introduction to the principles of n.s.b., consider first the transmission system shown in block form in Fig. 1. This is perfectly straight-

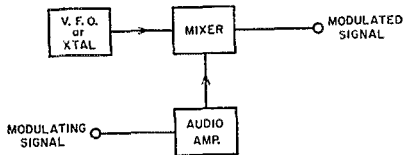


Fig. 1—Block diagram of simple amplitude-modulated transmitter.

forward, using popular techniques. The stage labeled "mixer" is simply the modulated stage, but which certainly is a mixer, since its output contains (ideally) the r.f. carrier frequency, plus and minus the modulating signal. Thus the mixer output contains three components. It is well known that for communication, the carrier and one side band may be eliminated. If we are to achieve the narrow bandwidth mentioned at the outset, we certainly had better remove these two components.

For a moment, however, realize that the carrier alone occupies only an extremely narrow band. From a strictly spectrum-conservation standpoint, therefore, its removal would accomplish nothing. So for the present we shall leave the carrier component in the composite signal and

*% Kellogg Switchboard & Supply Co., Chicago, Ill.

remove one of the two side bands.

The side band (either upper or lower) may be eliminated by one of several methods. The simplest, for discussion purposes, is the filtering method. Therefore, we pass the composite signal from Fig. 1 into the band-pass filter network of Fig. 2. It is worth noting here that the effective-

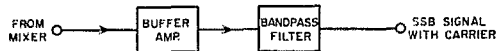


Fig. 2—Elimination of one side band.

ness of the filter in removing the unwanted side band is related to the frequency-bandwidth ratio; that is, if the nominal carrier frequency is related to the bandwidth of one side band by a small number, the effectiveness of the filter is improved. Thus, the importance of relatively low carrier frequency is established. The n.s.b. system has this consideration in common with the s.s.b. filter techniques, in which the basic carrier frequency is in the order of 0.5 megacycle.

The output signal from Fig. 2 now consists of the carrier plus either the upper or lower side band, depending on the side band removed by the bandpass filter.

From this point, n.s.b. departs from s.s.b. Instead of reducing or suppressing the carrier, n.s.b. philosophy requires that the carrier be *exalted*. The degree of this function is in general quite high. Thus, the next step in the process is to lift the level of the carrier to a point which is very much higher than that of the remaining side band. This can be done quite simply by reducing the amplitude of the side band and then amplifying the remaining signal. This selective function is performed by the equipment shown in Fig. 3. The composite signal from Fig. 2 is fed to the band-pass filter, whose characteristics are chosen so as to pass the side band relatively unattenuated, while attenuating the carrier. At the same time the composite signal is fed to a cathode-follower amplifier, to achieve isolation from the amplifier A-4 and the input of the band-pass filter. The output of the band-pass filter is amplified in A-3. This is a single-stage amplifier which inverts the phase of the signal at its input terminals. The output of the cathode follower A-2, however, is in phase with its input. Hence, the two signals applied to the input of A-4 are of opposite phase, and if the control R_1 is advanced, thus presenting the output of A-3 at the A-4 input, the side-band energy which passed through the filter is applied out of phase to the side-band energy which passed through A-2. The resultant signal at the input of A-4 will consist of nearly all carrier, the side band having

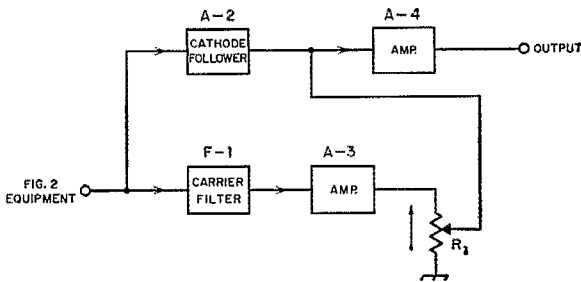


Fig. 3—Exalting of carrier over remaining side band.

been greatly reduced. In actual operation, with control R_1 fully advanced, side-band attenuation of over 80 db. is readily attained. The output from A-4 is then fed to suitable multipliers and amplifiers to reach the desired transmitting frequency and power.

Assume now that it is desired to transmit a message. The system is set into operation, with modulation applied at the point shown in Fig. 1. As the composite signal passes through the side-band filter, either the upper or lower side band is eliminated. Then, passing through the Fig. 3 equipment, the remaining side band may be greatly attenuated. This leaves a signal having the spectral characteristics shown in Fig. 4 It is readily seen that this signal is one of extremely small bandwidth.

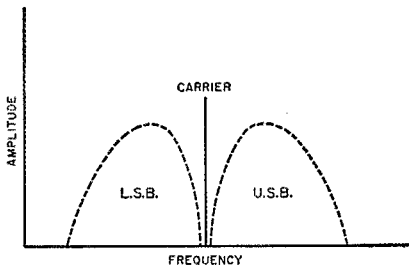


Fig. 4—Spectrum occupancy (solid line) of NSB signal. Dashed lines represent components removed in earlier circuitry.

This received signal is mixed with a locally-generated carrier at the receiver, in much the same manner as in the reception of an s.s.b. signal. This mixture is then detected and the difference-frequency recovered. The locally-generated carrier is chosen so that the difference-frequency will lie in the audio range.

Thus, when the transmitter is on, the receiving station will hear a steady tone. When the transmitter is momentarily turned off, this tone at the receiver disappears. If, then, the transmitter is alternately turned on and off, the tone will appear and disappear in accordance with the pattern of interruptions at the transmitter.

Obviously, the next step is to select a method of signaling by this method, so that actual intelligence may be transmitted. As an example, let us assume that the operators at each end of the circuit have mutually agreed on a particular

pattern of transmitter interruption, such that if the transmitter is turned on for a short interval, then off for an equal interval, then on for a period approximately three times as long, and then turned off, it is agreed that the letter "A" is being sent. This type of signaling may be extended, such that the entire alphabet may be translated to combinations of off and on time.

Bear in mind, that for normal signaling speeds, in the region of 15-50 w.p.m., the bandwidth occupied by the transmitter is roughly 100 cycles¹, compared with the original 6000-cycle bandwidth occupied by the signal. Thus, the statement that 30 stations may operate in a single 3-ke. band of the spectrum is confirmed.

Detailed mathematical analyses have shown it possible to dispense with the filtering units and still produce the desired signaling system. These, however, have not yet been translated into actual working units. The writer welcomes comments on this phase of the n.s.b. system.

The astute reader may ask how the modulation applied in Fig. 1 is obtained. This modulation may consist of a speech wave, or, in the absence of such a signal, a simple audio tone of 1000 c.p.s. If such a generator is not available, a d.c. signal may be used. It is to be noted that the resistor R_1 in Fig. 3 should be normally operated to its fully clockwise position, as indicated by the small arrow adjacent to the resistor. If this is done, it will be found that the nature of the signal applied to the modulator is not at all critical.

It is hoped that this system of transmission will be tried by many amateurs. It is simple, straightforward, and effective. Once the filter units of Figs. 2 and 3 are procured, the transmitter is easily built and put into operation.

One last note: The author investigated the legal aspects of this mode of transmission. The local FCC office, after examining the circuitry, expressed an informal approval of its use, provided the amateur operates in accordance with the laws governing the operation of an amateur station. Thus, there is no reason why an amateur can't get right on the air with n.s.b., and be one of the true pioneers of his day.

Those phone men interested in building the equipment described may refer to the current edition of *The Radio Amateur's Handbook*, for a discussion of a satisfactory signaling code for communication.

¹ Assuming moderate shaping of the switch current to reduce transients as the transmitter is turned on and off.



Amateur-Red Cross station W6CXO did a big job during the SET, handling 528 messages during the week end exercise. That's K6PZA sitting and station trustee W6JWF leaning over him. (San Francisco Examiner Photo.)

SIMULATED EMERGENCY TEST - 1957

Facts, Opinions and Figures on the AREC Exercise

BY GEORGE HART,* WINJM

WHETHER OR NOT the 1957 SET was a disappointment depends on how you look at it. Sure enough, participation was slightly below that of the 1956 version, but both civil defense and Red Cross indicated an increase on their part of the program. And we know for a fact that many AREC groups participated who never let us know about it. The tendency of ECs to refrain from filling in that simple little SET report form and mailing it to us is, we think, the biggest reason for the statistical decrease, although in fact such decrease was insignificant and really inconclusive. We can say, in a general way, that the activity was about the same as last year.

Is this good? No, not particularly. With over 1800 ECs on our rolls, you can't get very boastful about having received reports of SET activity from only 205, and only 125 of these were mail reports submitting a point total. It gets us to wondering about a few things. How many EC groups actually participated? What would our national score look like if all those who reported by radio only (with no point total) had submitted a mail report? This would have added 53 more reports to our mail total, making it 178 instead of 125 and goodness knows how many more points. Mail reports indicated that 1123 messages were originated by AREC members to ARRL out of the reported participation by 1971; what happened to the difference? If they had originated messages, it would have raised our point total

* National Emergency Coordinator, ARRL

another 800 or so. We actually received 1332 messages at headquarters, 1221 of them signed by amateurs.

Confusing, isn't it? Actually, we're not trying to prove anything by all this. The SET is a good exercise and, if properly put on, a lot of fun, very reminiscent of the Field Day, except that it is without the all-important competitive aspect. You compete with yourself, to better your previous year's score, and to make a good-sized contribution to the national score so that we can show an improvement from year to year. To those of you who did so, congratulations. To those of you whose score deteriorated over last year or previous years, our condolences. To those who participated but did not submit a point score, our admonishments. To those who sat on their duffs and did not participate at all, our reproaches.

At the risk of boring the casual reader, we want this year to make a few more acknowledgments than has previously been the custom. We hope that this will have a salutary effect in bringing about greater participation in years to come.

Red Cross Activities

The Red Cross had a good year in the SET. A gross total of 1550 messages were received at the national headquarters, most of them through predesignated collecting stations in the four American National Red Cross areas. Activity was concentrated in the Southeastern and Pacific

areas. In the Southeastern area, Florida and South Carolina staged state-wide drills, and in the San Francisco Bay area the stations promoted traffic by sending pre-SET messages to 376 chapters alerting them to the test, enabling them to handle 530 messages in return. Collecting stations reporting (with messages handled following in parentheses): Eastern Area — W2CRD (5), W2GTE (3), W3PZA (79); Southeastern Area — W4EM (30), K4IWT (178), W4SOF (247), W5UK (4); Midwestern Area — W9DKI (18), W9DUA (50), W9NOE (5), W5AIR (21); Pacific Area — W6CXO (528), W7CBE (2). Along with 380 messages handled by other stations, the gross total of messages received by the Red Cross was 1550, 400 chapters reporting. This is the second largest Red Cross total in SET history, having been exceeded only by the big year in 1951 when over 3000 were handled.

Civil Defense Activities

FCDA received 45 messages from c.d. officials in 23 states and the Canal Zone, more traffic by far than was ever previously received at Battle Creek. Amateur stations representing FCDA Regions 1, 3, 4, 6 and 7 took part in relaying this traffic and traffic destined to regional administrators. We wish to list them all, with the station of origin in parentheses. The civil defense directors of the following: San Juan Co., N. M. (K5CIN); Vanderburgh Co., Ind.: Afton, N. Y. (W2LEP); Vermillion Co., S. Dak. (W0DKJ); Pinellas Co., Fla. (W4SEA); Cedar Rapids, Iowa (W0LBK); Owensboro, Ky. (W4RFN); Wood Co., W. Va. (W8GWR); Davidson Co., Tenn. (W4ZLM); Vigo Co. Ind. (W9CBB); Kent Co., Mich. (W8DC); St. Mary's Co., 1 Md. (via W8VPH); Hillsboro, Ill. (W9VWJ); Cuyahoga Co., Ohio (W8BUQ); Barrington, R. I. (W1NCD); State of West Virginia (W8HZA); Balboa, C. Z. (KZ5VR); Warren, Minn. (W0PHD); Redding, Conn. (W1ODW); Newington, Conn. (W1NJM); Menlo Park, Calif. (K6GDH); St. Petersburg, Fla. (W4GAC); Henly Co., Fla. (W4PJU); Winchester, Ky. (K4BPX). Civil Defense organizations of Cloquet, Minn. (W0YHR); Pipestone, Minn. (W0KFN); Mt. Pleasant, Mich. (W8PFF); Bristol, Conn. (W1KYQ); Dawson, Minn. (K0DIA); Columbia, Mo. (W0TBL); Kansas City & Wyandotte Co., Kans. (W0ZGK); Los Alamos, N. M. (W5PDO); Sacramento Area, Calif. (K6SXA); Fort Lauderdale, Fla. (W4AB). Radio officers for Washington Co., Ore. (W7OTV); Los Altos, Calif. (W6ASH); Stewartsville, Mo. (W0EBE); Centerville, S. Dak. (W0SCT). Red Cross Secretary, Carlsbad, N. M.: "Press," Franklin, N. H. (K1BCS); Deputy C.D.: Director, Memphis, Tenn. (W4OGG); Sheriff's Office, Monnatt, Mo. (W0ZTY); FCDA Regional Administrator, Harvard, Mass. (W1LWB); FCDA Region 3 Operations, Thomasville, Ga. (W4POD); Washington, D.C. & Prince George's Co., Md. (W3CVE).

ARRL Activities

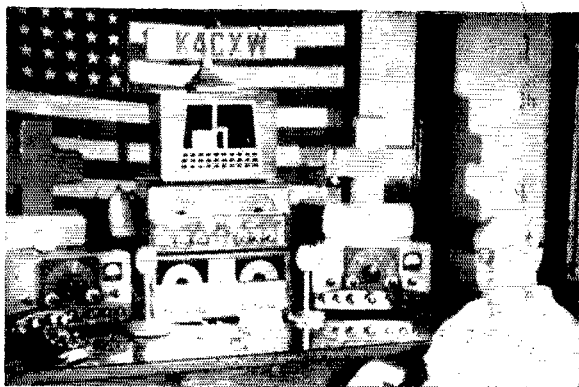
ARRL traffic was about the same (slightly

higher) than in the 1956 SET, with sixteen local stations taking part in the deliveries. Four of these were ARRL staff members (including WIAW), the others local or Connecticut amateurs who mailed or phoned in messages. Some of the traffic was mailed in from outside the state. We'd like especially to make mention of the work of W1YBH, Connecticut PAM, who delivered 271 messages to the headquarters. WIAW carried the biggest load, with 608, and other contributors included W1NJM (148), W1DAV (70), W1FYF (52), W1BDI (30), W1MQT and W1KTM (17) and W1HID and W1PTS (10). Sorting, counting and tabulating the messages received (1332 altogether) was a tiresome and frustrating job because they were in all forms, lengths and categories. However, it is interesting to note that the Fourth Call Area far exceeded others in sending messages to headquarters as well as in reports received and nearly every other aspect of the SET, and that the Third Call Area was, as usual, in last place. Here's the way the traffic received, broken down by call areas, worked out: Fourth Call Area was way on top with 368; a poor second was ninth, with 153; following in order were Second (141), Eighth (111), Zeroth (109), Sixth (105), Seventh (79), Fifth (53), First (42), Third (38), Canadian (13) and Canal Zone (9).

The headquarters received messages from a number of dignitaries. We feel we should acknowledge these, and do so herewith, hoping we haven't left anyone out or slighted anyone by not considering him a dignitary: The Mayor of Phila., Pa.: Red Cross Chapter Chairman and Executive Director of ARC, Mayor, City Manager, Fire and Police Chiefs of Rock Hill, S. C.; Mayor of Fort Mill, S. C.; Mayor of Lancaster, S. C.; Mayor and Police Chief of Barnwell, S. C.; Mayor, Fire and Police Chiefs of Greenville, S. C.; Director American Red Cross, Manatee Co., Fla.; Mayor of Melbourne, Fla.; Mayor of Redlands, Calif.; Vice Mayor and Chairman of the C.D. Committee, Battle Creek, Mich.; Mayor of Miami Springs, Fla.; City Manager of Shawnee, Okla.; City Manager of Tocumsoia, Okla.; C. D. Director, Seminole Co., Okla.; Mayor of Bradenton, Fla.

We wish also to acknowledge the assistance of many nets, both those of the National Traffic System and free-lance nets who conducted extra sessions in order that SET traffic might be handled more rapidly than otherwise would have been the case.

And lastly, we want to make acknowledgement to each amateur who sent us an SET message, both to let you know that your message was received and to give you credit for having originated it. The SET is an annual test of both our emergency and traffic facilities, which should be geared to work together. If you sent a message but your call does not appear in the list, it may be because (1) your message was never received, (2) you did not sign with your call letters, or (3) your message was delivered garbled. In any event, please don't ask us to investigate if your



The Fort Pierce Radio Club (Fla.) set up two stations at the Red Cross, one to control the operation of the ten participating local stations and one to maintain contact with the Red Cross in Miami. At the right is a photo of both stations with EC K4CWX in the operator's chair.

call does not appear herewith. We have no doubt that many messages were not received that were indeed originated, but we cannot undertake to do research on each case. Next year, try a different routing.

W1s AGU BB BEO CBS CHD CKA DHG DVB EKJ F0Z FHP GNS GNT HGQ HBB HQM HRD KTM KTW MCL MIF MTN OKY RLN STU SWM SXM TCJ TGD TSL YCP YHY YOG ZEO ZFG ZFS ZUQ. **K1s** HFI BAL BVO CII CUI DEU DGL.

W2s AEE BCI CJS CYW DIR DUS EFU ERO ESK F00 GTC GTE GTI GPJ HES HXD HZZ JBQ JCI JFB JGD KGC KPP KQL KU LDC LNF LYA MTD MITL NDX NPH PEH PHF QWC RCX RPK RYA SNT SUL VDT WFL WHI WKI WVK WYO. **K2s** AAV AAW ACB AOR ARY AYB AYH AZT BDD BQD CHN CUF CMJ OSD CTK CWX EJV EY GCH GGD GHS GIS GK Y GMV GVG GYM GZ HAM HLX HNW HPV HSX HSY HYI HYS HZK IAD ILL IOJ IRK ITO IWC JAS JFL JA JMY JVB JWG KRC KYK LUM MEM MUE MXT NYS OHH OKR OTL OVN PAT PMI QBT QDB QGL QIX QJD QZS RDI RJO RMA RSQ RUQ SEK SGY SME SSE STV TGH TYU UDJ UEA UKE UMS UTUX UYE VBH VMP YEA YBW YWK YWM YXB ZEX ZEZ ZXY.

W3s AHC ARA BAT BCP BKM BKT BUD BZR CDG CMR DVB ECP EBU EVA FUR FVK FWQ GJY IVD IY JJC JPC JVC MAZ MUX NQB PQT RAE RUN RVZ TEJ YA YLL ZCM ZXB ZYV ZZK. **K3s** AVE.

W4s AAV ABV ADB ADM AEH AGP AJA AKC AKF AL ALK ANK AYD AYW BAQ BBD BCH BCQ BFM BHS BIL BKC BXP BTU BUU BVG BWR CCC CCS CHD CSN CWT CXO CXW CXY DBO DCH DDI DHB DHJ DI DIT DNQ DQA DQH DSO DSR EDH EEI EJD EKU ELG EHV FCJ FGK FGN FKR FLX FNF FPC FRB GAG GAH GFT GLU GOH GOY GPE GQO HPH HFR HIX HLQ HAIG HOU HPW HTA HWO HZB HZG IMU IQX IQI ISS IUI IWD IY T JCP JGS JOU JSH JXF KGJ KME KQM KVR KZ LHW LUB MFH MFI MIV MWX MZW NDH NGN NKO NKX NTD NTW NVN OBV OGY OGY OMH ONJ OOR OTJ PED PFQ PHY PJU PJZ PKX POU PWW PZT QCP QEE RFN RPF RUR RUW RWM RYM SBI SEG SGI SGY SJZ SKF SLJ SUD SXJ SZL TAS TCF TEF THM TLU TMD TOD TOY TQD UDI UFP UIO UMW UMY UNO UQE URG UVQ UZZ VEP VKC VDY WAR WRK WBQ WJT WME WPE WPF WQC WQE WRH WSP WZH YAM YBZ YFN YHW YJS YMB YMG YOS YU YUT YWR YXW YYI ZBA ZCD ZDA ZDB ZDK ZOA ZRV ZUT. **K4s** AAJ ABB ABV AEE AHW AI AKD AKQ ANL AVU BKN BFS BMF BFX BRM BVN BVX CBQ CEJ CFA CFE CFS CIS CJC COO CTA CXW DFV DFX DGE DIV DKT DMN DNW DOM DPN DPP EAE EAX EGI EH ELA EMB ENA ESU ETA EVU EYE GAT GCG GDR GGR GHI GII GSO GWA HBF HCK HDX HED HJK HKB HMG HNC HQK HRX HSE HTZ HXP HZM IDC HIE HJN ILB ILW IMY IQU IRW IXO IYR JBP JDE JFF JFN JGN JGY JIZ JNW JSF JSK JTF JUX JYX KAR KIC KIN KIX KJD KJH KKZ KQF KRG KRM KUR KYK KYM KYS KYU LBM LMB

LOE LPS LRV LSF LZS MIE MJC MIV MQC MQL MTU MUV OHH OCV ODM OEP OFG OHK OII OJD OLO OOH OPE ORQ ORV ORW OQB OSQ OTN OYX PAE PCF PGF PIK PJR QBR QCR QKL QNB QPB QPP QPW QVD QZF QZX RDG RMR RNI RYL WCW WPQ.

W5s AHW CBY CCK CML CYF FIR GQW GVV GXG HEW HMA INL IRK KGV LAR LHU LXH MDR NFX REC RIR SJZ UCT VR WFG YNQ YNZ ZQP ZRP. **K5s** AIV BUW CRG CRH CTZ DGJ ECI EGS GTR GYP HSP HXM HXO JBY JCB JVK LDN LDQ LGV LRD MBI MQV OUV SQC.

W6s AAY BAO BBR BGF BKZ BLK BME BR BWV CNG DEF DYF EOT EVU FBK FHK POP HBI HC HQU IOE IT JBX JTD KSI KUU LGW MCR MKS MLN MMT MQM MSW MVI MWT MXA MTN OIA OIQ OLP OPL OPY PIV PKJ PKZ QAS SBK SK SLX TBM TXB TYC UFK UWH VFT VMS WSX YHM YHL YLQ YQZ ZSE ZZE. **K6s** CGA CHZ CXB DAM EOB GAU GCD GDH GGS GPJ HKY HPP HRX IRD ITF JCC KME MWK OMU OTR OUV PWA QIF QWB RBD RDF SUR SXA TRO UTU UVD UWV UWM VCY VNO YEF YIS YLO TQP ZCN ZVX ZVY.

W7s ADU AIB A0Z AXK AXT BDL BGR BIQ BJI BLN BQD CDA CHO CNH CTM DGO DIS ED ENU EVU EZE FJY FY FIQ GAT GCO GDS GGV GHS GW E HCE HIO HJU IAM ICS ITI INM JRB KLE MCT MDC MNW NES NPV OFC OJP OLY OOR PDR PQT PUH QLC RER RKP SEZ SPX SZB TGL TGM TIS TIZ TMD UHS UMO UWB UXR VMX VWT WJG WKT WOM WOQ YKS YTG YWF ZFV ZIU ZQM ZQN ZXC.

W8s AB AFB ATW BDZ BFF BNL BZN CCN CLX CSK CTZ DAR DFC DPT ELW EMD EWT FFK FNI FUM GBL GEC GKI GLB GPB GWR GZK HQK HTT IYY HZA ID ILL INO IPT IRN JSW KGA KWZ KXU KXN KYZ LER LJZ LRU MPD MVE MWE NZI OCC OTH PDP PFW PNF PQQ PVA PX PXG PZT QLY QO QZC RBT RYI SDU SPB SUM TIZ TSN TVO UBK VAQ VAP VOI VSV VZ WKD WKO YAN. **K8s** ADW AGT AHX AJX AWS AXK BAO BCH BCX BXP BUX BXX CBF CIS CJV CNB CSG DFE DLJ DNJ DOW DPA ELA EVT GAG GJW GMV HHX HID HRC HQY HWP.

W9s AHK AIN AKR ASG BBN BDP CAW CCA CDW CMM CWG CXY DBJ DNP DSG DUD EEO EFL ELIE ENU EZA FBC FHA FTT FYK FZC GYZ HAD HPG IHU IRH JBF JBC JFG JZV LBP LDK LEF LOJ LSJ LZE MAK MEU MHC MHP MIN MIU MLE NOE NPN NTA OAR ODT OG OIB OIK ORW OVB OZQ PQQ QHW QKE QLB QOS QYQ RAE RBL REA REC RPI RQM RSU RTH RAW RYQ STQ STR SVZ SWC SWD TQC TT TZN UXQ UPN VAY VEY VHA VRH VSD VSV VWJ WFF WHL WRQ WUH YFD YIG YRH YFF YYG YZM ZIM ZSK ZVS. **K9s** AAI ADJ AEC AMD AOM APH AQP AQS ARU ATZ AXS AZK BCB BMP BMO BXE BXP BVX BYN CJN CKM CLW COK CXS CYS DGH DLU EBB EEC EID ELE EMM ESY EWV FGF GCD GCE GDF GEN GFY GOL HBA HWB HWY IRZ ISA IUA JFN.

W0s AEH AJO AMN BDR BPD CKT CYL CZ DKJ EBE EUI EXN EYH FGP GBF GBJ GEP HEN HJI HWI IA IH JAJ KFN KJZ KLG KQD KWT KXE LIG MAO MYE MNW NGS NIT NUE OJG OJK OPX ORL OTG

Red Cross and C.D. worked together in San Diego County, Calif., where 43 amateurs participated in a simulated highway disaster and consequent fire. Operation was controlled from this station at county Red Cross headquarters. Shown in the picture are (l. to r.) KN6UTN, W6KBT (background, EC and RO), K6CAL and W6VJY.



PHD PKH PKQ QVA QWS RIQ RRV RVO SCT TBL
 TPB TTN UCZ UGW UJE UMX VOA VPQ VVU VYN
 WBH EWQ WFA WIN WMA YHL YWS YZQ ZEF ZGK
 ZJK ZOB ZPP ZTY. K0s ABA ABB AEE APS AVAI AVZ
 BBG BNU BVL BXF BZK CUS CNC CYS DEV DIA
 DVZ EET EJZ EPT ESQ EXB EXN GKI HKK HUD
 IGU IGX IMK JAD JCF JNH LUA LWN.

Summary of Local Participation

We try to keep this summary the same each year so that it can be compared with those of previous years. Last year we started the custom of including "hearsay" reports—that is reports that are not really reports at all but merely indications gleaned from messages received, SEC summaries or EC or non-EC reports that did not include any detailed data. We continue that custom in the current summary but would like to mention the possibility of duplication where the actual area of coverage does not bear the same name as the apparent city, town or country gleaned from the spotty information we received from participants. This is just one of many discrepancies that cost us fistfuls of hair during the tabulation (and we can't spare it any more!).

First, some over-all statistics for the 1957 affair, with 1956 comparative figures in parentheses; then, the breakdown by coverage areas:

Total Reports of Activity — 205 (215)

By Mail — 125 (140)

By Radio — 128 (134)

By "Hearsay" — 24 (19)

AREC members in area reported by mail — 3457 (3688)

Total known participation — 1971 (2276)

Mobiles & Portables — 610 (615)

Fixed Stations on Emergency Power — 87 (85)

AREC member messages to ARRL — 1123 (1117)

BC radio reports to ARRL — 159 (184)

Total points computed — 14,357 (15,984)

Area Covered	Reported by	Points
Aiken Col., S. C. ⁴	...	...
Alamanca Co., N. C. ²	W4AEH	247
Albany Co., N. Y. ^{1,2}	W2GTI	192
Archbold, Ohio ³	W8VAQ	...
Area 5, N. C. ³	W4D8O	...
Arlington, Va. ^{3,5}	K4LMB	...
Augusta, Ga. ⁴	...	...
Baltimore, Md. ⁴	...	...
Barren, Hart, Coreen, Larue, Adair Co., Ky. ²	W4TQD	129
Barrington, R. I. ²	W1TGD	79
Bartow & Floyd Cos., Ga.	W4BHX	79
Belleville, Ont., Area ^{2, 6}	VE3AUI	60
Belleville, Ohio ³	W8AB	...
Berrien Co., Mich. ^{2,5}	W8QQO	...
Bethlehem, Conn. ^{2,7}	W1FHP	27
Billings, Mont. ⁷	W7YHS	103
Black Hawk Co., Iowa ^{1,2,8}	K9AVM	101
Bonita, La., Area ^{1,2}	W5CYF	29
Boone Co., Mo.	W0VJD	112
Boulder, Colo. ³	W0RRV	...
Bozeman, Mont. ²	W7ED	77
Brevard Co., Fla. ³	W4UCQ	122
	W4BWR	...

Area Covered	Reported by	Points
Bridgeport, Conn.	W1EJH	80
Bristol, Conn. ³	W1GNS	...
Bristol, Va.-Tenn. & Washington Co., Va. ^{2,9}	W4THM	76
Buchanan Co., Iowa ³	W0KWT	...
Burlington, Iowa ^{1,2}	W0QVA	40
Burlington Co., N. J. ³	W2WKI	...
Cabell, Wayne & Mason Cos., W. Va. ²	W8FUM	103
Calhoun Co., Mich. ²	K8CIS	117
Cape Breton Island, N. S. ³	VE1FH	...
Carroll Co., Md. ^{1,2,7}	W3FVK	61
Carroll Co., Tenn.	W4BQC	96
Cedar Rapids & Linn Co., Iowa	W0LBK	252
Centre Co., Pa. ⁴	W3YA	...
Chambly-Laprairie-Vercheres Cos., Que. ¹⁰	VE2KG	180
Chambers Co., Ala. ²	W4PHY	70
Charlotte Co., N. B. ⁴	VE1JP	...
Chicago, Ill. ³	W0HPG	...
Chippewa Co., Minn. ³	K0RKK	...
Cincinnati, Ohio ⁴	...	...
Clark Co., Ind. ⁴	...	...
Clark, Oconee, Madison, Jackson Cos., Ga.	W4OTA	68
Contra Costa Co., Calif. ³	W6LGW	...
Coos Co., Ore. ²	W7BLH	120
Corpus Christi & Nueces Cos., Texas	W5LOW	326
Cumberland Co., Ky. ²	W4SZB	31
Cuyahoga Co., Ohio ¹	W8AEU	292
Dade Co., Fla. ²	K4AHW	371
Daviess, Hancock, McLean, Ohio, Butler, Muhlenberg Cos., Ky. ²	W4NGN	100
District 13, Va. ³	W4FLX	...
Dougherty Co., Ga., area	W4YWP	106
Douglas Co., Ore.	W7UZU	27
Dutchess Co., N. Y. ²	K2GCH	195
East Hartford, Conn. ³	W1EKJ	...
E. Volusia Co., Fla. ^{1,2,11}	W4RWM	106
Eddy Co., N. M.	K5CEV	101
Elk Co., Okla. ⁴	...	...
Enid, Okla. ⁴	...	...
Eureka Area, Calif. ^{1,2}	W6SLX	108
Fairbault Co., Minn. ³	W0GKI	...
Fall River, Mass. ^{1,2}	W1YHY	24
Falls Church, Va.	W4OP	55
Fayette Co., Ky. ³	W4BNP	...
Floyd Co., Ky. ³	K4GAG	...
Fort Pierce, Fla. ³	W4CXW	...
Fulton Co., Ohio ^{3,12}	W8VAQ	76
Garfield Co., Okla.	W5MFX	104
Graham Co., N. C. ³	W4AEH	...
Grays Harbor Co., Wash. ¹³	W7AVM	47
Great Falls, Mont.	W7DSS	126
Greene, Hersey & Calhoun Cos., Ill.	W9IFA	65
Greenville, S. C. ³	W4KZ	...
Greer, Beckham & Roger Mills Cos., Okla. ^{2,6}	W5SVR	136
Groveland, Mass. ¹	W1MRQ	59
Hampton, Va. ^{2,14}	W4AJA	110

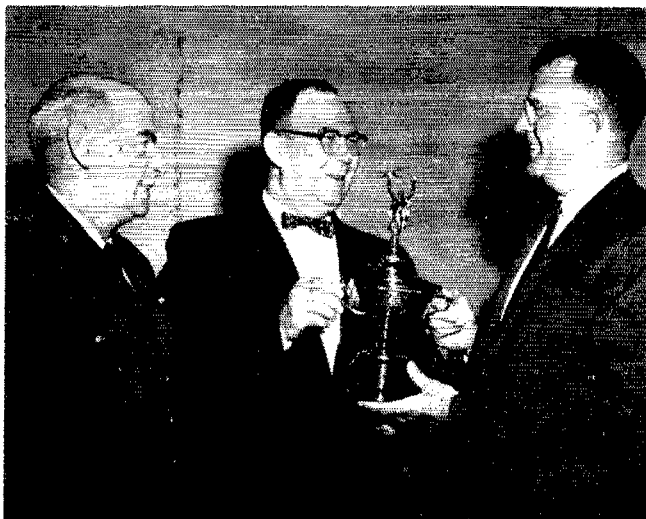
Area Covered	Reported by	Points	Area Covered	Reported by	Points
Henderson, Ky. ²	W4CSN	86	Porter Co., Ind. ^{1,2}	W9EHE	181
Hendry Co., Fla. ³	W4PJU	5	Poughkeepsie, N. Y. ³	W2HZZ	...
Isabella Co., Mich.	W8PDE	54	Pueblo, Colo. ²	W0DML	168
Jackson Co., Ind. ^{2,18}	W9RTU	69	Pulaski Co., Mo. ⁴	W0VEQ	...
Josephine Co., Ore. ²	W7ZQM	77	Putnam Co., Fla. ³	W4CQP	...
Kalamazoo Co., Mich. ²	W8PNE	145	Queens Co., N. Y. (10 meters)	W2IAG	143
Kanawha Co., W. Va. ³	W8CLX	...	Redding, Conn. ²⁰	W1ODW	52
Kansas City, Mo.-Kans. ⁴	...	...	Redlands, Calif. ²	K6GGS	110
Kent Co., Mich. ³	W8SUM	...	Redwood City, Atherton & Menlo Park, Calif. ²	W6DEF	152
Kings Co., N. Y. ^{1,2,16}	K2CTK	392	Richmond Co., S. C. ³	K4AVT	...
Kings Co., N. Y. (2 meters) ¹⁷	W2JCI	...	Richmond Co., Ga.	W4PMJ	193
Kingsport, Tenn. ^{2,9}	W4UJO	42	Rock Hill, S. C. ^{2,8}	W4VEP	146
Kitsap Co., Wash. ²	W7UWT	120	Rockland Co., N. Y.	W2ZZZ	117
Knoxville, Tenn. ¹⁸	W4TXJ	49	Sacramento Co., Calif. ³	K6QIF	...
Koschis Co., Ind. ³	W9QDW	...	Salem Co., N. J. ²	K2ARY	101
Lake Co., Fla. ^{2,12}	W4SXJ	151	Saline Co., Mo. ⁴	W0MMZ	...
Lake Co., Ind. ³	W9SWZ	...	San Diego, Calif. ^{2,18}	W6EWU	391
Lake Co., Minn. ³	W6LIG	...	San Diego Co., Calif. ^{1,18}	W6KBT	337
Lawrence Co., Ind. ³	W9WIL	...	San Jose, Calif.	W60IA	43
Letcher & Terry Cos., Ky. ⁴	...	...	San Juan Co., N. M.	W5CIN	95
Linn Co., Ore. ⁴	...	...	Schenectady Co., N. Y. ^{1,2}	W2WVK	198
Logan Co., Ohio ⁴	...	...	Seneca Co., Ohio	W8WAB	115
Los Alamos, N. Mex. ³	W5BEW	...	Skagit Co., Wash. ³	W7PQT	...
Los Angeles Co., Calif. ³	W6NTN	87	So. Pinellas Co., Fla. ²	W4WPF	100
Louisville, Ky., area	W4BAZ	370	Springfield, Mo., Area.	W0HUI	107
Louynds Echols, Lanier, Clinch, Gardner & Atkinson Cos., Ga.	K4INN	87	St. Francis Co., Mo.	W0BYJ	36
Madison Co., Ala. ²	W4YFN	176	St. John Co., N. B. ⁴	VEJEE	...
Mahoning Co., Ohio ³	W8QLY	...	St. Lucie Co., Fla. ²	K4CXW	90
Manatee Co., Fla. ^{2,18}	W4EDH	91	St. Marys Co., Md. ^{1,2}	W3ZZK	77
Manhattan, N. Y. ³	K2JVB	...	Stearns & Benton Co., Minn. ³	W0RYO	...
Manitowoc Co., Wis.	W9RKT	66	Story Co., Iowa ²	K0EXW	107
Manfield, Conn. ²	W1MHF	68	Swift Co., Minn. ³	W0UMX	...
Marathon Co., Wis. ³	W9VHA	...	Tarrant Co., Texas ⁴	...	...
Marion Co., Ind. ⁴	W9SWD	...	Torrington, Conn. ⁴	...	...
Marshall Co., W. Va. ⁴	...	...	Trilatin Valley, Ore. ⁴	...	...
Marshall, Polk, Bennington & Red Lakes Cos., Minn. ³	W6PHD	...	Tulare Co., Calif.	W6ARE	40
Martinsville, Ill. ³	W9IHU	...	Vallejo, Calif. ²¹	W6ZZF	96
Megantic, Beauce & Frontenac Cos., Que.	VE2AJM	14	Vanderburgh Co., Ind. ³	W9WUH	...
Memphis, Tenn., area ^{1,2}	W4BAQ	276	Vermillion Co., S. Dak. ³	W0DKJ	...
Menominee, Mich. vic.	W8GGQ	46	Wabash River Basin ²	W9TT	175
Mercer Co., W. Va. ³	W8DFC	...	Wadena Co., Minn. ³	K0NBU	...
Millelac Co., Minn. ³	W6OJG	...	Waltham, Mass. ⁷	W1JSM	100
Millbrae, Calif. ⁴	W6WIS	...	Washington, D. C. ³	W3ECP	...
Minneapolis, Minn. ⁴	...	...	Washington Co., Ohio ²	W8VZ	106
Mitchell, Baker, Miller, & Early Cos., Ga.	W4FWP	52	Washington Co., Okla. ²	W5MQV	141
Mobile, Ala. ³	W4FBZ	...	Washington Co., Ore. ^{1,2}	W7HCE	137
Monroe Co., Fla. ⁴	...	...	Waupaca Co., Wis.	K9EAN	60
Monroe Co., Ill.	W9ICF	29	Wayne Co., N. Y.	W2VBY	67
Montgomery Co., Ill. ²	W9VWJ	157	W. Palm Beach, Fla. ²²	W4DWK	...
Montgomery Co., Pa. ^{1,2}	W9ZXX	351	Westside Area, New Orleans, La. ^{1,7,2}	W5INL	89
Morgan Co., Ala.	W4LEN	99	Whatcom Co., Wash. ³	W7PZQ	...
Morkan Co., Ind. ²	W9ZSK	62	Wheatland Co., Mont. ²	W7INM	97
Multnomah Co., Ore. ⁴	...	...	Whittier, Calif., area ^{1,7}	W6LYQ	116
Muncie, Ind. ³	W9FYK	...	Will & Kendall Cos., Ill. ^{2,23}	W9REA	194
Muscogee Co., Ga. ⁴	...	...	Winona & Houston Cos., Minn. ¹	W0LUX	75
Nashville, Davidson Co., Tenn. ^{2,10}	W4DMU	176	Wood Co., W. Va. ^{3,6}	W8GWR	...
Nassau Co., N. Y. ³	W2DUS	...	Wood-Ridge, N. J. ¹	W2DMJ	113
Newington, Conn.	W1NJM	51	Wyandotte Co., Kans. ³	W0ZJK	...
Newport, R. I.	W1JFF	35	...	...	...
Nobles Co., Minn. ⁷	W6QDZ	42	...	...	...
North Adams, Mass. ²	W1ZEO	64	...	...	...
N. St. Louis & N.W. St. Louis Co., Mo. ²	W0MNW	111	...	...	...
Oak Ridge, Tenn. ³	W4CXY	...	...	...	...
Okaloosa Co., Fla. ⁷	W4RKH	114	...	...	...
Okeechobee Co., Fla.	W4PZT	44	...	...	...
Olmsted Co., Minn.	W0TJA	106	...	...	...
Orange Co., Fla. ²	W4NKD	269	...	...	...
Orange Co., Ind. ³	W9QYQ	...	...	...	...
Orange Co., Texas ¹⁸	K5BJB	68	...	...	...
Owensboro, Ky. ³	W4NGN	...	...	...	...
Pacific & Central Areas, C. Z. ^{1,3}	KZ5VR	123	...	...	...
Philadelphia, Pa. ²	W3DVB	70	...	...	...
Phoenix, Ariz. ⁴	...	...	...	...	...
Pike Co., Ind. ²	K9ELE	42	...	...	...
Pipestone Co., Minn. ³	W0KFN	...	...	...	...
Pocatello, Idaho ²	W7BDL	68	...	...	...
Polk Co., Fla. ³	W4BJL	154	...	...	...
Portage Co., Wis. ⁵	W9BCC	...	...	...	...
			Annual Total.		14,857

¹ Bettered last year's score. ² Reports by both mail and radio. ³ Report by radio only. ⁴ Hearsay report only; EC not heard from directly. ⁵ Negative report. ⁶ Nov. 3. ⁷ Oct. 14. ⁸ Oct. 11. ⁹ Oct. 10. ¹⁰ Oct. 4. ¹¹ Oct. 15. ¹² Oct. 27. ¹³ Oct. 21. ¹⁴ Oct. 19. ¹⁵ Oct. 7-13. ¹⁶ Oct. 13 & 21, includes report of W2JCI. ¹⁷ Data included in report of K2CTK. ¹⁸ Oct. 20. ¹⁹ Oct. 6 & 13. ²⁰ Oct. 28. ²¹ Oct. 8. ²² No data in mail report. ²³ Oct. 23.

Strays

The AF-MARS Eastern Technical Net (7540 kc., Sundays at 1400 EST) will discuss "Radio-teletype" on April 6, and various aspects of commercial communications setups on April 13-20-27.

That happy gentleman in the center is James Harrington, K5BQT, receiving the Edison award trophy from L. Berkeley Davis, G.E. division general manager who serves as committee chairman for the award which is granted to the radio amateur judged to have rendered the most outstanding public service during the calendar year. At the left is Gen. Griswold, KØDWC and vice commander of the Strategic Air Command.



Edison Award to K5BQT

JAMES E. HARRINGTON, K5BQT, of Lake Charles, La., was awarded the 1957 Edison Radio Amateur award at ceremonies in Washington, D. C., on February 27. K5BQT, who received his amateur radio license less than three years ago, received the award for the part he played in providing emergency communications from hurricane-stricken Cameron last June 26. He, with the help of two other amateur operators, gathered emergency equipment and supplies and traveled 40 miles by boat through the swollen Calcasieu River. At Cameron, Harrington and his helpers waded through waist-deep water in order to reach the court house from which he operated for three days in the handling of some 1500 messages.

K5BQT was nominated for the award by Major General Hufft, Louisiana civil defense director, as well as by several other state civil defense officials and the members of the New Orleans, Baton Rouge and Lake Charles radio clubs.

Judges for the annual Edison award, sponsored by the General Electric Company, included FCC Commissioner Rosel Hyde, E. Roland Harriman of the American National Red Cross, and G. L. Dosland, president of the American Radio Relay League.

Principal speaker at the award presentation was Lieutenant General Francis H. Griswold, vice commander of SAC, and well-known on the ham bands as "Butch," KØDWC. His remarks show such an excellent appreciation of the radio amateur by the military that we are pleased to reproduce them herewith.

It is a particular pleasure to participate in the presentation of the 1957 Edison Award to Mr. James E. Harrington because I have a threefold interest in the circumstances which led to this award — as an American citizen, as a radio amateur, and as an Air Force officer.

As an American citizen, I share the pride and gratitude for the heroic and invaluable work done by Mr. Harrington in voluntarily and unselfishly placing his services and experience at the disposal of a stricken community. His actions are symbolic of the spirit of the thousands of radio amateurs who have, time and again, disregarded their own interests and safety in order to help their fellow citizens in an emergency. The public service rendered by these men and women is truly inspiring, and I can readily appreciate how difficult it is to select from among so many deserving people the one who, more than all the others, has earned the coveted award which will be presented here today.

I believe that I can speak from some experience when I express such high regard for the many contributions which our radio amateurs have made — and are still making — to the public and to the country. Being a radio ham of sorts myself, I know how it feels when you get that bug that won't let you go to bed when you should, that makes you forget even your favorite TV programs, that makes you sit up all night to talk to some good friend in Australia or Africa whom you have never met in your life. That "bug" is actually all you share with him, but it is enough to create a bond which is responsible for what is probably the most closely knit yet most widely scattered brotherhood in the world.

It is that invisible bond, that bug, that enthusiasm which make the typical ham operator what he is — a person whose greatest hobby is public service. For there can be no greater service to the world torn by strife and clashing doctrines than to establish man-to-man communication and to gain friends for our way of life through the homey chatter that fills the amateur bands around the globe.

Somehow, the dedicated ham operator seems to be different from most other people, not just because he leads a life that, more often than not, arouses the curious wonderment of his family and friends, but also because he has learned to think beyond the horizons of his home, his job, his daily routine. He may have never left his hometown, yet he is a cosmopolitan. He may have never met a foreigner face-to-face, yet he is a man of the world. He may have never studied international relations and geopolitics, yet he knows more about people abroad and their daily problems than many a widely travelled and well-read diplomat.

It is no wonder, then, that most radio amateurs have risen above the plateau of the tinkerer, the do-it-yourself fan, the after-work hobbyist. And having learned to think in terms of people and of the world, they can no longer sit idly by when emergencies arise and, like most others, merely go to watch the fire or regretfully read about the havoc caused by the flood. The real radio ham could not possibly

consider himself a bystander or sidewalk superintendent when disaster strikes because, as a citizen of the world, anything that happens in that world concerns him personally. That is the reason why, in an emergency, he offers his services not merely as a good neighbor but because he is fired by the same compassion to help that inspires the doctor, the minister, the missionary.

In perhaps a less dramatic and more indirect manner, but just as importantly, radio amateurs are also contributing to the military posture of this country. There is no need to emphasize the vital part communications play in military operations, especially in a global organization such as the Strategic Air Command. As the nation's principal deterrent force, SAC's airplanes must be ready to go into action at a moment's notice, no matter where they happen to be if and when an aggressor should strike. This quick-reaction capability would be impossible without what is undoubtedly the most extensive and complex communications network in existence.

The focal point of this global network is a huge subterranean Control Center which is located in SAC's headquarters at Offutt Air Force Base near Omaha, Nebraska. From here, the Commander in Chief of SAC and his staff direct the entire far-flung system of bases and aircraft which are scattered all over the world. The communications network, acting as the "nervous system" of our organization, insures rapid and positive contact with everyone of SAC's multitudinous elements, whether on the ground or in the air.

The importance of communications in modern warfare is highlighted by the fact that nuclear weapons and jet bombers have compressed into hours military action which took days in World War II, and weeks or even months in the more distant past. Once missiles become operationally available in increasing quantities, large-scale actions will take only minutes. To cope with the problems created by this fantastic compression of action and the equally dramatic reduction in warning time, there must be greater reliance on communications than ever before.

Thus, the scope and complexity of our communications systems must grow in step with the rapid and continuous advances in all areas of weapons technology. But it is not sufficient to merely improve the capability and performance of communications equipment. There must also be commensurate improvements in reliability, in maintainability and in simplicity. One single failure somewhere in our communications network or bungling by one inexperienced operator could easily have disastrous results for the entire country. Warning may come too late to get SAC's alert force into the air before it is hit by the missiles or bombs of an aggressor.

It is here where the radio amateur is again destined to play an important part. Many a valuable idea or improvement in communications equipment and circuitry has come from the ranks of the radio hams. This is not at all surprising because, as a rule, the amateur must operate under rather primitive conditions and with limited budgets. Therefore, he cannot make use of the latest equipment and devices that others have developed but, instead, must rely on his own ingenuity and enthusiasm in continuously improving the performance of whatever limited facilities he has. The result has been an imposing array of amateur-developed improvements, with particular stress on simplicity, reliability, economy and better utilization all of which constitute valuable contributions to the art of military communications.

In addition, radio amateurs have frequently participated directly in a variety of military projects, ranging from assistance in emergencies to advisory services offered to or requested by the Armed Forces. Their training and experience have been particularly valuable when they became members of the military while, conversely, military training in communications has induced quite a few former servicemen to become radio amateurs.

But, in my opinion, the principal contribution of the radio amateur is an intangible one, namely the manner in which he stimulates the achievement and spread of technical know-how and proficiency. There has been much public discussion lately about the urgent need for producing more scientists and engineers in order to meet the threat of rapidly increasing technological competency on the part of the Soviets. This poses quite a problem for us, not because

we lack the institutions of learning, the teachers and the funds required to train enough scientists and engineers for the future, but because we lack the enthusiasm among our youth for careers in these fields.

Whether or not Soviet youth is actually interested in these careers is beside the point. The fact is that the Soviet system of channeling young men and women into careers of importance to the State and of rewarding or punishing performance has resulted in a spectacular increase of their scientific manpower pool. Conversely, the rate of technical and scientific graduates in this country has generally been on the decline. It is indeed fortunate that recent events have caused the public to become exceedingly space conscious and interested in such complex devices as satellites, space platforms, ballistic missiles and rocket ships. But, so far, this interest is still largely passive and has not sufficed to engender a noticeable upswing in active participation.

To become a good engineer or scientist, the high school graduate must select his career not because someone talked, let alone forced him into it, but because he honestly desires it. This desire must be instilled in him while he is still in his formative years so that he can begin, at an early stage, to devote himself to the study of those subjects which are to form the foundation for his advanced studies. Some youngsters will do so without urging and prodding, but others need the guidance and helping hand of their parents, their teachers, or their friends.

The most effective way of creating the desire for a technical career in a child is to interest him in some hobby, some activity which will stimulate his curiosity and satisfy his natural urge for meeting a challenge. Photography, chemistry and even hot rodding — provided all these activities are properly supervised — can do much along these lines. But an early interest in amateur radio work is perhaps the most rewarding one later on in life. A radio ham who shares his hobby with his son and his friends can, therefore, become a more convincing advocate of a technical career than the best speeches and pamphlets.

The age in which we are living has, at various times, been called the "atomic age" or "electronic age" or "space age." In the final analysis, however, our age is not that specialized but rather an era in which science and technology have become the keystones for political and economic survival. None realized this better than the Soviets who knew that, in order to achieve their avowed goal of world domination, they had to first achieve domination in the world of science and technology. Since the end of World War II they have made a tremendous effort to convert from an essentially agrarian to an industrial economy and, while we abhor the methods in which they pursued their ends, they have made rapid progress.

I do not share the pessimism of those people who believe that we have all but lost the race for technological superiority to the Soviets or that it would be difficult for us to re-establish our dominant position in science and technology. Scientific progress is not established by isolated successes, no matter how spectacular, but by steady advances in all of the many fields of human endeavor which, in combination, constitute scientific capability. Measured in those terms, I am confident that we are still ahead of the Soviets but I am equally convinced that, in order to remain ahead, we must make an aggressive and determined effort to accelerate the pace of our technological advancement.

Again, communication will be a vital phase of that effort — communication of ideas, of knowledge and of experiences. We must continuously strive for better means to exchange information on what to do and what not to do. We must do on a national and all-encompassing scale what the radio amateurs have long been doing in their own limited way — share experiences and help each other so that we can advance together for the common good. In this manner, we will be able to grow with the threat and meet the challenge of the demanding times ahead of us.

In conclusion, I want to express my personal congratulations to Mr. Harrington for the well deserved award which he will receive. At the same time, I want to commend the General Electric Company for sponsoring this award which I know is meant as recognition rather than an award. For radio amateurs such as Mr. Harrington may be officially designated as "amateurs" but, in my book, they are professionals in the finest sense of the word.

C.A.P. Satellite Data

BY THE TIME this issue of *QST* is distributed the Civil Air Patrol should be broadcasting daily bulletins on the positions of satellites, for the information of both visual and radio observers. The data will be sent on regular CAP channels by regional stations at 2030 local standard time Monday through Friday, the regions and frequency channels being as follows:

Region	Channel No.
Northeast.....	1 or 5*
Middle East.....	3
Southeast.....	3**
Great Lakes.....	4
North Central.....	1
Rocky Mountain.....	4 or 5*
Southwest.....	4
Pacific.....	5

* To be determined.

** A few minutes after 2030, to avoid interference with Middle East broadcast.

Channel frequencies are as follows:

- Channel 1 — 2374.0 kc.
- Channel 3 — 4467.5 kc.
- Channel 4 — 4507.5 kc.
- Channel 5 — 4585.0 kc.

Friday broadcasts will contain predictions for the week end. Regional stations will get their information from the headquarters station, VP0, in Washington, D. C., which will transmit the data on 4275 kc. at 1900, 2000 and 2100 EST daily.

No specific locations can be given for regional stations since they are operated on a volunteer basis and locations may change from day to day as necessary. If difficulty is experienced in getting good reception, drop a postcard to Headquarters, CAP, Bolling AFB, Washington 25, D. C.

Broadcasts will give the following information, when applicable:

1. Date.
2. Satellite identification (Note 1).
3. Height in statute miles.
4. Condition (Note 2).
5. Inclination and period.
6. Heading in degrees across 40th Parallel (Note 3).
7. Radio transmitting frequencies, when operating.
8. Vertex (or 40th Parallel intercept — see Note 3) at degrees west longitude at stated time, EST.

Notes

Latitudes and longitudes are expressed in degrees and tenths of degrees with the decimal point omitted; e. f., 0778 West would represent 77.8 West Longitude.

Note 1 — Satellites are identified by the year of launching, the order (indicated by a Greek letter) of launching during the year, and order of visual brightness when more than one object is associated with a particular satellite. For example, Sputnik I (the satellite itself) was 1957 α_2 , and its rocket was 1957 α_1 , because the rocket was a brighter visible object than the satellite. Sputnik II is 1957 β and the Explorer is 1958 α .

Note 2 — Color code for visual conditions:

- Black — Satellite in Earth's shadow.
- White — Background sky too bright for visual observation of satellite.
- Green — Transition zone between Black and White; necessary condition for visual observation of nonself-luminous satellites.
- Red — Self-luminous satellite.

Note 3 — Used only for satellites with orbital inclinations greater than 50 degrees.

Note 4 — Used only for condition Green. Specifies time and longitude (latitude, in the case of satellites having orbital inclinations greater than 50 degrees) at which the satellite will leave condition White or Black and the time and position at which it will enter the opposite condition. Between the given times the satellite should be visible to an observer near the subsatellite point.



Alabama — The Birmingham Amateur Radio Club annual hamfest will be held May 4 at the Alabama State Fairgrounds, Birmingham. For further info, write the BARC Hamfest Committee, P. O. Box 603, Birmingham.

Connecticut — The annual Tri-City Radio Council Hamfest will be held at the Crocker House in New London on April 26. Registration including banquet will be \$4.00, while the hamfest only is \$1.00. Registrations are being accepted by John H. Rogers, W1ZYJ, Spithead Road, RFD 1, Waterford.

Florida — The annual hamfest of the Orlando Amateur Radio Club will be held April 13 (the Sunday after Easter) at Sanlando Springs. For particulars write to the club at Box 2067, Orlando.

Louisiana — The Amateur Radio Club of Southwest Louisiana is sponsoring a hamfest in Lake Charles on May 3, at the Columbia Southern Recreation Center. There will be a fish fry on Saturday afternoon and a barbecue on Sunday. Total price for both meals and all festivities will be only \$2.00. Chairman of the reservation committee is Forest Gaspard, W5BWZ, 3719 Vanderbilt, Lake Charles.

New Jersey — The 13th Annual Old Timers' Round-Up and Banquet will be held on Saturday evening, April 19, in the Grand Ballroom of the Stacy-Trent Hotel, West State Street at Willow, in downtown Trenton. The affair, as usual, will be *stag*. Turkey dinner will be served promptly at 6:30 P.M. Advance reservations are \$6.00 per man, and are available from Ed G. Raser, W2ZI, 315 Beechwood Ave., Trenton 8, N. J. \$7.00 at the door. There will be a special award for the OM whose ham activities date the earliest, and W2ZI's old-time gear will be on display.

Ohio — On Saturday, April 19, at the Dayton-Biltmore Hotel, Dayton, the Dayton Amateur Radio Association will sponsor its annual Hamvention. The day-long program will again feature outstanding speakers on all phases of ham radio. Several excellent forums will be held throughout the day on DX, side band, v.h.f., etc. Bring the XYLs, as a fine program has been prepared for them. As in the past, the Grand Banquet will terminate the affair. Tickets are \$5.50 in advance, including the Grand Banquet, up to and including April 17. After that date tickets will be \$6.00. Reservations, more information, and an attractive brochure may be obtained from DARA, P. O. Box 426, Dayton.

Oklahoma — The Sixth Annual Hamfest of the Northfork Amateur Radio Club will be held on May 3 and 4, at Quartz Mountain State Park, in Southwestern Okla. Lots of prizes, lots of fun, bring the family. For details write to Pauline Cooksey, Secretary, NARC, Box 321, Carter.

Pennsylvania — Saturday, April 19, at the Arcadia Ballroom, 27 West Orange St., Lancaster, the 13th annual banquet of the Lancaster Radio Transmitting Society. Festivities will begin at 6:30 P.M. Entertainment has been planned for the OMs, YLs, and XYLs. Registrations should be obtained in advance by writing to A. C. Jacoby, W3OY, at 136 Springhouse Rd., Lancaster. Phone Express 2-6093.

Happenings of the Month

NATIONAL CONVENTION PLANS

Amateurs in the nation's capital, organized as the Federation of Radio Amateur Clubs, Inc., are hard at work planning the ARRL National Convention to be held in Washington, D. C., Friday through Sunday, August 15-17, 1958. Headquarters of convention activity will be the Sheraton-Park Hotel, with additional accommodations available at the Shoreham Hotel nearby.

Under the general chairmanship of Byron Roudabush, W3AHG, the committees promise adequate coverage of every field of amateur interest. Some of the program subjects include v.h.f., mobile, RACES, traffic and emergency nets, s.s.b., YLRL, Novice, DX, contest symposiums, FCC, military, RTTY, public relations, ARRL forum, Wouff Hong initiation, QCWA, FCC exams. There will be tours of several Washington points of special interest to hams, such as the Pentagon, Naval Research Laboratory, a Nike installation, Voice of America, etc. For the ladies, in addition, there will be a visit to the White House, boat trip to Mount Vernon, and special breakfasts and luncheons.

One of the features will be an exhibition hall where manufacturers and distributors will show the latest in amateur equipment, and where the military will have elaborate exhibits covering service communications aspects. A ragchew area, with free coffee and donuts, will be nearby. There will of course be numerous contests with prizes, such as for the best QSL and the best mobile.

As plans become final, *QST* will carry more specific information on the program schedule, and the committee will be sending out additional publicity material direct to hams in most areas of the country. The purpose of this brief announcement is to remind you to make your vacation plans for the nation's capital in Mid-August, and to get your reservations in early, both for hotel accommodations and for convention registration.

Room rates at the Sheraton Park are \$7.50 to \$14 single, \$11 to \$16 double. Write the hotel direct. Inquiries concerning motels or other accommodations may be made of the Convention Housing Bureau, 1616 K Street N.W., Washington, D. C.

Convention registration is \$5 in advance, \$7.50 at the door. This fee covers all convention activities except food functions. The convention banquet Sunday evening, the Hiram Percy Maxim Memorial Banquet, is \$6.50. There will be three separate luncheons, one honoring *QST*, one honoring the exhibitors, and one ARRL; and two dinners, one honoring FCC, one honoring Mar-



W3AHG
Convention Manager

coni. Advance registration fees for these and other extra events are shown below (tickets at the door will be slightly higher):

<i>QST</i> Luncheon (Friday).....	\$3.75
Buffet Supper, FCC (Friday).....	6.50
QCWA Coffee Shop (Friday).....	2.00
Luncheon (Saturday).....	3.75
SSB Dinner honoring Marconi (Saturday)...	6.50
Wouff Hong initiation (Saturday).....	1.00
ARRL Luncheon (Sunday).....	3.75

Make checks payable to the Federation of Radio Amateur Clubs, Inc., and mail to P. O. Box 3726, Washington 7, D. C. Acknowledgments will be made.

MM EXPANSION PROPOSED

In time for only a brief mention in our March issue, FCC issued a Notice of Proposed Rule-Making aimed at permitting maritime-mobile operation by amateurs in any of our bands between 7 and 148 Mc., so long as the vessel is within the confines of Region II as defined in the Atlantic City Radio Regulations. Region II is, broadly speaking, North and South America and adjacent waters, and the bands specified are

those which are assigned exclusively for amateur use in this region. Comment by interested parties may be filed with FCC on or before April 30. At this writing, the position of the League has not yet been established.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

In the Matter of

Amendment of Section 12.91 of
Part 12, Amateur Radio Service,
to make additional amateur frequency
bands available for amateur
operations outside the continental
limits of the United States,
its territories, or possessions.

DOCKET NO. 12307

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above entitled matter.

2. The Commission has before it for consideration a petition filed by the Maritime Mobile Amateur Radio Club which seeks amendment of Section 12.91 (b) of the Commission's Rules so as to make additional amateur frequency bands available for use by amateurs operating outside the continental limits of the United States, its territories, or possessions.

3. The petitioner proposes that all amateur frequency bands between 7 Mc. and 148 Mc. be made available for use by amateurs operating within Region 2,¹ as defined in the Atlantic City Table of Frequency Allocations, except when within the jurisdiction of a foreign government; that the frequency band 3500 to 4000 kc. be made available for use by amateurs operating aboard ships "sailing between ports on the East coast; between ports of the Gulf coast; or between ports of these coasts; or between ports of the Pacific coast; and the Hawaiian coast." In addition, the petitioner proposes that the present availability of the amateur frequency bands 21.0-21.45 Mc. and 28.0-29.7 Mc. for operation on a world-wide basis, except when within the jurisdiction of a foreign government, be maintained.

4. Allegations in support of the proposals include:

(1) "The proposal does not materially add to or change in any way the character or distribution of United States amateur operation in widely scattered sections of Region 2. Land-based amateur operations in territories and possessions of the United States scattered throughout the Region are not considered to be detrimental to the position of amateur radio, internationally. Hence, maritime mobile operation between and surrounding these possessions may and should be considered in the same light as land-based amateur stations in these outlying areas of Region 2. The amateur position generally is therefore not affected by the proposed enlargement of maritime mobile operating privileges within Region 2."

(2) "The proposal to use Region 2 as a geographic limitation for all-band maritime mobile operation above 7 Mc. in addition to the presently permitted world-wide maritime mobile operation on the 21 and 28 Mc. bands, conforms to the principle that maritime mobile operation be confined to those frequency bands assigned exclusively to the amateur service. Appropriate dispositions are made in this proposal of the 1800-2000 kc. and 3500-

¹ Region 2 is defined as follows: On the east, a line (B) extending from the North Pole along meridian 10° west of Greenwich to its intersection with parallel 72° north; thence by Great Circle Arc to the intersection of meridian 50° west and parallel 40° north; thence by Great Circle Arc to the intersection of meridian 20° west and parallel 10° south; thence along meridian 20° west to the South Pole.

On the west, a line (C) extending from the North Pole by Great Circle Arc to the intersection of parallel 65° 30' north with the international boundary in Bering Strait; thence by Great Circle Arc to the intersection of meridian 165° east of Greenwich and parallel 50° north; thence by Great Circle Arc to the intersection of meridian 170° west and parallel 10° north; thence along parallel 10° north to its intersection with meridian 120° west; thence along meridian 120° west to the South Pole.

4000 kc. bands in Region 2. 1800-2000 kc. is eliminated from consideration and 3500-4000 kc. band further geographically limited to areas adjacent to the United States coast."

(3) "The proposal does not present a new concept of regulation difficult of understanding on the part of those amateurs affected. Operation of a vessel at sea is such that its position is always officially known and may be ascertained by consulting the ship's log. Use of latitude and longitude for precise geographic location purposes is routine. Ship's position in relation to precise boundaries offers no difficulty."

(4) The proposal to use geographic location in relation to amateur frequency usage is not new. Amateur use of the band 1800-2000 kc. is so regulated and, "the use of Region 2 as a limitation on frequency usage already exists in the Marine service."

5. The Commission believes that the petitioner's proposals, in general, have merit and, by the rules set forth in the Appendix attached hereto, proposes to effectuate the purpose of most of these proposals. The sole proposal which the attached proposed rules would not effectuate is that which would allow use of the frequency band 3500-4000 kc. by amateurs operating beyond the continental limits of the United States, its territories, or possessions provided they are "sailing between" certain United States ports. This proposal, if adopted, would provide no specific boundaries within which such operations would be permitted. Even though the purpose of the proposal may merit approval, the Commission believes such a rule would be so indefinite as to preclude effective administration. Furthermore, adoption of such a rule would place an unreasonable burden upon amateurs attempting to operate pursuant to its terms.

6. The proposed amendments, authority for which is contained in Section 4 (i) and 303 of the Communications Act of 1934 (47 USC 4(i) and 303), as amended, are attached hereto as an Appendix.²

7. Any interested party who is of the opinion that the proposed amendments should not be adopted, or should not be adopted in the form set forth herein, may file with the Commission on or before April 30, 1958, a written statement or brief setting forth his comments. Comments in support of the proposed amendments may also be filed on or before the same date. Comments or briefs in reply to

² It should be noted that the Commission in Docket Number 12160 has previously proposed to amend Section 12.91 and several other sections of Part 12. While the amendments proposed in Docket Number 12160 do not affect the substance of proposals contained herein and are not subject to comment in this Docket, they will, if adopted, cause the rule provisions proposed herein to become a part of a new Section 12.90.

(Continued on page 152)

In January ARRL Hq. had the pleasure of a visit by Joseph Mussche, ON4BK, president of the Union Belge des Amateurs-Emetteurs. Here W1BUD autographs a Handbook as a memento, while W1LVQ looks on. This is not the first picture of ON4BK in QST; the June, 1925, issue showed him as one of the representatives of Belgium at the Paris Congress where the International Amateur Radio Union was formed.





Hints and Kinks

For the Experimenters



CONELRAD MONITORING WITH DISCARDED AUTO RECEIVERS

AUTOMOBILE receivers of the 6-volt vibrator type — as well as 12-volt models if your junk box happens to be that modern — that have been set aside for one reason or another can be put to work as fixed-station conelrad monitors by modifying them for a.c. operation. Only a few minutes labor is involved in the transformation, and if the junk box does not contain the main component required a brand-new one will cost much less than the price of an all new monitor.

The first step in modifying the car receiver is that of removing the vibrator and locating the primary winding of the power transformer. This is usually a center-tapped winding having the outer ends connected to the vibrator socket and the c.t. connected to the d.c. input (battery) terminal. Next, connect the secondary of a 6.3-volt filament transformer between the c.t. and one end of the vibrator transformer primary winding, and then ground one side of this circuit to the chassis. Now, install a 115-volt a.c. line cord for the filament transformer. The on-off switch on the receiver can probably be easily rewired to serve as the on-off control for a.c. operation.

Chances are better than average that the ends of the vibrator transformer primary winding will be terminated directly at the vibrator socket and that these leads need not be disconnected from any other part of the power supply circuit when the above modification is made. However, it is advisable to make a thorough check of the circuit just in case. The resistor and capacitors that are usually connected across the primary winding need not be disconnected.

Naturally, it is advisable to determine how much current the radio normally takes from the car battery in order that you can estimate the required current rating for the filament transformer. If the fuse is still mounted in the receiver, it will give you a clue as to normal receiver power ratings.

— Kendall Young, W5OCV

RE S.S.B. RECEPTION WITH THE UNIVERSAL SERVICE PRODUCT DETECTOR AND COLLINS 75A-3

THE a.v.c. time constant of the 75A-3 is somewhat fast for satisfactory s.s.b. reception. The Universal Service people recognize this, and they furnish a 2- μ f. capacitor with their product detector, with instructions to connect it from the a.v.c. bus to ground in order to slow down the recovery time and improve reception. This does improve reception remarkably; however, one then finds that the receiver requires an excessively

long time to unblock after one's own transmissions. The unblocking problem may be solved in the following manner:

Operate the receiver, using the stand-by feature as described in the instruction book, using a spare pair of relay contacts in the transmitter (Model 10A s.s.b. exciter in my case) to short the stand-by terminals during reception. The above-mentioned 2- μ f. capacitor is returned to the No. 2 stand-by terminal instead of to ground. Thus, during reception it is grounded through the relay, just as if it were connected to the chassis. When transmitting, however, this terminal assumes a potential of about 40 volts negative to ground, which is greater than the a.v.c. bias developed by the signal. Therefore, the a.v.c. bus side of the capacitor is actually slightly positive with respect to the return side. When the relay grounds the capacitor again at the end of the transmission, the a.v.c. bus is momentarily positive, and the receiver is "wide open." The capacitor discharges very rapidly through the d.c. amplifier tube plus the grids of the controlled tubes and normal a.v.c. operation resumes immediately.

Undoubtedly, a paper capacitor is preferable here due to the part-time reverse operation. However, I have been using the electrolytic that was furnished and have had no difficulty after several months' operation. Actually, with this scheme an even larger capacity can be used if desired.

— Robert L. Petersen, KP4ZM

MORE ABOUT WIICP'S TRANSISTOR CODE-PRACTICE SET

THE CIRCUIT shown in Fig. 1 is a modified version of the one described by McCoy in *QST* for May, 1956. This arrangement has more audio output than did an exact duplicate of the original model, and it uses a junk-box filament trans-

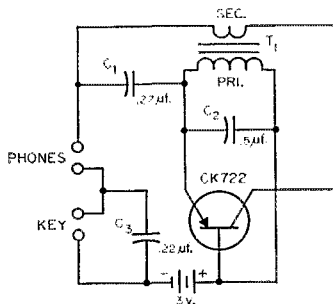


Fig. 1—Circuit of the transistor code-practice set described by W8KX. T_1 is a small 6.3-volt filament transformer.

former instead of a universal output transformer. C_2 has been added in the interest of increased audio output, and C_3 suppresses key clicks that show up without the capacitor.

Connecting the 0.5- μ f. capacitor across the filament transformer does cause the oscillator to generate a different tone than that emitted by WIICP's unit. However, the frequency or pitch of the signal can still be varied by increasing or decreasing the capacitance of C_1 .

— *Walt Strauss, W8KX*

FIG. 2 is the circuit of a transistorized code-practice oscillator that started out to be a duplicate of the one described in *QST* for May, 1956. It now has a pair of resistors and a couple of capacitors not used in the original set, but it does use the same transformer and transistor.

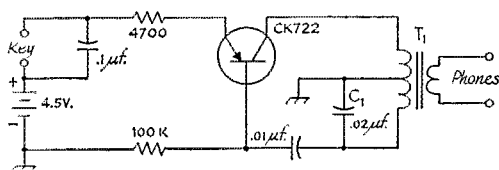


Fig. 2—Schematic of W3UYC's transistorized code-practice oscillator. Resistances are in ohms; resistors are 1/2 watt. Capacitors are paper. T_1 is a Merit type A-2900 universal replacement output transformer.

The alterations can be easily made by anyone who has constructed the 1956 model, and an improvement in tone and the elimination of sharp key clicks will be the reward. The output of the modified unit is nearly a sine wave. The circuit draws only about 0.5 ma. from a 4.5-volt battery, it follows a bug at high speed and it will work with headphones of almost any impedance. The tone can be changed by varying the capacitance of C_1 in steps of 0.01 μ f.

— *George Messenger, W3UYC*

USING THE GONSET SUPER-SIX AHEAD OF A COMMAND RECEIVER

AN EXCELLENT, low-cost communications receiver can be assembled by adapting the BC-453 Command receiver (190-550 kc.) for use with the Gonset Super-Six converter. This combination has been used at this station for s.s.b., c.w. and a.m., and has outperformed several amateur receivers costing many times more.

The simple modification necessary to the Command receiver is accomplished by removing approximately 180 turns from one end of L_1 , L_3 and L_5 , the antenna, r.f. and oscillator coils, respectively, in addition to the removal of the powdered-iron slugs. The tap on L_1 is unimportant in this instance and may be neglected if desired by connecting the grid coupling capacitor directly to the hot end of the coil. The trimmers can be adjusted for optimum gain at 1430 kc., the output frequency of the converter, by using a broadcast signal as a source. Modification of the coils

does not prevent the use of the BC-453 for other purposes at a later date since the coils come as a plug-in set and can be easily replaced with the original type.

If desired, the usual Command receiver modifications for phone jack, r.f. gain control, b.f.o. and a.v.c. switch, noise limiter, etc., can be made at the same time. The construction of a small 200-250 volt a.c. power supply with a separate inexpensive 26-volt filament transformer (Stancor P-6469) completes the unit. Voltages for the converter are obtained from the same power supply, of course, and B-plus should be dropped to 130-180 volts through a suitable resistor for optimum operation.

No special precautions need be observed in connecting the converter to the BC-453. In the interests of safety, however, it should be pointed out that at least one variety of commercially available "plug-in" power supply for Command receivers should be used with extreme care since if the line cord is plugged in backwards the receiver cabinet will become hot to ground. Severe shock or death might result if a grounded lead and the receiver cabinet is touched at the same time!

— *Ronald E. Delp, W6DAW*

Editor's Note: We remind newcomers to amateur radio that W2TZI also did some interesting tricks with the Gonset-BC-453 combination. See *QST*, June, 1955, or page 73 of *The Mobile Manual for Radio Amateurs*, for complete details.

DRIVING SOFT COPPER PIPE INTO THE EARTH

SOFT copper pipe may easily be driven into the earth to almost any required depth, providing it does not run into large rocks or other solid objects, by connecting a garden hose to the upper end of the pipe.

After a small guide hole has been started with a crowbar or other tool, turn on the water. Hydraulic action will wash the earth away from the lower end of the pipe allowing it to be pushed downward.

Recently, a soft copper pipe was driven seven feet into the ground using this method.

— *Peter Bloom, KN2YSO*

HOMEMADE FLEXIBLE SHAFT EXTENSIONS

REQUIRING a flexible extension shaft for a new transmitter, I hit upon the idea of using the inner shaft of automobile speedometer cable.

By heating the ends of the cable after cutting it to length, and by shoving them into hollow 1/4-inch plastic tubing, adapters that fit standard shaft couplers are provided. The beauty of the extension is that insulated shaft couplers are not required and it will work well as a drive when bent over 90 degrees.

A trip to the auto-wreck lot and an investment of a quarter will give you more than a year's supply of flexible shaft.

— *Bill McCullough, VE3BCT*

TUBELESS CONVERSION FOR 75-METER MOBILE

THOSE WHO have recently acquired a car with 12-volt system may be somewhat staggered at the prospect of acquiring, or modifying, both a receiver and transmitter for 12-volt operation. The following temporary expedient takes care of the receiver and allows one to concentrate his energy and finances on the rig.

Most of the modern auto receivers use an i.f. of 262.5 kc. With the receiver tuned from approximately 1356 to 1606 kc., the second harmonic of the mixer-oscillator beats with 3.5- to 4.0-Mc. signals to provide a 262.5 kc. i.f. All that is needed, then, is an input circuit to match the low impedance of the 75-meter mobile antenna. In the interest of simplicity, it is possible to bypass the r.f. amplifier and to use a fixed tuned, broadly resonant circuit. Sensitivity, as provided by this system, is adequate, and while the selectivity is not all that might be desired, it is not as poor as might be expected.

Parts required are a 100K resistor, a d.p.d.t. wafer switch, and a small coil of approximately 40 microhenries, as shown in Fig. 3. The coil

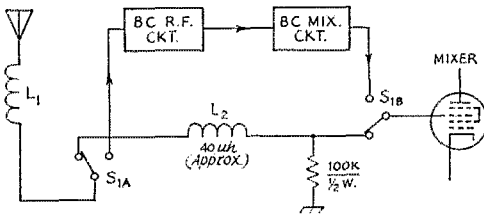


Fig. 3—Input circuit for the tubeless 75-meter conversion system suggested by K6YRQ. L_1 is the whip antenna loading coil and S_1 is a d.p.d.t. selector switch. L_2 may be slug tuned, or it may be approximately 85 turns of No. 32 enameled wire close-wound to a length of $\frac{3}{4}$ inch on a $\frac{1}{2}$ -inch diameter form.

should be self-resonant somewhere near 4.5 Mc., as determined with a grid-dip meter. The antenna input terminal of the receiver is fed in series with the coil to the mixer grid, with the 100K resistor for grid leak. This, in effect, forms a pi net, with the input capacity of the mixer tube on the high impedance end, and the capacitance of the coaxial cable from antenna on the low impedance side.

Although many refinements are possible, the system described performs surprisingly well without involving complication or expense.

— W. S. Skeen, K6YRQ

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QST thanks Don Middleton, W0NIT, for reporting his "150 stations worked" while using a tubeless conversion system. Don coupled his 75-meter mobile antenna directly to the front end of a Motorola type 75MF (Ford No. FEG 18806-H) receiver. This particular set uses tubes designed to operate with plate and screen voltage supplied directly from a 12-volt storage battery

and a transistorized audio section. Tubeless conversion should be of particular interest to amateurs owning this general type of receiver because the sets have no high-voltage plate supply which may be used to power a standard converter.

W0NIT, working along with W0ANO and W0CYK, has found out a few other things about tubeless conversion. First, the 75-meter signals may show up at four or five spots on the broadcast receiver dial because of the relationship between the harmonics of the receiver oscillator and the signal frequency. Tuning at the high-frequency end of the dial gives the most band spread.

Secondly, a low-Q parallel-tuned trap, tuned to approximately 1560 kc. and connected in series with the antenna lead (inside the receiver), will suppress broadcast signals that otherwise feed through in the 1506.25 to 1606.25 range — the receiver range used to tune the 75-meter signals.

And last but not least is the desirability of using a whip antenna that has been resonated right on frequency. Performance of the tubeless conversion arrangement falls off considerably when the antenna loading coil is only a turn or two off resonance. — Ed.

HOLDERS FOR RADAR-TYPE CRYSTALS

ALTHOUGH it is generally known that a National No. 8 grid clip makes an excellent holder for the large end of the surplus radar-type crystals, it may not be so easy to dig up a holder/connector for the small end of these crystals. Fortunately, you've very likely got a junk box item — an 8-prong socket — that will provide eight "exact fit" clips that need not be soldered to the diode.

— William R. Deal, K1CLD

ANOTHER "STARTING NUTS" KINK

WHEN space limitations make it impossible to use either your hands or a regular tool to hold a nut while the screw is being started, try binding the nut in position with surgical adhesive tape. Punch a hole in the tape to permit the screw to pass through, and then work the tape and nut into position with the aid of a slim tool. Press the tape onto the surrounding surface, and if the future is one that you may want to remove in the future, leave the tape in place for the next cycle.

More difficult cases can be handled by cementing the nut to a strip of cardboard. Model airplane cement or any other quick-drying binder will hold the nut firmly until the screw is started.

— George W. Tappan, W1W0.1

ANOTHER CLEANING HINT

OFTEN, when chassis wiring is completed, there are small blobs of solder, wisps of wire or pieces of shield braid that are difficult to remove from inaccessible corners and other hard-to-get-at places. These fragments may easily be picked up by means of pressure sensitive tape (cellophane, electrical or medical adhesive) taped sticky side out to the end of a pencil or soldering aid.

— Laurence Leveson, W2KKT

11th V.H.F. Sweepstakes Results

Six-Meter DX Rockets Scores and Activity to Record High

IT HAD to happen eventually! Since the earliest days of v.h.f. contest planning we've been haunted with the thought that someday there would be a major band opening for east-west work at a time when the party would be underway for one end of the path but not for the other. It finally came on Saturday, Jan. 4, and we're still hearing about it!

The band was wide open between the East and West Coasts, before noon eastern time. By 1400 EST it showed no signs of dropping off, and the greatest mass confusion in the history of v.h.f. contests built up. Fortunately the band provided an even better session the following day, when everybody could count his contacts, so the wrath of the Westerners was assuaged somewhat, as they piled up their ARRL Section multipliers while things were hot.

A uniform local starting time has much to recommend it. The possibility of a debacle such as resulted this year has been accepted as a calculated risk without incident heretofore, but if F_2 DX continues as it currently is running there'll be some changes made before another SS. We have plenty of suggestions on file; not all of them couched in polite language!

Even ignoring the change in scoring rules, which made all scores much higher, the 1958 V.H.F. Sweepstakes broke records in every measurable category. Valid entries totaled 1183, an increase of more than 41 percent over the 1957 total, then a record. The increase in 6-meter activity was phenomenal — up 106 percent over the best year prior to 1956 and 324 more than the 1957 record. This was not done at the expense of 144 Mc., for 2-meter entries totaled 642, an increase of 107 over 1957.

Propagation feature of the weekend was the superb 50-Mc. DX on both days. Back-scatter from Europe was in from early Sunday morning until well after noon, making it possible to work just about every U. S. and Canadian Section where there was c.w. activity. Section multipliers of 25 or more were amassed in nearly all parts of the country as a result of this treat, and the more readily-worked direct F_2 skip kept the band in a turmoil the entire day. Some idea of the extent of the F_2 opening can be judged from the record of the more enterprising KL7 and VE7 operators. KL7CDG, Anchorage, Alaska, with only about 10 watts, worked 67 stations in 22 ARRL Sections. VE7AFB, Abbotsford, B. C., worked 107 in 25 sections for 7455 points.

A record for contacts and total score was set by K2ITQ, Riverton, N. J. Brothers Joe (K2ITP) and Hal Taylor combined forces to work 507 stations in 26 ARRL Sections, for 34,468 points. They used both 50 and 144 Mc. The writer of this piece concentrated on ionospheric scatter and back-scatter for DX sections and ended up with a

record 32. Using two bands, 297 stations were worked for 24,402 points. This was a "just-for-fun" score, as your v.h.f. ed enjoys certain advantages that justly keep him out of the competition.

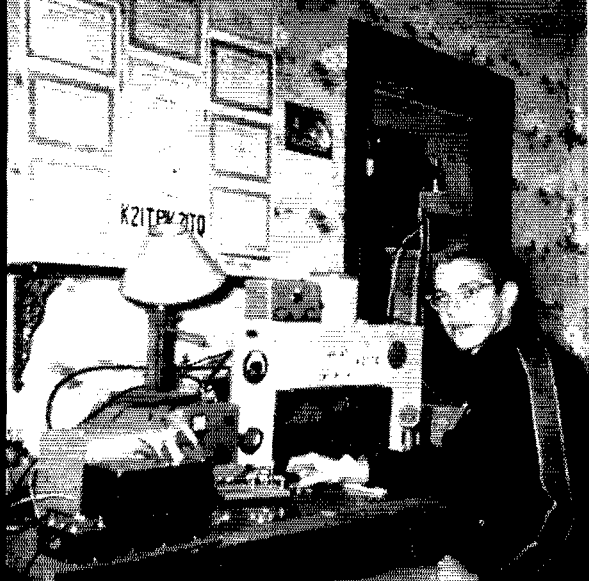
The gal who has done it so often before turned the trick again. Helen Harris, W1HOY, posted the top competitive score, 23,940 points. Helen bored a hole through the low-end QRM throughout the party, piling up 315 contacts in 28 sections, on 50 Mc. alone. Not only was this the country's top competitive score, it won the Technician and Section awards for Eastern Massachusetts, and was the country's best 6-meter effort as well.

The winner of the Eastern Pennsylvania award, W3KKN, made the most contacts of any single operator, 408. Ernie's section multiplier of only 18 kept his from being easily the No. 1 score of

CLUB SCORES

Club	Aggregate	Certificate Winner
South Jersey Radio Assn.	354,514	W2BLV
Midwest V.H.F. Club (Ill.)	209,661	W9WOK
Hampden County Radio Assn. (Mass.)	195,501	W1RPU
Dayton Amateur Radio Assn.	171,403	W8ILC
Mt. Airy V.H.F. Radio Club (Penna.)	169,946	W3KKN
Hartford County Amateur Radio Assn.	157,649	W1LGE
Mobile Sixer's Amateur Radio Club (Penna.)	128,588	W3HPY
National Capital V.H.F. Society	67,375	W4UCH
North Penn Amateur Radio Club (Penna.)	43,167	W3TDF
Waltham Amateur Radio Assn. (Mass.)	42,805	W1QMN
Rochester V.H.F. Group	27,392	K2CEH
The 6 Meter Club of Chicago	25,092	K9HWY
Lake Success Radio Club (N.Y.)	24,435	W2YHP
CQ Radio Club (Conn.)	19,493	W1FFP
Cathay Amateur Radio Club (Calif.)	17,925	K6EOW
Keystone V.H.F. Club (Penna.)	17,004	W38ST
Lakeland Amateur Radio Assn. (N.J.)	14,212	W2BDL
York Road Radio Club (Penna.)	13,986	W3ULC
V.H.F. Institute of New York	12,803	W2AOC
El-Ray Amateur Radio Club (Mass.)	10,416	W1JSM
Springfield Amateur Radio Club (Ohio)	9852	W8EHW
Totem Amateur Radio Club (B.C.)	9502	VE7NM
Taktronix Employees Amateur Radio Club (Ore.)	9282	K7AAD
1200 Amateur Radio Club (Mass.)	8382	W1QTB
Fox River Radio League (Ill.)	8038	K9CEM
Greensboro Radio Club (N.C.)	7498	W4ZXI
Framingham Radio Club (Mass.)	7354	W1ZVL
DeVry Technical Institute Amateur Radio Society (Ill.)	7070	K9JVZ
Seneca Radio Club (Ohio)	6902	W8MVE
MIC Amateur Radio Club (Penna.)	6872	W3PZC ¹
Nortown Amateur Radio Club (Ont.)	5852	VE3MR
Frankford Radio Club (Penna.)	5520	W3ZSS
Phoenix V.H.F. Club	5307	W7JBX
Air Capital Amateur Radio Assn. (Kans.)	5032	W0ZTB
West Side Radio Club (Ont.)	4828	VE3AIB
Midwest V.H.F. Assn. (Mo.)	3614	K0BVL
The 8 Meter Club of Dallas	2596	W5FEG
Turlock Amateur Radio Club (Calif.)	2100	K6SNA
Town of Barnstable Radio Club (Mass.)	1682	W1JMS
Central Kansas Radio Club	1586	W0BDK
Radio Amateurs Club of Knoxville	1305	K4KYL

¹ W3GKW, opr.
54 other clubs mentioned, but with less than the required 3 logs.



Joe Taylor, K2ITP, and brother Hal, K2ITQ, away when picture was made, pooled their operating skills to make the highest QSO total in the history of v.h.f. Sweepstakes competition. K2ITQ worked 507 stations on 50 and 144 Mc. Their 26 sections gave them 34,468 points.

the country, though 22,848 points was good for No. 2. WILGE, Windsor Locks, Conn., demonstrated the value of c.w. work on 6 by posting the No. 3 score, 20,124 points. Ed worked 258 stations on 6 and 2, in 29 sections.

Other leaders in sections worked included W8RMH, Pontiac, Mich., with 29, W4UCH, Sterling, Va., 28 on 50 Mc., K2CBA, Troy, N. Y., leading the second call area with 26, and W6BAZ, Santa Rosa, Calif., top West Coast station with 26. Paul made 161 contacts on 50 Mc. alone, for 11,556 points. W4IKK, Signal Mountain, Tenn., well removed from any major activity centers, used c.w. to good advantage in working 79 stations in 27 sections, for 5846 points. The best effort in the Middle West was turned in by W7VMP, operating W9KLR, Rensselaer, Ind. Dick worked 215 on 50 and 144 Mc. in 23 sections, for 14,157 points. Here again, skill with the code paid off handsomely.

The story was by no means all 6 meters. W3IBH, Philadelphia, worked 225 stations in 10 sections, for 9000 points. W1OAX, Coventry, Conn., wasn't far behind, with 186 in 12, for 8184.

Club competition was fiercer than ever. The method of scoring was modified to favor the areas where section multipliers are hard to come by, but it is interesting to note that the same six clubs wound up in the first six places as in 1957. The perennial winners of the V.H.F. SS gavel award, the South Jersey Radio Association, repeated, and by a margin wider than ever, swamping their nearest competitor, the Midwest V.H.F. Club, by more than 145,000 points. Just goes to show that you can't heat a large and active membership, skilled operators, and a location in the midst of the hottest v.h.f. territory in the country. (Or perhaps you can — but it isn't easy!) The Hampden County Radio Association of Springfield, Mass., snowed under their down-the-river rivals, to win third place, and permanent possession of the trophy that these two clubs have been battling for over the past five years. This private

interclub competition, incidentally, turned out to be a fine thing for club interest and friendly rivalry.

The Dayton Amateur Radio Association pushed the Mt. Airy V.H.F. Club back two notches in the standings, and the Hartford County Amateur Radio Association slipped back to the No. 6 spot as their rivals moved up from 4th to 3rd.

Feedback: This being the first contest writeup since the results of the September V.H.F. Party appeared, this is as good a place as any to correct errors made in reporting that affair. Our apologies go to the crew of 7 ops at W2PRF, members of the Pompton Valley Radio Club, who worked the massive total of 486 stations, for 19,641 points, on 4 bands. We missed them completely in writing up the results of the party in December QST, but now acclaim their work as tops in the country. And apologies to VE3AIB, whose call was printed as VE3AII. And to KN9HIC and WN3JNT, whose calls were listed as HCT and JCT, respectively. If there is any redeeming feature about such errors, it is that they usually come about because activity and reporting in v.h.f. contests are growing by leaps and bounds.

SCORES

In the following tabulation, scores are listed by ARRL divisions and sections. Unless otherwise noted, the top scorer in each section receives a certificate award. The highest-scoring Novice and Technician also receives a certificate in each section where at least three such licenses submitted valid contest logs; footnotes denote these winners. Columns indicate final score, number of contacts, number of different sections worked, and the bands used. A represents 50 Mc., B 144 Mc., C 220 Mc. and D 420 Mc. Multioperator stations are shown at the end of each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

- W3KKN 22,848-408-18-AB
- W3HYJ/3 16,988-275-21-AB
- W3TDF 16,480-259-22-AB
- W3HFY 15,060-252-20-AB
- W3TYX 12,250-245-15-AB
- W3CL/3 9660-210-13-AB
- W3VOC 9196-209-12-AB
- W3IBH 9000-225-10-1B
- W3SAO 856-2388-8-AB
- W3YEA 7866-207-9-AB
- W3ZEY 6409-176-8-AB
- W3FSC 6358-187-7-AB
- W3JBA 6012-167-8-A
- W3FQD 5909-156-9-A
- W3IZU 5882-172-7-AB
- W3NKK 5824-182-6-AB
- W3HYO 5790-179-7-AB
- W3CCN 5712-136-11-AB
- W3AJF 5438-151-8-AB
- W3ZOR 5040-126-10-A
- W3ULC 4796-109-12-AB
- W3BYN 4672-146-6-A
- W3OR 4250-125-7-AB
- W3FTF 4068-113-8-AB
- W3UML 3960-110-8-AB
- W3FTU 3910-99-10-A

- W3CXU 3898-113-7-AB
- W3ZIE 3750-125-5-A
- W3ZKV 3570-119-5-A
- W3AZE 3504-110-6-AB
- W3SST 3502-103-7-AB
- W3OZF 33742-124-4-B
- W3OWW 3468-102-7-AB
- W3AMG 3224-115-4-A
- K3BGT 3220-115-4-A
- W3ZSS 3136-112-4-AB
- W3PMG 3074-53-19-AB
- W3JLU 3066-110-4-B
- W35XD 3040-80-9-AB
- W3VGN 2912-104-4-AB
- W3OZE 2910-97-5-B
- W3TXO 2910-97-5-A
- W3YWW 2880-80-8-A
- W3ZHF 2850-95-5-A
- K3CHN 2600-100-3-A
- K3BHEZ
- RN3BK 2576-92-4-B
- K3BCM 2444-94-3-A
- W3CPT 2408-86-4-B
- W3PZC 2200-100-2-AB
- W3GNU 2160-72-5-A
- W3FOZ 2080-80-3-AB
- W3AYG 1960-70-4-B
- W3MIU 1932-81-2-B
- K3AGG 1885-73-3-A
- K3APP 1848-66-4-A
- W3J 1764-71-5-A
- K3BKH 1770-59-5-AB
- K3CIV 1752-73-2-A
- W3FTU 1742-67-3-A

W3JXT .1710-45-9-A
W3JHT .1666-60-4-A
K3BUB .1624-58-4-A
W3CPS .1620-54-5-A
W3MPP .1612-62-3-B
W3WJL .1534-55-2-A
W3MDE .1400-50-4-A
W3UUR .1400-50-4-A
W3RRZ .1316-47-4-B
W3ROB .1316-47-4-B
K3CCR .1300-50-3-A
W3JAY .1274-49-3-B
W3RIR .1248-52-2-A
KN3BPH.3
1232-44-4-B
W3BRV .1222-47-3-A
W3CPH .1196-46-3-B
W3DRU .1170-45-3-B
W3DYL .1056-44-2-A
W3MYV .1036-37-4-A
W3HKZ .1008-42-2-A
K3CHR .1008-42-2-A
W3ZRR .1001-41-3-A
W3UQU .980-35-4-A
W3ELO .958-31-4-B
W3OCL .962-37-3-B
W3GPK .960-40-2-A
W3GCR/3 936-36-3-B
K3BYT .936-39-2-A
KN3BUZ .936-36-3-B
W3DEX .868-31-4-B
W3PFY .868-31-4-B
W3FLD .868-31-4-A
W3JRY .840-30-4-A
W3AHL .804-34-2-A
W3OZM .768-32-2-A
W3JUN .648-27-2-A
W3SOH .640-25-4-A
W3RNF .552-23-2-A
W3PNL .528-22-2-B
KN3BMD/3
520-20-3-B
W3WNF .504-21-2-B
W3DBL .434-16-4-A
W3ZCE .384-16-2-A
W3AWA .364-14-3-A
K3BRJ .364-14-3-B
W3DBN .330-11-5-A
W3AXC .304-12-1-A
W3YTR .284-12-2-A
W3TJQ .280-10-3-A
W3ALR .242-11-1-B
KN3AKR .242-11-1-B
W3LHF .216-9-2-B
KN3BV .110-5-1-B
W3MUM (8 ops)
4176-117-8-ABC
W3UBO (W38 IIO UB)
3749-83-13-A
W3MRM (W3MRM
K3CP)
2669-80-7-A
K3AIR/3 (4 ops)
2192-89-4-B

Mid.-Ind.-I.C.

W3CGV .6304-140-13-ABCD
W3KMY .6090-105-19-A
W3UCR .3880-10-4-AB
W3LAW1 .3744-10-4-8-A
W3OJU .3596-63-19-A
W3YGD .3312-92-8-ABC
W3ASD .2196-61-8-ABC
W3VAM .1892-45-12-AB
W3EHV .1820-61-12-ABC
W3AHQ .1742-67-3-AB
W3LFN .1664-52-6-A
W3LCC .1620-56-5-AC
W3YNK .1248-47-3-A
W3EB .1222-48-3-B
W3LMC .1190-43-4-ABD
W3ELO .1092-39-4-A
W3HYE .1080-45-2-A
K3AMG .988-38-3-A
W3KLA .960-32-5-AB
W3GGO .924-69-4-A
W3IDF .846-35-2-A
W3DMS .825-28-5-A
W3JZI .720-30-2-A
W3GPK .646-19-7-B
W3CQH .600-25-2-A
W3MBS .588-21-4-B
W3ICD .576-24-4-B
K3JAY .572-22-3-A
W3LSS .308-11-4-A
W3DHQ .288-12-2-A
W3NKO .288-12-2-B
K3BBH .288-12-2-A
W3CTY/3 (4 ops)
1486-129-7-AB

Southern New Jersey

W2BLV 15,652-301-16-AB
K2HDI
14,364-257-18-AB
K2JVN 11,712-244-14-AB
W2RBB
10,516-239-12-AB
W2JAV 10,500-210-15-AB
W2PAU
10,274-234-12-AB
W2KPC 10,212-223-13-AB
W2ELF 10,101-241-11-AB
W2GGO .9888-206-11-AB
W2WV .9812-223-12-AB

K2MIO .8160-204-10-AB
W2ADA .7163-189-9-AB
W2LBN .6878-181-9-AB
K2HIY .6720-170-11-AB
W2EWN .6498-203-6-AB
W2YRU .6468-170-8-AB
W2HBE .6103-180-7-AB
W2NSH .6061-160-9-AB
W2QBH .5882-173-7-AB
W2DCP .5640-141-10-AB
K2ZUL .5610-187-5-AB
W2ORA .5463-131-11-AB
W2QUN .5400-140-8-AB
W2NFL .4800-150-6-AB
W2OGJ .4590-153-5-AB
W2DAJ .4368-156-4-AB
K2JKA .4320-108-10-AB
W2OSD .4312-154-6-AB
W2QUN .4300-130-6-AB
K2GCO .3820-96-10-A
K2GCD .3752-134-4-AB
K2RRK .3668-131-4-B
W2GLV .3540-177-10-AB
W2VNC .3360-120-4-B
K2ZUL .3340-120-4-B
K2MMQ .3116-82-9-A
W2NSJ .3060-90-7-A
W2ESG .2992-88-7-AB
K2AWT .2948-79-9-A
K2APJ .2912-104-4-B
K2KSHJ .2884-104-3-AB
K2ZTT .2848-89-6-AB
K2UDA .2782-107-3-AB
K2CKK .2744-98-4-B
K2DNF .2704-104-3-B
K2DQC .2520-90-4-B
W2DHI .2370-79-5-AB
K2KUN .2338-84-4-A
K2VPA .2268-81-4-A
W2BAY .2210-85-3-AB
K2KFF .2156-77-4-B
K2TYW 2088-58-8-A
K2PVM 1976-76-3-B
W2UCV 1898-75-3-B
W2GVV .1878-73-3-B
K2JGU .1848-66-4-B
K2KIQ .1848-77-2-AB
W2SDZ .1776-74-2-B
KN2HPJ 1768-68-3-AB
W2SDU .1764-83-4-B
K2UXB .1734-51-7-A
K2PRE .1700-50-7-A
W2DMU .1560-65-2-A
K2NZW .1560-52-5-A
K2LDQ .1540-55-4-A
K2ULI .1520-55-4-A
K2PTJ .1440-60-2-AB
W2OJQ .1326-51-3-AB
W2TAV .1326-51-3-B
K2BG .1320-55-2-B
K2HDN .1320-55-2-B
W2PUC .1320-55-2-B
W2EXT .1300-50-3-B
W2SDB .1248-52-2-A
W2ENB .1204-43-4-A
K2KFO .1200-40-5-A
K2MIV .1176-49-2-A
K2SNN .1140-42-3-A
K2HHO .1040-40-3-B
K2YRW .1032-43-2-A
W2LFN .984-41-2-A
K2PVT .936-36-3-A
K2BIC .888-37-2-B
K2BIC .888-37-2-B
W1YRZ .827-35-3-A
K9CKQ/2 806-31-3-A
W2BDI .744-31-2-B
W2BGF .728-28-3-B
K2MIS/2 728-28-3-B
K2MIS/2 728-28-3-B
KN2YSJ .650-25-3-B
W2ZX .648-27-2-B
K2KTS .600-25-2-AB
W2ORC .576-24-2-A
K2KCA .564-24-2-A
K2KBC .512-32-6-A
K9GYO/2 480-20-2-A
K2THX .408-17-2-A
W2OBR .420-10-2-AB
K2GUK .168-7-2-A
W2MND 96-4-2-B
K2OHM .140-4-2-A
K2ITQ (K2S ITP ITC)
36,468-507-26-AB
W2LY (W2S LY UPE)
2400-100-2-AB
K2UFE (K2UPE KN2VQH)
2340-90-3-B

Western New York

K2CEH .8092-119-24-AB
K2JFY .5265-98-17-A
K2PPI .3895-103-9-AB
W2LNE .3720-124-5-B
K2LRL .2828-101-18-AB
K2MRF .2468-4-8-B
W2OWF 2200-55-10-AB
W2RHQ 2100-42-15-AB
W2ROA .2016-72-4-B
KN2DGR
1806-65-4-B
W2VJV .1723-43-4-B
K2PEY .1728-54-6-AB
K2UXF .1666-49-7-A
W2QY .1300-50-3-B

K2RFD .1260-36-8-A
K2RUM .1176-42-4-B
KN2YJN 1092-42-3-B
W2YIK .1020-34-5-AB
W2UAD .720-30-2-B
K2VFN .698-26-3-A
K2PLN .552-23-2-B
K2RZI .528-22-2-A
K2MPE .520-20-3-A
K2DPW .504-21-2-AB
W2RUJ .484-22-1-B
KN2HDU/2
468-18-3-B
W2TOP .156-19-2-B
KN2ZFY .418-21-1-B
K2IAV .374-17-1-B
K2DPV .360-15-2-B
W2KIO .352-16-1-B
W2ZS .352-16-1-B
KN2INH 336-14-2-B
KN2ZUR 312-13-2-B
K2YIH .324-11-2-A
K2ZPO .261-10-3-A
K2ZDG .220-10-1-B
K2ZUL .208-87-12-AB
W2BLO .154-7-1-B
W2WZQ/2 144-6-2-B
K2EAY .121-6-1-A
W2YBK .111-5-1-B
K2ELE .110-5-1-B
K2ZQP .66-3-1-A
K2TKJ/2 (5 ops)
5324-121-12-AB
K2ERQ (4 ops)
4350-95-13-AB
K2LZF (K2S DLM LZP)
3688-87-12-AB
W2TCU (W2TCU K2QVC)
2640-67-10-A

Western Pennsylvania

W3RUE .2250-45-15-AB
W3BWU .1230-41-5-A
KN3AQY 990-33-5-B
W3TFE .720-24-5-AB
W3GCO .630-28-2-AB
W3PIE (W38 AKZ SGA)
930-32-5-AB

CENTRAL DIVISION

Illinois

W9WOK 9196-210-12-AB
W9WOL 716-212-8-AB
K9CSP .6480-180-8-A
W9ALD .6370-179-5-AB
W9EQV .6218-152-7-BC
W9ROS .4912-155-6-A
K9HWY .4808-158-6-AB
W9EET .4320-125-6-AB
W9DRN .4230-141-5-ABU
W9MYC .4050-135-5-AB
K9FAO .3752-134-4-A
W9VNW .3744-117-6-B
W9BPB .3648-114-6-B
W9UUB .3640-130-4-A
W9PPV .3640-130-4-AB
W9BOZ .3552-111-6-B
W9YVP .3332-119-3-A
K9BCH .3300-110-5-A
W9YLY .3206-103-6-AB
W9MTC .2880-91-4-AB
K9DTB .2848-116-4-A
K9CKM .3220-115-4-A
KN9HIE
3090-103-5-B
K9DPV 3086-102-4-AB
W9AGM .2800-100-4-AB
K9EWW .2744-98-4-A
W9IMG .2720-85-6-A
W9VIT .2720-85-6-B
K9BDI .2700-80-5-B
K9CEM .2700-89-5-B
W9BBA .2548-91-4-A
K9DKG .2520-90-4-A
K9BEE .2492-89-4-B
KN9JLU 2380-85-4-B
W9RPH .2366-91-3-AB
W9RDW .2310-83-4-AB
W9CVQ .2286-86-3-AB
W9UUF .2286-86-3-AB
W9AKR .2184-78-4-A
K9IEH .2184-78-4-A
K9JTV .2184-91-2-A
W9PFT .2170-78-4-B
W9RPM .2156-77-4-A
W9GDM .2130-71-5-B
K9DOC .2128-76-4-A
K9ACU .2080-80-3-A
KN9IHI .2072-74-4-B
W9NDK .2070-69-5-B
K9FNB .1950-65-6-A
W9PME .1932-69-4-B
W9QKE .1920-80-2-AB
K9DWE .1848-66-4-B
K9EZN .1848-66-4-B
W9FTT .1846-71-3-B
W9RPG .1842-67-3-B
K9DNT .1734-72-4-A
K9GHN .1708-61-4-B
K9JSL .1690-63-3-B
W9UMD .1680-60-4-B
W9OKB .1638-63-3-B

W9NYO .1624-58-4-AB
K9APQ .1624-58-4-AB
W9KVC .1612-62-3-AB
K9DLS .1598-57-4-A
W9PDD .1560-60-3-A
K9KAC .1560-65-2-A
K9DHH .1540-55-4-A
W9LOG .1530-51-5-B
W9REM .1530-51-5-B
W9KQK/9
K9AHL .1508-58-3-A
K9AKL .1404-54-3-A
W9YNQ .1400-54-3-A
W9RON .1380-46-5-B
K9DDY .1344-56-2-A
K9JFN .1344-56-2-A
W9WN .1300-50-3-B
W9YNN .1300-50-3-B
K9AMG .1300-50-3-A
KN9JTR 1274-49-3-B
W9DRJ .1260-45-4-A
K9C8S .1254-57-1-A
K9HNL .1196-46-3-AB
W9KZS .1176-42-4-AB
W9HLC .114-34-4-AB
W9SKF .1144-52-1-AB
K9CTT .1144-44-2-A
K9JMX .1128-47-3-A
W9PPA .1120-40-4-B
W9CRN .1092-42-3-B
K9ACQ .1092-39-4-A
K9G5S .1040-40-3-B
W9DJ .1014-39-3-B
K9HIA .988-38-3-A
W9YOL .980-70-4-A
KN9JDE .962-37-3-B
K9LHB .936-36-3-AC
W9UJL .936-36-3-AC
W9OSQ .864-37-2-AB
K9ITS .836-38-1-A
K9LHL .832-32-3-ABC
W9FGL .814-37-1-A
W9GMK .792-38-2-A
W9SLZ .792-36-1-AB
K9DQZ .792-36-1-AB
W9BOD .770-35-1-ABC
K9SDX .726-33-1-A
K9KEX .704-32-1-A
K9GFS .704-32-1-A
W9PDK .682-31-1-A
W9MTC .680-29-2-AB
W9SFE .624-51-2-B
W9VPU .624-24-3-B
KN9KPH .616-28-1-B
K9KCG .600-25-2-A
K9BBO .594-27-1-A
W9VTC .588-21-4-A
K9KLA .560-20-4-A
K9GZI .552-23-2-A
W9QKK .550-25-1-B
K9AZE .520-20-3-A
W9WTF/9
508-23-1-B
W9FHS .462-21-1-B
W9HWW .462-21-1-B
K9DTE .462-21-1-A
W9MKW .432-18-2-A
K9AGS .408-17-2-AB
K9B9 .408-17-2-AB
K9DSP .396-36-2-A
W9BDM .374-17-1-B
W9UJ .374-17-1-A
W9ALR .336-14-2-B
W9ISY .330-15-1-AB
W9MTC .330-15-1-AB
K9ANT .320-15-1-AB
K9RRK .330-15-1-A
W3MMD/9
242-11-1-B
K9BWM .242-11-1-A
W9GLM .232-11-1-A
K9EFS .232-11-1-A
K9ARG .220-10-1-A
W9UMM .216-9-2-B
W9RVG .216-9-2-B
W9ZGP .198-9-1-B
W9KML .192-8-2-B
W9UMU .176-8-1-A
K9SBS .176-8-1-A
W9ZQT .171-8-1-B
W9PNT .154-7-1-B
K9AMT .154-7-1-A
K9KPM .132-6-1-A
W9MTC .120-5-1-AB
K9ERT .110-5-1-A
KN9JBM .44-2-1-B
W9VJU .22-1-1-B
W9LBU/9 (6 ops)
32015-115-4-AB
KN9IRG (KN908 IRG KOUC
KUT) .1386-50-4-B
K9HRL/9 (W9UHM K9HRD)
1170-39-5-B

Indiana

W9KLR
14,157-215-23-AB
W9CSP .3724-98-9-A
W9AFC .352-6-2-AB
W9MHP .3298-97-7-A
K9JRT .3264-102-6-A
W9EKC .3008-94-6-A
K9KGL .3008-94-6-A
K9GFG .2210-65-7-A

(Continued on page 130)

YL News and Views

BY ELEANOR WILSON,* W1QON

Woman in Electronics

Frances Darne, W3AKB, is one of a few of our YLs who is engaged in engineering as a profession. There are a number of YLs who are employed as engineering aides or assistants, and several YLs are majoring in engineering in college right now. W3AKB is a full-fledged engineer.

We'll let Frances tell her own story:

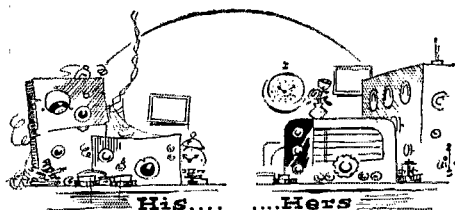
"My interest in radio goes back to age twelve when the boy next door got a ham set for Christmas and used me as a code practice oscillator. He never did get a license but I became fascinated by radio and electricity. Later, a high school physics teacher, who wished she were an engineer, spurred me into going to Cornell, where women have taken engineering since 1878. Electrical engineering studies stimulate amateur radio interests, and vice versa. The E.E. degree and the W3AKB call were both received about 1927. Engineering jobs were scarce during depression years, so I did secretarial work for quite a while. Four years were spent as secretary to Dr. V. K. Zworykin of RCA Laboratories, where I had a chance to mingle with top flight scientists and see the results of advanced research. In 1942 I came to the Navy as an electronics engineer, specializing in tubes, and here I still am. My present posts are Assistant Head of Electron Tube Section and Head of Techniques and Display Unit.

Although it wasn't always so, right now the field is wide open for women engineers, particularly in radio. So many of the engineers I work with are also hams that it's hard to tell where one begins and the other leaves off, but I know there is one less obstacle to overcome because a fellow ham seldom "raises his eye-brows" at meeting a lady engineer.

I continue hamming, mostly on 80 c.w., though not as

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

As an electronics engineer for the Bureau of Ships, Navy Department, W3AKB's work necessitates frequent business trips around the country. Here Frances is shown with Lt. Commander W. H. Widerspahn, USN accepting delivery of a Raytheon History Indicator (for use in radar systems) from Mr. John Buckbee and Mr. Alan Luftman of the Raytheon Mfg. Co.



active as I used to be in traffic and nets. For evidence that I took skeds seriously, I offer the fact that I married one! The OM is Ep, W3BWT."

Frances is an officer of the Washington Chapter of the Society of Women Engineers. With the trend of the times pointing towards more and more emphasis on the sciences and engineering, we prophesy that within not too many years, there will be enough YLs who are women engineers to enable them to form a YL Club of Women Engineers!

LARKs Tour Fort Sheridan!

The following information was released from Army Headquarters, Post Information Office, Fort Sheridan, Illinois:

"Fort Sheridan, Ill. 17 Jan — Seventeen members of the Chicago Ladies Amateur Radio Klub were greeted by Col. John W. Hammond, Post Commander, upon their arrival at Fort Sheridan for a tour of Post Signal and NIKE Missile Installations.

"With the cooperation of the Post Provost Marshal,

Major Edwin M. Schaad, K9JGO/K9JNW, Post Signal Officer, Fort Sheridan, Illinois, presents a trophy to Mrs. Evelyn Tibbits, W9YWH, President of the Chicago LARKs, at a dinner honoring the LARKs, held at the Officer's Open Mess, Fort Sheridan, Ill. (Photo courtesy U.S. Army PIO, Ft. Sheridan, Ill.)



QST for

Post Transportation and the Officer's Open Mess, Major Edwin M. Schaad (K9JGO/K9JNW), Post Signal Officer, escorted the ladies on an inspection tour of NIKE and Signal Activities at Fort Sheridan.

—the LARKs observed the Post Telephone Central Office and Switchboard Operation, Radio-teletype, the Communication Center and the Signal Field Maintenance Shop. They next visited the NIKE Control and Launching Sites, under the guidance of 16th AAA Group personnel. As they arrived at the NIKE site, four NIKE missiles were raised, one after the other, into launching position.

"After the tour, the group continued to the Officer's Open Mess where they were joined by many members of the Amateur Radio Club for dinner. Col. and Mrs. John W. Hammond; Col. Melvin W. Kernkamp, 5th US Army Signal Officer, and Mrs. Kernkamp; Dr. Clarence Leinenger (W9AY), President of the Fort Sheridan Amateur Radio Club, and Mrs. Leinenger of Deerfield, Ill., were among the many guests of honor at dinner. Major Schaad (K9JGO/K9JNW) presented Mrs. Evelyn Tibbits (W9YWI), President of the LARK, a model tower with a 20 meter rotary beam antenna as a trophy to be retained by each succeeding president. Mr. Frank E. Fisher (A9BMJ), the Illinois State MARS Director was guest speaker at dinner. Also attending the dinner were two Australian Army Officers, one of whom is an amateur radio operator, VKITL.

"Members and guests later attended the regular session of the Fort Sheridan Amateur Radio Club. Mr. Laddie J. Smach (A9CYD) of Chicago (CW) Net Control was guest speaker. Capt. Robert Sehram (K9KUV), 5th US Army Headquarters, was elected the new secretary of the club, and a film entitled "Tuned Circuits" was shown followed by drawings for several door prizes. This concluded a busy day for Chicago LARKs at Fort Sheridan."

Advance Notice — New YL Book

CQ YL by Louisa Sando, W5RZJ now in the process of printing, should command attention as the first non-fiction book written about YLs. Containing 18 chapters and more than 500 photographs, the book outlines YL activity in amateur radio, beginning with the first YL, 8NH in 1915.

It has taken the author, who is YL Editor of *CQ Magazine* and a licensed amateur since 1943, several years to write the book, which is being sponsored by the YLRL (without financial backing).

If you want to reserve an advance copy at \$3.50, contact Louisa Sando, W5RZJ, 212 Sombrio Drive, Santa Fe, New Mexico. Louisa will personally autograph copies upon request.

Coming YL Get-Togethers

Dayton Hamvention — YL, XYL Program

April 19, Dayton Biltmore, Dayton, Ohio. Women's Activities Chairman is Mrs. Terry VanPatten, XYL of W8ZHU, Ruby Rhude, W8MDK, is YL Forum Moderator. This year's YL program pays tribute to the women pioneers in amateur radio. Ruth Silbaugh, W8VWL, will give the story of Emma Candler, 8NH; Lillian Root will talk about Winifred Dow Williams, 7FG. Other speakers include Edison Award winner Mae Burke, W3CUL, and Walter Burdine, W8ZCV, who is scheduled to give A "Man's View of YL Operators." The program includes coffee hour, tour of exhibits, YL luncheon and Operators' Forum, special features for XYLS, and general banquet. For further details, write Ruby Rhude, W8MDK, 42 Patterson Village Drive, Dayton 19, Ohio.

Introducing the GAYLARKs! Ten of the fourteen members of the newly-organized Gulf Area Young Ladies Amateur Radio Klub are shown in the photo. Seated, l. to r.: KN5MIZ, K5BJU, W5ERH, W5CXM. Standing: K5ALF, Lena Dodson (awaiting call), KN6MET, K5LIU, W5EGD, and Audrey Bever (awaiting call). Harriett, K5BJU, is President; Al, KN5MIZ, is Secy.-Treasurer; and Betty, W5ERH, is Historian. Members not in the photo are W5DRA, Vice President, K5CZZ, W5EUG, and W5MBB. The Klub plans to issue a special certificate available to all hams— details to be announced later.

April 1958

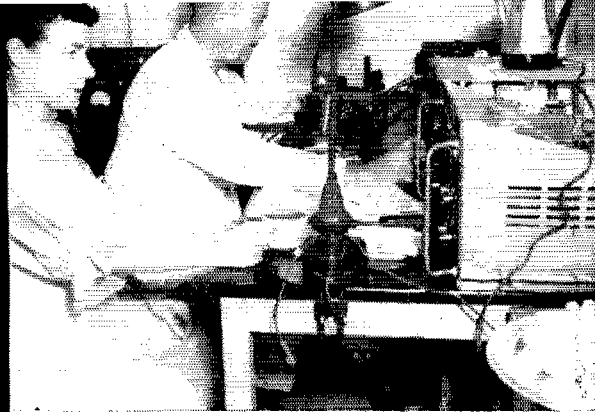


Members of WHO, Inc. (Women Ham Operators of Tarrant County, Texas) demonstrated ham radio to interested visitors from near and far at the Ft. Worth Ranch and Farm Show during the annual Southwestern Exposition Jan. 24 thru Feb. 2. Using the club call K5LZW, the members who manned the four operating positions seen in the photo were K5LUA, K5EGB, W5IHB, and Arlene Goff (call not given). Relief operators included K5CRH and W5s ETH, GXG, IHB, PFU, and ULX. Bands used were 10 thru 75.



Why not produce this photo of Mrs. Lulu Perrine the next time you hear someone lament, "Well, I'd like to get an amateur license now that my children are married and I have more time, but I'm just too old." For our money, 76 year young K9BZU, licensed last year, should be an inspiration to the many in this class. Lulu proves you're never too old, and to quote her, "Ham radio fills your mind so full there is no place for worry." Lulu's husband, a retired electrical engineer, coached her on code and theory. Now on 40 c.w. using a home-brew coffee can rig, Lulu is building a modulator for phone operation. A resident of Washington, Indiana Lulu is a member of the new Hoosier Amateur Woman's Klub. Bravo, K9BZU, and may you enjoy decades of fb operating!





Early risers at Nouasseur Air Base in Morocco are Lieut. Norman D. Johnson, CN8HM, and his wife Blanche, CN8JM. Between 6 and 7 GMT each morning the Johnsons breakfast while chatting with stations 'round the world. We assume that some mornings the procedure is reversed and the Lieutenant makes the coffee and logs while his wife brings home the DX. (Photo via W9BRD.)

Eighth Midwest YL Convention

May 23 thru 25, Mid-City Motel, Toledo, Ohio, sponsored by the Toledo Radio Club, Inc. this year. Friday: tour of local industry, buffet supper, QRM party; Saturday: shopping tour, luncheon and YL-OM Banquet; Sunday: tour of ham shacks. Baby-sitting arrangements can be made. Registration fee of \$2.00 should be received by Chairman Marie Helminski, W8MIB, 3913 Concord St., Toledo, Ohio, by May 10.

ARRL National Convention — YL Program

August 15 thru 17, Washington, D. C. Plans are still in the formative stage. OM W3CN is in charge of the YL program. Liz, W3CDQ, is planning a YLRL forum; Irene, W3RXJ, will hostess a luncheon; Fran, W3AKB, is working on code contests. Watch this column for further details on the YL part of the year's big convention.

KEEPING UP WITH THE GIRLS

CLUBS:

YLRL — Pres. W7NJS announces the appointment of K5BNQ as chairman of the committee for nominations for 1959 officers. Assisting Doris will be Mary, W1CEW, and Kay, K0BTV. Members are reminded that dues for 1958 must be paid immediately. Two dollars should be sent to Harryette Barker, W6QGX, 16011 East Fairgrove Ave., La Puente, California. *Harmonics* will be mailed to members in good standing only.

Vice Pres. W4BLR announces the re-opening of the East Coast YL c.w. Net on 3610 kc. at 2200 EST Wed. W4BLR is NCS of the net, which is slow speed for one hour, then moderate speed. All are welcome, and OMs who desire YL QSOs are invited to check in at the end of roll call.

Chicago YLRL — Club station W9DEQ is back on ten meters sporting a new antenna. K9CQF, June, is alternate NC for the Hair Pin Net which meets on 29,000 kc. at 1300 EST Tues. K6EXQ is NCS.

San Francisco YLRC — New officers are Pres. K6HIW (re-elected); V. P. W6BDE; Secy. W6QPV; Treas. K6UDT.

On Jan. 18 twenty-nine YLs and OMs attended the fourth anniversary dinner. Speakers included Gladys, W6DXI, from the L.A. YLRC; Jeri, W6QMO; and Pacific Div. Director of the ARRL, W6HC.

Miscellany: Grace, W9GME, has been reappointed asst. SCM for the Illinois section. . . . W6QMO is manager of the growing No. Calif. net. Jeri is scheduling a 6-meter section of the net in addition to her slow-speed traffic net which meets twice nightly Mon. thru Fri. at 1900 and 2200 PST on 3635 kc. . . . W5EGD is an ORS and OBS in the South Texas area. Lacking only one confirmation for the DXCC, Lillian has worked 115 countries. . . . In the fire that completely destroyed her home in Montara, Esther, W6BDE, also lost a new DX-100 which she hadn't had a chance to use.

I've Been Hamstrung

This ham-shack houses grave injustice;
I can't get at where all the dust is.

Tubes, transmitter, plugs, and fuses
(Over which our son enthuses);

Receiver, headphones, amplifier
(And yards and yards of aerial wire);

A modulator — inside out —
(Its vital organs strewn about);

And oddments I won't try to label
(Each fastened to a wire cable)

Can make my housework unrewarding!
(How tangled can I get in cording?)

Forsooth! This room's a dismal hut,
Strung high, strung low with you-know-what —

Some thin, some thicker; slack or tauter . . .
I wish, son, you'd been born a daughter!

— Eliana Beam
(Mother of K8CRG)

(We know whereof you speak, Mrs. Beam, but consider, we have some YLs who are daughters, in fact, some mothers who are YLs! — Ed.)

Strays

Our congratulations to W9CVP, who now is not only the editor of *Atomics*, but is also technical assistant to the president of Technical Publishing Co., publishers of *Power Engineering*, *Plant Engineering*, and *Atomics*.

— . . . —

W9LYG is glad that his 74th birthday is at hand. Many times during the past year there have been occasions when the fellow on the

other end of the QSO wasn't copying W9LYG too well and would mistake a statement of his age for the preliminaries of a sign-off. W9LYG figures that from now on he is not going to be forced into so many "short" QSOs.

— . . . —

Another claimant for the longest-winded c.w. QSO — K2EWR says he worked W1IUC for nine hours and two minutes.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Where?

April — and shades of Outer Baldonia.

Many philatelists share with our DX hounds a geographical-geopolitical obsession. They, too, seek "new ones," filling albums and scrapbooks with references to far-off regions little known. One such hobbyist, K9EFU, drives home this point by forwarding an undated clipping from a recent issue of the *Western Stamp Collector*, an esoteric paper contributed by one Lt. G. J. Raymond, USAF, titled "World's Smallest Colonial Possession." Interested? Goes so:

In studying a list of Portuguese possessions some months ago, the author of this article was startled to see listed there a possession never seen in previous lists: Fort Sao Joao Baptista de Ajuda. Its position was given as on the west coast of Africa, near the border of Nigeria, west of Lagos. A microscopic examination of a detailed map, however, failed to reveal it; no encyclopedia mentioned it, and reference books ignored it completely. Aha! Perhaps here was a rare postmark to add to the collection!

After months of research and many fruitless letters, a letter arrived from the Ministry of Overseas Territories, Lisbon, Portugal, and at last it became clear why letters addressed to the Postmaster, Fort S. Joao Baptista de Ajuda, West Africa, were returned by the Post Office endorsed "No Such Country," etc. Alas! there was no post office. But, shades of San Marino! — here surely was the smallest inhabited colonial possession in the world!

Fort S. Joao Baptista de Ajuda is located in the French colony of Dahomey, West Africa, and is about 18 and one half miles from the village of Cutenu, on the coast. The nearest town is that of Ouidah, through which all mail is sent and received, and thus the fort uses the stamps of French West Africa. A cover was at last received, after many unsuccessful attempts, postmarked at the tiny Ouidah post office. Mail must pass through rarely, at least from the small Portuguese garrison of troops. It must be small, for Fort S. Joao Baptista de Ajuda, for all its long name, is only 329 feet long and 329 feet wide! Within an enclosing wall there is a garden and the residential home of the Portuguese commandant. A garrison of Portuguese Colonial troops is quartered somewhere within the walls, presumably in a wing of the residency.

The Fortress of Sao Joao Baptista de Ajuda was built in 1680 by Bernardino Freire de Andrade and Jacinto de Figueiredo de Abreu, both governors of the Portuguese island of Sao Thome (St. Thomas) in the near-by Gulf of Guinea. This region was first discovered by unidentified Portuguese navigators in the years 1471-1481.

For two centuries this fortress was a very important center of Portuguese influence in the kingdom of Dahomey. In the last century it became part of a Portuguese district, attached for administrative purposes to the colony of Sao Thome e Principe. At the end of the century, in accordance with a boundary treaty with France, Portugal withdrew its claim over territorial districts in Dahomey, retaining only the fortress, which is no longer connected in any way with Sao Thome e Principe. Thus here remains what surely must be the smallest inhabited colonial possession in the world.

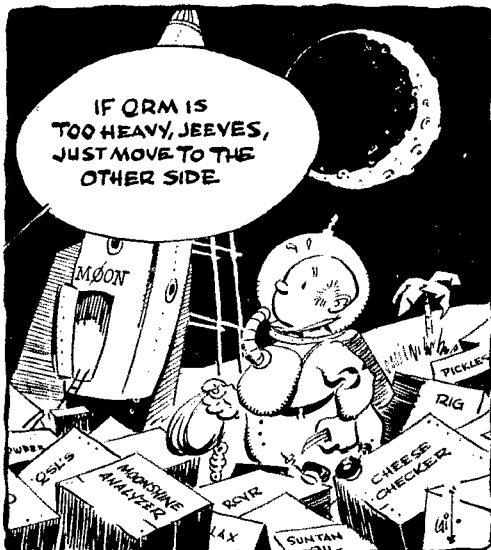
Interesting? No, the Fort is not included in your ARRL DXCC Countries List. As a matter of fact, not having been through Dahomey lately, we're not even sure that the place is still there. Seems doubtful, for some dauntless DX-peditioner certainly should have put it on the air by now.

And have you heard about Monmouthshire, that fabulous county in the west of England — or is it in Wales? As native GW3HJR explains to K4HQD: "This is a border county and it is quite permissible to choose one's prefix, G or GW." Profound possibilities here!

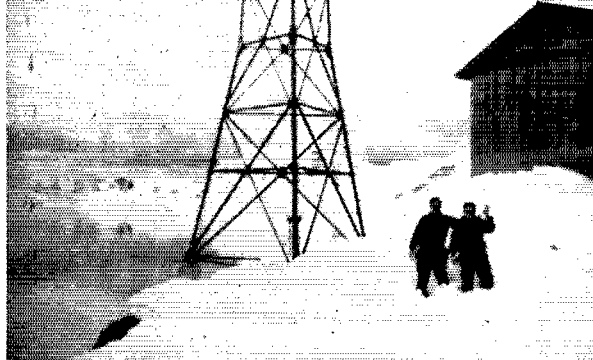
What:

Your 1958 ARRL DX concert is over but the haunting melody lingers on. Cats out in the call areas really stepped out with a rousing rendition of what might have passed for a Wagnerian interpretation of Alban Berg's *Lulu* — it certainly was a lulu! All caught up now on your sleep and statistics?

The temporary streamlining of our Bandwagon format, introduced by necessity in February's column, draws cogent comment from near and afar. Let's sample a few pros and cons, and shades between: "February's format has a flaw; there is no indication of whether DX was reported from the east, west, south or midwest parts of the country." — W2HVV. . . . "How much better the reports are set up now, so much more compact. It's tops with me! We mainly want to know what DX is active, not who works it." — K2QXG. . . . "The new system is bad, in my opinion. Credit should be given right where credit is due." — KN4RJN. . . . "I'm not happy about February's style of reporting. It's quite important to me to learn what the Ones and Twos are working and hearing." — W1EKU. . . . "I don't like the February column's way of listing DX." — KN5KGF. . . . "It doesn't show how the competition is doing." — K6SXA. . . . "I wonder if the change will dull the gang's enthusiasm for reporting." — W6ZZ. . . . "The



* 4822 West Berteau Avenue, Chicago 41, Ill.



How green is PX1YR's valley—and how white are the shores at LU3ZSI Andorra and Half Moon Island contrast strikingly enough to tie for our "QTH of the month" title. The frigid figure at far right is LU8DAB. (Photo via W4TFB)

factor of 'who-worked-whom' is especially important for QSL-info inquiry purposes. — **W7GSK**. "February's DX reporting system is a definite improvement, putting credits to one side where they don't get in the way." — **W2HMJ**. "I vote for the old style of listings, each call with the DX he reports, so I can check on how my friends are making out." — **W7DJU**. "Please change back to the old style because East Coast and West Coast DX conditions are very different, especially on 7 Mc." — **K6RGO**. "The 'What' section to me is the most important portion of the column but without individualized credits it's not even worth reading." — **K6TSW**. "Keep us informed as to who works what because I want to know what the other westerners are doing." — **K6CQM**. "Glad to see the new layout! Who cares which W/K/VE worked whom? The important things are what, which band, and when." — **W4TFB**.

This reasonably representative sampling of *your DX populi* runs about 4 to 1 in favor of individualized credits for this section of your QST DX pages. We're not surprised, of course, and it remains our intention to return to the favored format when limiting factors permit. Meanwhile, we DX enthusiasts can hardly expect to usurp all departmental space in QST! — hi! And now to cases:

20 c.w. goes over big with W1s NJM RAN, W2s DEC EQS GUR (163/153 score), HBV HMIJ, W3s CMN LOS QYG ZEB, W4s CYY PNY TPB UWA, 1, W6s AMI HEB ONK ZZ (185), W7s CWN CYG DJU DKH GYR OEB (120/90), W8s BMX BZX CSK (78/41), IEX (101/79), YIN (235), W9UBI, W0QGI, K2s QXC, UPD, K4s IEX, JOS MWB, K6s EC (201/160), HFA PJT SHJ SRZ SXA, K9s DMY (143/116), DQI (80), VE8 IPQ (209/188), 7CQ, 11ER and KR6BW thanks to the congeniality of GE0AG (K6BAZ), CN2s AQ 2 GMT, BE (14,085 kc.), CRs 7CI (68) 3, 10AA (88) 14, CT2BO (25) 3, DM2AHA, DU7SV (50)

13, EA6 6AW 9AP (122) 0, ELs IC (70) 21, 28, F9YP/FC (15) 18, FR8AC (80) 17, that PK0AD Jeller, FL8AC (34) 4, PM7WT (110) 6, F08AB (300) 9, FR7ZE (25) 23, FY7s YE (85) 1, YF 11, HA5AM/ZA (35) 11, HB1FE of the Swiss military, HCLJW (40) 2, HE9AC (18), H1Is 2LD (18) 1, 2Y (110) 1, 3L 13, HKs 3JC (10) 1, 0AI (70) of San Andres, IILs 2KL 9KS (1) 6-12, IIRs 1JZ 2FG (10) 2, HSlS C 16, VR, HV1CN (80) 18, HZ1VB (5) 22, IS1FC 15, JA8 IAG IANF ICC 2AB 2JW 3AB 3CM 5A1 71C 8AA 9FV, JTIs AA (19, 60, 90) 11-12, YL (100) 15, JZ0HA of Biak, K2DGL KC4 (21), KAs 7CS 8KW 8, 9AF (15) 12, one KC4TAC "of Navassa," KGs 1BE 1, 4A1 4AL, KP6AL (5) 17, KR6s AC AK BF BW QW SS all 12-19, KV4AA 3, KX6BQ/KC6, LA2JE, P (76) 23 of Sralbarr, LU6Z, LZ1KSZ, MP4s BBE (10) 21, BBL (10) 2, OA4BW (50) 3, OO5IE (YL), OY7AL (30) 1, PJ2ME (20) 0, PY7AN 6, RAEM and RAMA, TA3AT (40) 1, TF3s 4B (80) 2-3, RF, UA9s AA AR DN KAB KAC KCC KCC KCC KEC KJB OI SA YP, UA0s JA (20) 7, KAR (41) 0, KFC 6, KFG 6, KJA KA8 (39), LC OM UC2s AD AF (40) 6, AX (70) 12, CB (80) 4, UD6s AI (41) 4-5, AL (100) 5, KAB, UF6s AB AM (40) 23, KPA BP, UI8s KAA (29), KAE (35), UJ8AF, UL7KAA, UMRKAA (17) 16, UNIAE, UO5s IT (11) 23, KPM (70) 20, UP2AT (40) 21, UO2s AB (90) 5, AG AW, UR2s AK AR (75) 7, DX, VE8s ALX OZ, VK6AB, VP6s CW EE PJ, VP8BM (50) 23, VO3 3CF (38) 19-20, 4AY, 5GJ (48) 20, 6LQ (20) 22, 8AM (50), 8AS of Rodriguez, VR6TC (18) 8, VS1s HJ (23) 13, IID, VSs 2DW (42) 19-1, 4JT 6AE (23) 12, 9AD (100) 4, 9AJ (25) 19, VU2s AJ DR GE JA JG RM all 1-4, one VU4BZ, Ws 6IVL/KG6 6BKL/KG6 (83) 12-13, XE8s IMB 1YF 2E, XW8AI 5-12, XZ2TH (84) 14-15, YK1AT (350) 6, YV5s GY 11, HL 13, a ZA1AF, ZBs 1V (50) 21, 2A (50) 1, 2I (40) 20, ZC3AC (109) 12, ZDs 2CKII (60) 17-18, 2DCP (50) 23, 2GWS 16, 2NWW, 3G (82) 23-0, 6DT (11) 21, 6NJ, 8JP, ZEGJE (25) 4, ZP5HK, ZS8R (49) 5, 3A2s BT CE (90) 15, 3V8AO (5) 22, 4S7WP (28) 2, 4X4s BR IO IV IX JB JL JV, 5As 2TY (5) 12, 4TC 3, 9G1s BQ (12) 22 and CM (92) 21.

20 phone (asterisks indicating users of s.s.b.) fixed up W2DEC, W4s 1FB (171/154 on A3), TK, W6ZZ, W8YIN* (74 on side band), W9UBI*: K2QXG*, K4HFP, K6HFA* and HK7LX with such delicacies as BY1US (161) 14, CR9AH* (315) 15, EA8CL (150) 0-1, ERV/FG (165) 18, FB8BC (142) 22, FM7WS (130), FO8AB* (279) 4, HKs 3TG 0AI (195) 23-3, HR2WC*, K2DGP/KC6* of Antarctica, KAs 2KM 2LP 2MF 2ALJ 2AMJ 2PS 3LD 7KO 7MB 7SL (160), 8AB 8FM 8JT 6IJ 6SC, KC4s USB* (285) 5, USC* (277) 8, USW, KC6UZ*, KG1s BB* DT* EE* HL*, KR6s AL BI, BP CM CP DG DO JN, far-south LU8 1ZS (155) 4 of So. Shetlands, 5ZD 7ZD, MP4KAM* (315) 15, OD5BZ, OH0NC (314) 3-4, TG9EA (160) 2, UAs 1DZ (310) 1, 9AA (110) 0, UBSUW, UR2BU, VKs 6DX (160), 6RU* 9-11, 9AD (160) of Norfolk Island, VE3BQL/SU, VPs 2LB (142) 2-3, 3HAG, 5AB (180) of the Cairns, 5AR, VRIC (180) 1, VSs 1FJ (180) 4JT*, VU2HY (135) 21-22, Ws 4HHW, KSA 6DZM, KL7, 4X8AG (198) 2 of Antofagasta, XV5A* still taboo at this writing, YS3FL, 3V8AB, 4S7YL (109) 7-8 and 5A5TM (160).

15 c.w. treated W2s EQS HMIJ, W3s CMN IIF QYG YUW, W4UWA 1, W6ZZ (138 on 21 Mc.), W7s DJU GYR, W8s CSK YIN, W9UBI: K2s MHY UPD, K4s HPR IEX MWB OTG, K6s PJT SRZ SXA, K9s GSG JIN; VE7CQ, 11ER and KR6BW to a logful of GE0AG, CN2AY 21, CN8s FM GU (95) 16, HA, LL1K (15) 16, GD3FXN, HAs 1KSA 5AIR 5MA, HP5CC, JT1s AA (30), YL (30) 8, KAs 5MC 8KW (130), KP6AL, KR6s BW SS, KX6BU (480), OA1s FM IGY, OX3s AY BP, PJ2ME of Sint Maarten, RAMA of Moscow (presumably), SPs 1KAA 2BK 3PL, TFs 2WBZ 5TP, UAs 1AL, 1DZ 3SL, UB5WF, UL7HB, UO5AA, UR2AR, VE8AJ, VP3VN (32) 1, VQ2FC

1958 PACC Contest

VERON, the Dutch IARU Society, invites amateurs everywhere to enjoy its 1958 PACC Contest, to run (code) from 1200 GMT April 26 to 2400 April 27, and (phone) May 3 and 4, same hours. The idea is for people to exchange RS/RST reports and consecutive serial numbers (579001 c.w., 57001 voice) with PA0s on 3.5, 7, 14, 21 and 28 Mc. Each station may be worked once per band. Hollanders will call CQ PACC, and clue you as to their Province by transmitting FR, GR, DR, OV, GD, UT, NH, ZH, ZL, NB, or LB. Count two points per complete exchange. The two-letter call appendages serve as the multiplier for non-PA0s (maximum of eleven per band). Total contact points times total multiplier gives final score. Certificates go to the call district leaders in U. S. and Canada provided logs, post-marked by June 15, are mailed to P.v.d. Berg, PA0VB, VERON Contest Manager, Keizerstraat 54, Gouda, Netherlands.

VERON also is willing to use contest logs to cross-check claims for the PACC Certificate, issued on proof of postwar contacts with 100 different Netherlands amateurs, when your submitted QSL confirmations plus PA0s worked in the contest total 100 or more.

21, VS1GX (20), VU2s SG RC, W2s CSQ and ZXMI both/MM, WL7CIW, XE1AX, YU3s FK SO, YV5HL, ZB3 IGUH (36) 22, ISS (100) 18, 2I (80) 16, ZD3G (ex-ST2NG-VS9AG) (85) 22-23, ZP5CJ and 4X4DK.

15 phone, auroral flutters notwithstanding, fared well enough to enable W1OKG*, W2LKW, W4FFB, W6ZZ, W8s HOY (now 100 even), IEX YIN*, W9VHAI; K2s QBV SCO (79/46), TSW UPD*, K6IUL (73), K0s IHO and JZW to make the grade with C3AL (204) 20, CN2AK (395) 0, CN8s FV* GS* IH, CT2s AC (240) 9, AH CX2CO (200) 22, EAs 8AX (200) 12, 8BO 9BH (270) 9, EL1G (200) 22-23, ET3s LF XY (275) 20, F9YF RC, FE8s AH, AK, FFA8P (210) 1, FPA8P (230) 1, FS7RT* (240) 23-0, HA5KBP, HB9AG*, HC2s 2AF (200) 2, 2AGI*, HK3s 3FL 3FV, HL9KT 5, HPI1B (225) 0, HR2MC, KAs 2MA* 8SC of Iwo, Kc4s USA* USK* USW*, K6CGC, K6GFAE, KP6AL, KR6s AF* QW BR, KX6s BP BQ* BI* (430), LX1DC, LZ2KSB, OAs EW HR* IGY, OH3NW*, ON4DM*, PY1CK 0 of Noronha islet, FT2WCJ, VE8SE, VPs 4TO 6XZ 7BQ 3RF 8OU 0RT* (442) 14, VOs 3DQ 5FS (260) 20-21, 6ST, VRs 3A 6TC, VSs 4AT 9AI, YN1MF, ZB1DC (210) 20-21, ZLs 2AX 5AA, ZFTC, 4X4s DK* FV (200) 19, GB (240) 22, 9G1s CF* and CH (190) 22.

15 Novice DX hawks, namely KN1s BJU CBR CEC DIW (14 countries), WN2s GRG OQH (23), TKZ (45), KN3BTs, KN4s PRO RJN (16/10), KN5s JWK KGF LAJ (28), KN9ISP, KN0s LIL JPJ and LFY, deftly took the measure of CE3RE, CN2AQ, CN8s BC DJJ, DM2s ABB ABE, DU7SV, EAs 2EY 3GF 8CA, E16A, Es 3VJ 8AT 8NU 9PQ, GM3s DUS HGU IGB UU, G13AXI, HK3JC, HR1Vs, JA1s ACA AFF BSO, KAs 2KS 5MK, KC4USN, KG1s BB EEL JL, KN9EZP, KL7, KP4KD, LAs 3DB 5HF, LUs 1AAH IDEN 51DDF, LZ1KEN, OA4V, OK1LAL, OX3DL, PJ2ME, Pys galore, PZ1AO, SPs 4JF 5KAA 6WM 9EU 9FR, numerous SMs, T12LA, UAs 1BU 1DG 6KOB 0CI, UC2CB, Macquarie's VK9KT, VP7NE, VR3J, some Aussies, WL7s BW CJD CIW GJJ, WP4s AIQ ALV, XE1s AB RX, YU8NV, YV5FB, ZBs 1DC 2I, miscellaneous ZLs, ZP5CF and ZS5RN. Fine!

10 c.w. enters its soft season now, but W1ECH, W3ZKB, W4s IV PHY, W6HPB, W8s RMX CSK IEX LCI, W9s PJT YYG, W0QJL; K2MHY, K6SXA, K9DDT and I1ER cashed in on CE6AG, CE6AG OA4, CN8HC, DM3LBH, DL8BN (ex-9S4BN, of course), FA8JO, FFA8D, G2PL's 5-watter, GD3UB, HA1s IKS A 5M SWS, HC1LE, HIS8E, JA1s 1BI 1FC 9YI, LZ1WD, OHEYY 0, SPs 2AF *AP 3DG 5AA 5ZM, SV0VP, TFA8B, T12EA, UAs ICC 1CK 4KCE, UB5s KAB UW WF, UR2s BH BU, VE8MS, VP7NM (50), VQ2RG, VU2s EJ EP 16, Y03KAA, YU4s IAG 3AT, ZD3G, ZS3B and 4X4I (79).

10 phone also grows spotty upon the passing of our vernal equinox, so W1s ECH (86/54), EKU GOU JYH OHA (89 on a 2E26), W4TFB W5MZF, W6ZZ, W8s HOY IEX, W9VZL; K2s MHY QBV and HK7LX (now 108/72) were wise to salt away BV1US, CE6AG, CN8FV, GRs 4AD 4AT (400), 4AS 5AC (400), 6CS 7BB, CTs 2AH 3AF, CX9AJ, DU1VVS, EL1s H X (230) 23, FFA8P, FS7RT, GC2RS, GD3UB, HA8WS (450), HClS AL HL, HIs 3HH 5LA, H17LS, HK4AQ, JA3LK, KAs 2EB 2HQ 2RB 7WV 0JJ, K6CGC, KR6s BN SO, LX1s AI (350), HIL, LZ1WD, OA2RVF, OD5s AC (250), BZ, OH2XK 0, OQ5s CS 1C4, PY1CK 0, SV0WU, TF2s WBD (480), WCJ, UA1CE (300), UR2BU, VE8s NH NJ, VK9s DE (300) of Papua, LE (490) of Cocos-Keeling, VPs 2LB 5RS 8AQ (800) of Grahamland, 9HH, VO2s AS DC JB LB VZ 19, VR2BC (400), Y03V1, YUs IAG (500), 3JN (480), ZC4IP, ZD3E, ZEs 1JQ 2KR, ZS3DP and 9G1CI. Eleven members interested W8IBX and W9JPT in such stray items as KH6s BQK CKO FM, KL7JDO, KP4s AEB KD, PJ2AO, VK2ADV, ZL1MQ and CX3BB.

10 c.w., popular as ever, finds W8s EQS HUG, W3IIF (40/29), W4UWA, 1, W7DJU, W8L BX; K2s PGP UBC, K6s CQM (88 JAs in six months on 7 Mc.), DV HFA RGO SRZ, I1ER and KR6BW rattling the headsets of DU7SV, shipboard E18BC off Tasmania, EL1C, FA8RJ (4) 8, GD3UB, HA5KFN (3) 3, an HLIAP (50), JA1s ACA AEA AEX AGU AHC AMM BEZ BNA BTH DM DY MIQ PS PX, JA2s ADB AQ BP IY LC OT RC UW XM, JA3s AAJ AE BP IS TT, JA4HM, JA5AI, JA6s AC BC MS, JA7s GW IB LJ IW JU, JA8s CH HO, JA9s HX IF (not Iwo), KA2FF, KM6BK, KP6AL 8, KR6s AB AK BW, SP1JV, UA9s FA of Sakhalin, KKB OAI, UB5WF, VE8s

MX OM (20) 5, VK7MF of King Island, VPs 7XZ 8CW, VR1CZ, VS1CN, XE2s OK UA, ZD2CKH (25) 20-21, ZM6BB and 3V8DZ, K6SRZ's 50-watter caught up with JA1s AEE ICE IEF 0BY, KH6s and KL7s on the 7-Mc. voice route. . . . Forty Novice frequencies saw WN6VUS, KN7BBU and KN8MOM nab WH6CNK (170) 7, JA9SS 9-10 and WH6CMP, respectively.

80 c.w. struts its spring stuff—DMs 2AFN 2KIN 3KIN, P3ZU, HB0IN, KZSWU, LA7Y, OKs 1KNJ 1KSZ 1KUR 2KLI 3KIC 3KMY, ON4LP, OZ9CM, PA0LV, SM4ALB, SP6CT, UA1LZ, UB5WF, YN1AA and YU3BDE—around 0300-0500 GMT and between 3500 and 3550 kc. for W1s DBA ECH, K1AQO and W3ZKB. . . . CN8IN and VK4WF tickled W1ECH and K1AQO, respectively, on 75 phone.

160 c.w. may be spotty but not dead, emphasizes W1BB and colleagues. W6KIP made this crystal clear by working KP6AL solidly, and K6PJT managed a 1.8-Mc. gem with KH6IJ (1997 kc.) 9. . . . Other January and February low-band DX doings featured transatlantics between Gs 3JVI 5JU 6RQ 6GM 8GP, GW6HB and/or W1s BB PPN, K2CHQ plus others on our side. One unusual aspect over this period: a rash of East/West Coast contacts, these QSOs never plentiful as a rule even under excellent transoceanic conditions at either end. . . . VP7NM put in a disconcerting 1.8-Mc. appearance in mid-January and was immediately captured by W1BB and K2CHQ. Yep, there's life in the old crosstown rag-chew band yet!

Where:

Asia—Formosa nationals, mostly ex-C3s with newly reinstated hamming privileges, can be QSLd through M. T. Young, QSL Bureau, P. O. Box 16, Taichung, Formosa, China. . . . One of WIUED's Turkey-lurking correspondents ran a check on our September '57 listing of a TA2 in Trabzon: "I was informed that the box number had been rented in 1955 to a Turkish national but that it has been vacant since December of that year." Oh, well. . . . "The RAF Khormaksar Radio Club," VS9AD, QSLs 100 per cent via ISWL but we wish people who receive our cards would be a little better about replying. I excuse the W.K.s, who are grand in this respect. But out of 77 different countries worked we have only 40-odd confirmed." This from VS9AD on Des via WIICP. . . . From XZ2OM through W2TQR: "I will handle all cards incoming to Burma. The QSL bureau of the Burma Amateur Radio Society is not operating at present. All cards sent to Box 611 or Box 376 after 1954 must have gone astray, for the box was closed." Note the new XZ2OM address to follow, W2TQR, now 199.188, supplied Aung with a fresh stock of QSLs, and learns that there is no licit XZ2AO. . . . Via VE6NX, OK1MB calls attention to the renaming of YK1AT's bailiwick: no longer Syria, but "United Republic of Arabia." No changes in YK1AT/OK1MB QSO/QSL procedures occur. . . . W8KX informs us that the CIMCC who pops up so frequently in our "Ten Years Ago" now is W8FEL. "He still has a few CIMCC cards plus all logs for his DX operation and is willing to oblige those who have not received deserved QSLs. Full QSO data and s.a. s.e. are required." . . . "We VS1 boys probably have a bad name for QSLing but I assure you it's not entirely our fault," writes VS1JF in reporting a change in QTH. Apparently most Singapore lads do their best to meet the terrific world-wide demand for VS1 wallpaper. . . . As of mid-January ZC1s AG AM AW BA BE BL BN BW CA CB CH CK DA DN DF FL FM FX GT HK IP JB JL JU JX MH NS OP PM PR PT PW QK TH WR and WV are legitimate Cyprus licensees. Chief Inspector ZC4BE reports slews of cards incoming for such spurious calls as ZC4s AF AH, et al. . . . MP4BE writes that reports of a change in his call sign are greatly exaggerated. No such critter as 9G5BVE although John does expect a new prefix before long. "I've also received QSLs for phone QSOs although up to now I've never been on phone (building a modulator now). All QSLs received direct for genuine MP4BE QSOs are replied to direct with as little delay as

VU2EZ turns up regularly on our band-by-band "How's" DX synopsis and this rugged Poona layout is reason why. Aravind receives with that SX-28 plus crystal-controlled converters for 14, 21 and 28 Mc.; the rig's 6V6-6V6-6V6 v.f.o. exciter pushes a pair of 807s, these modulated by a 6SH7-6SN7-6SN7-1625s AB₂ arrangement; and antennae include a dipole for 20 meters, a 2-element rotary for 15, and a 3-element job for 10. (Photo via W5ERY)





UA3BJ enthusiastically recorded the Doppler-distorted voice of Sputnik I early last October and crashed the Moscow press with this action shot of ham versatility. (Photo via W7DJU/W7GYR)

possible." ----- WGDXC's *DX Bulletin* states that your XV5A QSL can go via W2JXH — when and if the ITU/FCC kibosh is quashed. ----- W1JSS's QSL to JY1AC bounced like a rubber ball. ----- XZ2TH advises W2CTO that International Reply Coupons are unusable at his QTH. Tun prefers U. S. mint commemoratives in equivalent denominations. XZ2TH also reminds us that mail routes in his part of the world are laced with the perils of thievery and transportation difficulties. ----- VE3MR, who aids 4X4DK in QSL chores as specified in the listing to follow, generously waives all postage and self-addressed envelope requirements.

Africa — Detailed QSL instructions from VE3BQL/SU of Gaza Strip: "QTH for QSLs from stations other than Canadian, U. S., Central and South American is: SB15637, Sgt. Veale E. C., 56 Cdn. Sig. Sqn., U. N. Emergency Force Base P. O., Beirut, Lebanon. For QSLs from Canadian, U. S., Central and South American stations: SB15637, Sgt. Veale E. C., 56 Cdn. Sig. Sqn., CAPO 5049 (Montreal, P. Q., Canada), UNEF, Middle East. It is requested that cards be sent *only* by these addresses or via the VE3 QSL bureau." ----- From W2RCK: "VQ2AS has had trouble getting QSLs out and he wants the boys to be patient. They'll be along as soon as he can manage it."

Oceania — "VS4BA promises prompt QSL service but disdains the 'buck per card' routine," writes K2GFQ. ----- In confirming K6GMA's QSL managership for his W6/K6 contacts, VS4JT states: "All contacts made before January 1, 1958, have been confirmed via bureau." ----- ZK1BS, whose Stateside QSL efforts are abetted by K6EXO, mentions that W8VDJ still retains his W8-K8 franchise. ----- Blanks due from Australia will enable VR1C to carry through on all QSL promises, assures WGDXC. ----- W2DEC is apprised that all cards resulting from KX6BQ-KC6's three-day Eastern Carolines stand have gone forth.

Europe — SV0WP (W3JTC) trenchantly observes: "Americans can't tell time, and I have a devil of a time finding contacts in my log. Some guys use GMT meaning local time, and vice versa. Also, they are usually an hour off!" Keep Larry's tip in mind, for carelessness in such details will shave your QSL-returns percentage to a smithereen. ----- You can do the GD boys a large favor by writing E. V. Bond, Isle of Man Tourist Board, 13 Victoria St., Douglas, Isle of Man, to express appreciation for the scenic QSLs dispensed in the past by I. of M. DXers. This source of card stock now is in jeopardy, a development that could water down the enthusiasm of GDs for unlimited numbers of W. K. VE QSOs. Drop Mr. Bond a steamer to assure him that the Isle's amateurs really do a Man-sized job in publicizing the place, eh? ----- Spurred by steady inquiries we confirm the curious fact that HE9s in Liechtenstein are licensed amateurs, but that the same

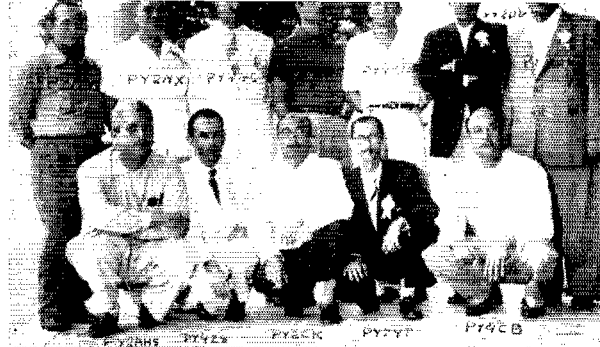
prefix in Switzerland refers to s.w.l. identification.

Hereabouts — VP7NM tells W9NIJ that one VP7XB has no basis in fact and that numerous QSLs incoming for this unfortunate cannot be returned without postage defrayal. ----- Some six months after spraying 792 FP8AS pasteboards DXward, W2EQS reports less than a 50-per-cent return. Charlie still stands by for QSL inquiries regarding his St. Pierre sojourn of last autumn but points out that he has no connection with FP8AS emanations dating after September 18, 1957. The usual s.a.s.c. should accompany each W. K. VE inquiry, and one IRC each foreign contact. ----- K2IVG disclaims any connection with FP8 QSL matters. ----- W7RGL offers his good offices to any rare DX operator with bona fide need for QSL assistance. "Have file cabinet; will handle!" ----- G3LWS, VP8, awaiting his VP8 suffix, says that G3IEW will deal out his South Shetlands QSLs on a card-for-card basis. "Except, of course, for my first 100 new countries!" ----- KG1EE, whose 400 watts and Vee make (quite a cash in '20, tells W7DKH that mail arrives his Greenland QTH at two- or three-month intervals. ----- The following list of addresses, contributed by W1s ELR ICP JY1 ORG, W2s DEC EQS HBV HMIJ LKW TQR, W3s CMN VKD YIK, W4s EBY JTK YZC, W6s KG ONK, W7s DMJ DKH, W8s BMX GSK LCI YIN, W9UBI, W0QG1; K2s PGP QXG SFA SYS TSW HBC YPE, K4IEY, K6s CQM EC HFA IUL, K9CNC; DJ3BW, VE4DB and club groups listed at the conclusion of "Whence", is necessarily neither accurate nor official:

- G3AL (see text preceding)
- CE3AGI, IAGS, Project Vanguard c/o U. S. Army Attache, U. S. Embassy, Santiago, Chile
- CN8FV, APO 113, New York, N. Y.
- CN8GU (via W9DSO, or to address listed last month)
- CT1BB, F. K. Besgen (DL7BB), Box 46, Lisbon, Portugal (or via DARC)
- DL4DIB, Amateur Radio Club, 312th ASA Bn., APO 108, New York, N. Y.
- DL4LJ, Lt. H. B. Mellors (W7KUS), Hq. 3rd Recon. Sqdn., 8th U. S. Cavalry, APO 28, New York, N. Y.
- DL8BN (formerly 984BN)
- EL1X, C. Reed (W6FHB), Box 18, Harbel, Liberia
- FF8DX/FE8, c/o RARC, Box 1985, Richmond, Va.
- FK8AU, Box 63, Noumea, New Caledonia
- FL8AG, Box 121, Djibouti, Fr. Somaliland
- FY7YH, Box 286, Cayenne, Fr. Guiana
- HB1PL/ar. P. Langenegger, VHF & TV Stn., Saentis, Switzerland
- HC2AGI (via HC2GRC)
- HK1III, G. Lopez D., Box 1594, Barranquilla, Colombia
- HK3JC, J. C. Amaris, Box 9997, Bogota, Colombia
- HK6HO, B. Santacoloma de los Rios, Apto. Nacional 172, Pereira, Caldas, Colombia
- HR8SM, Dr. S. Marx, Moravian Mission, Ahuas, via Brus, Dept. Gracias a Dios, Honduras
- HS1C, Capt. H. Christensen, Box 1038, Bangkok, Thailand (also see last month's listing)
- JT1YL (via CAV, attn. OK1JX)
- K2DGP/KC4, USCGC *West Wind*, c/o FPO, New York, N. Y.
- KA5VN, 179th ASA Co., APO 5, San Francisco, Calif.
- KA9AF, Capt. A. D. Frink (W7NIO), APO 70, San Francisco, Calif.
- KA01J, T. Set. L. Woodell (W2FVG), 1964th AACs Sqdn., APO 815, San Francisco, Calif.
- ex-KB6AQ, T. Sato, KH6CRQ, c/o CAA, Lanai City, T.H.

Foremost among Peru's avocational radiotelegraphers and active on voice as well, OA4FM is popular on several bands. Rene came to South America from Switzerland in 1948 and has been radio-active in Lima since late '56. (Photo via W1VG)





April's welcome onset carries us into the hamfest season and we oblige by taking you on a timely armchair tour of recent amateur gatherings on four continents. At left, above, we sip sarsaparillas in Noumea with (front, l. to r.) FK8AO's XYL, FK8AO, YJ1DL, FK8AH; (rear) FK8s AS, AE, AT, AJ, AM and AC. This occasion is FK8AO's departure for France Right, above, is a rare assemblage of Brazilian DXCC members who attended the 1957 ham convention in Santos. Front, l. to r., are PYs 2AHS, 4ZS, 2CK, 7YT and 4CB. Rear: PYs 7AN, 2NX, 4GC, 4APE, 4KL, 2DV and 2JU. PY2CK, of course, heads up the DXCC Honor Roll, phone, and PY7AN is of fresh Fernando de Noronha fame To left, below, prominent DXer ZS6s XL, KD, ANE, A and FN were photographed by W7ADS in sunny Johannesburg on his trip to South Africa last year Right, below, we meet (front, l. to r.) SV1s AD, AC, AF and AG; (rear) SV1s AE, AA and AB. SV1AA has served as Greece QSL manager for many years. These citizens of Greece lost little time obtaining their tickets upon recent liberalization of SV licensing regulations. All are of Athens except SV1AD who hails from Piraeus.



KC4USH (via K1NAP)
 KH6CV/KW6, U. S. Weather Bureau, Wake Island
 KM6BK, Peck, Navy 3080, PPO, San Francisco, Calif.
 KR6HP (via K2LEQ)
 KW6CP, J. J. Watson, ex-KL7AKV, CAA Control Tower, Wake Island
 LU1ZS (to K4MKN)
 LU0AG, R. O. Compiani, Pier 25, North River, New York, N. Y.
 LZ1UR, Box 336, Sofia, Bulgaria
 OH0NC, S. Gramholm (OH2OJ), Alandsvagen 32, Mariehamn, Aland Islands, Finland
 OH0ND (to OH0NC)
 OR4VN, Antarctica (via UBA)
 PY1CK/Ø, Fernando de Noronha Island (via LABRE)
 SP6FZ, J. Zienbicki, Bielawa (D. Sl.), K. Marksa nr. 9, Skrylka-poczlowa nr. 30, Poland
 SV1AD, A. Lianos, 41 Distomou St., Piraeus, Greece
 SV1AG, G. Gerardos, Stoa Pasmazoglou 4, Athens, Greece
 TG7SS, Mission School, Santa Elena, Bettan, Guatemala
 UA8LA, A. Dombrowsky, P. O. Box 29, Vladivostok, U.S.S.R.
 VEM8C, U. S. Weather Bureau, 24th & M, Washington 15, D. C.
 VK0TC, c/o 277 Hardey Rd., Cloverdale, W.A., Australia
 VP5BE, U. S. Naval Facility, Navy 104, Patrick AFB, Fla.
 VP7BO, D. Coctas, U. S. Naval Facility, Eleuthera, Bahamas
 VP8AQ, G. Davis, P. O. Box 188, Port Stanley, Falklands
 VP0RT, Anguilla, Leewards (to W6ITH)
 VQ8AQ, Cable & Wireless, Rodriguez Island (or via RSGB)
 VR1CZ (via NZART)
 VR3N (via RSGB)
 VS1JF, R. Brown, RAF Seletar, Singapore 28
 VS9AD, RAF Khormaksar, Amateur Radio Club, BFPO 69
 VU2AJ, B. S. Dutt, 89 Pandora St., New Delhi, India
 ex-W4IHW/KS4, I. H. Vosbrink, Box 3, So. Miami 43, Fla.
 W0BKL/KG6, Box 1363, Aznara, Guam, M.I.
 XE1YF, L. de la Fleur (W4AW), Manrique de Zuniga 165, Mexico 10, D.P., Mexico
 XE2NF, Box 354, Tijuana, Mexico
 XZ2OM, Flt. Lt. Aug Myint, BAF, c/o Dept. of VCSDS (Air), Ministry of Defense, Rangoon, Union of Burma
 XZ2TM, U Tun Hla Oo, Box 449, Rangoon, Union of Burma
 YA1AA, c/o ISWL, 86 Barrenger Rd., London N. 10, England
 YV4BV, Dr. A. J. Escobar, Box 160, Valencia, Venezuela
 ZB1VV, P. A. Fields, "Ajax", Paceville, Malta

ZC3AG, V. Mathew, c/o Phosphate Commission, Christmas Island, Indian Ocean via Freemantle, W.A., Australia
 ZD2KH, Box 48, Ibadan, Nigeria
 ex-ZD4CI (to 9G1CI)
 ZL1ABZ, Kermaadec Islands (via ZL2GX)
 ZM6BB (via NZART)
 9G1BO, Box 109, Tarkwa, Ghana
 9G1CI, D. Greig, University College, Achimota, Ghana

Whence:

Asia — Des Crouch of VS9AD gets about the Middle East in twin-engined RAF Valetas. "All that keeps a Sultanate of Oman VS9 off the air is a lost letter bearing the Sultan's permission," he tells WIICP. Des adds that VS9GV's license was withdrawn thanks to tightened non-reciprocity regulations, ex-VS9GV being Italian. "Active Aden VS8s at present include AC AD AF AG AJ and AP. Others exist but are not very active." Club station VS9AD plans a shift to roomier quarters where the boys hope to be more workable with their 20- to 40-watt 807 rig, Marconi CR-100 receiver and assorted beam antennae "Will arrange for a sked at any time with anyone who needs VS1-land," obliges VS1JF's Roger Brown. "Advise date, time and frequency, and we'll be there!" W1ELR, who provided Vermont for VS1s HU and JF, reports the pair now searching for Nebraska and the Dakotas to complete WAS. VS1HU made W6AM writhe under tantalizing hints of Maldives activity "I run 50 watts on 7-, 14-, 21- and 28-Mc. c.w. with a homebrew transmitter, SX-28 and dipoles for each band," notifies Bahrain's MP4BBE WGDXC information has HS1A closing down in June, and HS1C using his original c.w. 50-watter, mainly on 20. An HS1E reportedly readies for a.m. action VE6NX observes that OK1MB continues to LXPedite YK1AT's QSO output on 14,330 kc. around 0600 GMT. According to W3VKD and others, Beda also schedules JTYL, wife of JT1AA, near 21,030 kc. at 0800 GMT From VE3MR: 4X4DK's 10A-813 s.s.b.generator now is very available near 14,300 kc. around 0500 GMT. Ami also hits 10 and 15 meters in efforts to bolster his 250-plus countries total "I am glad to tell you that amateur radio operation on the island of Free China resumed this January after a long period of ban for security reasons. I understand there are many hams dusting off their gear and applying for licenses to get back on the air." This good word, from Formosa QSL chief M. T. Yung, received by W1BDI Former BV1US op Leo dropped in on W0ZZZ for a transcoffee QSO. Miles learned that this staffer

departed with most of the Formosa station's antenna farm, skyhooks he had erected at his own expense. Some 10,000 BV1US confirmations also came out of Leo's pocket. . . . W8YIN finds MP4KAM most catchable around 14,310 kc. from 2000 to 2100 GMT on side band with an HT-32-33 combo. SX-101 and 3-element squirter. . . . W9VCH and K6LLS returned to the short end of the DX stick after 1957 operation as KA4AS, while W7NIO grabbed a fast 23 states and 29 countries in his first few weeks of KA9AF activity. Andy's DX-35 shortly will be spelled by a BC-610, 14 Mc. preferred. . . . Via K6DV: JA1AEA completes high school and is keen to continue engineering studies in America. Jimmy shipped data on some two dozen JA operating awards, and K0GCZ forwards another's specs. The certification facet of DX-chasing certainly finds favor in Japan. . . . W8PVIH writes from Pakistan: "Obtaining a temporary license here in Quetta presents quite a problem but I'm working on it. I hope to operate on 14 and 21 Mc. and will keep in close touch with AP2U." Jim and family encountered typical ham hospitality in visiting VS1AY, VU2BK, 487YL and other prominent DX personalities of the Far East. . . . W8YIN is told by Dickson Islander UA0KAR that Wrangel still is silent hamwise.



OY1R, keying and milking with equal dexterity, now supplies first-Faeroes contacts to many a North American DXer on 14, 21 and 28 Mc. This neat stacked-and-racked station is homespun except for a Gelloso v.f.o. The 6146 final is clamp-modulated and the receiver is a 9-tube double-conversion superheterodyne.

Africa — Does I5A really have the shortest c.w. call in the ham world? . . . OQ5BL, stationed at an astronomical observatory at the 6000-foot level, fiddles with a new 1000-watt time-signal transmitter on 9.78, 9.948, 18.76 and 19.6 Mc. . . . VE3BQL/SU works into Canada on 40 meters with fair consistency but hasn't thoroughly aroused the U. S. 7-Mc. crowd as yet. . . . VQ8AM informs K2GPO of FBSCD's Comoros QRT. . . . "ZD7A retained his St. Helena call while in South Africa and will be back in ZD7-land," declares WGDXC's *Bulletin*. West Gulf sharpshooters also learn of Zanzibar DXpeditionary musings by VQ4s AQ and KRL. . . . ZD1FG, inspired by a visit to the powerhouse at ZL2GX, expects to return to the Sierra Leone airwaves with a healthier phone signal. . . . SCDXC informants define VQ480's s.s.b. DX safari route as VQ3 VQ5 OQ5 FE8 9G1 ZD2 FQ8 9G1 ZD3 ZD1 ZD3 to ZD6 with Z86AQ serving as on-the-air emcee around 14,325 kc. . . . Ex-ZD4CF, now 9G1CF, claims to be the 9G1 icebreaker for s.s.b. and credits W10KG with QSO No. 1 under his new suffix. W8YIN finds 9G1BQ also cottoning to side band, transmitting on 14,330 kc. and listening around 14,280. Mickey advises that neighbor OQ5IE, OQ5GU's better half, tries her s.s.b. luck on one day of each week, at least.

Oceania — KP6 communique courtesy K6JUL: KP6AL (W7FNK) is set up on Palmyra. KP6AK is on Jarvis, and KP6AM sails aboard a schooner plying the Palmyra-Jarvis run. KP6AK likes traffic work; KP6AL, most active DXer of the trio, runs 60 homework wats to a long-wire, finding his activity limited mainly by the W/K/VE QSL avalanche

. . . . VS8BA tells K2GFO he seeks W/K contacts around 14,000 kc., usually tuning 10 kc. lower, during week ends. 1300 to 1500 GMT. Dick employs 90 wats, a beam, and an Eddystone receiver. WGDXC's organ observes that "VR1C runs 20 wats to an 807 but power troubles have him down to 10 wats at times. He is usually on 14,180-ke. phone at 0500 GMT but will use 14,002 and 14,104-ke. c.w. as soon as he receives crystals contributed by W7PHO." The Gulfmen also understand that VK9XAI will dispense ZC3 QSOs ere too long. . . . KH6RU and W4TGA/MM, with a KVM and dipole aboard *SS Lurline*, had a flock of fun hamstringing on the high seas before disembarkation at San Francisco on the 19th of last month. High point of the 72-day cruise was a 94-minute operating stint at F08AB which produced 85 QSOs. . . . W3VKI and other perseverers caught the Kermadecs cross-band-style thanks to the guidance of ZL2GX. Jock haunts the low edge of the W/K 20-meter phone segment around 0600 GMT while ZL1ABZ, listening on 14 Mc., transmits on 3690 or 3844 kc. Tricky! . . . VR2BC (ex-VPIGG), who takes temporary leave of Fiji beginning next month, was delighted to complete his 15-meter phone WAS with a Delaware contact. "DX here so far this year has been poor, with little VR2 activity as a result. VR2s AG and AS talk of rebuilding; VR2s CC DE and DF are intermittently active. VR2AZ came back from leave but is off again to VK on business." . . . At a recent Potomac Valley Radio Club clam bake W4YZC learned that W3PZW may do some KBing courtesy CAA. . . . W2DEC names KC6s JC and UZ as your best Eastern Carolines bet right now. KC6JC has an 813 300-watt and a 50-watt cruiser, both of which must shut down with the local power plant at 1130 GMT. KC6TJZ often roams 20 meters, side-band style. . . . W6PYM, K0DMY and others have been teasing the teasy FK0AD who smokes up 14 Mc. with a pack of Chesterfields exhalations.

Europe — OH2YV informs W8YIN that OH2OJ and XYL now are permanent residents of the Aland Islands, signing OH0NC and OH0ND, respectively. Mickey also learns that UB5WF intends to be No. 1 Ukrainian side-bander and is particularly interested in KC6 KXG and KP6 QSOs on 20. . . . W1ELR finds OR4VN a fresh entry among the potpourri of antarctic prefixes now workable. . . . GD3GMH pioneers s.s.b. DX work on Man Isle. . . . It finally came! W1VG tells us of a real certificate-certifying certification (see *Jeeves*, p. 81, December 1956 QST). OH2YV is the prime mover for this one; he calls it AHC — the Award Hunters' Club — and its fundamental requirement is the attainment of at least 25 acceptable DX diplomas. Check with OH2YV for full details. (Now who'll come up with a certification to certify certificate certifications?) . . . W3YIK tells us that DL7BB's CT1BB ticket is a temporary authorization. . . . K2TSW discovered DJ2YL chasing her WAS-clinching Ark., Okla., Utah and Vt. QSOs on 15-meter phone. . . . OH4 certification No. 680 fell to W7RT. . . . ZB1VV goes for the QRP approach and has captured 41 countries with his 20-meter 12-watt since last November. Peter is a former V86 V81 and DL2 call-holder. . . . DL4LJ (W7KUB) has DX sights set on Continental DXpeditionary endeavors, target(s) unspecified. . . . HB1PL ar's 6146 final, SX-28, and phased arrays make Switzerland's rare Appenzel canton available on 10, 15 and 20 meters almost daily from 1800 to 2300 GMT. Pete's usual spots: 14,064, 14,132, 21,299, 28,128 and 28,961 kc. HB1PL ar radiates from a TV transmitter site high on Mt. Santis. . . . Flyboy HA5AM manages to sign slant-ZA on occasional Albanian week ends. W6RW was among the first to make the grade. . . . OY7AL determinedly entered this year's ARRL DX Test to gather enough Nevada Sevens to insure his so-near-but-yet-so-far WAS sheepskin. . . . SP6FZ, who will be remembered by the prewar DX school as TP4R, SP3AR and SP1AR, seeks old ham buddies on 14, 21 and 28 Mc. . . . Russia's Central Radio Club received 724 entries from over 30 countries as a result of its "Radio Day" DX activity last May. UA9DN slaughtered the competition for top homeland honors, followed closely by UBSBER. Among multipropered Russian stations UH8KAA and UB5KAG ran a tight one-two. Meanwhile, down on Uncle Sam's ranch, W2WZ, W4LZF and K6EIV won, placed, and showed for our side, W2ZRX, VO and VE1SB put Canada into the thick of things, while OK1LAI, 3W8AA, 3A5TH and ZL1MQ posted continental highs outside U.S.S.R. territory.

Hereabouts — W6ITH rang up several hundred VP0RT QSOs from Anguilla of the Leewards in late January. W8YIN found Reg's s.s.b. KW4L1 especially potent on 15 meters. . . . According to SCDXC, KF4AIO's latest Navassa Island timetable calls for a July assault, and OVARA adventurers talked up an imminent invasion of Revilla Gigedo's Socorro isle. Incidentally, the 1958 line-up of Ohio Valley Amateur Radio Association officers has W8FGX president, W8ELB vice-presy, W8IFU secretary, and W8TJM treasurer. . . . North Jersey DX Association's January elections reinstated W2BXA as president and established W2s DEC and AGW as vice-president and secretary-treasurer, respectively.



Correspondence From Members -

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

MEXICO

335½ Park Avenue
Long Beach 14, California

Editor *QST*:

In the December issue of *QST* 1957, page 84, under tourist operation in Mexico, there is an error. The LMRE dues were raised to 100 pesos (\$8.00 U. S.) in June of 1957.

Having stumbled thru the procedure of obtaining an XEØ call, I suggest anyone planning a trip thru Mexico follow, in sequence, the following steps:

1. At least 45 days before planning to leave on trip, to write to LMRE — Liverpool 195A, Mexico 6 D.F. air mail for instructions, application blank, and renunciation letter.

2. Have ready for immediate return by air mail, the following papers:

- A. 1 Photostat copy of amateur license.
- B. 1 Photostat copy of auto ownership paper.
- C. 1 Photostat copy of visitors' permit.
- D. Money order for 100 pesos (\$8.00 U. S. is O.K.) made out to LMRE for dues.
- E. Money order for 100 pesos (\$8.00 U. S.) made out to "Direccion General de Telecomunicaciones."

3. Upon receipt of papers from LMRE fill out application blank, renunciation letter and attach the above 5 papers and send air mail to the LMRE.

Thirty days must be allowed for the return of your XEØ call after mailing all papers to the LMRE.

The total cost including visitors' permit \$30.00. However, it is well worth it to get out of the American band. Hi. Good luck, OM, and may you enjoy being "DX" as much as I do.

— *Lyle B. Gardner, K61PJ XEØ1PJ*

P. S. The LMRE have a fine group of people in their office. They will help you if you cooperate. Remember we are their guests when using their bands.

SHOOT HIM?

Conrad, Iowa

Editor *QST*:

Should we give him a choice? Should we hang him, put him in the gas chamber, or the electric chair, or should we take care of him with the ole .22?

If you don't know what I'm talking about then turn to page 57 of your February *QST* and read the article entitled "Why Be a Ham?" Shucks, just consider the advantages and disadvantages of this tape business.

He does have a few points, but then look at the biggest loophole of all. What excitement, thrill, and adventure is there in sending tapes? I think what W5FLS needs is to belong to a pen-pal club. What a dreary dull hobby as compared to ham radio!

— *Dennis Hughes, KØGUB*

MOONWATCH

Rt. 3
Manhattan, Kansas

Editor, *QST*:

As team leader of the Manhattan Moonwatch station I want to thank the radio amateurs who have been so useful in the operation of our station and other stations I know of. Our station is deeply indebted to Clifford Simpson WØYUQ who designed our antenna for 40-Mc. reception and tracking, and who built our pre-amp for 108 Mc. This last receiver gives a gain of three times in antenna noise when merely pointed at the sun; and the present "Explorer" signal comes thru loud enough to be clearly distinguished 100 feet from the speaker. Cliff, thru his radio tracking of all of the satellites, has provided us with not only crossing times, but enough orbit data so we have been able to operate well before the official Smithsonian data has been received.

On the evening of Feb. 2, WØYUQ was tracking 1958 Alpha so tightly that Ben Mullinix KØEHI, was able to sight along the boom and make a naked eye sighting of the American satellite. Four other persons in this manner likewise found the object. At no time was Cliff more than a degree off the object. This was the first naked-eye sighting of 1958 Alpha, and as you know got great publicity in the press all over the nation. It would have been impossible without Cliff's fine work.

Also we are greatly under obligation to N. DeYoung, WØTOL, who has kept us in constant contact with the Lincoln, Nebraska, Moonwatch station. Because of his efforts (which include driving 6 miles out in the country to deliver radiograms) we caught two Sputnik crossings we otherwise would have missed.

At our station we use the radio tracking (Yagi direction finder) primarily as a means to alert the optical fence. Optical fixes are so superior to electronic ones (even Mini-track) that we give them priority. But the minute or so warning the radio gives makes the visual work immeasurably easier.

— *Walter Scott Houston*

HAM SPIRIT

214 Delaware Avenue
Toronto 4, Ont., Canada

Editor *QST*:

I read with interest the letter by VQ5GF in December *QST* expressing his views on the kind of QSOs he likes. No one will question his sincerity and he is entitled to his views and to operate his rig in the way that most pleases him. However there is something more. There is "ham spirit" which being interpreted means that a ham does not live to himself alone, but does his best to be friendly and helpful to other fellows in the game.

There are so many certificates such as DXCC, BERTA, EDX, WAA etc., which rely on contacts with such rare places as VQ5. If every VQ5 took the attitude that our friend VQ5GF takes, then we can only say that many ardent DX men would not consider that Frank Stead was playing the game in the best interests of others. Surely he can spend an evening now and again swapping QSOs with W's, not to mention VE's and G's.

After all, there are very few amateurs who do not subscribe to the golden rule, and I guess it does no harm to remind all of us there is a golden rule in amateur radio as well as in other walks of life.

Let the super DX boys have their rag chews, but let them give the DX boys a break, too. How about it, VQ5GF?

— *H. A. M. Whyte, VESB7Y*

WORTHLESS TFC

203 West 90 Street
New York 24, New York

Editor, *QST*:

OM Tracy's comments in praise of the public relations value of hamgrams are quite justified only when such communications are well handled. However, the heavy traffic load on some nets I have known more often than not make proper delivery impossible. This is particularly true during a fair, etc., when almost all of the traffic is worthless, sent only for kicks and over too short a distance.

What is the PR value of a hamgram received by the addressee by post card a week later than the communication would have arrived by direct mail? Back in 1949 I made BPL on deliveries and telephoned every message in. I could have bought a new rig for the phone bill that month. Where unlimited service is not available post cards must be used by the really active traffic men.

Much as I enjoyed traffic back when I had leisure the delivery-time problem was a blot.

— *David L. Wiesen, W2WHB*



CONDUCTED BY EDWARD P. TILTON,* WHDQ

ELSEWHERE in this issue is the summary of the 1958 V.H.F. Sweepstakes. It was quite a party. There were nearly 1200 valid entries, and several leading clubs turned in more logs each than the entire country's totals in some early v.h.f. parties.

The V.H.F. SS has been a major operating activity right from the start. And as such, it is also one of our major problems. The club competition is a basic cause of both the interest and the strife. No group, it seems, enjoys coming in second! Any club that comes close is sure to have its lawyers studying the rules for possible changes that would make them potential winners.

Admittedly, a club in the Philadelphia area enjoys certain advantages. It has the greatest concentration of population in the country to draw from, and it is close to many different ARRL Sections. But these fellows also operate under some handicaps, not the least of which is a QRM level that is mighty rough to work through. And one club doesn't have all the activity to itself; there are several active v.h.f. clubs to compete for local honors.

It is no news to our contest planners that Southern New Jersey and Eastern Pennsylvania are hard to beat in v.h.f. competition. We've studied countless suggestions, but have found none that can be guaranteed to smooth things on a country-wide basis for contest purposes. Eliminate multipliers? Clubs in densely-populated areas still have the advantage. Change to counties or other geographical breakdowns? Same problem as with sections; though emphasis might be shifted geographically, there's still no formula right for all areas. Mileage or power multipliers? They're impossible to administrate.

This year an attempt was made to hold down the section-multiplier advantage enjoyed by the small-section East. Everyone started with a multiplier of 10. This raised the worth to his club of the fellow who couldn't cover so much ground, but you will note that it effected no marked change in the standings of the leading clubs. The same six clubs finished in the first six places as in 1957, though in slightly different order. And the South Jersey Radio Association still finished first, miles ahead of its nearest competitor.

This is bringing more howls of protest from the groups down the list. One frequently recurring idea is that the average score per member should be a factor in a club's ability to win. What a clinker this puts in the system! It encourages a club to send in only its best scores, and works

toward just the opposite of our objective of fun for everyone, big or little.

There is just one approach we know of that



1 W0ZJB	11 W2IDZ	21 K6EDX	31 K0GQG
2 W0BJV	12 W1LLL	22 W5SFW	32 W7FFE
3 W0CJS	13 W0DZM	23 W0ORE	33 W0PFP
4 W5AJG	14 W0HVW	24 W9ALU	34 W6BJI
5 W9ZHL	15 W0WKB	25 W8CMS	35 W2MEU
6 W9OCA	16 W0SMJ	26 W0MVG	36 W1CLS
7 W6OB	17 W0OGW	27 W0CNM	37 W6PUZ
8 W0INI	18 W7ERA	28 W1VNH	38 W7ILL
9 WHDQ	19 W3OJU	29 W0OLY	
10 W5MJD	20 W6TMI	30 W7HEA	

W1FOS	47	K4HOB	44	W7FDJ	46	W0QIN	47
W1CGY	46	W4QN	44	W7JPA	14	W0NFM	47
W1LSN	46	W4AKX	42	W7JRG	14	W0TKX	47
W1AEP	46	W4RFR	42	W7BOC	42	W0KYF	47
W1RFP	45	K4DNG	41	W7FIV	41	W0ZTW	47
W1SUZ	44	W4OXC	41	W7CAM	40	K0JJA	47
W1FLP	44	W4ZBQ	41	W7MKW	40	W0JOL	46
W1KHL	44	K4GYZ	41	W7YJE	38	W0USQ	45
W1FZ	42	W4FNR	40	W7QDJ	34	W0FKY	45
W1FVZ	41			W7UFB	33	W0QVZ	45
W1FKO	40	W5VY	48			W0QFZ	44
W1CLH	40	W5LFP	47	W8WPD	47	W0YJF	44
		W5GNQ	46	W8OJN	46	W0URQ	44
W2RGV	47	W5FSC	45	W8SQU	46	W0JHS	43
K2JNS	46	W5ONS	45	W8XJT	46	W0PII	43
W2AMJ	46	W5JLY	45	W8NQD	45	W0WNU	42
W2BYM	46	W5ML	44	W8UZ	45	K0DXS	42
W2FHJ	45	W5UXZ	43	W8RFW	45	K0GKR	41
K2CBA	45	W5VV	43	W8LPD	44	W0PKD	41
W2SHV	45	W5FXN	43	W8HJR	44	K0AKJ	40
K2AXQ	43	W5JME	42	K8ACC	43	VE3AET	47
K2ITP	43	W5CVW	41	W8ESC	42	VE1EF	38
K2ITQ	43	W5FAL	41	K8CIC	42	VE3AIB	37
K2LTV	41	W5HEZ	41	W8EVH	42	ET2W	35
W2ORA	40	W5BXA	41	W8YLS	41	VE3BX	33
		K5ABW	40	W8INQ	40	VE3BHQ	32
W3TIF	47	W6WNN	48	W0BRN	48	VE1QY	32
W3KKN	45	W8UXN	48	W0ZHB	48	VE2AOM	31
W3KMY	45	W8BAZ	47	W0UVV	48	VE3DER	31
W3RUE	42	K6JTA	47	W0VZP	47	VE1GE	27
W3NKM	41	W8JKN	46	W0RQM	47	VE1WI	26
W3MQU	41	W8ANN	45	W0QKM	47	PZ1AE	26
W3MXW	41	W8NDP	45	W0JFP	47	C02ZX	24
W3OTC	41	K6GTC	44	W0DSP	46	VE1ZR	22
W3FPH	40	W6CCG	43	W8AAG	46	VE3OJ	21
W3LFC	40	K6HYX	43	W8AUI	45	SM6BTT	21
		W8ABN	43	W8UNS	45	SM7ZN	21
W4EQM	47	W8NIT	42	W8AHP	43	C06WW	21
W4UCH	47	K6RNQ	41	W8SWH	43	LAPT	20
W4UMF	47	W6IWS	41	W8MHP	43	VE4HS	20
W4FBB	46	W6CAN	40	W9KLR	43	K16UK	17
K4DJO	46	K6ERG	40	W8JCI	42	J41AUH	16
W4EQR	46	W6BWG	40	W9MFI	42	LU9MA	16
W4AZC	45			W8SWH	42	J48BU	14
W4LNG	45	W7BQM	47	W7DID	41	ZF2JV	12
W4CPZ	45	W7DYD	47	W8PPT	41	J41AAT	12
W4FLW	45	W7INX	47	W9IMG	41	VQ2PL	11
W4MS	44	W7ACD	46				

* V.H.F. Editor, QST.



This picture just about tells its own story. The first 50-Mc. award, and the cards that made it possible, just before they were mailed to Paul Boberg, W6BAZ, Santa Rosa, California. All contacts were made on voice, though W6BAZ is a good c.w. man, and all reports were S9. DXCC next?

offers a chance for success for clubs that have not quite made it up to now. Oddly enough, no club has yet tried it in earnest, yet it is a simple formula. Make better v.h.f. men out of your members. Instead of trying to sign up every Communicator owner in the area, concentrate on making better stations out of the ones you have. Insist that a fair number of your gang attain proficiency with the code, so that they can catch those hard-to-get sections on c.w., via tropospheric and ionospheric scatter. Build up section multipliers through real exploitation of the potential that exists for every really good v.h.f. station. Develop operating skill; drive for bigger and better beams, more power, and better receivers. See that every piece of v.h.f. gear at your disposal gets used, and to maximum advantage. Then work the contest from beginning to end, for all you're worth, and see that every other member does the same. When the Midwest V.H.F. Club, the Hampden County Radio Association, The Dayton Amateur Radio Association, the Mt. Airy V.H.F. Club, or your conductor's own HCARA do this, one of them will surely move SJRA out of the top spot where they have rested so securely all these years!

50-Mc. DX News

East-West DX was off somewhat in February, but by previous standards it was already on borrowed time. North-South and other transequatorial paths were very much alive; some of the work coming at hours new in our experi-

ence. The NBS scatter stations in Chile and Peru were being heard fairly regularly, and some of the time with signal quality that suggests something new in the way of transequatorial propagation. CESAE, the 20-kw. station at Antofagasta, Chile, was often audible throughout the morning. This would be the normal period for high F_2 u.u.f., but the signal had marked fast flutter suggest of T/E scatter.

HC1JW and HC1FS were worked or heard all the way from Maine to Florida Feb. 19 and 20. These sessions began around 0830 EST and lasted about an hour, following closely the pattern set by HC2OT during the previous cycle. W3BWU, Pittsburgh, reports PZ1AE, Surinam, worked, and an HC heard on Jan. 26, around 0930 EST.

The week end of Feb. 22 and 23 was a hot one. Breaking precedent, ZE2JV and ZE2KL, Southern Rhodesia, worked into Eastern U.S.A. as early as 0830 EST on the 22nd. Previous (and rare) openings over this path have come in the afternoon. Around 0915 the skip shifted to the eastern edge of the Middle West, and stations throughout the eastern half of the country could be heard via backscatter, calling the ZEs and ZS9G. Despite the high backscatter level, no African signals could be heard in W1 at this time.

All signals of a DX nature dropped out around 1000 but the band came back to life about 1125, with ZS9G in S9-plus, working W3 and W4. ZE2JV and VQ2PL were also heard briefly around this time, and there was a short break to W6.

PZ1AE started things at 0915 Feb. 23, working W8CMS. No Africans were heard this day, but XE1GE was worked by W1ELP, W1OAK and possibly others, and TG9JW was in for a few. This was the first appearance of TG9JW in northeastern U.S.A., to our knowledge. W6s and KH6s were in briefly.

W6WNN, La Mesa, Calif., reports ZL1MQ and ZL2DS worked by W6KD, W6TMI and himself on the 22nd and 23rd. Pancho says that ZL2DS reported logging 97 different Californians these two days.

W4FNR, Ft. Lauderdale, Fla., worked KP4ACH around 1715 EST Feb. 7. W4HZG, only 20 miles away, also worked him, but when these contacts were made the KP4

was audible at only the one station at the time. This suggests sporadic-E, rather than F₂ backscatter. On the 8th, Ab worked TG9JW, but this time with beam headings and signal characteristics suggestive of backscatter.

Good news from EI2W: Harry's authorization for 50-Mc. work has been extended to Dec. 31, 1958. This will enable him to carry through the spring season, which could be important, in view of the unprecedented nature of 50-Mc. DX thus far in this cycle. In business almost daily since Oct. 27, EI2W has run up a record never before approached by a European 50-Mc. station in working Ws. At last report he had worked about 160 different stations in 35 states and 2 Canadian Provinces. Contacts had been as early as 1335 GMT (W1LGE, Dec. 25) and as late as 1828 (W5NSJ, Jan. 5). Many interesting observations have been made, particularly since a tilttable beam was erected.

This 5-element job was highly effective at times when tilted to as high as 60 degrees. Many stations were worked in the western part of the country on Nov. 17, with this beam angle, sometimes accounting for as much as 9 db. improvement over the horizontal position. Beam direction was not always conventional, either. On Dec. 15, while listening toward the north, EI2W heard strong signals from K1CAR and W1EPV. With the beam on its normal heading for these stations they were inaudible. This was in a late opening, around 1715 GMT.

CT3AE, Madeira Islands, reports that signals from the direction of USA have been missing of late, but transequatorial DX has come in. He made TE contacts on Jan. 9, 19, 23, 24, 25, 26, 29, 30 and 31. On Jan. 24 he worked PY3ADT and PY2AXX, for his first Brazilian contacts, most of his DX being to the LUs. Jose is also on 144 Mc., currently testing with EA8AX in the Canary Islands, thus far without success. He expects to run 144-Mc. skeds with W stations during the summer months.

W4RAMU, Oceanway, Fla., says that the NBS IGY stations are showing that South American DX should be possible much more of the time than has been realized. One or more of these stations were being heard frequently, so Allen started keeping a running record. CE8AE was heard on 20 days from Jan. 16 to Feb. 16. On five more days no observations were made. OA3AAE was heard on nearly the same schedule. OA3AAF, the low-powered station, was heard on 6 days. The signals were heard often during the morning, with typical F₂ characteristics. Evening reception occurred on Feb. 12 (1714 to 1819 EST) and 15 (1724 to 1928) both times on CE8AE only.

The long-awaited openings between the eastern part of the country and the Hawaiian Islands began to break at the end of January. KH6UK reports eastern QSOs as follows: Jan. 31 — W1LUN LGE SUZ YOB K2RRG; Feb. 1 — W1LUN CLS GLH DEL F1X VNH P1R K2CBA HPN. These are in addition to the first real break on Jan. 25, reported last month. West Coast stations, K7Ls and JAs were worked on several other days up to Feb. 9, the last date on which KH6s have reported DX in an East-West direction, as we write. The afternoon of Feb. 1 was probably the best on record for KH6 — W1, 2 work. KH6NS, KH6UK and KH6CND all did a rushing business, but not for W1HDQ. With a low temporary beam, your conductor was about 10 db. below the bottom layer.

Good news from the West Coast — ZLs have been coming through. K6RNQ worked ZL4GY, for what is believed to be the first ZL QSO of this cycle. Feb. 1 at 1530 PST. The latest we have on ZLs comes from W6BJI, Fresno, worked ZL2DS, ZL1DE and ZL1ADP, between 1248 and 1330 PST. ZL2DS was in again at 1505.

Birth of an Aurora

The aurora of Feb. 10-11 will stand out in the memory of anyone who observed it visually or participated in the DX sessions it produced on 50 and 144 Mc. Here is a report of the entire period from solar noise burst to fadeout of v.h.f. DX, told in fine detail by W4UMF, Falls Church, Va.

"Sunday morning, Feb. 9, the 6-meter band was in good shape DX-wise. CT1CO was coming in by 0745 EST. Around 0815 CE8AE was in with a steady S2 signal, with typical F₂ characteristics. PZ1AE was heard at 0850, S7. At 0915 the background noise level suddenly rose by some 24 db. (This burst of solar noise was also reported by W1SUZ, Colebrook, Conn. — Ed.) CE8AE was still S2, but now showed marked transequatorial scatter flutter.

"At 0920, the 80-meter band, which had been good to W2

all morning, suddenly went dead, but the 10-meter band was still wide open. By 1000 all bands through 10 were dead, but 6 was still open to the south and east. CE8AE was still audible, with TE flutter, and PZ1AE showed no change. Stations as far away as New Mexico were heard via backscatter from the south.

2-METER STANDINGS

U. S.			U. S.		
States	Areas	Miles	States	Areas	Miles
W1RFZ	28	8	W5FEK	8	2
W1AZK	22	7	W5VY	7	3
W1KCS	22	7			
W1RFDU	22	7	W6NLZ	9	3
W1FZJ	21	6	W6DNG	5	3
W1AJR	21	6	W6WSQ	7	3
W1OAX	21	6	W6AJF	5	2
W1DDG	20	6	W6BRZ	4	2
W1MMN	19	6	W6BJA	4	2
W1LZY	17	6	W6ZL	3	2
W1UIZ	17	5	W6BAZ	3	2
W1AFO	17	6	W6MMU	3	2
W1BCN	16	5	W6ORS	3	2
W1KHL	16	5	W6LSB	2	2
W2ENLY	34	8	W7VMP	11	5
W2CXY	34	8	W7LEE	6	3
W2ORI	34	8	W7JRG	4	3
W2AZL	38	8	W7LHL	4	2
W2GOL	35	7	W7JJP	4	2
W2BLV	32	7	W7JZU	3	2
K21EJ	23	7			
W2DWJ	23	6	W8KAY	36	8
W2SMX	22	6	W8WXY	35	8
W2AMJ	21	6	W8LOF	31	8
W2KCR	21	6	W8RMH	31	8
K21NJ	21	6	W8SVI	30	8
W2OPQ	21	6	W8KCG	30	8
W2CBB	21	6	W8PST	29	8
W2LWL	20	6	W8WRN	28	8
W2OAC	20	6	W8SRW	27	8
W2PAU	20	6	W8JWV	25	8
W2UTH	19	7	W811C	25	8
W2AZP	19	7	W8LDP	25	8
W2RGV	19	6	W8DX	25	8
W2LHL	18	7	W8EHW	24	8
K2RLG	17	6	W8BAX	23	8
W2SFT	16	6	W8LCY	18	7
W2PCQ	16	5	W8PST	18	7
			W8CZY	17	7
W3RUE	30	8	W8RWW	17	7
W3BGT	28	8			
W3TDF	27	8	W9KLR	37	8
W3GKP	27	8	W9WOK	32	9
W3SGA	26	6	W9GAB	29	8
W3IBH	23	7	W9ACG	27	8
W3FPF	21	8	W9RBI	27	8
W3KCA	21	8	W9ZIH	27	8
W3LVA	20	7	W9UCJ	27	8
W3LZD	20	7	W9FVJ	26	8
W3KWL	19	7	W9EQC	26	8
W3NKM	19	8	W9ZLV	25	8
W3BNC	18	7	W9BII	24	8
			W9BPV	23	7
W4HHTK	33	9	W9UED	22	7
W4HJQ	32	8	W9KPS	21	7
W4AO	29	8	W9PBP	20	8
W4LTU	27	8	W9MUD	19	7
W4UMF	26	8	W9F	17	6
W4MKJ	24	8	K9AQP	18	8
W4CJT	22	6	W9ALU	18	7
W4EQM	21	6	W9JGA	18	6
W4DWW	20	6	W9MRL	16	7
W4OLK	19	6	W9DDG	16	6
W4TIV	18	7	W91Y	16	7
W4JFV	18	7	W9LEE	15	6
W4HKZ	18	6	W9DSP	15	6
W4VLA	17	7			
W4WNH	17	7	W0IHD	27	7
W4C1Y	15	5	W0GUD	25	7
W2BHS	14	7	K0DOK	22	8
W4ZBU	14	5	W0TGC	21	8
W4A1B	14	5	W0SMJ	20	7
W4TCR	14	5	W01NL	20	6
W4SOP	13	5	W0RUP	19	7
W4CPZ	12	5	W0ROP	18	6
W4UDQ	11	5	W0ONG	17	6
W4MDA	11	5	W0ZJB	15	1200
W4KCG	10	4	W0USQ	14	6
W4LNC	9	4	W01FS	14	5
W4GIS	9	2	W0OAC	14	5
			W0RYG	14	5
W5RCI	33	9	W0MYG	13	5
W5DUF	25	9	W0TJE	13	4
W51G	22	8	W01C	4	2
W5JWL	18	6			
W5VKH	15	5	VE3DIR	26	8
W5MMW	14	5	VE3ATB	26	7
W5FSC	12	5	VE3BYN	17	7
W5ASN	12	5	VE3DR	16	7
W5125	12	5	VE3AOG	13	7
W5QNL	10	5	VE3BPB	13	6
W5CVV	10	5	VE2AOK	12	5
W5SWY	10	3	VE1QY	11	4
W5KTD	10	1	VE1FJ	2	1
W5ML	9	3			
W5NDE	8	3	K116UK	1	2



Meet Shyozo Hara, JA1AN, v.h.f. manager of the Japanese Amateur Radio League. Coordinator of the activities of about 1000 JA v.h.f. enthusiasts, Shyozo has supplied regular and complete reports to ARRL for several years. Here he displays a scale-model Yagi, tested on 1200 Mc.

"At 1020, W8CMB was heard 89, via back-scatter from the mid-Atlantic direction. Suddenly at 1030, in the midst of a transmission, he dropped out of audibility. Simultaneously strong auroral flutter was noted on local signals. This lasted until about 1130, when the noise level was back to normal, and C8EAE resumed its normal F_2 quality.

"There was no aurora observed here that night, but at 2115 Monday (just 36 hours after the solar noise burst) a beautiful red and white aurora lighted the northern sky. It was very bright for this latitude, 38 degrees, but it showed little effect on v.h.f. propagation at first. Around 2130 the visible aurora faded a bit, but signals started to pour in on 50 Mc. from VE1, 2, 3, and 4, and all U.S. call areas except 5, 6 and 7. The Yellow knife beacon on 49.99 Mc. was 89-plus. The signals from W0 and VE4 sounded like a combination of sporadic-E and aurora, being wholly readable on voice, but with a fast flutter fade. The Yellowknife beacon showed no auroral characteristics at all!

"A marked change occurred around 2230, when Yellowknife dropped out and all signals assumed typical auroral characteristics (broad fuzzy notes, with little or no voice readability). These continued, with all the above areas represented except VE4, until 0030, when the strength dropped somewhat and the distance over which signals could be heard was not quite so great.

"There seems to be little doubt that the noise burst Sunday morning resulted from ultraviolet radiation from a solar flare. As the UV entered the earth's atmosphere, it caused a sudden ionospheric disturbance (SID) and a short aurora. After a 36-hour interval the charged particles arrived, touching off the visible aurora and the radio effects noted. W3OJU and W4UCH observed the same effects, as far as the 50-Mc. band was concerned.

"The aurora continued well into Tuesday morning, I changed to 144 Mc. at 0030, and found the band in fine shape. North and South Carolina, Mississippi, Tennessee, Kentucky, Missouri, Iowa and all W1, 2, 3, 8 and 9 states were in. I worked W5RCI, Marks, Miss., at 0400, for state No. 27. The aurora, both visible and radio, continued past 0530, but the band was all but empty as the last die-hards quit for a bit of sleep. The Middle West enjoyed a fine break. W8KAY was heard calling Colorado, and other 8s were heard calling or working Nebraska, Kansas, Missouri, Iowa and North and South Dakota.

"I heard nothing of Alabama, Georgia or Florida on 144 Mc., but Mississippi and Tennessee, seldom heard here via aurora, were represented by two and three stations respec-

tively, and for five consecutive hours. All in all, it was quite a session!"

From the reports received it is obvious that this was one of the most widespread auroras on record. It was seen visually in almost all parts of the United States, as far south as the Florida Keys, and Fresno, California. On 50 Mc., as reported by W4UMF, above, the 50-Mc. band showed that peculiar sporadic-E-like condition in the early phase of the aurora, permitting work over distances as great as the Montana contacts reported by W2SHV, Johnson City, N. Y., and VE3AET, Lansing, Ont. Minnesota, North Dakota and VE4 were worked over much of the Eastern Seaboard, and Montana was heard on W1.

Coverage on 144 Mc. was phenomenal, especially for stations in the central and southern parts of the country. W5RCI, Marks, Miss., worked as far northeast as W1AJR, Middletown, R. I., nearly 1200 miles, and he was heard by W0IC, Denver, Colo., about 900 miles to the northeast. It's not often that a 144-Mc. signal is heard over a spread of nearly 2000 miles in one night! W0IC made his first 144-Mc. aurora contacts, with W0RYG, Lincoln, Neb., at 2358 MST on the 10th, and W0ZJB, Wichita, Kan., at 0124 on the 11th. Heard were an Ohio station (believed to be W8LOF), W4HJQ, Glendale, Ky., W0RRR, Omaha, and W5RCI, these between 0100 and 0200 MST.

W5RCI worked his first North Carolina station, W4BUZ, and heard some 15 states, from the East Coast to Nebraska and Kansas. W1PHR, Wethersfield, Conn., reports 24 states heard on 144 Mc., including all call areas except W6 and 7. Kansas and Nebraska were worked as far east as Pittsburgh. W4LTU, Orlando, Fla., worked his first aurora on 144 Mc., and probably the first on that band ever from Florida, working W4VSN, Oak Ridge, Tenn., at 0152 EST. Walt also heard W4BUZ, W4RFR, W4TDW and W5RCI. Nothing was heard farther north, and DX was heard only after 0130. This late timing seems to be characteristic of aurora openings that have extreme southerly penetration.

W6BJI, Fresno, saw the aurora and monitored the 50-Mc. band. He heard only W6BAZ, Santa Rosa, and W7MAH in Reno, Nev. The latter appears to be the best prospect for California-Nevada 50-Mc. QSOs, by the way, as he has a potent 600-watt signal on a.m., c.w. and s.s.b.

W8LOF, Piqua, Ohio, worked his first Kansas stations on 144 Mc., W0JND and W0ZJB, and heard a total of 66 stations in the period from 0200 to 0500 EST.

An interesting coincidence, if nothing more, is the report from VK3AHL, West Brunswick, Victoria, Australia, to the effect that a fine 50-Mc. DX session occurred the night of Feb. 10th. Sporadic-E distances (Brisbane, 1000 miles, and Rockhampton, 1500 miles) were worked, and then suddenly the band opened for Japan. Signals were fairly strong, but with the characteristic TE flutter, making voice rather difficult copy, especially with the trouble many of the JAs had with English. Terrific QRM in the low part of the band didn't help either. Japanese stations were in from 2200 to 2300 local time, which is 1200 to 1300 GMT. (Note that this is 0700 to 0800 EST, Feb. 9, or just about the time that W4UMF was noting good conditions in the pre-aurora period Sunday morning.)

Then on the night of Feb. 11 (morning of Feb. 10 here) VK3AHL was hearing pulsing noise from the south, and VK3ALZ heard VK3ATN (northwest Victoria) by auroral reflection from the south. VK3AHL heard VK7LZ and VK7AB (Tasmania) working on c.w., with the usual aurora buzz, and soon many other VKs were in the fray. An interesting angle here is that several VKs with Z calls (v.h.f. only) were heard on voice, trying to make contacts, but not succeeding to any great degree. These beginner-type licensees are *not permitted to use c.w.* Might be a good idea here, too. If it were treated as a special privilege, to be earned, perhaps more beginners would work toward it!

WAC and WAS

When the West Palm Beach Radio Club offered a trophy for the first v.h.f. WAC (announced in August, 1947, QST, and pictured again in these pages in February, 1958) a good many 50-Mc. men were sure that nobody would ever win it. You could count on your fingers the F_2 DX contacts that had been made on 6, and the possibility of working all continents seemed remote indeed. Prospects seemed no brighter when the world conference at Atlantic City in 1947 eliminated the 50-Mc. band in the European region. Even if another good solar cycle came in the '50s, would there be any

DX left to work by then?

Then along came the IGY, timed to coincide with the anticipated peak of the solar cycle. Taking advantage of the IGY angle, several European amateur societies were able to sell their governments on issuing special temporary authorizations for 50-Mc. work to qualified amateurs. Meanwhile, activity on 6 had grown to tremendous proportions in Japan, guaranteeing Asia's availability. Consistent effort was being made by well-equipped stations in the right places in Africa, notably Northern and Southern Rhodesia and Southwest Africa. Several South American countries were experiencing 6-meter booms, and there were a few good stations in the Hawaiian Islands. The stage was set — if the ionosphere would cooperate.

How well the last question was answered is now history. On Nov. 13, K6GDI, Fresno, Calif., worked his first Japanese stations. Bob had worked EI2W Nov. 5, for the first W6-Europe 50-Mc. QSO, and had been on the job when the first Africans had come through on the 10th. The first 50-Mc. WAC thus became merely a matter of proving it with QSLs. This turned out to be quite an operation for K6GDI, but he finally got the necessary confirmations, and the beautiful trophy, so long on display at ARRL Headquarters, is now being engraved for presentation to K6GDI.

Just two days after K6GDI's first JA QSO, W6BAZ, Santa Rosa, Calif., worked EI2W, completing the second 50-Mc. WAC. Paul lost no time in collecting the necessary cards, so his was the first application for official 50-Mc. WAC to be processed. Details of this "first" are shown in the accompanying photograph.

W6BAZ didn't hold the WAC honor on an exclusive basis for long. W6BJI, Fresno (that town must be a hot spot for 50-Mc. DX!) was issued certificate No. 2 within a few days. W9DSP, Chippewa Falls, Wis., broke the W6 monopoly, getting No. 3. Award No. 4, and the trophy, went to K6GDI, and No. 5 is on its way to W9QIN, Minneapolis, Minn., as we write. We know that W6FZA, Porterville Calif., is in line for No. 6, if he can get the cards. W9HGE, Beloit, Wis., is in the same boat. After the KH6 work in early February, many Easterners are praying for a shot at Japan, in order to break into the charmed circle.

Meanwhile, the shortened *F₂* skip within the United States made 50-Mc. WAS a reality for many who had been close to the goal for several years. Eight 50-Mc. WAS certificates have been issued already this year, the last three being to W1CLS, Weston, Mass., W6PUZ, Pasadena, Calif., and W7ILL, Big Piney, Wyo. VE3AET worked Montana in the Feb. 10-11 aurora to put him in the 47 spot, well ahead of the pack in the race for the first VE WAS. Can a station not on the North American continent make it? EI2W is trying his best to prove that it is possible. Note that Harry is up to 35 now, a phenomenal total for a European.

Here and There

Bad news for 144-Mc. men who have not worked Florida: W4LTU, who probably made more out-of-state contacts than all other Florida 144-Mc. operators combined, is moving to the Washington, D. C. area. Walt's exploitation of meteor scatter makes one of the finest pages in the history of v.h.f. His article in April, 1957, *QST*, is now the Bible, as far as the ping jockeys are concerned, and Walt proved that he knew whereof he wrote, by working every state within an 1100-mile radius, except Delaware, West Virginia and Louisiana. W4LTU expects to locate on the south side of the Potomac, so the call will not be lost to the v.h.f. scene, but his move is going to keep a lot of v.h.f. men (including W1HDQ) one state down on the list from where they might have been if W4LTU had been in Florida through another Perseids shower.

MARS v.h.f. nets are springing up all over. W9ZJB says that the Kansas City area, Net 50, operates on 143.99 Mc. 2000 to 2100 CST Tuesdays. Net 50A, Wichita area, uses the same time and frequency on Sundays, and Net 50B, Salina area, holds forth on Wednesdays. This completes v.h.f. relay facilities from South Texas to Kansas interior. Connections now needed from Salina to Manhattan or Topeka, and thence to Kansas City.

W5VKH, Tulsa, says that he has no trouble checking into both the North Texas and Oklahoma MARS nets, though his nearest check point is Ada, Okla., some 100 miles distant. He is working on RTTY for MARS and amateur use.

MARS bulletins coming to Headquarters show increasing

emphasis on v.h.f. nets, some of them including detailed information on ways of getting on or making the best use of the MARS frequencies adjacent to the 2-meter band. Early in the winter, your conductor appeared as speaker on the Sunday afternoon MARS Technical net (around 7500 kc.) and was kept busy for an extended period after the session answering questions about v.h.f. techniques and possibilities.

Anyone like to work Greenland on 144 Mc.? KL7CJY/KG1 (some call for moonbounce, but he's getting it changed!) is getting set up for the works. He can be reached through KG1BB, or addressed as follows: John M. Oxholm, Philco Tech Rep, 1963 AACSS Sqdn, APO 23, New York.

Reading of Kraus' work in tracking the disintegrating Sputnik I, W9CUX wonders about the possibility of v.h.f. DX from the trail now being left by Sputnik II. With a chart of traverses and a timetable, a station equipped with the best in v.h.f. gear should be able to get some results, he thinks. Any takers?

Vermont shouldn't be so tough on the v.h.f. bands in the months to come. Activity is building up on both 6 and 2 throughout the Green Mountain State, and the SCM is out to help the cause along. Said SCM is W1OAK, wife of that Vermont stalwart on 144 Mc., W1MAMN, and she is bearing down on 6. The rig is a pair of 4-65As at 400 watts, both phone and c.w. Ann worked KH6NS Feb. 1, undoubtedly the first Vermont-KH6 contact on 50 Mc.

Nets are active on both 6 and 2, and PAMs for v.h.f. are on the job in the Burlington and Brattleboro areas. These are W1TBG and W1FMK. W1TBG reports about 10 stations in the Burlington area on 144 Mc. One (W1HFN) is on 6, with more coming. Brattleboro now boasts 10 stations on 50 Mc. Bellows Falls has 5 on 144 Mc. and 4 on 50 Mc., and there are other stations on both bands in communities scattered throughout the state. The terrain is not encouraging for local work, but W1OAK and W1FMK, more than 90 miles of rough country part, are making out quite well on 6.

Some time back we mentioned the slide show, "The World Above 50 Mc." being compiled by The Rochester Amateur Radio Association, as a companion to their splendid historical show, "The First 30 Years of Amateur Radio." Photographs of prominent v.h.f. stations, antennas and operators are still needed. Color slides are best. These will be returned after duplication. Send contributions to Henry Blodgett, W2UTL, 515 Victor-Holcomb Road, Victor, N. Y.

Two 50-Mc. nets are currently in operation in little Rhode Island, according to W1FIG. The Johnnycake Net holds forth on Wednesdays and the Fish Net on Fridays, both at 2030. Frequency is 50.7 Mc., but the first megacycle is tuned for callers not on the net frequency. NCS are W1LSP and W1FIG. Organization of a society, the express purpose of which will be to promote v.h.f. activity and help newcomers to the game, is under discussion. Dinner meetings are held monthly on the second Thursday.

The Six-Meter Club of Dallas is still in business with certificate for anyone who works 10 or more of their members on 50 Mc. Contact data should go to K5BDL, 8209 Menger, Dallas 27. Certificates have been issued as far away as Michigan, Ohio and Illinois, thus far. This info from W5-FEG, who was in a hurry, because XE1GE and XE1PY were coming through on 6 as he wrote, Feb. 8.

Strays

KN4PYR practices code by tuning his receiver to a standard broadcast station, with b.f.o. on, and keying the output to a speaker. He also records this material and plays it back for additional practice.

One fine afternoon K9EGJ called "CQ Nebraska" in vain for some time, striving for his WAS. Finally giving up, he called just a plain ordinary old CQ, and back came W9EGJ in Nebraska. How's that for a double coincidence!



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, WIWFO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr. Phone

Reviewing Plans for Your '58 FD. It's that time of the year again. The June 28-29 weekend is marked on many calendars, so provisions to take part in the *ARRL Field Day* will not be forgotten. The full FD Rules were mailed all active affiliated clubs in February. You should check last year's announcement in June '57 *QST* or see the results, Oct. *QST* if for any reason you need a refresher on how it goes in a Field Day. The rules will follow the same pattern as last year this June. To be ready with emergency powered equipment, both for receiving and transmitting, and to prove it in a communications test is the basic purpose in Field Day. An amateur can take part as an individual, or go portable with another amateur, pooling the available equipment. It's more fun sharing these experiences. Or go with a larger group or club if you prefer it that way; our annual FD is the greatest operating activity for radio clubs ever attempted. Some advance preparation and planning by clubs and individuals is necessary to assure getting most from the Field Day.

Club planning may require a good many decisions, first as to the FD site or location, tentatively also as to bands and modes to be used, and whether Novice or Technician setups for those classes of members can or should be manned as separate positions all through the FD or just for certain hours. Some club questions: Will you organize by teams for each band and mode or rotate your operators to just one or two "hot" setups? Do you have a FD chairman spurring your committees to action? Many clubs have separate committees assigned responsibility for equipment, location, antennas, commissary, operating-rosters, etc. In many groups each band is organized as a separate setup. This item is just a reminder that this is just about the last minute to get cooking as a club on your Field Day plans, if you haven't. It takes time to implement new gadgetry, to assay antenna sites and make the important decisions.

New operators before going out with the club can profit from blackboard sessions that familiarize them with message form, use of system, and abbreviated calling and answering practice. There's nothing like *experience*. Operators who cannot log accurately, copy well and use their heads can slow down any group, if not properly indoctrinated and given last minute briefings on the equipment they will use, some of which will not be the familiar home equipment! The

most expertly setup gear will not show results unless your operating staff is alert and on the ball. Some clubs even hold a dry run by having advance exercise or tryout of some of the slick new gear in the April CD Party. This is not a bad idea.

Individual Preparation. Individual preparedness should not be neglected. The FD is a time to test out every piece of radio gear that is portable; building a real practical portable, improving the mobile rig and operator capability are subjects vitally connected to successful results. Having that gear available later can make your vacation, with amateur communication along, a more pleasurable and effective one, also. So in the next six to eight weeks complete the planning and cut-and-try and, if you can, build yourself some new battery-or-otherwise emergency powered equipment you can be proud of.

About the Transmitter Class. On Field Day one can test as much equipment as desired. However, FD results are reported by grouping the number of simultaneously-operated transmitters. One or two operators going afield will usually go in the one-transmitter class; least gear to manage, most results per pound! Clubs can match themselves up in any transmitter class that gives the greatest promise of developing and testing equipment representing an emergency communications radio center, and that will give most members a crack at some actual operations. The class chosen is intrinsically unimportant, unless the club wishes to specifically challenge some club of about the same size and in that case wants to get in the same equipment class.

FD Log Forms to be Ready in May. The popular feature of starting FD operation any time after 4 P.M. EST or 1 P.M. PST Saturday June 28 — but once started counting the 24 consecutive following hours within the designated 27-hour period — has been retained. It lets both coasts be on the air at the same time but still gives time for late set up for those that have a half-Saturday work day before they can start. Clubs or individuals are invited to ask in advance for free reporting forms for the annual ARRL June FD. These will be ready to forward to you after mid-May. Ask *early* to allow mailing time for third class mail to bring them to you. Don't forget our main theme: to get most from this Field Day, do some advance planning and implementing right now.

— F.E.H.



Richard Maringer, W6JVA, 21-year-old OBS of San Diego, has kept his section solidly on the map recently, having been among the top three in every C.W. CD Party since October, 1956. He enjoys contests and DXing and belongs to the San Diego DX Club.

RESULTS, JANUARY CD PARTIES

In the January 11-12 c.w. goings-on, which some 4500 ARRL appointees and officials were eligible to enter, Official Observer W3VOS paced hundreds of crack ops on three counts—score, sections, and contacts. Charles' QSO average of 38.2-per-hour puts him on a par with W4KFC, the only other C'Der who has registered over 700 contacts. (Vic did it twice, in October of 1955 and 1957.) OBS W6JVA (see photo) easily copped second position in the standings, followed by New Hampshire ORS OO OPS WIARR, who had his picture in last month's *QST* (p. 48) for outstanding work in the 1957 VE W Contest. . . . The following week end, activity resumed anew as appointees hurled microphones and modulators into action, Making use of four bands to pick up those elusive section multipliers, OPS W4DCQ again led the phones by a healthy margin, after which came ORS K2PHF and OO ORS/OPS W1FYF.

The highest claimed scores follow. Figures after each call indicate score, number of contacts and number of different ARRL sections worked. Final and complete results will appear in the April CD Bulletin.

C.W.

W3VOS.....	227,810-706-64	K9ELT.....	85,510-326-52
W6JVA.....	216,180-397-60	W4BZE.....	84,500-320-52
WIARR.....	178,605-560-63	W4HOJ.....	84,100-290-58
K6SXA.....	157,248-274-63	W1AQE.....	83,050-302-55
W6BIP.....	152,864-284-59	W4PNK.....	81,855-321-51
W6INQ.....	148,940-237-55	W8FZO.....	81,510-295-54
W7VII.....	147,636-301-54	W4WHK.....	80,360-282-56
W1EOB.....	145,200-477-60	W1YNP.....	79,820-300-52
K4BAI.....	143,400-476-60	K5AUZ.....	78,100-284-55
K4HOU.....	140,420-470-59	W8SVL.....	77,840-274-56
W9YYG.....	138,470-449-61	W9GIL.....	77,115-285-53
W8DJN.....	136,115-443-61	W7USO.....	76,500-170-50
W2FEB.....	130,760-463-56	W2GSB.....	74,730-278-53
W3MSR.....	130,500-424-60	K4KNP.....	73,250-293-50
W9LNC.....	130,410-409-63	VE7AC.....	70,100-153-50
W9YTI.....	129,320-418-61	W8FNI.....	69,420-264-52
K2PHF.....	127,600-433-58	W1GVK.....	69,335-283-49
W4LK.....	122,005-393-57	K1EZZ.....	63,855-236-53
K4CAX.....	119,840-428-56	K2BHQ.....	63,750-245-51
W7JC.....	117,600-230-56	W4WKQ.....	60,240-251-48
W2SZ.....	117,135-404-57	K2JAE.....	60,000-235-50
W3QOR.....	114,300-416-53	W3GYP.....	58,650-251-46
K6CNC.....	109,251-352-61	VE3EAM.....	58,650-230-51
K17CDF.....	108,336-234-51	K9AZJ.....	58,395-225-51
K2KIR.....	108,870-375-57	K1BCS.....	58,000-227-50
W2AYJ.....	108,750-368-58	W3UE.....	57,120-218-51
K2OMT.....	108,350-391-55	W1KRV.....	56,635-241-47
W6YCF.....	107,360-219-55	W3HHK.....	56,160-229-48
W4KFC.....	105,905-352-59	K0IFC.....	55,500-220-50
W2ANG.....	104,440-384-56	W1KGG.....	54,735-263-41
W1CMH.....	103,950-383-54	W4CXY.....	53,655-212-49
W4YZC.....	103,820-351-58	W3AXA.....	53,345-222-47
W6WII.....	101,420-201-57	W4DFU.....	53,295-209-51
W8GBF.....	100,375-368-55	W6WYJ.....	53,180-184-56
W1AW3.....	100,035-344-57	W5FCX.....	52,000-196-52
W4THM.....	98,550-365-64	W8JM.....	51,975-227-45
W3NF.....	98,230-331-57	K2RYH.....	51,600-234-43
W2DRV.....	94,770-344-54	W1ZDP.....	51,450-203-49
VE6NX.....	94,710-189-55	W5JDM.....	51,250-200-50
W9MAK.....	92,400-301-60	K8HID.....	51,060-222-46
W8PBO.....	86,070-298-57	W6IA.....	51,030-182-54
W9DYG.....	85,550-260-59	W1AJX.....	50,400-218-45

PHONE

W4DCQ.....	41,170-179-46	W1DGL.....	8455-84-19
K2PHF.....	20,790-147-27	K4HFN.....	8370-62-27
W1FYF.....	17,125-137-25	W9PSP.....	7540-55-26
W3MSR.....	14,580-101-27	W2AYJ.....	6710-54-22
W1ZDP.....	13,500-93-27	W3EPL.....	6490-56-22
W1YNP.....	12,500-118-20	K2IKZ.....	6325-55-23
W1BXT.....	12,350-95-26	K1BCS.....	6080-59-19
W3NF.....	10,810-87-23	W1KGG.....	5920-70-16
W3DQG.....	10,800-86-24	W3ADE.....	5600-49-20
K6BWD.....	10,136-38-28	W2EWO.....	5300-48-20
W2COB.....	9680-88-22	K2OMT.....	5060-43-22
W4NYN.....	8960-64-28	W1UOT.....	5010-56-18
W1GVK.....	8520-71-24	W1DZW.....	5025-62-15

¹ W9SZR, opr. ² W2CEV, opr. ³ W1WPR, opr. ⁴ K2MLN, opr. ⁵ K4AHA, opr.



You may think it's easy to whomp up a lead item for this column each month, but in racking our brains it is very difficult to come up with something different. What can be said about AREC or the principles of emergency communications that has not already been said? Or, if it has already been said, what items should be said again and how can they be said better? You readers (both of you) could help out by suggesting a few topics, if you would.

Quite often, we take a topic suggested by correspondence received during the month, and that's what we have done this time. The subject is a step by step procedure for organizing RACES. This has been covered before, but recent correspondence suggests a need for something in one-two-three order. Before we begin, let us set down a cardinal principle: that RACES organization is best preceded by and supplemented with an ARFC organization. You don't have to wait for your civil defense people to act before getting an AREC unit started. Then when they do act, you'll already have something on the fire and rapid progress can be made; also, you'll have demonstrated your ability to work together as a team.

In organizing RACES, first you have to have a local c.d. setup. Second, your c.d. director must designate someone as a RACES radio officer, either an amateur of conditional class or higher or a commercial operator licensee second class or higher. Third, a RACES communications plan must be drawn up in accordance with the requirements of section 12.101 (i) of the RACES regulations; the regs are in any ARRL License Manual since 1951, and FCDA has a check list (we can send you a copy of it) to assist in drawing up your plan. Also, your state c.d. office may have some helps in this phase. Fourth, certify your radio officer on an FCC Form 482, signed by your c.d. director; it's a good idea to certify one or two (depending on the size of your group) alternate radio officers on the same form. Fifth, clear both the completed plan and the RO certification with your local c.d. director, then send them to FCC through your state c.d. office and your regional FCDA office. At this time you can also include application (s) for RACES station authorization (FCC Form 481) if you wish. Sixth, while you are wait-

ing for FCC notification of approval (and this may take a while), don't sit back and twiddle your thumbs; prepare to implement the plan, set up stations, recruit more operators, procure equipment and facilities, establish a training program, start drilling your amateur-licensed operators (using amateur calls and procedures for now), coordinate with other local c.d. services. There is a lot to do in this interim period. *Seventh*, when your plan is approved apply for RACES station authorization (s) (on FCC Form 481) direct to FCC in Washington, if you have not already done this in step five. *Eighth*, you are now ready to institute full scale RACES operation, including certification of your operators by the c.d. director. Operators must hold FCC licenses, not necessarily amateur, to be eligible for certification. You are also now in a position to apply for federal "matching funds" for communications equipment, provided your local civil defense has the necessary budget to do so. *Ninth*, round out your RACES setup in terms of activities, programs and equipment. Beware of the common pitfall of allowing it to wither on the vine through lack of "something to do." And *tenth*, sign up all RACES amateurs in the AREC and have an AREC operational plan, for there are things that can be done under AREC that cannot be done under RACES.

Each of the above steps can be surrounded by a number of details, and each is a story in itself. We can help you with most of them and would be delighted to do so. Most of the details are discussed in a series of three articles which appeared in the March, April and May, 1953, issues of *QST*. We urge you to look up these issues for some good background on RACES problems.

At this writing, EC annual reports are still coming in. By the time you read this, we hope to have completed an analysis of them. If you have not yet sent in your annual report, please do so at once. It may still be in time to be included in the analysis and help make our overall estimates of the status of the AREC more accurate.

Supplementing the story of the hunt for the lost hunter in Vermont (Feb. *QST*, p. 87), we are now informed by EC W1YSA that the following additional amateurs participated in this operation: W1s CTM EIB EQR ETV FND KDY LMI QQN TFB WOD WOH WOL LYD UXS, KIARP, KN1BEU.

On November 28, Bedford (Mass.) civil defense was asked to assist in the search for a missing three-year-old boy. RACES was called out at 1800. Concord RACES was also asked to assist. Headquarters was set up at the fire house in Bedford, where RACES personnel arrived and established control at 1850. By 1900 five mobiles were in action. The operation was secured at 2330. Known amateur participants were W1s AQE DTA DZF EIQ LLY LAMZ RSY VGC UYK WME WNP and YYY.

On Jan. 2, W4BJL called into Alabama Emergency Net P with a report that a fifteen year old boy had run away from his Huntsville, Ala., home and was believed headed for Wiuter Haven, Fla., on his motoreycle. Net control K4BTO asked K4GBO in Pell City to contact police to try to intercept him at this point. Thirty-four minutes later, K5GBO reported the boy had been located by the police and was already on his way home, thanks to prompt action by amateur radio. — *K4AOZ*.

On Jan. 4, K2BDD was asked to assist in communications activity at a fire in Brooklyn, N. Y. K2JFL and K2IWC reported to the Red Cross Station and K2BDD and W2VYE arranged to meet at the scene of the fire. Contact was made between the scene and Red Cross within 30 minutes of initial notification. This circuit assisted in communications connected with obtaining blankets, sandwiches, coffee and milk formula for the evacuees and workers. Evacuees were sheltered at a nearby theater. K2BDD acting as relay between the theater and W2VYE/m at the fire. Operation was continued for three or four hours. Also assisting were K2GKY and W2JCI. — *K2QDB*, Radio Officer, Kings Co., N. Y.

W5GY reports briefly on an operation, Jan. 15, in which amateurs in northeast Texas assisted rescue personnel by furnishing communications in connection with the search for a 73-year-old man who wandered off. Two fixed stations, two mobiles, one portable and two hand-carried units oper-

ated on 3840 kc., resulting in the man being found alive after three days of wandering. Participating: W5s PSL QQU YUL WKK GY and K5AHG.

In Arlington's (Mass.) Civil Defense Parade on Nov. 23, nine mobiles from the Arlington Amateur Radio Club and ten mobiles from the Six-Meter Mobiles were assigned to intersections along the parade route and kept headquarters station W1VPT informed of the parade progress. Mobiles were accompanied by auxiliary police. W1FWQ was in charge at W1VPT, where he had two assistants. Twenty-two amateurs participated. — *W1THO*.

The Sooner Traffic Net handles regular weather reports for a group of students at Blackwell, Okla. The reports are sent to Oklahoma City and used in the 10 p.m. weather report from KWTW. The operation is under the direction of K5INC in Blackwell. This is one of the ways in which the Sooner Traffic Net keeps in preparedness for emergency work.

On Jan. 19 a simulated c.d. drill was conducted by thirteen members of the Kaw Blue Amateur Radio Club of Manhattan, Kansas, under the auspices of the local AREC organization. Using all personally-owned equipment, the group assembled at the city park, where a control station was set up, then dispatched mobiles to various strategic points about the city to show how they could quickly establish effective communications. The demonstration was witnessed by the city manager, city commissioners, police chief, representatives of the telephone and electric companies, the Army at Ft. Riley, and also Kansas SCM W0ICV. — *W0WJB*, Pres. Kaw Blue A.R.C.

Twenty SECs submitted December reports on behalf of 4954 AREC members, a decrease of four reports and over a thousand AREC members from last December. Virginia's SEC reported for the first time. Other sections represented included Conn., Ga., Ala., E. Fla., N. Mex., Wis., E. Pa., Mont., San Joaquin Valley, Ky., NYC-LI, No. Tex., Colo., Md.-Del.-D.C., So. Tex., Mo., Santa Clara Valley, Ore., E. Bay.

The record for the year, however, shows a slight overall increase in SEC reporting. Thirty-seven different sections were heard from (36 in 1956) and we received a total of 256 SEC reports during the year (230 in 1956). SECs of the following sections turned in a 100% reporting record: Ga., Colo., San Joaquin Valley, Eastern Florida, Santa Clara Valley, NYC-LI, and Md.-Del.-D.C. This is the *sixth* consecutive perfect reporting year for the Eastern Fla. section. The NYC-LI section has reported each month for four consecutive years. Three sections have two-year perfect records: San Joaquin Valley, Santa Clara Valley, and Md.-Del.-D.C. Our congratulations to the above-named sections for their outstanding records.

To wind up the year-end summary, here's a breakdown of the number of reports received from each section under 100%: eleven — W.N.Y., Conn., N. Mex., Wis., Mont.; ten — Ala., Minn., Ore., Maritime; seven — Santa Barbara, Nebr.; six — So. Tex., Mo., N. Tex.; five — Iowa, Ky.; four — Ont., Nevada; three — N. C., E. Pa.; two — Tenn., S.N.J., R.I., W. Va., E. Bay; one — Los A., Ark., Ind., Va.

RACES News

RACES operators may be interested to know that the latest reorganization at FCDA national headquarters in Battle Creek, Mich., separates the Warning and Communications Office into two separate offices. While previously we were concerned with warning only because it was part of the same office with communications, now we have an "office" of our own, so to speak. The new Communications Office has our friend A. P. Miller as director with Henry Brown as deputy. RACES comes under the Operations Division of this office and will continue to be handled by Jim MacGregor, W8DUA. Charlie Dewey, W8LBM, is director of the Equipment and Systems Division.

How is RACES doing from an overall standpoint? Figures released to us recently from FCDA show that as of the first of this year there were 955 approved RACES plans in exist-



A.R.R.L. ACTIVITIES CALENDAR

Mar. 21-23: DX Competition (c.w.)
 Apr. 2: CP Qualifying Run — W6OWP
 Apr. 12-13: CD QSO Party (c.w.)
 Apr. 17: CP Qualifying Run — W1AW
 Apr. 19-20: CD QSO Party (phone)
 May 1: CP Qualifying Run — W6OWP
 May 23: CP Qualifying Run — W1AW
 June 4: CP Qualifying Run — W6OWP
 June 14-15: V.H.F. QSO Party
 June 23: CP Qualifying Run — W1AW
 June 28-29: Field Day

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Mar. 29-30: New Hampshire QSO Party, Concord Brasspounders (p. 120, last month).

Apr. 4-6: WAE DX Contest (phone), DARC (p. 82, last December *QST*).

Apr. 4-10: Goose Bay QSO Party, Goose Bay ARC (p. 142, last month).

Apr. 5-6: Pennsylvania QSO Party, W3GJY and W3JNQ (p. 96, last month).

Apr. 11-13: West Virginia QSO Party, Mountaineer ARA (p. 140, this issue).

Apr. 12-13: Ohio Intrastate QSO Party, Ohio Council of ARCs (p. 114, this month).

Apr. 12-13: French Contest (c.w.), REF (p. 80, February *QST*).

Apr. 26-27: PACC Contest (c.w.), VERON (p. 72, this issue).

May 3-4: PACC Contest (phone), VERON (p. 72, this issue).

May 10-11: USSR International C.W. Contest, Central Radio Club (next month).

May 17: Armed Forces Day Receiving Competition and QSO Party, Dept. of Defense (next month).

May 17-18: Helvetia-22 Contest, USKA (details next month).

ence in all 48 states, Hawaii and Alaska. All FCDA regions except Region 1 have approved plans, and all states have plans except Mississippi and Texas. In number of plans per state, Massachusetts has by far the most with 232; Connecticut is second with 85, and then come California and New York with 82 and 80 respectively. It should be pointed out, however, that the number of approved plans in existence does not necessarily gauge the coverage or excellence of RACES operations.

RACES members of the Clinton Co., N. Y., group participated in an exercise set up for the benefit of the widow and six children of the Plattsburg, N. Y., assistant fire chief who died leaving his family destitute. Radio station WIRY programmed a full six hours of eulogies asking for contributions. RACES units made the collections, using five mobiles on two meters. Nine amateurs participated in the activity, which lasted from 1800 to 0030 on January 20.

In order to test the state of readiness of the RACES network in Camden Co., N. J., EC and RACES 80 meter coordinator K2MBD conducted a surprise problem on January 17 as part of the regular Friday evening training session. An explosion in the Audubon borough hall was simulated, killing or injuring a number of important officials. Immediately after the roll call of fixed stations, the net control called for

any RACES mobile. He was answered by HT-4, a RACES mobile from Haddon Township, who was told to proceed to the Audubon police station. As a result of his arrival there, he issued an urgent call to W2RG, county control station, apprising this station of the simulated disaster. From then on, the emergency situation developed to bring in more mobiles and stations until the exercise was concluded at 2100, having commenced at 2000. K2MBD states that the results of the exercise were surprisingly gratifying. Within 35 minutes radio contact had been established, personnel located and emergency equipment dispatched, and radio personnel involved demonstrated proficiency and good judgment in their actions and decisions. The successful outcome of the test shows, says K2MBD, that the intensive training program in Camden County is beginning to show results.

Pennsylvania has a complete statewide RACES setup, staffed entirely by amateurs, that operates every Sunday in a drill that includes over 200 amateurs. For RACES purposes, the state is divided into three areas: Eastern, Central and Western. W3MPO is state radio officer, with W3FBF his senior deputy. A state control station is located at Harrisburg, with area controls in each of the three areas. The state net operates on 3997 kc., maintaining contact with each of the area headquarters and with FCDA Region 2 in Olney, Md. There is also a statewide c.w. net on 3503.5 kc. Area nets operate on 3910, 3915 and 3920 kc. with contacts to key county stations. Networks at county level are established on 2, 6 or 10 meters, at local option. Pennsylvania State RACES is administered by a board of directors consisting of the following amateurs: W3a DJZ BBV IBM MPO FBF YA BGR EM MLY NRU KLD and LFS.

The Oak Ridge, Tenn., RACES organization operates under the "mother hen" system. A station of an amateur of general class or better is authorized for RACES, then takes under its wing, for RACES purposes, a group of six-meter technicians with portable units, using sub-unit designators during RACES drills. Sixteen stations are so authorized, with six of them already having RACES sub-units under them.

Response to our appeal for more RACES items has been gratifying. Many thanks, fellows. We now have more material than we can use in this column, so we are trying to use it chronologically. If your contribution does not appear promptly, bear with us, and don't let this keep you from sending in more.

W1AW OPERATING NOTE

The complete schedule of current W1AW operations appeared on p. 82 of *QST* for last month. See that issue for full details on when and where to look for the ARRL Headquarters Station.

Well, the 1958 DX Contest is over. Conditions were great, weren't they? Don't forget to forward your log, postmarked by April 30, to ARRL to assure listing.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be vacated immediately to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: c.w. — 3535, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for January traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KEB.....	192	1574	1114	451	3331
W7BA.....	16	1106	1073	31	2226
W3CUL.....	250	746	523	102	1621
W4PFC.....	183	712	667	43	1605
W9NZZ.....	306	529	0	527	1362
K6MCA.....	65	625	648	0	1338
W0BDR.....	125	658	554	2	1337
W0CPI.....	5	660	617	43	1325
W0SCA.....	35	557	553	2	1147
W0LCX.....	40	499	457	42	1038
K6GK.....	10	484	277	184	935
W5RCF.....	21	434	416	18	889
K0BCQ.....	0	451	436	0	887
W3WIC.....	38	396	388	46	868
W9CXY.....	10	420	410	10	850
W7AFP.....	6	415	411	4	836
W4PL.....	5	418	388	16	830
W0LGG.....	52	393	358	20	822
W9DO.....	33	360	322	71	786
W0IA.....	32	356	356	3	747
W1UEQ.....	6	371	336	31	744
W9JOZ.....	15	365	340	7	727
K7FAE.....	87	276	247	29	639
W6GYE.....	270	187	169	9	635
W0ZWL.....	5	308	17	289	619
W0CZ.....	28	294	267	24	613
W0BJP.....	5	303	296	7	611
W6EOT.....	2	305	273	28	608
W8WGU.....	74	267	160	104	605
W8JJN.....	31	293	240	17	581
K6KTW.....	29	276	43	231	579
W7PGY.....	19	277	244	33	573
K6MLL.....	19	259	256	15	549
W1EMG.....	8	272	245	22	547
W0GAR.....	2	266	262	6	536
K6GOD.....	16	259	196	53	524
W5ACK.....	8	263	225	13	509
W6GQY.....	241	126	80	80	507
W7FKK.....	81	218	172	32	503

Late Reports					
W2WS (Dec.).....	0	691	6	0	1382
K6MLL (Dec.).....	68	528	566	16	1172
W6ZJB (Dec.).....	382	182	401	26	991
K2TNJ (Dec.).....	26	445	391	39	901
W5DWB (Dec.).....	11	355	326	19	711
W8PNI (Dec.).....	233	180	182	13	608
W8PVO (Dec.).....	103	208	202	22	535
K0GVD (Dec.).....	62	219	68	156	505

More-Than-One-Operator Stations

KR6AF.....	140	77	456	18	691
KGLDT.....	263	166	5	160	594
K6LZW.....	584	0	0	7	591

BPL for 100 or more organizations-plus-deliveries

W3YDX.....	239	W3AHQ.....	136	K0CLS.....	106
K6GDF.....	205	K5AEX.....	132	W2LZJ.....	105
K2WAO.....	189	K9GYD.....	119	K2FNM.....	105
K5MZS.....	178	K4DSJ.....	115	W4RCM/6.....	103
K6GZ.....	172	K6FSD.....	112	K4HQB.....	103
W9ETM.....	167	W0KJZ.....	111	W3BID.....	102
K0BXP.....	158	K2YTD.....	110	K5EGQ.....	102
W4SHJ.....	151	K6BYV.....	108	K2SOW.....	100
W1YBZ.....	149	W9FCQ.....	107	K4DAS.....	100
W1YBH.....	137	KR6HN.....	106		
Late Reports:		K6QID (Dec.).....	107		
K5MZS (Nov.).....	175	W8GFE (Nov.).....	105		
W9YFO (Dec.).....	122	K6RLX (Dec.).....	101		

More-Than-One-Operator Stations

W7DK.....	175	K3WBJ.....	113	W1AW.....	104
		K4EZL.....	108		

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W2VDT, K4ATS, W4QDY, W4SHJ, K6UOD, W6CXQ.

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 organizations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. The notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager

must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the.....
.....ARRL Section of the.....
Division, hereby nominate.....
as candidate the Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
Yukon *	Apr. 10, 1958	W. R. Williamson	Mar. 17, 1949
Eastern			
Massachusetts	Apr. 10, 1958	Frank L. Baker, jr.	June 15, 1958
Ontario *	Apr. 10, 1958	Richard Roberts	June 15, 1958
Santa Barbara	May 9, 1958	Dorothy E. Wilson	Resigned
Northern Texas	June 10, 1958	Ray A. Thacker	Aug. 10, 1958
West Indies	June 10, 1958	William Werner	Aug. 10, 1958
Western			
New York	June 10, 1958	Charles T. Hansen	Aug. 10, 1958
Kentucky	June 10, 1958	Albert M. Barnes	Aug. 16, 1958
Montana	June 10, 1958	Vernon L. Phillips	Sept. 1, 1958
Northern			
New Jersey	July 10, 1958	Lloyd H. Manamon	Sept. 25, 1958

* In Canadian Sections nominating petitions for Section Manager must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

North Dakota	Casper F. Bonifas, W0UBG	Oct. 10, 1957
Alaska	Eugene N. Berato, KL7DZ	Jan. 15, 1958
Eastern New York	George W. Tracy, W2EPU	Feb. 10, 1958
New Mexico	Allan S. Hargett, K5DAA	Feb. 10, 1958
Virginia	John Carl Morgan, W4KX	Feb. 11, 1958
Maritime	D. E. Weeks, VE1WB	Feb. 15, 1958
Georgia	William F. Kennedy, W4CFJ	Mar. 18, 1958
Arizona	Cameron A. Allen, W7OIF	Apr. 15, 1958

TRAFFIC TOPICS

Recently in the mail we received copy of a "Net Control Log" sheet put out by W4CDA, and it reminded us that a discussion of the subject of net control methods is long overdue. The W4CDA sheet, by the way, has space at the top for the name of the net, date, page number, frequency, total traffic and time of net closing; and columns for indicating time each station reports in, number of kc, he is sent up or down to clear his traffic, his call, the time he checks out and a wide column headed "traffic distribution." We don't permit advertising in this column, but we understand the forms are for sale, so if you're interested, write W4CDA.

The net control station is the most important single station in any net, but this does not mean that if the net does a poor job it is necessarily his fault. These words of advice shall apply, therefore, variously to the net control himself and to the stations in the net.

The first thing the net control should have is a piece of paper and a pencil. The log can be used for this purpose, but it makes for some messiness and many control operators use separate sheets for this reason. As each station reports in, the call should be entered, followed by the list of traffic he reports into the net by its destination. If the net is the kind that uses side frequencies to clear its traffic, net stations should be dispatched to a side frequency as soon as any two stations that have traffic for each other are in the net; no use waiting for other stations to report in. However, if all traffic is handled on the net frequency, this should be deferred until there is a break in the continuity in stations reporting in. As soon as two stations are dispatched to clear some traffic, make a mark on that traffic to indicate this, then another mark after they report the traffic cleared. Some NCS underline it, then ring it; others ring it, then cross it out. It doesn't matter, just so you know what your marks mean. If the two operations are too much bother, it is always best to cross out the traffic as soon as you have given the order to clear it, then restore it to your sheet if they report it wasn't cleared. Otherwise, when dispatched stations return you won't remember, without a little headscratching, what traffic they were supposed to have cleared, and time will be wasted while you get this info.

Insofar as possible, clear the traffic and the net stations in the order in which they reported in; this will reward promptness. But if you have a roll call, it is best to clear the stations with small amounts of traffic first, holding those with loaded hooks. It's always annoying to have to cool your heels for half an hour; but less so if you have a lot of traffic than if you have only one or two.

Don't hold stations in the net when they are clear of traffic and no one has traffic for them. Best thing to do is to set a minimum time for participation, and at that time excuse all "cleared" stations. Fifteen minutes after net time, or fifteen minutes after completion of roll call, is a good rule.

Keep your orders brief and concise. The more complicated they are, the more you'll have to explain them. You'd be surprised how brief you can be if you work at it, either on phone or c.w. The less discussion you have on the net, the more traffic you will handle, and the sooner the net can complete its business.

Don't try to help the NCS, unless he asks for help. It is always a temptation to break in to tell the NCS that someone is calling him, that you can copy a station he appears to be having trouble with, that you can handle a certain message better than the station he told to receive it, or any number of other little diversions that plainly indicate to him that you think he is doing a lousy job or that you could do a much better job if you were NCS. Usually, an NCS does not appreciate being "helped" unless he asks for it. Wait until he does so; then give him all you've got.

By all means avoid breaking into the net with "informals," unless they are of the utmost urgency. Save them until after the net. On phone nets especially the urge to chew the rag with another net station is often irresistible. In c.w. nets we often hear a net station request "word with so-and-so." A good NCS will defer all such requests until all formal traffic has been cleared first, then declare the net free and you can have all the "informals" you want — so you might as well have refrained from wasting the net's time by asking for it in the first place.

Report into your net promptly at the appointed time, give your list of traffic destinations, then stand by until the NCS instructs you. Neither the net nor the NCS is interested in the contents of your traffic, where you got it, how long it is, how old it is, or how important it seems to you to be. Skip all that; just tell the NCS how many you have and for where.

Controlling a net of savvy operators and operating in a net controlled by a savvy NCS can be one of the greatest pleasures in amateur radio, comparable to conducting or playing an instrument in one of the top orchestras. Being part of a well-organized and well-run unit is as great a source of pride as any individual achievement, and has the additional benefits of close companionship, teamwork, fraternalism and altruism that are conducive to progress in amateur radio.

Net Reports. Early Bird Transcontinental Net reports 31 sessions, 851 messages. Transcontinental Phone Net reports as follows: 1st call area, 1587; 2nd call area, 1377; 4th, 9th & 8th call areas, 797; total, 3761. North Texas Oklahoma Net reports 30 sessions, 988 check-ins, traffic total of 320.

National Traffic System. The year-end survey of NTS shows that the system had its biggest year in 1957, by quite a good margin. One of the biggest reasons for this was the increased reporting by nets at all levels, totalling 490 reports in 1957 compared to 407 in 1956. Other data showed similar large increases: Total sessions reported amounted to 14,892 (12,715 in 1956); total NTS traffic 203,576 (167,729); regional and area reports received, 158 (147); regional and area net sessions, 6,446 (6005); section NTS net reports, 299 (260); section NTS traffic, 63,939 (49,437); section NTS sessions, 8,223 (6,710). Of the 14 NTS nets at regional and area level, only four failed to report every month, and all three TCC areas made 100% reporting records. TCC traffic handled, by the way, amounted to 32,154, slightly more than 1956's 30,832, but in 1957 we started taking steps to avoid duplication of regional area traffic reports by TCC directors — so the difference is really greater than that.

Yes, lads and lasses, our NTS gets bigger and stronger each year. The growth is not phenomenal, but steady, as befits an organization with basic principles and policies which can be followed by any traffic man once the benefits of it begin to sink in.

January reports:

Net	Ses- sions	Traffic	Rate	Aver- age	Repre- sentation (%)
EAN.....	26	899	.659	34.6	96.2
CAN.....	31	333	.634	26.9	100
PAN.....	31	1106	.516	35.7	90.3
1RN.....	27	370	.341	13.7	94.71 ¹
2RN.....	54	380	.309	7.0	97.9
3RN.....	46	396	.377	8.6	97.8
4RN.....	54	448	.240	8.3	67.5
RN5.....	34	621	.353	11.5	80.9
RN6.....	36	408	.278	11.3	45.2
9RN.....	58	843	.385	14.5	84.0
TEN.....	93	1245	.400	13.5	62.2
ECN.....	21	41	.136	2.0	81.0 ¹
Sections ²	772	5209		6.7	
TCC East.....	429	174			
TCC Central.....	629	11			
TCC Pacific.....	993	909			

Summary.....	1303	13893	EAN	9.8	CAN
Record.....	1303	16010	—	12.1	100

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

² Section nets reporting: CN & CPN (Conn.); ILN (Ill.); S. Dak. 75 Phone & S. Dak. 40 Phone; NJN (N.J.); SCN (Calif.); Iowa 75 Phone; TLCN (Iowa); GSN (Ga.); FMTN (Fla.); KSN, KYN, KPN (Fla.); CSSN (Colo.); WVN (W. Va.); QKS & QKN (Kans.); MJN, MSPN Noon, MSPN Evening & MSN (Minn.); WSN (Wash.); Tenn. C.W.; AENT, AENB & AENP (Ala.).

³ TCC functions reported not counted as net sessions.

This is the customary January let-down after the big month of December. Last year's January traffic total for NTS was far in excess of any January we had previously experienced, making this month's total look bad; actually, January 1958 is second-best in the "record" column.

The new Rocky Mountain Net, operating at present at section level, is getting traffic directly from PAN instead of going through RN6, for reasons of convenience to its members. K2SIL has been awarded a 2RN certificate.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc.

7140 kc.

Teen-agers are keeping 3RN on its feet, says Lindy, W3UE. W3GYP is liaison coordinator for the EPA Net and is doing an excellent job of digging up a 3RN representative from that section each night. RN6 is showing better representation from its mountain sections these days (except Colo.).

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 April 17 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 28,060, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on April 2 at 2100 PST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station

you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your list, hook up your own key and audio oscillator and attempt to send in step with W1AW.

- Date Subject of Practice Text from February QST
 Apr. 1: A Medium-Power R.F. Amplifier, p. 11
 Apr. 7: A Novel Power-Supply Overload Relay, p. 15
 Apr. 10: Transistorized Frequency Marker, p. 16
 Apr. 15: An . . . I.F. Amplifier, p. 18
 Apr. 18: Simple Universal Antenna Coupler, p. 21
 Apr. 21: A Three-Band Ground-Plane Antenna, p. 26
 Apr. 24: Transistorized Power Supply, p. 36
 Apr. 30: What's Wrong With Delaware?, p. 52

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH275	W2AGW . . .269	W6TT266
W6AM275	W6DZJ . . .269	W3BFZ . . .265
W8HGW . . .272	W8NBK . . .269	W7AMX . . .265
W9NDA . . .272	W6SYG . . .268	G3AMM . . .265
KV4AA . . .272	ZL2GX . . .268	W6TFE . . .265
W3CHD . . .272	W6RW . . .268	W2BNA . . .265
W8BRA . . .271	W3JNN . . .268	W6ERG . . .265
W6ENV . . .270	W2HUQ . . .267	W8KLA . . .264
W6MX270	G2FL267	W6GFE . . .264
PY2CK270	W3KT267	W9RBI . . .264
	W6CUQ . . .267	

Radiotelephone

PY2CK369	Z86RW256	W9RRI252
VQ4ERR . . .265	Q4IRW255	W3JNN . . .251
W8GZ261	CN8MM . . .253	W8BF248
W1FH260		

From January 1 to February 1, 1958 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

W6TPJ203	ON4IV105	VE3BHS . . .101
W6NIF/4 . . .178	W2PTD . . .104	W2AGN . . .100
CORDL129	W6JVA . . .104	K2PKT . . .100
W8WT125	W1ALK . . .103	W4AMC . . .100
W6NXP114	W4EZO . . .103	W4KMS . . .100
DL7GS113	W4ZFX . . .103	W4PRC . . .100
SPTX111	W7BSE . . .103	W48NR . . .100
K4KOR109	W7AGS . . .102	W4WV100
W7MCT109	W9YKJ . . .102	W4YSB . . .100
W7MOY108	W8RPE . . .102	K8LGF . . .100
W1OTX107	W3TMZ . . .101	W8QCF . . .100
W5OVB107	K4KOY . . .101	W9OYF . . .100
DJ2KU107	W6JRY . . .101	W9TFA . . .100
W3LUD106	K6LZI . . .101	DL1LP . . .100
W7TQ106	W8YEL . . .101	F9OQ100
DJ3BB106	W0BSK . . .101	H8PFC . . .100
G8BYM106	W0RZU . . .101	OE7TA . . .100
W4WDL105	9847H . . .101	VE1GA . . .100
W9FGX105		Z86AJO . . .100

Radiotelephone

YK2JZ145	W8HTP . . .101	W4YCB/3 . .100
W2DEC111	DL2UZ . . .101	W4YQB . . .100
W3POG111	EA3HL . . .101	W6WTH . . .100
W4BHI106	K2SDX . . .101	W7LVR . . .100
OE8BA105	Q4IRW . . .103	W8WQJ . . .100
W1BIV105	SM5WS . . .101	W9QYH . . .100
W0AXE . . .103	W2AFP . . .100	W9SD100
K4EHA102	W2LXT . . .100	W0WMA . . .100
W9PVL102		IBNC100

ENDORSEMENTS

W6VE261	W4CYY . . .215	W2HQL . . .200
W7GIV260	W2BYP . . .212	W4IML . . .200
W3COR244	W7PZA . . .212	HB9MO . . .196
W0NLY240	W0ANF . . .211	W2AYJ . . .195
W8WY232	K2ZCP . . .210	OK1HL . . .193
OK1FT232	W8EFR . . .206	GRKS192
W6BVM231	W5OGS . . .203	KO2EA . . .191
K2GFG230	DL7AH . . .203	W8HJL . . .191
W5BZT225	W3JKO . . .202	W9HUG . . .191
W8SDR225	ZL2HP . . .202	OZ3FL . . .190
W4ML222	W2DEC . . .201	W2NUT . . .188
W5CEW222	W3VOS . . .201	ZL2GA . . .186
W6YMD222	W6ID201	W2AEB . . .185
W6NGA221	LA5HE . . .201	PY4AO . . .183
W5UK220	OZ7BG . . .201	W6SQP . . .182
K2BZT216	K1DLT . . .200	W2LSX . . .180

W4HYW . . .180	W9ROU . . .153	W3RBF . . .124
E19Y180	W9LEB . . .153	W6OAG . . .124
W1ZZK . . .178	VE8KX . . .153	W0VKB . . .124
L1U5AQ . . .175	W5GNG . . .152	W1YRO . . .123
DJ2BW174	W1PFA . . .150	W1YZG . . .122
W1W1W . . .173	W1TS150	W4EFX . . .122
W4TP172	W2OTC . . .150	K4JOU . . .122
OZ3Y172	W3RPG . . .150	W9DSO . . .122
W7EFT . . .171	W4PYI . . .150	OZ5Z120
W9RQM . . .171	W0DMA . . .150	W3EIS . . .121
OH2QQ . . .171	VE2YA . . .150	W6PYU . . .121
W2SUC . . .170	K6IJY . . .146	W6KG121
W2YTH . . .170	W9WYB . . .145	K2LWR . . .120
W7AUS . . .170	K4LVB . . .145	W20XR . . .120
W9BBS . . .170	W4CRP . . .144	W6QQA . . .120
W1QNC . . .170	W4EEO . . .143	W3RZL . . .120
EA1BC . . .170	W6BSY . . .142	K5BGT . . .120
G6XL170	W8BSR . . .141	W6RZS . . .120
K4CTU . . .166	W3EER . . .140	W7BTH . . .120
VE3DIF . . .165	K17PIV . . .140	W9QNO . . .120
W2HO164	W9BSR . . .137	W6BBS . . .120
W2MZB . . .161	W5QVZ . . .136	W7TNP . . .117
K2PIC161	W9EHW . . .136	K2JGG . . .116
W2RA161	W1LQQ . . .133	K6GXG . . .115
W8UMR . . .161	K2EDL . . .133	K4BZL . . .114
K2HJ160	ZL1AJU . . .133	W8YQ112
W2QHM . . .160	W4BWP . . .132	W7TFE . . .112
W3NKM . . .160	W8JRG . . .132	W7PSO . . .111
W6OUN . . .160	W8KAK . . .132	W9GGO . . .111
K6BWW . . .160	W1ZDZ . . .131	K0DMY . . .111
LA5Q160	W8MQR . . .131	H18BE . . .111
OZ7SN . . .160	PA0VO . . .131	K4AL110
VE3JZ160	W5YU130	W6WV . . .110
K6EC158	W4IEH . . .130	W91SV . . .110
W8VTF . . .157	W9BYU . . .130	K9EAB . . .110
W5ACL . . .156	K6KJR . . .130	PJ2AN . . .110
	W3MWC . . .126	

Radiotelephone

W6YY231	K2AAA . . .155	K5BEU . . .127
PY4KL . . .213	CX3BH . . .155	W2LV125
W9RNX . . .210	W6COG . . .153	W6ZSZ . . .125
W3K202	C83DY . . .151	W6WVXJ . . .124
(T)PK202	W5VU150	W1LLE . . .120
W8EWB . . .201	W5AED . . .150	W1YZG . . .120
LA5YE . . .200	VE7AH . . .150	W8GLK . . .120
T12HP . . .200	W6TNL . . .146	W8WV . . .120
W1PST . . .190	W5ALB . . .142	CG1AF . . .120
MP4AC . . .190	W7AUS . . .142	W5UBW . . .119
W3AEV . . .181	W6CHY . . .140	OZ3TH . . .115
W8JIN . . .174	W8TUA . . .140	W3QMG . . .114
W1GOU . . .171	W8ZET . . .140	OZ7BO . . .114
W8ZOK . . .170	W4BWP . . .131	W3UMU . . .112
ON4DH . . .170	W8CQL . . .131	W4KGR . . .112
W5YX166	W6TYS . . .130	W5BY111
W3HTX . . .163	W0GPR . . .130	PA0ZD . . .111
W8SDR . . .163	OZ7FG . . .130	K2JGG . . .110
OZ3Y162	K2BZT . . .128	W9UMJ . . .110
W2BQM . . .160	W4EEO . . .128	DL1WP . . .110

W/VE/VO Call Area and Continental Leaders

W4TM255	VE3QD . . .210	VE7ZM . . .233
W8ADZ . . .263	VE4NO . . .118	VE8AW . . .195
W0AIW . . .253	VE5QZ . . .140	Z56BV . . .257
VE1PQ . . .183	VE6NX . . .194	4X4DK . . .234
VE2WW . . .203		VO6RP . . .190

Radiotelephone

W2BNA . . .215	W0AIW . . .232	VE8NX . . .110
W4HA212	VE1CR . . .120	VE7ZM . . .185
W5GCP . . .204	VE2WV . . .131	OZ7LQ . . .237
W6AM246	VE3AIC . . .170	4X4DK . . .223
W7HIA . . .190	VE5RU . . .116	ZL1EX . . .238

• 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, Richard B. Mesirov, W3JNQ—SEC: DVB. RM: YAZ. PAM: TEJ. The E. Pa. Net meets on 3610 kc. at 1830. PFM meets on 3850 kc. at 1800. New appointments: ZRQ, Schuykill Co., and IVS, Delaware Co., as ECs; DJW and ELI as OESs and HNK as OPS. YUW has a new long-wire antenna and now stands at 101 countries worked. DUI reports that the Hazleton C.D. purchased a Gonset III which is now in operation. GH runs Sat. code classes which are well attended, but finds that a soft pair of 6146s keeps operating on the air at a minimum. CSP is building a 90-watt 6146 rig as a school science project and hopes for good results. ZRQ has founded a new club in the Tamaqua Area which will be exclusive to General Class licensees only. YDX, with SMC at the key, again makes the BPL on deliveries and originations and with one more will qualify for the Medallion as a one-operator station. FCI is QRL/QRT with school. CUL gets set to handle traffic from the Florida Fair and also is set for a Florida vacation (armed with the rig, of course). Via BUR: The State Eastern Area Civil Defense Hq. organized the Quakertown Radio Club which is open to Novices and Generals. YAZ gives credit to KZC for her help in preparing the instruction manual for the E. Pa. Net and reports that activity on the net is increasing steadily; participation in the 3RN has been 100 per cent. GGT received his WAVE certificate. The Lancaster RTS will hold its annual banquet on Apr. 19. Contact OY for details. The club has issued 31 of its "13 Hexe Klub" certificates to date. TEC received WAC for 10-meter phone using only 60 watts and a three-element beam. ELI has a souped-up 108-Mc. receiver for satellite monitoring and hopes for the best. New officers of the Keystone ARC are OQG, pres.; GSB, vice-pres.; RCE, treas.; PDJ, secy.; AUF, Field Day chairman. KN3ASH reports receiving his first D.C. QSL. IUB and UDL (father and son) have a new HQ-110 and a new 10/15-meter beam to go with an expanded garage shack. The Beacon RA has elected DYL, pres.; and CSS, secy. JNQ has a new 3DZZ beam which will be erected as soon as the weather allows. C U all in the Pa. QSO party (see Mar. QST, for details). Traffic: W3CUL 1621, YDX 274, TEJ 224, WHK 165, YAZ 110, DTK 101, ZRQ 95, CMN 82, GYP 63, BFF 54, NF 54, AXA 42, AMC 40, BUR 32, CSP 30, BBM 28, FVT 17, ELI 16, PDJ 14, OGD 13, AFF 12, DVB 11, NQB 7, ADE 5, HNK 4, BNR 2, KN3ASH 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM for Delaware: Ray deCourcelle, 3DQZ. SEC: PKC. Section Nets: MDD 3650 kc. M-S 1915 EST, MEPN 3820 kc. M-W-F 1800, SS 1300 EST. On Jan. 13 your SCM had the pleasure of talking to the Delaware ARC on "League Appointments and Section Activities" and meeting many of the Wilmington gang. The NLRARC met at the Lab. on Jan. 29 and acted to become a member of the Foundation of Radio Amateur Clubs. The Jan. 11 meeting of the RCARA had KOA, who spoke on "Amusing Fluxes in TV Production." The ARA elected EPV, pres.; CSX, vice-pres.; LII, secy-treas., and GVN, act. mgr. WRC held a VFO symposium at its Jan. 17 meeting. The HCARA formally activated a new club station with the first contact Labrador. WTF was reelected director of the MEPN. UE reports liaison with other nets approaching 100 per cent. In accordance with the CQ DCS Plan, Dec. QST, all area nets were alerted for the Explorer watch. The number of stations participating was large and all nets and NECFs were covered. The following nets were known to have been active: MDD, MEPN, VN, TCRN, Cracker

Barrel, HCARA, with the Montgomery Co. C.D. and PVRC V.H.F. net frequencies used for liaison between phone and c.w. nets. DHQ, KCQ and KDZ were the only local amateurs reported definitely hearing the Explorer signal. HIZ has received his WAS, WAC, 3RN and MDD certificates. EA6AF paid a return visit to CDQ in January and also visited the WRC and WMRC, as well as the ham shacks of BKE, KDP, PZA and WV. The Takoma Park ARC reports a c.w. contest at the Jan. 12 meeting, vis; sending with the left foot. TRT came in first, with UYC runner-up. Official Bulletin Nr. 640 lists ECP, pres. of the WRC and the Foundation of Radio Amateur Clubs, as the recipient of a special Edison Award Citation. MUA now is General class and is putting the Ranger VFO to work on 40 and 70 meters. KN8GMH is now stationed at the NRL Chesapeake Bay Annex, and is a new Chief Petty Officer. AXZ and KN3CDY had a visit from CUL and VR during January. AXZ and his XYL, Kitty, returned the visit to Morton, Pa., later in the month. KN3CDY is doing nicely on 40 meters with a DX-35. K3CJM, ex-6ABJ, now is stationed in Maryland. GOJ is stationed in Germany with the Army. 10NV/9 has reported into the MEPN from Indiana. EX-KR6RX reports he is being assigned to Andrews AFB. KN3CDS is a new Novice in Colesville, using a Command set on 14 and 15 meters. Many thanks to those who worked so hard on the Explorer watch for so few reports. However, NRL was very happy to receive those. Perhaps by the next satellite more will be equipped with 108 Mc. CU at the MEPN picnic, Braddock Heights Park, July 13, 1958, and the National ARRL Convention, Washington, D. C. Aug. 15-16, and 17, 1958. Traffic: (Jan.) W3UE 384, CVE 279, BUD 188, AHQ 184, WG 158, K3WBJ 152, HIZ 81, COK 74, NNM 46, PQ 39, UCR 32, TN 28, CN 24, WSE 7, JZY 6, OYX 4, BKE2.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZL. K2WAO. K2SOW and W1YRZ/2 made BPL. RG is doing FB with his QRP transistor rig on 80 meters. HDW, manager of NJN, reports 27 sessions in January and 258 pieces of traffic handled. K2CPR added JT1AA for Zone 40 and 227 worked. K2JKA has 250 watts on 6 meters. More c.w. operators are needed on the NJCD nets, especially in the southern counties. K2FQI is editor and TAM asst. editor of *DFRA News*. WOA, HX and PZS are going s.s.b. K2ITP and ITQ, Riverton, are doing outstanding work on 6 meters. The Delaware Twp. High School Club elected K2UFE, pres.; K2ZID, vice-pres.; W2NDNR, secy.; and Noel Luddy, treas. Look for the FNJ Net on 7105 kc. at 1715 nightly; SNJ support is badly needed. K2ARY, Salem Co. EC, reports many new AREC members. K2WAO/W1YRZ handled over 300 messages from servicemen at Ft. Dix to their families. NJN meets nightly on 3695 kc. The Burlington Co. Radio Club has a fine program planned for '58. K2HOD is pres. Club dates: BCRC 1st Fri.; Mercer Co. C.D. 4th Tue.; Salem Co. 1st Wed.; SCARA 2nd Fri. and SJRA 4th Thur. Traffic: (Jan.) W2HDW 197, RG 197, K2WAO 197, W1YRZ/1 171, K2SOW 159, JGU 89, SPT 42, W2BZJ 40, K2JKA 34, SOX 19, QOS 14, C4R 5, W2HAZ 2. (Dec) K2QOS 44, EFA 34, JKA 20, SOX 14, HPV 1.

WESTERN NEW YORK—SCM, Charles T. Hansen. K2HUK—SEC: PPY. PAMs: LXE, NAI and TEP. NYS c.w. meets on 3615 kc. at 1800. ESS on 3590 kc. at 1800. NYS Phone on 3925 kc. at 1800. NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun.. TCPN 2nd Call Area on 3970 kc. at 1900. SRPN on 3980 kc. at 1000. LSN on 3970 at 1600. We are pleased to announce the appointment of PPY, Tonawanda, as SEC. Those making BPL are K2UJZ and WS. WS got the staggering total of 1382 handling. KC4 Christmas traffic. K2GWN has been elected manager of the Traffic Hounds Morning Watch and editor of *Watchwords*, the monthly bulletin. The ARATS elected OPZ, pres.; DMI, vice-pres. and treas.; and K2QZH, secy. The N. Chautauque ARC held its annual auction. EYA reports Jamestown C.D. now has 10 stations with 20 operators. The Southwestern N. Y. High Frequency Assn. was organized recently with EJO, pres.; NNN, vice-pres. and act. mgr.; K2KWJ, treas.; and K2VAX, secy. The Willimantic, Conn., Jaycees have presented Dorothy W. WAT, with a Worked-All-Conn. award. K2QDT had WAS; he is now DXing on 10-meter c.w. EWO and VDX had a fine article in the local paper on their activities. OXU is conducting classes for prospective Novice and General Class licen-

(Continued on page 102)

A COMPLETE PACKAGE

IN recent years the design trend in amateur radio equipment has fallen into three categories, each related to the others but having marked characteristics of its own.

THE first phase was the advent of S.S.B.; the second was greatly improved receivers to take full advantage of S.S.B.; and the third is the current trend of complete receiver/transmitter "packages" reduced in size to provide better portability, mobility, and flexibility.

CONCURRENT with this latest design trend has been the recent increase in use of the higher frequencies. Thus we now find both the two and six meter bands hotbeds of activity across the country.

HALLICRAFTERS' history of producing fine equipment for use on these higher frequencies is a long one. To the best of our knowledge, Hallicrafters was the first to produce a super-heterodyne receiver for the old five meter band — model S-5/10. This model was soon followed by the S-27 which covered from 27 to 143 mc. Then came the S-37 designed for use from 140 to 210 mc. By today's standards, and with components and techniques now available, no one would claim these older models too outstanding. But in their day they were ultra-advanced.

WITH this background, it is quite natural for amateurs and technicians to look to Hallicrafters for a new model designed for the V.H.F. field. One is being readied for production and soon it can be seen at your Parts Distributor . . . model SR-34.

IT is a high performance, compact, and complete two and six meter transmitter and receiver in one package. Many outstanding features are offered in the SR-34 including full AM and CW operation, a transistorized, built-in power supply for six and twelve volt operation, plus another self-contained power supply for 115 volts. "Crossbanding" will be possible between two and six meters, and the unit's sensitivity and stability are exceptional.

WHILE we can only touch upon the engineering advancements incorporated in the SR-34, we think that after examining it you will agree here is another Hallicrafters' model which will establish new standards of comparison in the current trend for fixed, portable, and mobile "packaged" equipment.

— FRITZ A. FRANKE

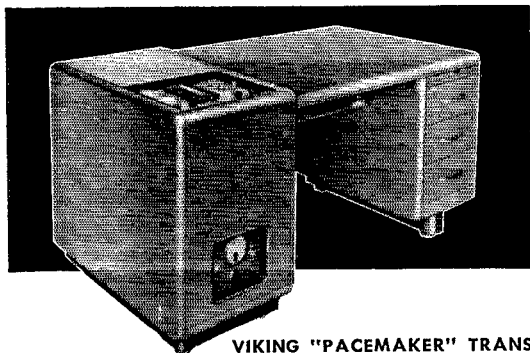
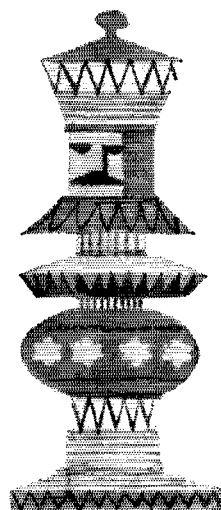
Buel Halligan Jr. W J. Halligan W9AC

for **hallicrafters**

Checkmate QRM with full communication power!

First choice among the nation's amateurs, Viking transmitters deliver solid communication power to punch your signal home every time! For effective practical design and honest dollar value, Viking transmitters stand ahead of all others. So, whether you choose the "Adventurer" as your first transmitter, or the power-packed Viking "Kilowatt" as the "last word", you know beyond a doubt that your transmitter dollar is soundly invested with Viking equipment.

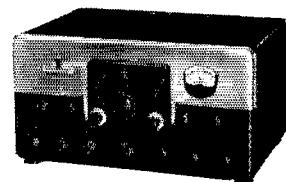
†Results of a recent nationwide survey conducted by an impartial organization prove that Johnson Viking transmitters in use outnumber those of any other manufacturer. Published copies of this survey available on request.



VIKING "KILOWATT" AMPLIFIER—in a class by itself . . . the only transmitter available that provides full, maximum legal power in all modes SSB, CW and AM—more than 2000 watts SSB*. Class C final amplifier operation provides plate circuit efficiencies in excess of 70% with unequalled broadcast-type **HIGH LEVEL AMPLITUDE MODULATION** with more than three times the AM power obtained in KW class linear equipments! Continuous tuning 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Wired and tested, with tubes.

Cat. No. 240-1000 Wired and tested . Amateur Net \$1595.00
Matching accessory desk top, back, and three-drawer pedestal.
Cat. No. 251-101-1 FOB Corry, Pa. \$132.00

VIKING "PACEMAKER" TRANSMITTER/EXCITER—90 watts SSB P.E.P. and CW input . . . 35 watts AM. Instant bandswitching 80, 40, 20, 15 and 10 meters. Excellent stability and suppression. Temperature compensated VFO; VOX and anti-trip circuits; high efficiency pi-network output. More than enough power to drive the Viking "Kilowatt" or grounded-grid kilowatt amplifiers. With tubes and crystals, less key and microphone.
Cat. No. 240-301-2 Wired and tested . Amateur Net \$495.00



*New
desk-top
linear
amplifiers . . .*

VIKING "COURIER" AMPLIFIER—Rated a solid 500 watts P.E.P. input with auxiliary SSB exciter as a Class B linear amplifier; 500 watts CW or 200 watts AM linear. Self-contained desk-top package—may be driven by the Viking "Navigator", "Ranger", "Pacemaker" or other unit of comparable output. Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts depending on mode and frequency desired. Employs two 811A triodes in parallel. Pi-network output will match 40 to 600 ohm loads. TVI suppressed. With tubes and built-in power supply.

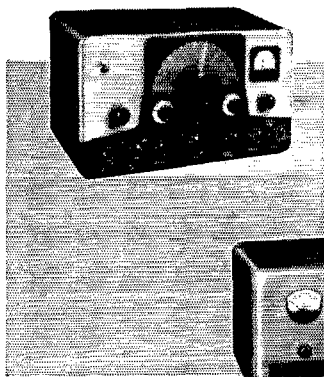
Cat. No. 240-352-1 . . . Kit \$244.50 Amateur Net
Cat. No. 240-352-2 . . . Wired and tested . \$289.50 Amateur Net

VIKING "THUNDERBOLT" AMPLIFIER—The hottest linear amplifier on the market—engineered to provide maximum "talk-power" to smash through QRM. 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. Delivers a dominant signal on all amateur bands—continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Navigator", "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts in Class AB₂ linear, 20 watts Class C continuous wave. Final amplifier employs two 4-400A tetrodes in parallel, bridge neutralized. Complete with tubes and built-in power supply.
Cat. No. 240-353-1 . . . Kit Amateur Net \$524.50
Cat. No. 240-353-2 . . . Wired and tested . Amateur Net \$589.50

*The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.

VIKING "RANGER" TRANSMITTER/EXCITER—This popular 75 watt CW or 65 watt phone transmitter will also serve as an RF and audio exciter for high power equipment. Completely self-contained . . . TVI suppressed . . . instant bandswitching 160 through 10 meters. Extremely stable built-in VFO or crystal control. Final amplifier tube is a 6146. Easy to assemble—with tubes, less crystals, key and microphone.

Cat. No. 240-161-1 . . . Kit Amateur Net \$229.50
 Cat. No. 240-161-2 . . . Wired and tested Amateur Net \$329.50



VIKING "VALIANT" TRANSMITTER—Here is power to slice through terrific QRM! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network output matches antenna loads from 50 to 600 ohms . . . final amplifier utilizes three 6146 tubes in parallel. TVI suppressed—timed sequence keying—low level audio clipping—built-in low pass audio filter—self-contained power supplies. Complete with tubes, less crystals, key and microphone.

Cat. No. 240-104-1 . . . Kit . . . Amateur Net \$349.50
 Cat. No. 240-104-2
 Wired and tested Amateur Net \$439.50

VIKING "FIVE HUNDRED" TRANSMITTER—Rated a full 600 watts CW . . . 500 watts phone and SSB. (P.E.P. with auxiliary SSB exciter.) Compact RF unit designed for desk-top operation—power supply/modulator unit may be placed in any convenient location. All exciter stages ganged to VFO tuning—also may be operated by crystal control. Instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Final amplifier uses a 4-400A high efficiency tetrode. Pi-network output will match a wide range of antenna impedances. Complete with tubes, less crystals, key and microphone.

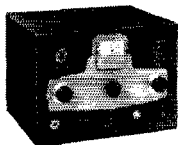
Cat. No. 240-500-1 . . . Kit Amateur Net \$749.50
 Cat. No. 240-500-2 . . . Wired and tested Amateur Net \$949.50



VIKING "ADVENTURER" TRANSMITTER—This completely self-contained 50 watt CW transmitter was used to earn the first novice WAC! (Worked All Continents) Instant bandswitching 80 through 10 meters . . . operates by crystal or external VFO control. Rugged 807 transmitting tube—wide range pi-network output—TVI suppressed—timed sequence keying. Easy to assemble—complete with tubes, less crystals and key.

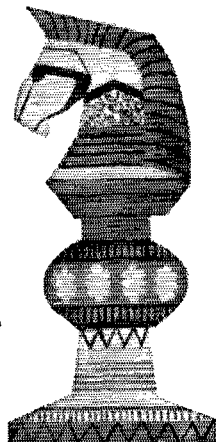
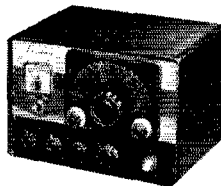
Cat. No. 240-181-1 . . . Kit Amateur Net \$54.95

SPEECH AMPLIFIER/SCREEN MODULATOR—Designed to provide phone operation for the "Adventurer". High gain—with crystal or dynamic microphones. Simple installation. With tubes.
 Cat. No. 250-40 . . . Kit Amateur Net \$12.25



VIKING "NAVIGATOR" TRANSMITTER/EXCITER—This flexible CW transmitter/exciter has enough RF power to excite most high powered amplifiers on CW and AM. 40 watts input—6146 final amplifier tube. Bandswitching 160 through 10 meters. Built-in VFO or crystal control—TVI suppressed—timed sequence keying. Pi-network output will match 40 to 600 ohm loads. With tubes and self-contained power supply, less crystals and key.

Cat. No. 240-126-1
 Kit Amateur Net \$149.50
 Cat. No. 240-126-2
 Wired and Tested Amateur Net \$199.50



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All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

HEATH *hams work to bring you*



CHUCK K8CJ1

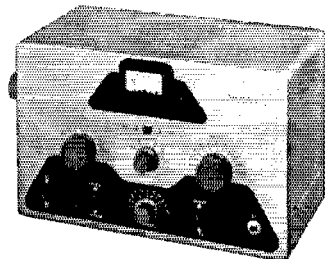


ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT¹ CW TRANSMITTER KIT

MODEL DX-20

\$35⁹⁵



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 500 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 18 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL
DX-100

\$189.50

Shipped motor freight unless otherwise specified. \$50.00 deposit required on C.O.D. orders.



You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built in VFO, built in modulator, TVI suppression, Pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, Pi network interstage coupling, and high quality materials throughout. Copperplated No. 16 gauge steel chassis, ceramic switch and coil insulation, silver-plated or solid silver switch contacts, etc., are typical of the kind of parts you get, to use in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11, and 10 meters with a single band switch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final Amplifier, modulated by a pair of 1625 tubes in parallel. Other tubes featured are: 6AL5 bias rectifier, 5V4 low voltage rectifier, 2-5R4GY high voltage rectifiers, OA2 voltage regulator, 12AX7 speech amplifier, 12BY7 Audio driver, 6AV6 VFO, 12BY7 crystal oscillator-buffer, 5763 r.f. driver, and a 6AQ5 clamp tube. VFO tuning dial and panel meter are both illuminated

for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. The DX-100 was designed exclusively for easy step-by-step assembly, and no other transmitter in this power class combines high quality and real economy so effectively. Listen to any ham band between 160 meters and 10 meters and make a mental note of how many DX transmitters you hear! This kind of acceptance by the amateur fraternity testifies to the performance and quality of the rig. Its the kind of a transmitter you will be proud to own, and one that will give you a very respectable signal on the air. Time payments available! Shpg. Wt. 107 lbs.

...top quality at lowest prices!

NEW HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL
DX-40
\$64.95



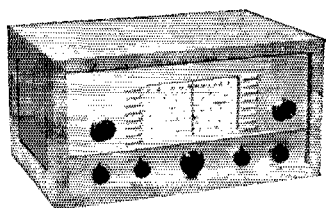
The new DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig, for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, controlled-carrier modulator for phone operation peaks up to 60 watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and Pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80 meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so the buffer stage can be pretuned before the final is on, and so

the operator can locate his own signal on the band. Tubes used are a 6CL6 Colpitts oscillator, a 6CL6 buffer, a 6146 final amplifier, a 12AX7 speech amplifier, a 6DE7 modulator, and 5U4GB rectifier. The modulator, incidentally, has plenty of "punch" for clear, strong phone operation. A switch selects any of three crystals, or a jack for external VFO. A high-quality meter with D'Arsonval movement mounts on the front panel for tuning. Whether you are a newcomer or an old-timer, you will find the DX-40 an ideal rig in its power class! Shpg. Wt. 26 lbs.

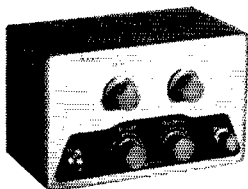
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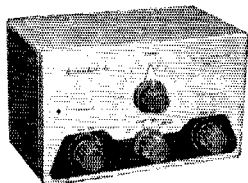
**BENTON HARBOR 9,
MICH.**



ALL-BAND RECEIVER



ELECTRONIC VOICE CONTROL



"Q" MULTIPLIER

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5/8" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma **MODEL AR-3** and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs. **\$29⁹⁵**
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **\$4.95**

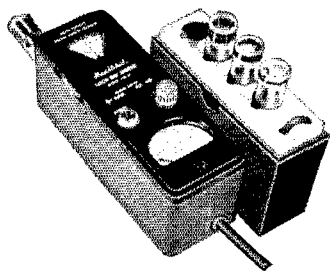
HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to **MODEL VX-1** build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. **\$23⁹⁵**
Shpg. Wt. 5 lbs.

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a heterodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. **MODEL QF-1** Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs. **\$9⁹⁵**

more fine ham gear from the pioneer



GRID DIP METER

HEATHKIT GRID DIP METER KIT

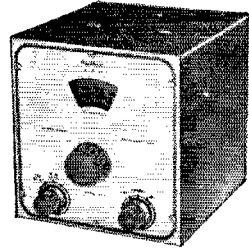
A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designed procedures, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs. **MODEL GD-1B** Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **\$3.00** **\$21⁹⁵**

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

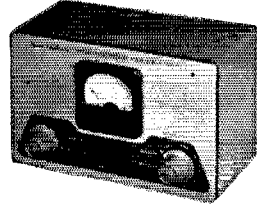
Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

\$19⁹⁵



VARIABLE FREQUENCY OSCILLATOR



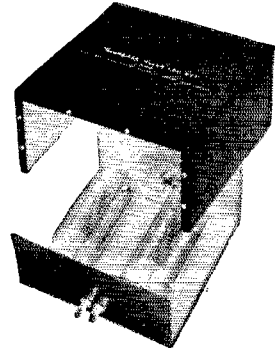
REFLECTED POWER METER

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

\$15⁹⁵



BALUN COIL

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

\$8⁹⁵

...in do-it-yourself electronics!



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1958
Catalog**

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

Rush Free 1958 catalog.

HEATH COMPANY

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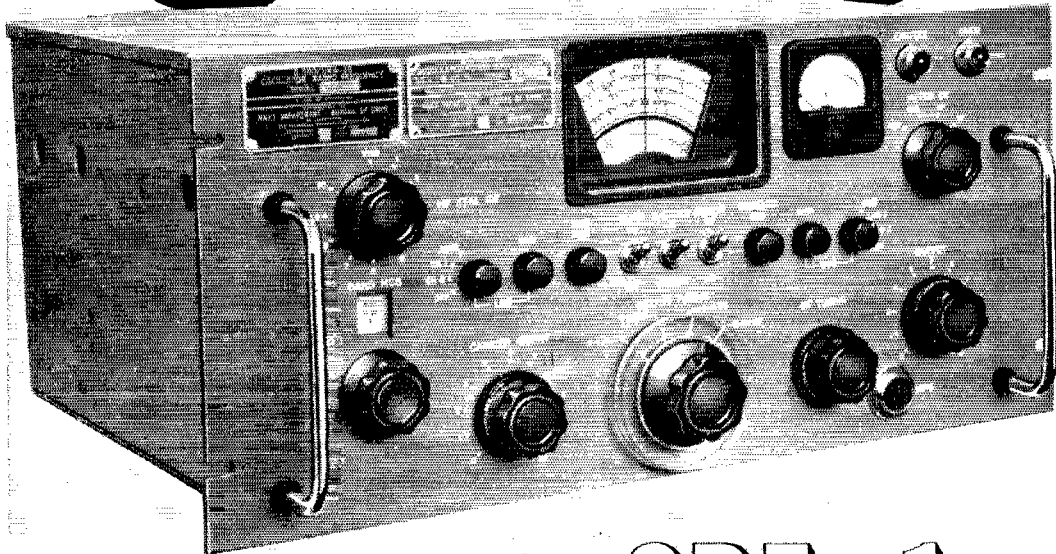
city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

\$_____ enclosed. Parcel post, include postage—express is shipped collect.

SSB

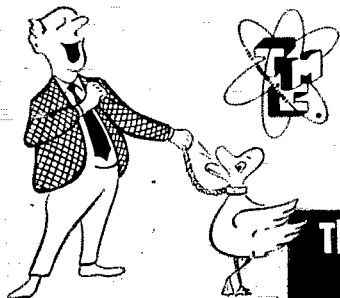
AN/URA-23



MODEL SBE-1

WRITE FOR
BULLETIN 195B

EXCITER • SSB • DSB • ISB WITH OR WITHOUT CARRIER • AM • CW



The TMC SBE-1 is continuously tuneable in the range of 2 to 32 megacycles and is frequency controlled by means of temperature controlled crystals or external VFO. Sideband selection is accomplished by a specially designed filter. The carrier may be suppressed to 55 db. Harmonic and spurious output are at least 40 db. down. VOX (voice control with anti-trip features) is built-in and adjustable. The SBE-1 provides at least 2.5 watts PEP output and could be followed by any appropriate AB-1 amplifier.

The illustration shows the basic exciter unit, without power supply. The unit occupies 8 3/4" of a standard WE relay rack. The power supply occupies 5 1/4" of additional space.

The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

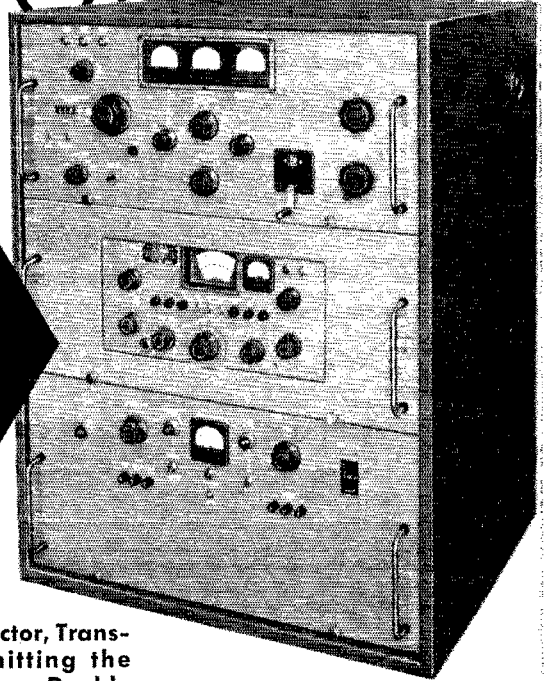
Main Office: MAMARONECK
NEW YORK



AN/URT-17

MODEL GPT-750(D)

- SINGLE SIDEBAND — SUPPRESSED CARRIER
- INDEPENDENT SIDEBAND — SUPPRESSED CARRIER
- DOUBLE SIDEBAND — FULL CARRIER — SUPPRESSED CARRIER
- FREQUENCY SHIFT
- CW-MCW-AM



TMC

The **TMC** Model SBE-1, Mode Selector, Transmitting, is a universal exciter permitting the transmission of any intelligence on Single or Double Sideband, with or without carrier.

The exciter may be used for simultaneous or independent transmission of intelligence on either upper or lower sideband. For example: A voice channel can be transmitted on the upper sideband while tone multiplex is being transmitted on the lower sideband.

The SBE-1 provides the following commonly known types of operation:

1. Conventional Double Sideband, AM, with the additional advantage of carrier level control.
2. Conventional Single Sideband with adjustable carrier insertion.
3. Conventional Interrupted Carrier, CW, or Sideband Tone CW.
4. Independent Sideband transmission with adjustable carrier insertion.

From the above paragraphs, it should be apparent that the SBE-1 provides transmission which is compatible with any of the current "controversial" systems.

The TMC Model GPT-750, Radio Transmitter provides radio telephone, telegraph, frequency shift and facsimile operation on all frequencies within the range of 2 to 32 Mc.

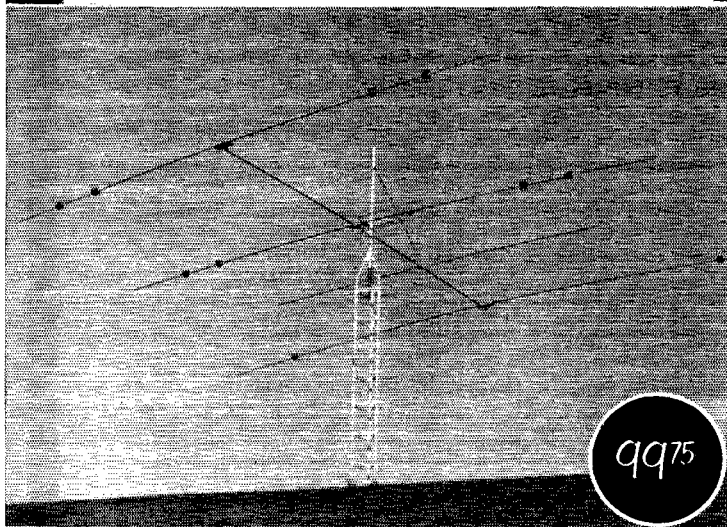
The GPT-750 is a field proven equipment, service tested, nomenclatured (AN/URT-17) and approved for service use. This transmitter has been used for fixed plant, mobile and shipboard operation and provides 1000 watts output CW and F5, 750 watts output radio telephone (high level modulation) and 750 watts output, PEP, single sideband, all on a continuous commercial service basis. Band switching in all stages.

WRITE FOR
BULLETIN 174C

THE TECHNICAL MATERIEL CORPORATION

there are more hy-gain trap tribanders in use

the hy-gain



Automatic Switch Action!

Streamline, silhouette traps, only 3" in diameter, make possible for the first time a really efficient multi-band antenna system, acting as insulator at its resonating frequency, but allowing radio energies of other frequencies to pass, isolating various sections of the antenna. Mechanically and electrically stable, the hy-gain traps are hermetically sealed in a polyethylene cover and cap. III-Q coils wound on large 3" diameter styron

trap

form. Capacitor dielectric is solid styron. No air dielectric.

No Bulky Sleeves!

The hy-gain lumped constants trap circuit accomplishes decoupling in the smallest, most efficient, most weather-proofed manner possible. Housed in a tight, 3" unit, they eliminate moisture,

9975

The 3-Element Tribander is now considered the standard of performance in the field of amateur radio communications. F/B Ratio: approx. 25 db. Forward gain: average 8 db. All lengths predetermined from experimentally derived data enable assembly and operation as specified with no test instruments needed.



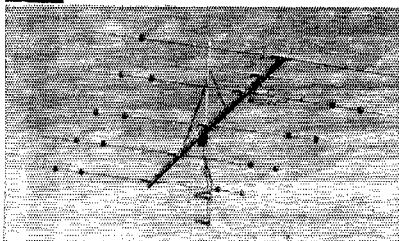
Three band performance at the lowest possible cost. This dipole may be rotated or mounted stationary due to its broad polar response pattern. Single transmission line for all bands.

3995



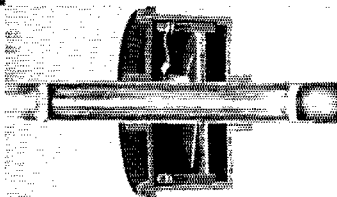
The 2-Element Tribander is for use in limited space for top quality transmission on 10, 15 & 20M. Single transmission line. F/B ratio: average 18 db. Forward gain: average 5.8 db.

6950



Here's the world's champion: the finest, highest gain rotatable array: the 5-Element Trap Tribander. Heavy duty construction. Uses 36', 2x3" rectangular aluminum boom. F/B Ratio: average 25 db. Forward gain: average 12 db.

39500

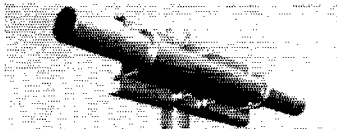


dust and breakdown. Compare this with trying to weatherproof an eight foot sleeve. The creative design of the hy-gain traps guarantees less total wind loading area than any other full-sized 3-band beam in existence.

Power Traps!

The new traps now take 2 KW (P.E.P.) RF Power, enough to handle the most modern high powered linear amplifiers, more than any other tribander now made.

hy-gain traps are guaranteed for the life of the beam!



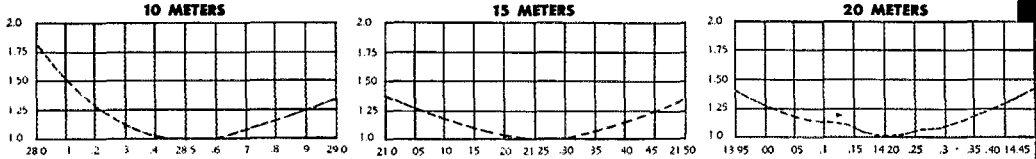
Tremendously rugged construction is used throughout, including this slip-proof Boom/Mast and Element/Boom clamp, with 12 Ga. galvanized steel channel for positive grip. All hardware is heavily galvanized and inidite treated for max. weather resistance. Hot dipped galvanized booms and Alcoa 6061T6 aluminum elements offer max. strength versus wind resistance.

All hy-gain Beams Guaranteed for One Year!

than all other three-band beams combined!

Now! For the First Time!

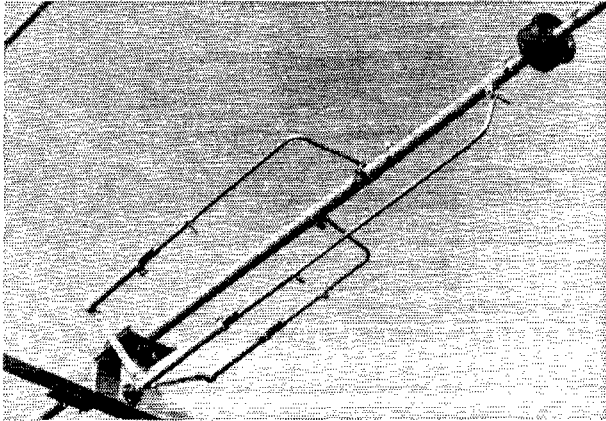
PERFECT 1:1 SWR



SWR CURVES FOR THE 3-ELEMENT TRAP TRIBANDER

tribanders

with *hi-gain* NEW & EXCLUSIVE
Triaxial Gamma Match System



The new, pre-calibrated Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR on a 3-band antenna system. Exceptional band width maintains low SWR over the entire band. Coax connector for 52 ohm feed line included. Gamma rod and capacitor section calibrated for exact setting over

each band. No external baluns, antenna tuners or matching networks needed. The Triaxial Gamma Match System completely obsoletes the "old fashioned" split dipole feed, maintaining perfect balance. Used exclusively in the hi-gain 3-band beams, this System is factory preassembled, weather sealed.

Look for the Blue & White Cartons . . . In Stock at

"World's Largest Distributor of Amateur Radio Eqpt."



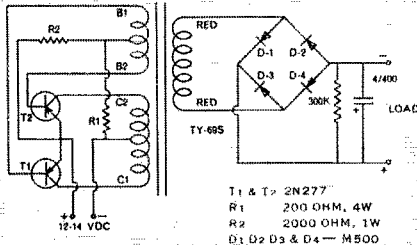
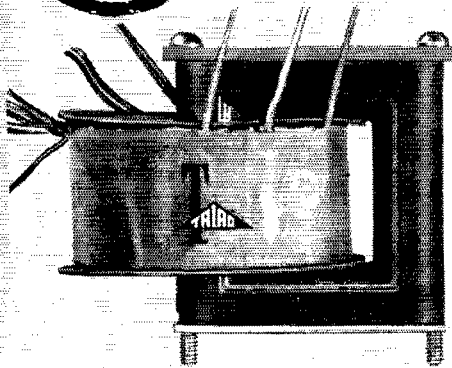
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TRANSFORMER NEWS

FROM TRIAD



High Efficiency Power Transformer for Mobile Transistor Power Supplies

NEW "DC Transformers" especially designed for DC transistor circuits, with an efficiency of 80% to 85% for the entire supply, are available from Triad. The types listed here are standard Triad catalog items you can get from your Triad distributor. For a complete listing of all Triad transistor transformers, please write for your copy of Catalog TR-58.



Type No.	Input Volts	Output Volts	Current Ma.	Net Price
TY-68S	12-14	250	65	\$8.34
TY-69S	12-14	300	100	10.56
TY-70S	12-14	325	150	11.40
TY-71S	12-14	375	200	12.30
TY-74S	12-14	600	200	15.00

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Station Activities

(Continued from page 90)

sees, K2ISO is doing likewise in Arcade. EMW has now worked 221 countries. KN2SGL has dropped the "N." K2VQF has a new beam. K2HUK and ICZ helped the Hutch Tech. H.S. RC present a ham radio program to the student body. They used a KVM-1 and c.d. equipment for a live demonstration at a special assembly. K2RUM had a nine-hour QSO with KN2DGU on 144 Mc. EUP is experimenting with transistor audio amp. K2DOZ has moved to Cowlesville and is starting an antenna farm on his 27 acres. CRR spoke to the RAWNY on d.s.b. The RARA Rag and Raags Review continue to be excellent publications. Appointments: K2LQJ as OO, K2SIL and K2UJZ as ORSs. Endorsements: ZHU as EC for Oswego Co., FE as OO Class 1, K2KTK as ORS. Traffic: (Jan.) K2SIL 385, IYP 256, W2RUF 228, K2UJZ 200, RYH 141, KIR 140, W2ZRC 103, OE 65, K2GGU 61, JBX 52, W2FEB 41, BKC 35, COB 32, PVI 26, K2BCL 23, KTK 19, RTN 18, BBJ 12, W2RJJ 12, K2HUK 10, W2BLO 9, K2RIT 8, W2RQF 8, EWO 7, K2DOZ 5, W2EMW 5, OXU 3, MTA 1, K2RHQ 1, RUM 1. (Dec.) W2WS 1382, K2GWN 143. (Nov.) K2UJZ 67.

WESTERN PENNSYLVANIA—Acting SCM, Anthony J. Mroczka, W3UHN—SEC: OMA, RMs: NUG and GEG, PAMs: AER and TOC. This is my first report since GJY resigned his SCM job because of ill health. We wish John a speedy recovery. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. A new appointee is EPM as QES. The Shaler High School ARC, KN3CFM, meets Mon. at 1900 EST at the school. RTB now has 157 confirmed. K3BPE now is working for the B&O at Baltimore. BSF and CX both are building up new postwar DX totals. Mail all contest log sheets for the WAPC awards to J. F. Wolkiewicz, W3GJY, 434 Glenwood Drive, Ambridge, Pa. OHF is off the air because of antenna difficulties. K3AGE has a new GPR-90. Newly-elected officers of the Coke Center RC are BZR, pres.; KN3BTP, vice-pres.; NCE, secy.-treas. LXU has DX-100 operating. WRE is net control station on the Cambria county C.D. Net. The Warren County Radio Association's new officers are YZL, chairman; ZFB, secy.-treas.; YZS, 3-year trustee. WAQ is improving after his operation. EPM is net control station for the Pittsburgh 6-Meter Phone Net on 50.1 Mc. at 2015 EST Mon. through Fri. Up Erie way: CJC received a Public Service certificate from Headquarters; a new Novice YL is WN3LPC; MS received his DXCC award; KRC is recovering nicely after an operation; the 6-meter net is operating on 50.02 Mc. at 2100 EST Sun. The Washington County ARC meets the 2nd of each month at the Brownson House in Washington. UPM has a new Communicator III. LAX has a new Hy-Gain tri-band beam. The Amateur Transmitters Association meets the 1st Fri. of each month at the Bull Planetarium. Traffic: W3WTQ 868, EPM 266, BZR 161, LXU 92, YCG 36, WRE 30, UHN 18, KNQ 17, GJY 6, PDY 2.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME, SEC: HOA, Cook County EC: HPG, RM: MAK, PAM: RYU. Section Net: ILN meets Mon. through Sat. on 3515 kc. at 7 p.m. We extend our sympathy to the family of LIS, who recently passed away. He will be missed by the RTTY boys. New officers of the Quad City Club are K9AKS, pres.; RLA, vice-pres.; K9EXB, secy. and K9JDF, treas. DRN is keeping a regular schedule with GAB, of Beloit, on 432 Mc. KN9KZM and KN9KZN are new Novices. They are the mother and father of K9AXL. UBI is sporting a new rotor for that three-element beam of his. K9GSG, K9CDI, K9JIN and K9JET are officers of the newly-formed River Park Amateur Radio Club in the Chicago Area. VWJ, Hillsboro EC, reports that the RACES plan has been approved in his area. LNQ finally got his 100 confirmations for DXCC with all contacts made on 14 Mc. and on c.w. at that. MAK received his WAVE certificate. He still is seeking operators down state for the ILN, which last month handled 251 messages in 31 sessions. GFV vacationed aboard the SS *Alcoa* and got the thrill of phone-patching into home using K5LZX/MM's rig. The new Regional Novice Net (RNN) according to KN9JLD, has made more members. PNE's jr. operator, K9DCF, has made WAS and is awaiting confirmations for his WAC. The new officers of the Streator Radio Club are JAU, ENO, and K9ECY. LIG was honored on his twenty-five years of hamming at a dinner given by the Starved Rock Radio Club. TZN received the first "9" member certificate in the Royal Order of Arfers of Traffic Hound Morning Watch. Art, The Sangamon Valley Radio Club graduated 16 new Novices in its current code class. A lot more "N" calls will be heard soon.

(Continued on page 106)

attenuation within ± 5 KCS, with extremely steep side skirts. This razor-sharp notch may be moved above, or below the desired signal by means of a control on the front panel. The notch filter plays an important part in improving all forms of reception by eliminating interfering signals.

IF AM contribution to antenna ratio of the selection antenna for noise reduction. **DU** response and 20 intermediate with a immediate **Q-MUL** feature per the notch filter to eliminate is used **NOT** rate receiver. the HQ-160 improve

A Automatic Volume Control controls the IF amplifier provide optimum signal-to-noise ratio and helps to overcome fading and signal variations.

S-METER—Accurate tuning and accurate signal strength read-outs are easy with the S-meter circuit of the HQ-160.

the audio amplifier. When receiving a strong signal, the frequency response of the audio approaches high-fidelity standards. In addition to this broad response, the auto-response actively dampens speaker resonance, thus minimizing "beating" and "ringing" in the speaker. The result is excellent reproduction of the original signal.

the re-foxi- an- se- e- he- ning line image aver- 15 an- ned later- important his feature imizes (XX7) the 60 db at the



phones. A speaker is provided on the front panel for earphones, while speaker connections are at the rear of the cabinet.

Whatever method of listening you use, you'll find the HQ-160 a masterpiece of performance on AM, SSB and CW.

Shattering All Old-Fashioned Receiver Ideas—The All-New HAMMARLUND HQ-160 . . .

Brand-new features, plus the hottest performance ever . . . that's the all-new Hammarlund HQ-160 in a nutshell. There's never been anything like it—you've got to see it, try it, to believe it. General coverage, dual conversion, built-in notch filter, Q-multiplier, crystal calibrator, and just about everything you could ask for . . .

Ask your Hammarlund dealer, or WRITE FOR COMPLETE DETAILS . . .

\$379⁰⁰



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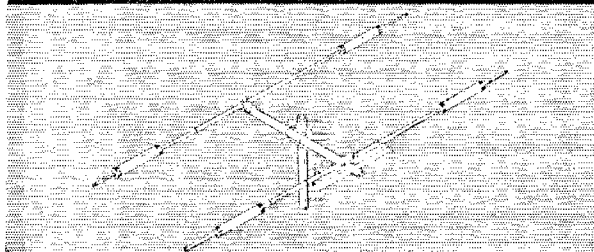
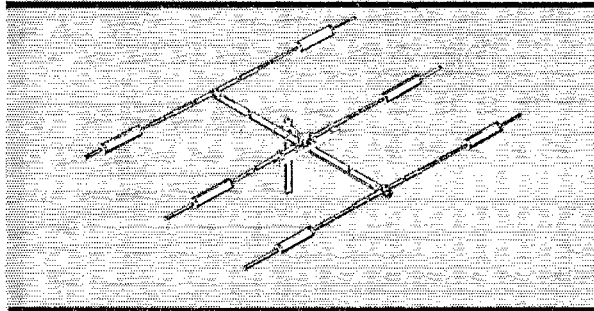
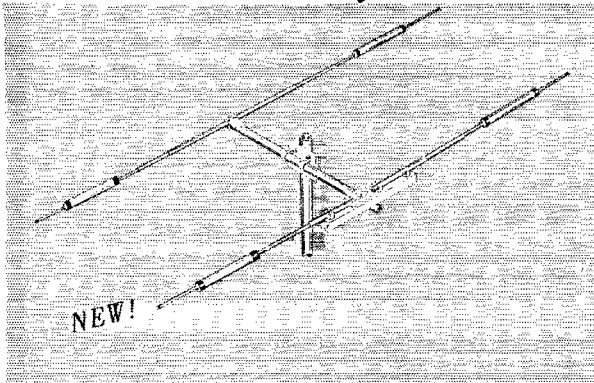
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the **TRAP**
MASTER
family

by
Mosley

Two New Beams for Hams using 300 watts or less!



NOW! Famous "Trap-Master" performance for max. 300 watts input, plate modulation!

● 8db Gain ● 25db F-B ● 1.5/1 SWR

Now! No need to spend extra money for a beam rated to a kw—if you're only running 300 watts, or less! Make that low or medium power rig speak up with a new Mosley "Trap-Master Jr." 3-Band Beam for 10-15-20! All the desirable features found in the world famous TA-33 "Trap-Master" are incorporated in this new "Junior". The only difference is in the power handling capability of the traps. Available in 2 or 3 element models—at a price to suit all Hams!

Model TA-33 Jr. \$69 50

Model TA-32 Jr. (Illst.) \$49 50

Top performance at a moderate price is yours in this Mosley 3-element tribander. Sturdy construction that requires no extra bracing and it's lightweight too—just 39 lbs. 10, 15 or 20 meters with 8db forward gain, 25db front-back and 1.5/1 swr on all bands. Maximum element length is 28 ft. mounted on a 14 ft. aluminum boom. Trap-Master design by Mosley features weather-proof, dust-proof traps—space wound coils of No. 10 tinned copper wire that cannot change inductance plus...that superlative dependability found in all Mosley Beams.

Model TA-33 \$99 75

This is a 2-element version of the above mentioned beam. The same sturdy construction throughout provides you with a low cost, 3-band beam for 10, 15 or 20 meters. Max. element length is 28 ft., weight, 26 lbs. 5.5db forward gain, 20db front-back, 1.5/1 swr is typical of the performance to expect from the TA-32. No tuning or adjusting needed!

Model TA-32 \$ 69 50

A complete line of Mosley Rotary Beams are available at your Ham Distributor!

FREE: Write main office for Mosley Catalog H-58.

Mosley Electronics, Inc.

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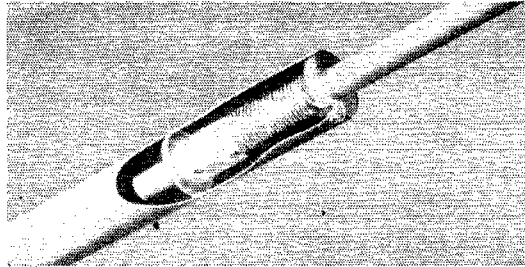
by
Mosley

NEW!

Here's 3-band mobile operation at its best... "Trap-Mobile" by MOSLEY! "Trap-Mobile" offers you the convenience of bandswitching right at the transmitter and receiver. No mechanical gadgets or relays! Stainless steel whip sections and polished aluminum traps provide everlasting beauty and operating qualities. Space wound coils will never change inductance... weather sealed traps and potted base coil provide a lifetime of uninterrupted operating pleasure! New anti-sway design and slim profile styling cut down wind resistance and drag. "Trap-Mobile" has radiating qualities equal to an 8 ft. whip on each band...yet the overall length is only 7 ft. 9 in. from base to tip. The plus feature of this antenna is the surprisingly low SWR over the full width of each band!

Model MA-3

\$1995



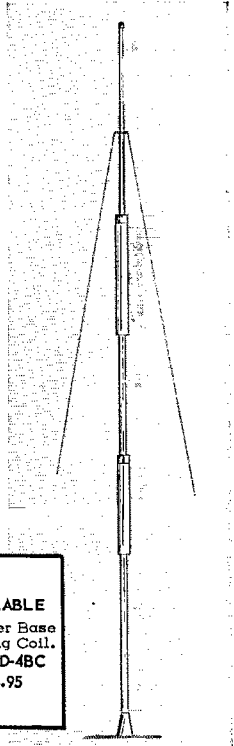
Delivering the "punch" to all "Trap-Master" antennas is this carefully engineered coil. Die cast of high impact polystyrene with preformed grooves that are precision wound with No. 10 tinned copper wire. This winding cannot move or change inductance; your guarantee of peak efficiency...always!

Ideal for the Ham with limited space. This fine, low cost vertical antenna has all the desirable characteristics found in "Trap-Master" design; weather-proof traps, low SWR, and sturdy, lightweight construction. Broad band! Automatic bandswitching from 10 thru 40 meters. The MOSLEY "Trap-Master" Vertical will handle 1 kw and maintain an electrical quarter wave length on each band. Comes complete with all necessary hardware, guy line and instructions. May be mounted on ground or rooftop. Requires no tuning or adjusting.

Model V-4-6

\$2795

AVAILABLE
 80 Meter Base
 Loading Coil.
 Model D-4BC
 \$14.95



FREE: Write main office for Mosley Catalog H-58.

Mosley Electronics, Inc.

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 New York 4, New York

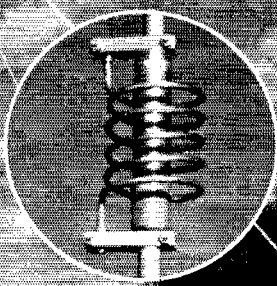
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10 - 15 - 20 Meters

CUSHCRAFT

- Ideal for big city dwellers (guy wires only 9' from base of mast.)
- True ground-plane operation on all three bands with low angle of radiation.
- Pre-tuned center band operation of 10, 15 & 20 meters with one 52 ohm feed line; requires no switching, tuning or adjusting.
- SWR not over two to one.
- Designed for full kilowatt input.
- Traps are rigid air-wound self-supporting coils of 3/16" aluminum rod.
- Condenser is aluminum tubing with "Phenolite."
- Antenna is heavy gage 61ST6 drawn aluminum tubing. Coils, clamps and fasteners are also aluminum.
- Support is heavy wall pipe with set-screw to lock mast which may be any pipe 1 1/2" diameter.
- Radiator height — 13' 3".
Radial length — 16' 8".
- Complete assembly is ready to install (less feed line) with radials and insulators attached — only \$28.50. Shipping weight — 9.5 lbs.



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Craft**

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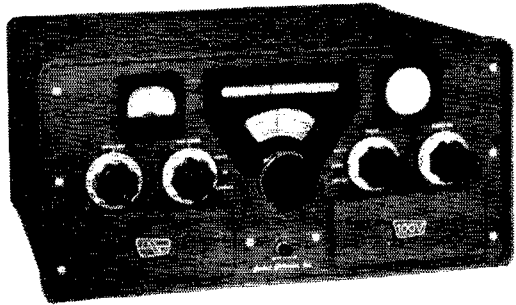
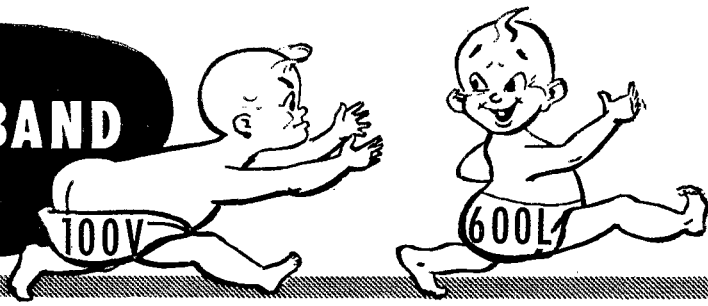
The RAMS (Chicago) elected as new officers K9GTS, YYS, UIE, K9EIG and CYD. CSW reports that the North Central Phone Net cleared 542 messages during the month. Thanks to all the ECs who have renewed their appointments. There still are a few that haven't been heard from. Let's send them in, fellows. If any other appointments are expiring send them in also for endorsement. CAG and SVEN (Springfield) assisted the local c.d. officer in the test of sirens in the Capital City. KQL and UYP are proud owners of emergency power units and are awaiting Field Day to give them a trial. The Illinois Civil Defense Agency issued for the first time Commendation Certificates for public service activity based upon tornado participation (Southern Illinois) to QNR/M, West Frankfort RACES, c/o KH, Target City Net Control Operators, c/o PSP, Shawnee Amateur Radio Assn. and Synton National Fraternity, c/o UIH, and to IEN, KN9ILD has a new DX-100 while KN9KIM is sweating out delivery of his new transmitter. New appointments are K9GVD as ORS and OBS. The Hamfesters (Chicago) went on a tour of the Air Traffic Control Center and Radar Installation of Midway Airport during its February meeting. Traffic: (Jan.) W9DO 786, MAK 446, K9GVD 251, W9PCQ 196, FAW 161, IDA 140, CTZ 67, VHD 66, TZN 55, CSW 44, K9JIN 30, KN9JLD 16, W9SXL 10, YYG 10, K9AXL 9, W9SKR 8, K9AKS 3. (Dec.) K9GVD 505, W9YFO 125, PSP 114, K9KMU 22, W9CLW 16, IFB 8, SKR 4. (Nov.) W9TZN 77, IFB 14. (Oct.) W9TZN 29. (Sept.) W9YFO 5.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: CMT. PAMs: BKJ, KOY, SWD and UXK. RMs: DGA, JOZ and TT. New appointees are K9DCX Howard County and K9DGO Elkhart County as ECs; K9GSV and HTF as OOs and JIY as OES. The spring meeting of the Indiana Radio Club Council will be held Apr. 27 at Terre Haute. The Bloomington ARC elected GHK, pres.; EPI, vice-pres.; Al. T. Sando, secy.-treas. The Fayette County RC elected JGI, pres.; OZJ, vice-pres.; JWH, secy.-treas.; RMC and ENR, trustees. The Kokomo ARC elected QUI, pres.; YDP, vice-pres.; MJN, secy.-treas.; HUF and DKR, directors. The Delaware County ARA elected K9BAW, pres.; CQB, vice-pres.; ETF, secy.; HTB, treas.; NQB act. mgr. The Duneland ARA banquet was held Jan. 18 in Valparaiso. New calls: K9NBK, club station of the Naval Avionics Facility RC; K9LEJ, for Vanderburg County C.D. Mobile Unit; K9LED, West Baden; K9KJK, Evansville, GTJ Portland; W9UQI, Hancock County. SNQ has a new RME-4350A. The Fayette County RC has started a training net on 10 meters, K9DWK made WAS. The Wabash Valley ARA has started a code class with 45 signing up. The "Promote Indiana On The Air" program has been worked out with the State Dept. of Conservation to send brochures to the stations you work who are interested. For details and a sample set write the Dept. of Conservation, 311 West Washington St., Indianapolis. TT reports RFN traffic as 69. JOZ reports QIN traffic as 209. IFN traffic reported by SWD was morning 191 and evening 226. FHZ reports CAEN traffic as 50. K9EEK reports NCTN traffic as 20. Traffic: (Jan.) W9NZZ 1362, JOZ 727, ETM 246, TT 242, VAY 213, TQC 164, BDG 150, ZYK 135, EHZ 103, AB 98, JYO 95, SVL 74, K9AUI 70, W9RTH 67, K9AYI 59, W9SWD 59, JBO 51, BUQ 44, ENU 41, CC 35, K9GBB 33, W9GJS 31, IMU 26, COW 20, EJV 20, DOK 17, YX 17, DGA 16, SNQ 15, WHL 15, WTD 15, STC 14, PPS 13, WTY 13, K9BSU 12, W9HXR 12, BRW 11, QR 11, NTR 10, K9HMN 9, W9SVZ 8, DZC 7, KN9KX 7, W9MMY 7, NTA 7, EZW 6, VQP 6, AMW 5, K9DGO 5, W9HRW 5, LGD 5, OFW 4, VPJ 4, K9GSV 2, W9LDB 2, YYS 2, HUF 1. (Dec.) W9SNQ 110, K9GBB 22, W9WTY 13, CMT 7, K9ELE 3.

WISCONSIN—SCM, George Wolda, W9KQB—SEC: YQH. PAMs: NRP and AJU. RMs: K9AEQ and KJJ. Nets: BEN, 3950 kc. daily; WIN, 3535 kc. daily. BPI, was made by CXY with an 850 total and by K9GDF on 169 organizations. SZR is the new trustee for U. of Wis. station YT replacing graduating VAK, who is now a Chicagoite. Bob is now OO and OES. CCO, now on his way to VK3-Land with the Navy, will be starting school at Whitewater in Sept. K9AQT has an 18-tube SP-220-SX receiver and is now converting a Command rig. It's on to Wausau May 17 for the big hamfest. It will be well worth the \$3.50 banquet fee. New officers of the Waukesha County Club are KJW, pres.; IZD, vice-pres.; K9GQZ, treas.; and Ken Janson, secy. ERW is past the 40 mark with DX worked with a new 15 beam and has a big group copying his perfect sending of Official Bulletins. BEN Mgr. NRP finally is up to date with his monthly reports and is breathing easier. ADM and his wife, LGR, now have Baraboo as their home QTH. IHW is on the high frequencies with a new KWM-1. BVX single-sidebanded

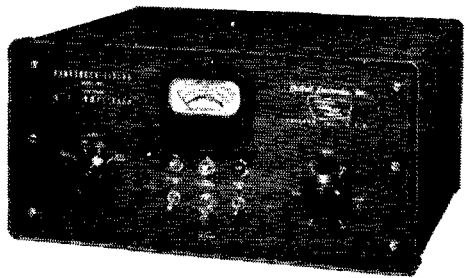
(Continued on page 108)

THE BROADBAND TWINS



THE REVOLUTIONARY NEW 100V EXCITER-TRANSMITTER

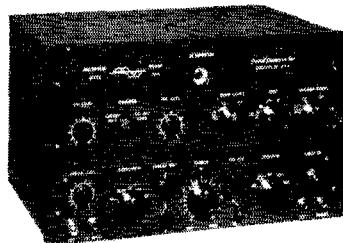
NO TUNING (except VFO), uses famous CE BROADBAND system. PRECISION LINEAR VFO—1KC Calibration. Single Knob Bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF Output adjustable 10 to 100 Watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression. 2" RF Scope. Speech Level and Load Mismatch Indicators. Audio Filter — Inverse Feedback — 50 db Carrier and Sideband Suppression.
IN PRODUCTION SOON.....PRICE \$595.00



FAMOUS MODEL 600L BROADBAND LINEAR

NO TUNING CONTROLS — CE BROADBAND Couplers in HIGH EFFICIENCY CLASS AB² using single 813. Easily driven to 600 Watts PEP Input 160 thru 10 by a 20A or 100V. Built-in HEAVY DUTY POWER SUPPLY — 45 MFD PAPER Capacitor. Meter reads WATTS INPUT, GRID DRIVE, RF AMPS, and SWR. Completely shielded — TVI suppressed — parasitic free. REMEMBER there is LESS than ONE S UNIT difference between the 600L and a 2 KW PEP job.PRICE \$495.00

MODEL 20A



THESE MULTIPHASE EXCITERS PIONEERED AMATEUR SSB

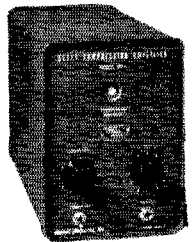
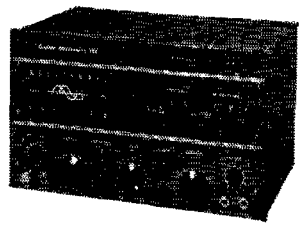
MODEL 10B — 10 watts PEP. Plug-in coils 160 thru 10 meters. Perfect voice control on SSB—DSB—AM and PM — CW breaker; Carrier and calibrate level controls. 40 DB suppression.

Wired.....\$179.50 Kit.....\$139.50

MODEL 20A — 20 watts PEP. Bandswitched 160 thru 10 meters. SSB—DSB—AM—PM and CW. Magic eye monitors carrier null and peak modulation. Ideal for driving AB¹, AB², and most Class B linears.

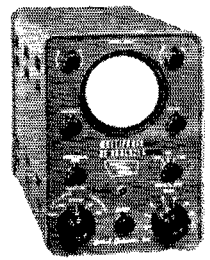
Wired.....\$279.50 Kit.....\$219.50

MODEL 10B



MODEL GC-1. Gated Compression Amplifier. Connects between receiver and speaker. Automatically brings all received signals to same level—no blasting. Compensates for receiver AVC deficiencies. Compresses a 40 db increase in level to less than 3 db. Magic Eye continuously monitors compression value. Keep peace with your family and neighbors — buy a GC-1.
KIT....\$49.50 Wired....\$59.50

MODEL MM-2. 3" RF analyzer scope for use on SSB—DSB—AM—PM and CW. MONITORS RECEIVED AND TRANSMITTED SIGNALS thru new electronic switching circuits. NO TUNING — BROADBAND response 1MC to 55MC at power levels of 5 watts to 5 KW. SIMPLE CONNECTIONS. Built-in 1KC oscillator for exciter alignment. Plug-in IF adapters available for 450-500 KC, 80 KC and 50 KC. IF adapter RM-455 or RM-80 or RM-50\$9.95 MM-2 (less adapter) wired.\$129.50 Kit\$99.50



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Hy-gain roto-brake

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10,000 IN. LBS.
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High carbon machined steel gear and rack, heavy shoulder bolts and lock nuts, oil sealed bronze bearings provide positive braking action. Twin 3600 rpm motors develop 500 in. lbs. rotation torque. Gear reduction unit factory sealed.



Multi-colored Great Circle wall map indicator, 16" in diameter. Moving wedge of light, 10" wide at perimeter indicates beam direction. Countries outlined and call areas labeled. Control box mounts under operating table.

Complete with
Brake, Rotator
and Indicator

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with YA1AA, KKM is back on WIN with a big signal. DYG had 151 contacts in 47 countries in the WAE Contest. BEN certificates went to K9DOL and K9CJM; WIN certificates to MWQ and DYG. Traffic: (Jan.) W9CXY 850, K9GDF 300, AEQ 210, W9SAA 111, K9BELT 100, W9KQB 83, QJW 52, FFC 49, K9GYG 39, DTK 38, W9DYG 30, YF 21, NRP 21, ERW 14, CBE 11, MWQ 11, OVO 9, K9CEF 6, IKM 5, W9IQW 5, GIL 4, KKM 3, SDK 3, RQM 2, SZR 2, K9IQO 1. (Dec.) K9DOL 25, W9RQM 7, FZC 6, MUM 1.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Rev. C. Bonitas, W0UBG. The N.D. Phone Net meets every weekday at 1800 CST on 3845 kc.; the C.W. Net on 3670 N-W-F at 1830 CST. VE4QD is the outlet for men at the U.S. Base at Ft. Churchill. He relays to the N.D. Phone Net. HVA pass on traffic. Newcomers to the phone net are relays on s.s.b. and K0CNC works the Regional Net to K0MLD and K0MBG. AILD starts out in Canillac style with a Valiant while AIBG has a dated AF-100. Ex-SWB still works North Dakota hams from Arizona. A DX Contest section certificate went to K0CNC. K0EBB got a v.f.o. KLP says he is marine mobile since losing the family car in a lake in January. NPR dusted off his Viking. CJC is camera man for KFYR-TV. HAV's ham interests have led to work in radio maintenance for the State. K0CNC received an SWL card from Russia, No. UA420612, NDN reported 14 sessions with QNI 99 and QTC 35. The Jamestown ARC elected K0EPV, pres.; HJK, vice-pres.; AVT, secy-treas. The club is working on a 6-meter transmitter. Traffic: W0FVG 245 (3 months), CNC 106, HVA 51, GGL 49, YCL 35, ATK 20, TOM 12, CCA 10, K0ARC 4.

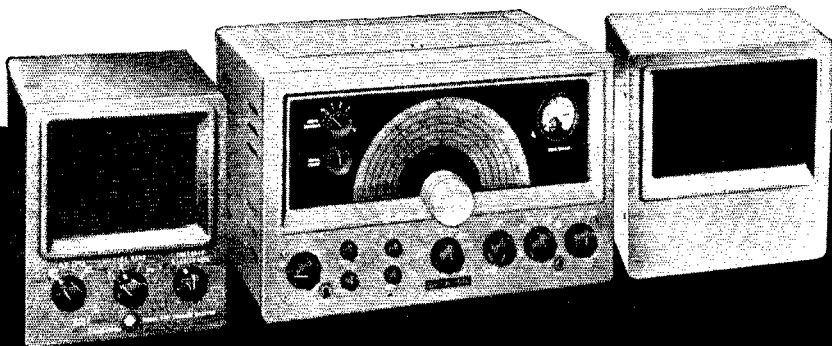
SOUTH DAKOTA—SCM, Les Price W0FLP, Asst. SCM, Gerald F. Lee, 0YKY. SCM assistants: TKE and NEO. SECs: YOB and GDE. PAM: SCT, RM: GWS. The S.D. WX Net, ZWL as NCS and UAJ as assistant NCS, reports 26 sessions with QNI 461, high 24, low 14, average 17.7; QTC 419, high 22, low 14, average 16. The S.D. 40-Meter (noon) Phone Net, EXX as NCS, reports 27 sessions, EXX 5, K0DPD 7, K0JNZ 5, LXP 5; QNI 465, high 23, low 9, average 17.2; traffic 32, high 5, low 0, average 1.92; informals 55, high 8, low 0, average 2.03. The S.D. 75-Meter (evening) Phone Net, SCT as NCS, had 35 sessions, SCT 17, K0CRD 2, CTZ 1, EXX 5, G0H 1, GWA 4, ZLB 1; QNI 1102, high 40, low 17, average 31.48; traffic 71, high 6, low 0, average 2; informals 137, high 8, low 1, average 3.9. The 75-Meter Evening Phone S.S.B. Net, which meets at 8 p.m. CST on 3870 kc, daily, NEO and FKC as NCSs, had 26 QNI, 32 high, 7 low, 2 average and for January had 9 sessions with QNI 30, high 5, low 2, average 3.3. ZUS and IEI became the parents of a girl on Jan. 20. Andy Robsin ex-HAT, now is K7CBY. On Jan. 21, BLZ, Harrisburg, "worked" RSP, Alarvin, and BJV, Watertown, for the best DX yet out of the Sioux Falls Area on 2 meters. DJK reports George Scott, a chemistry professor, is newly-licensed in Vermillion with the call K0MPL. TLU, Vermillion, and Norma Wickham, of Rapid City and Huron, were married Dec. 7. May I express the sympathy of his many amateur friends to EXX, Freeman, on the passing of his mother Jan. 30. Traffic: (Jan.) W0ZWL 619, SCT 378, K0BML 166, W0DVB 82, K0HSW 55, W0NEO 30, K0AIE 26, W0CTZ 26, K0BRQ 25, W0ZLB 22, K0JNZ 10, W0AZJ 9, GWS 8, K0CMX 7, W0FTZ 7, O0Z 7, OFP 5, YKY 4, CWJ 3, DIY 3, K0MIDZ 3, W0NNX 3, GCP 1.

MINNESOTA—SCM, Robert M. Nelson, W0KLG—Asst. SCM: Bob Schoening, TKX. SEC: WVO. RMs: K0DIA and RQJ. PAMs: QVR and TCK. V.H.F. PAM: HXY. The MJN had 13 sessions, QTC total 12, QTC average 1.0, QNI average 3.5; MSN, 31 sessions, QTC total 156, QTC average 5.0, QNI average 7.4; MSPN (1205), 30 sessions QTC total 80, QTC average 2.7, QNI average 32.9; MSPN (1800), 26 sessions, QTC total 120, QTC average 4.6, QNI average 40.0 WMA finally got 101 confirmations for his DXCC award. UCV operates from a lounge chair in his den, using his AF-67 mobile rig with an a.c. power supply. K0KVA has been very regular on MJN. QVR now has a 15-watt mobile rig in his airplane and will be looking for the 75-meter boys near 3820 kc. on week ends. KN0MVM is a new ham at St. Paul. KN0OGL's station lineup includes a DX-20, an 840-B and a half-wave dipole on 80 meters. K0DUO finished construction of a double conversion, high-gain i.f. strip for use with his 50-Mc. 416-B converter. A tool and equipment room was added to REA, the base station of the St. Paul Mobile Radio Club. RXL is giving code instruction to a Boy Scout troop at Duluth. K0GVX and K0IDV were appointed OPSS, LST is a new OO Class I. The following ECs have been endorsed
(Continued on page 110)

RME Dual Conversion 4350A Receiver With 100 KC Crystal Calibrator

4301 Sideband Selector.
\$75, Amateur Net

4302 Matching Speaker.
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Overtones: 30 to 54 Meg. tol. .005% ea. 4.10

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Special! FT-243 Prec. Calib. to 1st Decimal

2 Meters { Exam: *8010.6 x 18=144.190

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Note—10 KC difference between the above

6 Meters { Exam: *8340.6 x 6=50043.6

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This is a must if you want exact freq. on these 2 pop. bands.

Hermetically Sealed for new Gonset.....ea. \$2.50

Thin-Line FT-243 for new Gonset.....ea. \$1.49

Calibrated FT-243 as exam. above* spec.....ea. .99

Don't take chances with uncalibrated surplus—Be sure of freq.

NOVICE BAND FT-243 Fund. or DC-34 Freq.....99c

80 Met. 3701-3748—Steps of 1 KC. FT-243 or DC-34

40 Met. 7150-7198—Steps of 1 KC. FT-243 only

Dbl. to 40 Met. 3576-3599. Steps of 1 KC. FT-243 or DC-34

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3005	3800	4900	5875	6350	6913	7350	7520	7640	7860	8090	8300	8560
3010	3885	4930	5875	6350	6913	7350	7520	7640	7860	8090	8300	8560
3015	3955	4980	5880	6375	7000	7368	7530	7650	7870	8100	8300	8570
3020	3980	4980	5885	6375	7000	7370	7530	7650	7870	8100	8300	8570
3025	3990	4995	5900	6400	7025	7375	7540	7660	7885	8110	8310	8575
3030	3995	5030	5906	6400	7025	7375	7540	7660	7885	8110	8310	8575
3035	4005	5035	5925	6406	7050	7400	7560	7680	7910	8130	8330	8580
3040	4005	5035	5925	6406	7050	7400	7560	7680	7910	8130	8330	8580
3045	4010	5040	5935	6410	7050	7400	7560	7680	7910	8130	8330	8580
3050	4015	5045	5940	6415	7055	7405	7565	7685	7915	8135	8335	8585
3055	4110	5055	5955	6420	7100	7400	7560	7680	7910	8130	8330	8580
3060	4115	5060	5960	6425	7100	7410	7570	7690	7920	8140	8340	8585
3065	4185	5245	5955	6500	7100	7410	7570	7690	7920	8140	8340	8585
3070	4175	5275	5995	6500	7100	7410	7570	7690	7920	8140	8340	8585
3075	4190	5325	6020	6520	7100	7410	7570	7690	7920	8140	8340	8585
3085	4215	5395	6020	6520	7100	7410	7570	7690	7920	8140	8340	8585
3110	4290	5435	6025	6525	7100	7410	7570	7690	7920	8140	8340	8585
3115	4290	5435	6025	6525	7100	7410	7570	7690	7920	8140	8340	8585
3120	4295	5440	6030	6530	7100	7410	7570	7690	7920	8140	8340	8585
3125	4280	5485	6042	6535	7100	7410	7570	7690	7920	8140	8340	8585
3140	4275	5500	6050	6540	7100	7410	7570	7690	7920	8140	8340	8585
3145	4300	5545	6073	6596	7100	7410	7570	7690	7920	8140	8340	8585
3150	4300	5545	6073	6596	7100	7410	7570	7690	7920	8140	8340	8585
3155	4395	5645	6106	6625	7100	7410	7570	7690	7920	8140	8340	8585
3164	4395	5645	6106	6625	7100	7410	7570	7690	7920	8140	8340	8585
3165	4395	5645	6106	6625	7100	7410	7570	7690	7920	8140	8340	8585
3170	4465	5680	6120	6670	7100	7410	7570	7690	7920	8140	8340	8585
3175	4490	5685	6142	6700	7100	7410	7570	7690	7920	8140	8340	8585
3202	4490	5700	6150	6720	7100	7410	7570	7690	7920	8140	8340	8585
3205	4525	5706	6173	6768	7100	7410	7570	7690	7920	8140	8340	8585
3210	4540	5725	6175	6780	7100	7410	7570	7690	7920	8140	8340	8585
3220	4580	5730	6180	6780	7100	7410	7570	7690	7920	8140	8340	8585
3225	4610	5740	6200	6773	7125	7425	7573	7783	8000	8225	8490	8700
3238	4620	5750	6206	6775	7140	7433	7575	7790	8010	8235	8491	8700
3235	4635	5760	6215	6800	7140	7433	7575	7790	8010	8235	8491	8700
3240	4680	5773	6235	6806	7200	7441	7583	7800	8025	8241	8470	8710
3290	4695	5775	6240	6815	7206	7450	7590	7806	8030	8250	8508	8716
3310	4710	5800	6250	6820	7210	7450	7590	7806	8030	8250	8508	8716
3340	4735	5827	6273	6840	7240	7466	7600	7810	8040	8260	8516	8725
3410	4790	5800	6275	6850	7250	7473	7606	7820	8041	8266	8520	8730
3420	4795	5806	6280	6855	7255	7478	7610	7825	8045	8270	8525	8733
3435	4815	5820	6300	6875	7275	7483	7610	7830	8050	8273	8530	8740
3445	4820	5825	6305	6880	7280	7488	7615	7835	8055	8275	8535	8741
3455	4840	5840	6315	6900	7300	7500	7630	7840	8065	8285	8540	8745
3455	4840	5840	6315	6900	7300	7500	7630	7840	8065	8285	8540	8745
3460	4850	5850	6325	6925	7310	7510	7640	7850	8075	8295	8545	8748
3465	4855	5855	6330	6930	7315	7515	7645	7855	8080	8300	8550	8750
3760	4980	5860	6340	6950	7340	7540	7670	7880	8100	8320	8570	8780

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FT-243—From 1005-2999. Steps of 5 KC ea.....\$1.99

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(counties of jurisdiction follow calls): FIT, Freeborn; FWN, Goodhue; FYT, Traverse; GGQ, Hubbard; GTX, Douglas; KFN, Pipestone; LIG, Lake; PBY, Blue Earth; RVO, Stearns and Benton; TJA, Olmstead; VNY, LaCueParle and Yellow Medicine; and ZOB, Itasca. The ECs get together on the EC Net the 1st Sun. of each month. QJ1, Dakota County EC, reports that KBDYT has been named Asst. EC. Traffic: (Jan.) W6KJZ 226, KLG 132, ROJ 93, K6GCN 85, W6QDL 62, K6LDY 36, W6WMA 31, K6EPT 27, W6QDZ 27, HEN 25, QJG 21, QVR 21, UMX 20, K6DIA 10, W6HQL 16, K6EJ 10, OAK 10, TCR 10, GUY 15, K6AEF 13, W6KFN 13, PET 13, VBD 13, ALW 12, LUX 12, EMZ 11, BUO 10, MBD 10, LST 8, LIG 6, FGP 5, QJG 5, SZJ 4, IRJ 3, KN6I2D 3, K6DEF 2, GKI 2, W6OPX 2, PUO 2, UCV 2, VAK 2.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goines, W5ZZY—SEC: K5CIR, PAM: DYL, RM: CAF. We want to congratulate the amateurs in Walnut Ridge and Hoxie on the newly-formed club. The club has been named the Northeast Arkansas Amateur Club. The officers are K5LMS, pres.; K5IPS, vice-pres.; K5EEF, secy-treas. Any amateurs or would-be amateurs in the vicinity are very welcome to visit the club. Our best wishes for the success of your new club, boys. New hams in Walnut Ridge are KN5OOE and KN5OWP. The Arkansas Valley Amateur Club at Russellville has acquired a club room and is now fixing it up. The Logan County Club is getting under way at Paris and is training several prospective in code. A new ham in Little Rock is KN5OKQ, who has an identical twin, K5FLY, K5KMK and K5ITX both have new 100-SB-4 s.s.b. rigs. KRO has a new s.s.b. exciter and a new final with a pair of 833As. According to a confirmed rumor WUM is getting his feet wet in s.s.b. LOS, don't forget to send in your appointment certificates for endorsement. Traffic: (Jan.) W5YHT 28, K5IPS 20, W5CEU 12, K5HOL 6, W5ZZY 6.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—LAN, the Louisiana outlet for NTS and RN5, now operates nightly at 1830 CST on 3615 kc. NCS EA is looking for outlets in all parts of the State. A good way to get lined up on the frequency is to tune in about 1815 CST each night and get in on the Official Bulletins as sent on tape by K5AGJ, K5KLA, who has been active on 40 and 15 meters, reports that the 6-meter band has been open every morning. GQZ has been doing a fine job as NCS for the Delta 75 Sun, at 7:30 A.M. on 3909 kc. CEW has worked all 40 zones with 235 countries worked and 224 confirmed. It looks like a 200-plus net has been started on 7225 kc. Sun, at 9 A.M. You have to have 200 countries confirmed to become a member. Congrats to TTB on his Explorer recording and retransmission on the Delta 75. The Teenage Net operates Sat. at 10:30 A.M. on 7273 kc. with K5LUB as NCS. The Lafayette Amateur Radio Club, reactivated in December, has code classes in progress with 50 prospective hams. AFE, who will celebrate his 80th birthday in May, still is hamming. K5LRR is active on 10- and 15-meter phone. K5JYJ has received his General Class ticket and is hard at work putting up antennas. Officers of the Jefferson ARC are EKL, pres.; QHP, vice-pres.; K5HEK, treas.; K5GHJ, secy. JFB is at L.S.U. K5ALK and K5LKN are now s.s.b. KKZ has a new DX-100 and a WRL Tri-band beam. NDV is active on LAN, NTS and MARS. CEZ, another LAN member, is sporting a new HQ-110. Congratulations to Bones Harrington on being selected for the Edison Award. Check the expiration date of your CD appointment. Traffic: (Jan.) W5CEZ 328, MXQ 75, NDV 36, K5AGJ 32, W5JPV 20, EA 18, K5DMA 13.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5EHH, K5DXL is on 15 meters having a swell time with his new Hi-Gain three-element beam and needs Nevada for W.A.S. DHA has accepted the position of communications officer for the Mississippi C.A.P. The Cleveland Hamfest-Picnic has been set for May 8. RIM, TR and JHS now have AF calls. K5IKB is very active in CAP radio. K5HYO is mobile in a new Ford car. The NCS for the Mississippi Magnolia and Gulf Coast Hurricane Nets ask your cooperation in keeping down unnecessary QRM while the nets are in operation. The Magnolia Net meets on 3870 kc. each evening from 8 to 9 p.m., the Gulf Coast Hurricane Net meets on 3935 kc. each evening from 6:15 to 7 p.m. CST. K5LEA is now mobile on all bands with an AF-67. K5LWQ is impatiently awaiting the arrival of his mobile gear. Traffic: (Jan.) W5RIM 22, ZZV 18, K5AYP 10, W5TR 14, EHH 13, K5AUR 9, MFY 8, IHQ 7, LWQ 6, IQO 5, W5AHE 3, K5DFD 2, W5ESJ 1.

TENNESSEE—SCM, Harry C. Simpson, W4SCT—SEC: RRV, PAM: PGP, RM: JV. A nice letter was received from ex-TIZ, who comments that you don't appreciate the Memphis ham club until you leave. Bill is

(Continued on page 112)



EVERYONE'S TALKING "3-BANDER"

On every count — the logical beam for 3-band operation on 10, 15 and 20 meters. Streamlined, light in weight, handsome in appearance, outstanding in performance and ... no coils!

No tuning....

Just put it up and operate. Elements are factory cut to correct length and tuning sleeves are set, (and locked) to specified position when the beam is assembled.

No special tools...

No special tools required for assembly, just screw-driver, pliers, tapemeasure. Big, easy to read drawings detail each step, speed and simplify assembly.

Complete....

All hardware, nuts, bolts, lockwashers, clamps, spacers etc., are supplied. Every beam piece is pre-cut, all holes are precision drilled for exact alignment. Judging from the letters received, owners everywhere agree that packaging is unusually complete, no details overlooked.

3-Banders perform

The 3-Bander in the un-retouched photograph went up one day before the start of the 1958 DX contest. This week-end resulted in over 200 DX contacts and a country multiplier of 106 on 14, 21, 27 and 28 mcs. (54 countries on 14 mcs). This same beam subsequently rode out a gale with 50 mph winds without damage.

Dimensions

Longest element is about 32 feet. Boom for 3-element is 18 feet — for 2-element, 9 feet. Both beams feed with single RGB/U coax have low VSWR all bands and easily handle 1 KW.

2-element #3219, 84 50

3-element #3220, 124 50

(coax not supplied)

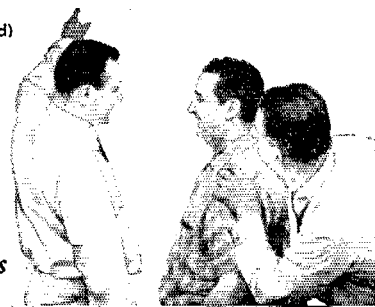


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TALKING
"3-BANDER"

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Now...

THE MARK 3 BAND

HELI-WHIP MOBILE ANTENNA

**COVERS 10-15-20 METERS
WITHOUT TRAPS**

**Self Selecting
No Antenna Adjustments**

The new 3-band HELI-WHIP, only 6 feet long, employs the thoroughly QSO tested principle of the standard HELI-WHIP—more radiated power, excellent VSWR across each of the 3 bands and matches 52 ohm co-ax without adjustment.

You switch bands at the rig, tune the final and the MARK 3-band HELI-WHIP automatically selects the proper band without further tuning. Switch bands while you're in motion—move anywhere within the bands easily and quickly.

The 3-band HELI-WHIP makes a neat installation on the trunk lid or fender with use of the MARK HWM-1 Mount.

Model HW-3* HELI-WHIP for 10, 15 and 20 meters—Only \$27.50.

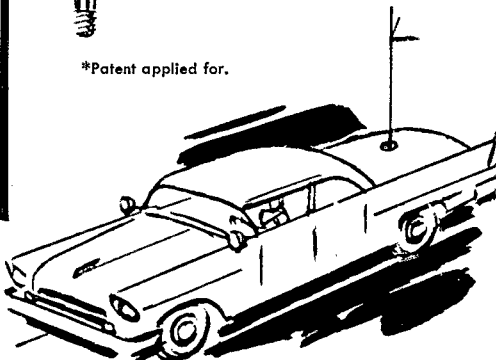
Write for further information or see your supplier of amateur equipment.

MARK MOBILE, INC.

6416 Lincoln Avenue

Morton Grove, Ill., Phone: Orchard 5-3940

*Patent applied for.



now operating in Shreveport. The usual nice reports were received from the East Tenn. Phone Net, Tenn. Phone Net and Tenn. C.W. Net. Activity continues to increase on these fine outlets. TJJ, president of the fine Knoxville Club, announces the annual elections and says that the club had a v.h.f. point total of 550. K4LLB is a new OPS, K4KYL is a new OES, K4OHU is a new OBS, K4HTB spoke on antennas and K4BAC explained s.s.b. at the Memphis meeting. K4LPW reports he is working s.s.b. DX. IV, our great RM, is happy to have worked CE6AG on 10 meters; he also heard SCF on TN! Nice notes were received from PL, who hasn't missed making BPI, since "Eighteen Ought Ninety Six," and 5RCF, who is working toward the same record. YRM reports working several Texas stations on 6 meters. SCF had a very fine meeting with our SEC, who has served us so faithfully for the past four years. UVU has a new 108-Mc. converter and beam to copy "her Uncle Samnik." Heartfelt sympathy from all the gang goes to RMJ on the loss of his father. Traffic: (Jan.) W5RCF 589, W4PL 330, K4ONQ 239, W4VJ 88, PQP 71, IV 55, UVL 36, SCF 32, LLB 16, UIO 16, NHT 14, LPW 8, YRM 8, EWC 7, RJN 7, PAH 6, KYS 5, GFL 4, HUT 4, CLE 1, DFV 1, HXV 1, KYL 1, LTA 1, MMP 1, OHH 1, PFP 1, PVD 1, RRV 1, UVU 1.

GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC; JSH, RM; K4AIS, PAMs; K4ECJ, OGY and SUD. The KYN/KPN/KSN/KNN/MARS Picnic will be held at Dix Dam July 13. The Dayton Ohio Hamvention will be held in the Dayton Biltmore Hotel Apr. 19. It is sponsored by the Dayton Amateur Radio Assn., Inc., which has instituted an Annual Dayton Hamvention Radio Amateur Award. Any amateur in the Great Lakes Division is eligible. OGY has been appointed PAM to assist SUD with KPN duties. KPN holds daily sessions now on 3900 kc. at 1930 CST. NCSS are K4GAG, K4AKD, K4MMW, K4WBG, K4JGN and K4HIE, RM; K4AIS reports that KYN held 58 sessions daily at 1700 and 1900 CST. NCSS are NGN, CDA, K4OAH, JSH, HOJ, ZDA/ZDB, K4CSH and K4KIO. After a year's excellent service as Route Manager, QCD has been transferred to Youngstown, Ohio. The Kentucky Sideband Net (KSN), under the leadership of PAM K4ECJ, held 23 sessions on 3975 kc. at 1830 CST. NCSS are NGN, K4HBF, KRY, NOW, K4DPP and K4KHB. The Kentuckiana Radio Club elected K4HXX, pres., OD, vice-pres., HOJ, secy.-treas., UVJ, rec. secy., BEJ, K4AIS and KN4PNG, directors. Kentucky Novice Net certificates (KNN) were sent to K4LHV, KN4RBH, and KN4QYP. MIKJ is a new OES, K4OAH made WAS, K4LOA is very active on 6 meters now; K4SPJ put up a new antenna. K4HTO heard Satellite Explorer. K4LOA is very active on 6 meters planning the Kentucky 6-Meter C.W. and Phone Net. Traffic: (Jan.) K4OAH 277, AIS 262, W4HSI 237, ZDR 177, K4CSH 151, W4KKW 113, RPF 84, CDA 64, K4MMW 52, W4BAZ 51, OGY 49, JSH 45, QCD 42, KKK 40, MWK 35, K4GPF 33, W4HOJ 27, K4QKQ 26, W4KJP 25, K4KTN 21, W4CN 15, K4KTS 14, W4WNG 11, K4HOE 7, W4SZB 6, JUI 4, K4KIO 4, IMW 3, MHM 3, W4KZF 2.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC; YAN, Don is getting off to a fine start in the SEC job and has enjoyed excellent cooperation from the several ECs contacted to date. PPL certificates were issued for January traffic totals to WGU and DJN. New appointments: PDP replaced PNF as EC for Kalamazoo County at the request of PNF, who turned in an excellent job until other pressure made resignation necessary. YDR and BJH were appointed OOs (Class III and IV). UPN received a handsome certificate from RAEM as the 7th high scoring U. S. station participating in the U.S.S.R. DX Contest of last May 4 and 5. The Mason County Radio Club (Ludington) is now equipped with a 2½-kw generator, an NC-98, and a 807 phone/c.w. rig built by KZV. The call is K8DXF. The Red Cross Disaster Net now meets on 3920 kc. at 2100 each Mon. LEN has asked to have his 73 passed along to the Michigan. Having recently completed his tour of Navy duty, he is planning to settle in the Chicago Area and is active now on the Interstate S.S.B. Net. PFO has a new DX-100. PIC is now using an NC-500 and a cubical quad. The Petoskey gang is forming a new net on 50.05 Mc. FGB has worked 39 states on 160 meters with 34 confirmed to date. QMNers are glad to have RJC back on the active list again even though his Ranger is working at odds with only a 40-meter antenna. Herb says that he will get some more wire up as soon as weather permits. VYG is stalking v.h.f. DX and working on a new linear amplifier using a pair of 4E27s. New officers of the St. Clair Valley ARC (formerly the Thumb Area ARA) are: DPU, pres.; VE3BZA, vice-pres.; EHT,

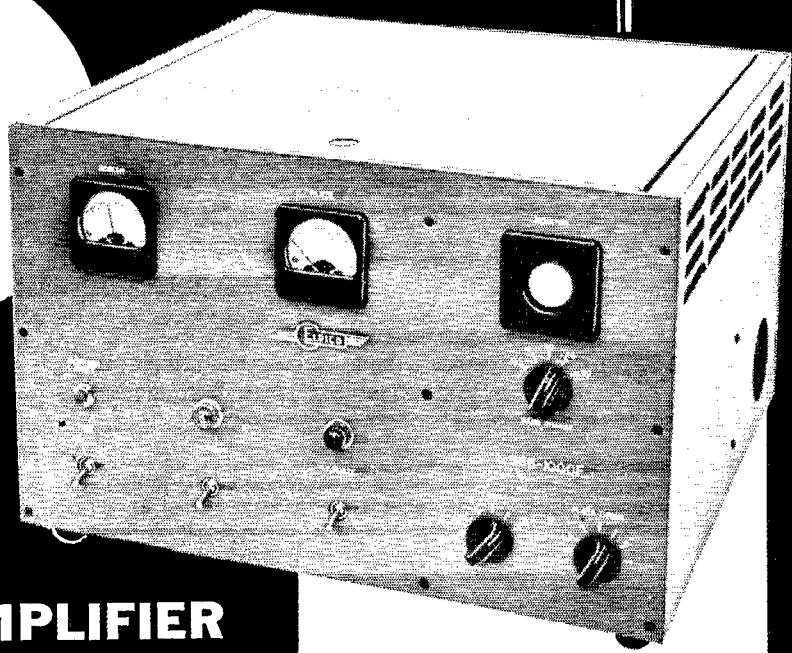
(Continued on page 114)

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MORE POWER

at no increase in price



**New Tubes —
Higher Voltage
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SSB-1000F LINEAR AMPLIFIER

A giant in power, a space-miser in size: ELDICO'S SSB-1000F is a compact, completely self-contained "table top" unit, capable of delivering a full kilowatt of talk power on the 80, 40, 20, 15, 11 and 10 meter amateur bands with any exciter capable of delivering 30 watts P.E.P. Rugged and dependable, the SSB-1000F loafs along at its full rated input (1250 watt peak envelope power) with extremely low third order distortion. Operating in Class AB1, it assures linear amplification, minimum band width and faithful reproduction of input signal.

RADIAL BEAM-POWER TETRODES: The use of EIMAC's new 4CX300A plus an increase in supply voltage to 2500 volts DC allows compactness, yet high efficiency and dependability. Ample plate dissipation (600 watts) for rated power input, together with excellent high-frequency characteristics of this tube, provides the 25% increase in talk power with no sacrifice of linearity.

ELDICO SSB-1000F:

Frequency Range: (in Megacycles)

80 meters	3.50 to 4.00
40 meters	7.00 to 7.30
20 meters	14.00 to 14.35
15 meters	21.00 to 21.45
10 meters	26.90 to 29.70

Power Ratings:

DC average input: CW; 1000 watts
AM; 700 watts
PEP input, SSB: 1250 watts
PEP output, SSB: 850 watts
Power input: 115 volts, AC, 60 cps,
1250-1750 watts

Drive Requirements: 30 watts peak envelope power. Input impedance 50 to 75 ohms.

Tube Line-Up: 10 tubes including 3 voltage regulators, 2 rectifiers, 1 oscilloscope deflection amplifier, 1 oscilloscope detector, 1 oscilloscope, and 2 power amplifiers.

Physical Dimensions: 10 3/4 inches high, 17 inches wide, 15 inches deep. Weight 98 lbs. Finished in ELDICO Gray.



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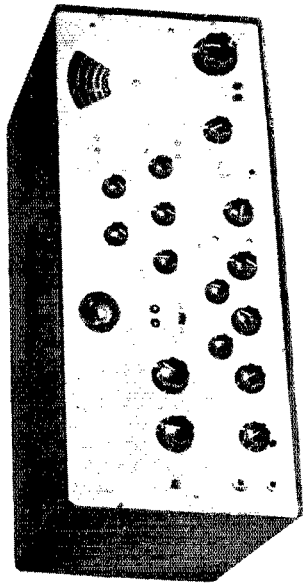
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"Phasemaster II - B"

CHECK THESE FEATURES !!

- SSB or DSB suppressed carrier or with carrier, PM and CW.
- 6146 power amplifier delivers 65 PEP watts output, giving sufficient power to drive nearly all types of linear amplifiers INCLUDING grounded grid finals.
- Calibrate control allows variable control of signal for zero beating VFO to receiver frequency or TOF (talk on frequency.)
- Voltage Regulation of 6146 Screen and 9MC OSC.
- Temperature compensating condensers in critical 9MC circuit for improved stability.
- Built in 3500 cps low pass audio filter.



NEW!

**Amateur Net
\$459.00**

Price and design subject to change without notice.

Built in VFO 100 to 1 Precision Dial.
Frequency Stability and Reset Accuracy better than 100 cycles.

Completely Bandswitched 160, 80, 40, 20, 15 and 10 meters.

See Your Dealer or Write Today
Lakeshore INDUSTRIES

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MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

secy-treas.; and VE3DPG, Canadian secy. The club has a fine international flavor. OGV succeeded PYW as trustee of the Motor City Radio Club. Let's see if we can't make a better showing in the April CD QSO Parties. Michigan could stand to be much better represented than in the recent parties. Traffic: (Jan.) W8WGU 605, DJN 581, NUL 84, K8NAW 73, W8ILP 57, FWQ 55, FX 55, RTN 52, OCC 51, RVZ 49, YAN 42, NOH 31, DSE 30, QIX 28, DAP 26, FDO 23, K8AXL 19, W8SCW 15, WVL 15, OGY 14, WXO 14, FGB 13, FSZ 13, TBP 11, SWN 7, K8CKD 5, W8SJF 5, RJC 4, VYG 4, EGI 3, HKT 3, JXK 3. (Dec.) W8RVZ 203, HBD 62.

OHIO—SCM, Wilson F. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE, SEC: UPB, RAI; DAE, PAMS; HPP, HUX and HZJ. The Springfield ARC's Q-5 tells us the club held its January meeting in the Gas Company's Club House, its emergency nets on 75 and 2 meters had a fine turnout. The Greater Cincinnati ARA announces its new "Honorary Membership Certificate." To get it work any five members of the GCARA on any band or combination of bands and send confirmation of same via QSL (plus return postage) to Alban Michel, SAIQ, Certificate Chairman, GCARA, 350 Bonhain Road, Cincinnati 15, Ohio. The Seneca RC's officers are MEY, pres., and WAB, secy-treas. LAH is seriously ill. KN6s DJN and DOB are a ham family. Advance dope on the Dayton Hamvention:

SIXTH ANNUAL OHIO INTRASTATE QSO PARTY APRIL 12 AND 13

The Ohio Council of Amateur Radio Clubs will sponsor a QSO Party, open to all Ohio amateurs, which will be held from 6:00 P.M. EST Saturday, April 12, until 6:00 P.M. EST Sunday, April 13. All Ohio amateurs may take part. In one county, ten contacts *only*, phone or c.w., may be counted.

Any and all amateur bands and any mode of emission may be used. There will be no power restrictions. *Scoring:* multiply the number of Ohio stations worked by the number of Ohio counties contacted. Each station may be worked but once regardless of band or mode of emission used. Logs should include calls of stations worked, time, date, and the county in which the station is located. Operation near the following frequencies is recommended: 3550, 3740, 3860, 7100 and 7250 kc. On the other bands, take your pick. The call "CQ Ohio" should be used on both phone and c.w. A cup and four appropriate certificates will be awarded to the highest scoring stations. Certificates will also be awarded to Novices, the number of certificates being contingent upon the degree of activity.

All contest logs must be postmarked no later than May 1, 1958, and should be sent to the contest manager, Hamlin King, W8EQN, 353 S. Arlington Ave., Springfield, Ohio.

HAF will head the s.s.b. forum, NAF will head the v.h.f. forum along with 1FZJ, IUTW and 2TRD. First prize will be a new Hallicratters v.h.f. transmitter/receiver. K8IXZ received his Technician Class license and is on 6 meters with an AT-1. The reactivated Kenton RC elected KN8HRX, pres., KN8JMI, vice-pres., KN8ICG, secy., KN8HTM, treas.; KN8AIR, pub-chairman; and KNK, act. mgr. The club meets the 1st Tue. of each month and conducts code classes for Novices and Generals. If you have an announcement of a hamfest or anything that should be in *QST*, please see that your SCM gets it three or more months ahead of the date set. Just received a letter regarding the Dayton Hamvention annual award for the outstanding ham in this area with a deadline of March 10. I am indeed sorry I didn't get this two months ago. AQ worked five European countries and Alaska on 6 meters with 45 watts. IBX received Frankford RC certificate No. 350. The Cuyahoga County Radio Emergency Corps took part in the March of Dimes with 6-meter mobiles with AEU, BHR, BUQ, FAG, IOT, JGQ, JHS, HZY, LHX, LFY, MVL, NLF, NOX, NRI, NRM, PVC, QLB, SQU, TFW TTT, UDL, VJA, QXG, YTR, K8s AAP, ABA, DPA, DQB, DZY, JTF, GJW, HYL, IHC and INC participating. Toledo's *Shack Gossip* names BILL as "Ham of the Month." The Toledo Mobile Club held a hidden transmitter hunt. The Massillon ARC heard a talk on Electronic Computers and elected ZWE, pres.; KN8EKG, vice-pres.; K8EJN, secy.; FRB, treas.; YHU, act. mgr.; and F8AI, asst. act. mgr. DXR moved to Canton. Fort

(Continued on page 116)

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!



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.

MORE DX CONTACTS

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.)

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

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.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between $\frac{3}{4}$ " and $1\frac{1}{2}$ ".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use $\frac{3}{8}$ " and $\frac{1}{2}$ " 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.

TRIBANDER BEAMS

6-10-15 TRIBANDER.....\$39.95
10-15-20 TRIBANDER..... 49.95

Do not confuse these full-size tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

TWO BANDER BEAMS

6-10 TWO BANDER.....\$29.95
10-15 TWO BANDER..... 34.95
10-20 TWO BANDER..... 36.95
15-20 TWO BANDER..... 38.95

Each Two Bander has twin 12' booms, and full-size half-wave elements. $\frac{3}{8}$ " and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

FREE! FREE! FREE! Details, Specifications and Characteristics of 50 antennas!

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WØDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.

NO TRAPS, COILS, BALUNS, STUBS OR INSULATORS USED!

Airmail Order Today — We Ship Tomorrow

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2 METER BEAMS
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 Deluxe 3-El Gamma match 46.95 T match 49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

Beam #R6 (6 Meters, 4-El).....\$38.95
 Beam #R10 (10 Meters, 4-El)..... 40.95
 Beam #R15 (15 Meters, 3-El)..... 49.95

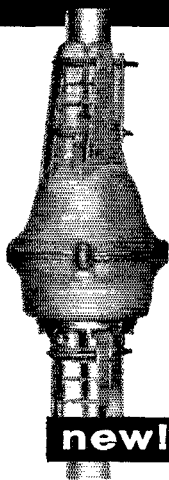
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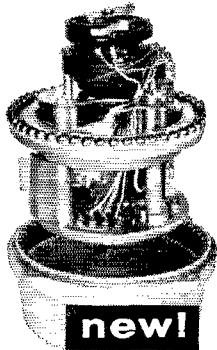


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C·D·R "HAM-M" Beam Rotor

Will support and rotate the heaviest beams commercially available. Weather-proof high pressure cast aluminum alloy housing. Heavy-duty holding brackets with stainless steel U bolts and nuts. Standard mounting on present towers. Complete system ready to install.



Heavy-duty broached-cut stainless steel motor gears and pinions. 98 ball bearings in nylon retainers. High tensile strength die-cast aluminum-alloy housing, with positive lock-and-hold brake that eliminates drift. Solenoid-operated brake release. Electrical end-of-rotation protection.



Sensitive 1-ma. meter indicator for pin-point accuracy. Separate transformer for direction indication. Double-stage switch permits instant direction reading without moving rotor. Heavy-duty power transformer. Designed for 8-wire cable.

ONLY \$99.50

Amateur Net



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Hamilton ARA's officers are HITQ, pres.; K8DYL, vice-pres.; CYD, secy.; and DCE, treas. Columbus ARA's *Carascope* tells us that JK gave a talk on Radio Tracking and Doppler Shift Effects and equipment used. BPL worked England, Sweden and Alaska on 6 meters. KN8GVD and K8BLJ moved to Omaha. The Buckeye Net is planning a slow-speed net to train members in the handling of traffic. All interested should write to Roger O. Barnett, K8DDG, 2565 Bristol Rd., Columbus 21, Ohio. New appointments: IBX and LGR as OPSS, HZJ and VWX as OOs. The Floyd Kinnaman ARC's officers are DHL, pres.; and CEW, secy-treas. IIR broke an arm in an auto accident. Traffic: (Jan.) W8UPH 397, VTP 339, GFE 158, DAE 121, K8BXP 102, W8SZU 75, IBX 63, QJL 57, HXB 45, K8DDG 34, W8AL 25, ARO 25, QHW 23, CSK 18, DG 18, QIE 17, LMB 15, DSQ 14, BGP 13, JRE 13, GQD 12, WYT 12, W9BV/8 9, W8WE 9, HZJ 8, STR 8, K8CCZ 6, W8RO 5, ZAU 5, LGR 4, UHW 4, OUI 2. (Dec.) K8BIZ 167, W8MVE 26, LZE 16, K8REW 8, W8PBX 6, K8EHE 4, W8RO 3, OOU 2, PLQ 2. (Nov.) W8GFE 182.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC, RM: PEX, PAMs: JG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, IPN on 3980 kc. at 1530. MIET (Novice) on 3716 kc. Sat. at 1300. ENY Emergency Net on 145.35 Mc. Fri. at 2100. Congrats to K2PXM and YTD on making BPL this month on originations plus deliveries. Section net certificates have been awarded to APF, SZ and K2VTW. New appointments: W2DIN, K2IOM, UTV and YFA as OOs. PCQ has been endorsed as EC for Orange County. Here are the County ECs: Albany, AWF; Columbia, none; Dutchess, K2GCH; Greene, K2SFY; Orange, PCQ; Putnam, K2EHL; Rensselaer, JJO; Rockland, ZTZ; Schenectady, WWK; Ulster, K2BCU; Westchester, none. New AREC applicants, please send your completed form to your EC. If you have none in your county, send to the SEC, KGC. Call into the 50.7-Mc. Net, which meets each Wed. at 2020. The members had a Christmas Party at the home of K2YWH. New stations on 6 meters include K2EED and VMI. The Pelham H.S. Radio Club is sparked by K2ZAU, WOH and WN2TFB, with several licenses on the way. K2VTW reports working 15 Europeans on 80-meter c.w. during January. We congratulate NYS Manager RUF on her Edison Award Special Citation. The Schenectady Club held "Mobile Nite" with members describing their gear. Your SCM has been elected for a second term of office. Traffic: (Jan.) K2YTD 196, W2EFU 163, K2PXM 147, HPQ 144, VTW 129, W2PHX 112, YTA 110, K2YJL 63, UYK 60, LKI 42, W2SZ 18, K2HNW 13, SOV 11, W2ANB 8, K2UTV 8, HJX 7, PRB 3. (Dec.) K2HPQ 57, RKY 34.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannels, W2TUK—SEC: ADO, RM: WFL, PAM: OBW, V.H.F. PAM: K2EQH. Section nets: NLI, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST. NYC-LPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. NYC-LI AREC, 3908 kc. Sun. at 1400 EST. Please note the appointment of K2EQH as V.H.F. PAM. Smitty will manage the newly-formed v.h.f. traffic net. Stations who cannot operate directly on frequency are invited to call anywhere between 145 and 146 Mc. until they can zero the net frequency. Outlets will be provided to other section nets as well as other v.h.f. nets nearby. Our section had the distinct pleasure of a visit from ARRL President Dosland, TSN, who spoke in Nassau County and Manhattan on League affairs. New officers of the Suffolk County RC are JFU, pres.; OBW, vice-pres.; K2RJO, secy.; and OKK, treas. New officers of the Bonac RC are K2HZQ, pres.; WH, vice-pres.; AJR, secy. TUK worked K2ZFA to complete s.s.b. WAC. New officers of the AMPS RC are K2QXH, pres.; and K2BSU, secy. New Novices in the Lake Success RC are KN2s IHS and IXL. K2ZOZ's DX-35 and AR-2 have accounted for 37 states and 5 countries. K2VIX is using a Chinaster on 6 meters. K2EQO is moving to New Jersey. The Nassau County 6-Meter Net continues to hold hidden transmitter hunts on the first Fri. of each month. K2YVN is now trustee for the Newtown HSRC, whose faculty advisor is K2MZW. GUR is driving a Viking Courier with his Ranger and has 153 countries confirmed out of 163 worked. K2UVQ is using a DX-35 and an NC-109 and picked up 18 new states with a vertical antenna. K2MHY received his WAS certificate and has reached 22 countries with his new Ranger. KN2JMO is a new Novice in East Northport. The newly-formed Bronx Boy Scout RC, signing K2LKK, has elected K2YWP, pres.; K2YWX, vice-pres.; K2UEH, secy.-

(Continued on page 118)

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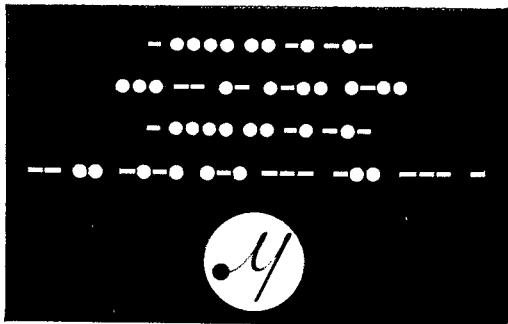


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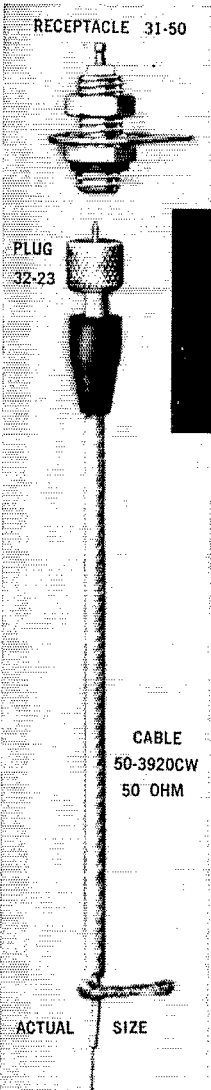


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treas.; and K2QIA, trustee. The station rig is a Globe Scout 680 and an NC-33. New officers of the Mid-Island RC are K2AZT, pres.; WFL, vice-pres.; JBQ, secy.; JDN, treas.; K2USL, sgt. at arms; and CLG, KTF and OWP, directors. JFK has a new SX-101 receiver. The new c.d. radio communications chief for Levittown is K2MAU. K2VWF has a new all-band vertical. A new electronic keyer has been installed at K2HNB. RZH is building a homebrew receiver. PRU added a v.f.o. to the station. Officers of the New York branch of the YLRL are K2DPN, pres.; EUL, vice-pres.; Helen Zuparn, secy.; and EEO, treas. Traffic: (Jan.) W2KEB 3331, VDT 285, OME 224, K2PHF 193, W2JOA 137, AEE 85, BO 85, K2BH 50, QBW 50, W2CKQ 34, K2RJO 34, SCV 32, W2DUS 27, K2LDC 24, W2DSC 24, K2SSE 21, W2JGV 17, K2KSP 17, W2UGF 15, LK 14, OBW 14, K2JYZ 12, DEM 11, W2EC 10, PF 10, TUK 10, IVS 8, K2MEM 7, EQH 6, W2YJD 6, GP 5, K2ITZ 3, W2RB 3. (Dec.) W2DSC 112. (Nov.) K2RJO 21, W2UGF 21, K2ITZ 1.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC. IIN, PAM; VDE, RMS; BRC, NKD, CGG. The Irvington Radio Amateur Club held its annual club banquet Mar. 22. K2TNJ has made BPL for the third time, thus qualifying for the Medallion award. The Long Branch Senior High School Radio Club deserves a lot of credit for keeping the city's RACES organization going full speed. The school call is NOZ. GUM is heard on phone working good DX. K2MGN is doing a fine job on 6 meters. K2UBW is awaiting the arrival of the General Class license. "Ron" is a member of the RCC, and has the 15-w.p.m. CP certificate. W2N2TKZ needs two states for WAS. K2ZLHK reports that the NCNJ is growing each month. The latest report shows a January total as follows: Attendance 71, sessions 23 and traffic 70. K2UBW is looking for the QTH of 8PHA/5, somewhere in Texas. Can anyone help? K2UQY is trying to get a modulator to work. K2KVR is doing a fine job as net mgr. for the New Jersey 6-Meter Net. This net meets Wed. and Sat. at 2300. ZVW has a 2-meter converter working and will have a transmitter on in a few weeks. CVW is giving 10- and 15-meter phone a try. K2SCU has a new DX-40, K2VAB and SBT, the Birchholz brothers, are competing with each other for WAS and WAC. At this writing SBT has the edge with 11 countries and 41 states confirmed. KN2HHS has been on the air for approximately three months and has logged 28 states on 15 meters. ADP is back in the DX game. N1Y reports that the Notice harmonic discrepancies far outnumber the total of all other violations logged. K2VZP is heard working DX on 10 meters. K2GPB has his mobile rig working FB. KFR has a new final on the air with a pair of 828 tubes in AB1. New officers of the Penn-Jersey ARC are KFR, pres.; RXL, vice-pres.; and K2QFL, secy.-treas. HDW, the new NJN Net Manager, has sent us a copy of the new *NJN Net Bulletin*. The NJN January totals are as follows: Sessions 27, attendance 297 and traffic 258. WN2OQH is waiting for his General Class license. Fred is on the air with a Globe Scout and a four-element rotary. The receiver is an HQ-110, and the log shows 25 countries and 38 states to date. K2MFF has received his Extra Class license. The Bloomfield RACES group is adding to its registration and looking for new recruits. Interested persons, please contact SDL in Bloomfield for membership. The Amateur Radio Society of Harrison elected PMP, pres.; BVS, vice-pres.; K2JCF, secy.; K2RAMK, treas.; and NKD gen. mgr. Those serving on the board of directors are IYG, OKO, QEX and GVC. Present club membership totals 85. Traffic: (Jan.) K2RRH 203, W2RXL 152, M1W 115, K2OAM 93, W2ZYW 49, BRC 39, K2QYI 39, W2EBG 35, K2ZHK 30, W2DRY 28, OXL 26, KFR 25, K2BWQ 20, TOD 16, BVE 13, VMX 13, W2N2RFS 8, W2CVW 7, K2KVR 7, W2ZEP 7, EWZ 6, QYW 6, WN2OQH 5, W2RZO 5, N1Y 4, KN2ZOY 3, K2BHQ 2, WN2ORL 2, K2SCU 1. (Dec.) K2TNJ 901, W2DRV 18, BVE 3.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, W6BDR. New officers of the Cedar Valley Club are W6LPK pres.; DKJ, vice-pres.; DGF secy.; and K6JYI treas. Sioux City Club officers are B XO, pres.; W6BQG, vice-pres.; CRF, secy.; FWO treas.; and BGB sgt. at arms. Officers of the Fort Dodge Club are QVZ pres.; LJI, vice-pres.; NGS secy.; FDM, ZKD and LFH, directors. Fairfield Club officers are K6GKZ, pres.; CRG, vice-pres.; BRE, secy. ILO was elected president of the Waterloo Club. KN6OAH is a new ham in Baird. W6EDQ has his General Class ticket. The RACES program in Sioux City is progressing nicely under the direction of FZO. New appointments: K6AZJ as CO, K6CYF as ORS, AFN and AAH as ECs.

(Continued on page 120)

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PERFECT 1:1 SWR

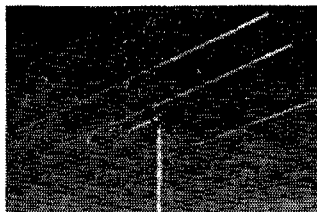
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GAMMAXIAL

Gamma match system!

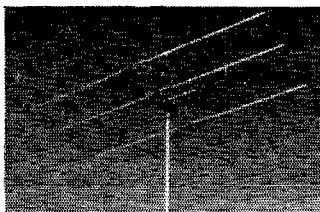
10 METERS 3 ELEMENTS



Weighing only 18 lbs., this Antenna is small enough to be rotated by any TV rotator. Elements are adjustable for maximum gain over the entire 10 meter band. Easy to assemble in short order, with no further adjustments necessary. Boom is 104' in length; longest element, 17' 10''

Amateur Net: **\$21⁹⁵**

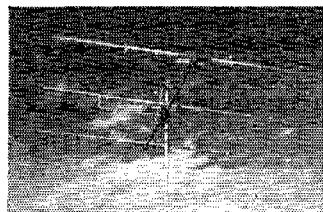
15 METERS 3 ELEMENTS



Still small enough to be rotated with the heavy duty TV rotators, this ruggedly built antenna is adjustable over entire 15 meter band. Extremely simple to put up and into operation. Rugged Boom/Mast clamp also used to support the elements. Wt: 30 lbs. Boom length 142''; longest element, 23' 10''

Amateur Net: **\$29⁹⁵**

20 METERS 3 ELEMENTS



This heavy duty, full-sized twenty meter array is really built to take it. The elements are adjustable over the entire 20 meter band, and they are telescoped three times to minimize element sag. Approximate net weight is 48 lbs. Boom length of 212''; longest element measures 33' 9''.

Amateur Net: **\$57⁹⁵**

Carefully engineered, incorporating the latest design principles for top performance, the hy-gain monobanders are factory pre-tuned and pre-matched. Complete with easy-to-follow instructions for assembly, these beams sold with 1 year guarantee. Features include large diameter elements and ruggedly built Boom/Mast clamps. Booms hot dipped galvanized steel for max. strength with minimum wind resistance. Elements 6061 T6 alloy.

Now a feature of all three monobanders, the new, pre-calibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included. Developed by hy-gain's engineering staff and used exclusively in the hy-gain monobanders.



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Renewals: YUA as PAM and BSG as OPS. KØHBD received a TLON certificate. BLJ and INR are new members of the TLON. KØASR, Luther College, is now operative on 160 through 2 meters on phone, c.w., and RTTY. FKB, BTX and VWF are wintering in the South. III got a 20-w.p.m. Code Proficiency certificate. BDR now has a Valiant and a new antenna for 75-meter phone. Traffic: (Jan.) WØBDR 1337, SCA 1147, LCX 1038, LGG 822, CZ 613, BJP 611, KØCLS 321, WØGXQ 265, BLH 99, QVA 92, PZO 70, LJW 69, NLC 64, VWF 49, KØCYF 48, WØUTD 43, KØCVD/Ø 35, WAD 30, WØNGS 29, KØAPS 27, AØZ 25, WØNYX 24, KØBMV 23, WØBTR 23, FMZ 22, KØAPL 16, WØGHZ 15, KØHHS/Ø 14, WØBTX 13, IUV 13, NTB 13, EEG 12, KØHBD 12, EXN 11, WØPTL 11, VLF 11, KØBRE 10, WØSWD 10, PDM 9, LQX 9, KØBLJ 8, WØXEL 8, UHO 8, JPJ 7, CGL 6, JDV 6, REM 6, ZPM 6, KØIGU 5, ASR 4, PEP 4, HFQ 4, GHH 3, WØHNE 3, COD 2, ØKITX 2, WØPKQ 1. (Dec.) KØHHS/Ø 10.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH, RM; QGG, PAM; LEW, V.H.F. PAM; ZJB. V.h.f. activity in Kansas is steadily coming to the front. The KVRC group of Topeka, headed by KKF, has started a c.d. net on 147.32 Mc. using discarded police i.m. sets. So far MXG, WIZ and QJC are operating mobile with ICV and KKF fixed. Our U.H.F. PAM reports that AF-MARS v.h.f. nets authorized in Wichita, Salina and Kansas City are operating on 143.99 Mc. ZJB worked 39 Kansas stations on 2 meters during the V.H.F. SS, all within 150 miles of Wichita. New officers of the Kaw Blue Radio Club at Manhattan are WJB pres.; KØGDW, vice-pres.; KØEHL, secy.-treas. YUQ was on the moon-watch team that was the first to sight the Army satellite Explorer. TOL is planning to continue the issuance of Traffickers Club certificates for the Midwest Division. UOL is continuing *Midwest Clix* under the name *Midwest Relay*. New officers of the ACARA of Wichita are LZJ, pres., and the following directors: JAW phone; KØGGA c.w.; APG experimental; KØEDT mobile; CRN, v.h.f.; NAS, s.s.b.; KØGIC, YL. The ACARA is holding a local phone-cw. contest. KDW (AØKDW) received the MARS "Operator of the Month" award from the 5th Army Hq. recently. Fellows, I will have completed ten years as your SCM in Oct. 1958. I have enjoyed the work very much but really think some new blood is needed. Start thinking about who you would like to have as your next SCM. fellows. Traffic: KØBXF 372, WØTOL 314, OHJ 309, KØICC 150, WØBLI 99, ABJ 97, UOL 64, KØHYD 54, HVG 46, WDW 45, WØFDJ 28, ORB 27, KØBIX 24, WØSAF 21, LFR 20, QQQ 19, ICV 18, SYZ 18, QGG 17, VBQ 17, LEW 8, QJC 5, KØEQY 4, WØVGE 4, ASY 3, HL 3, UTA 2.

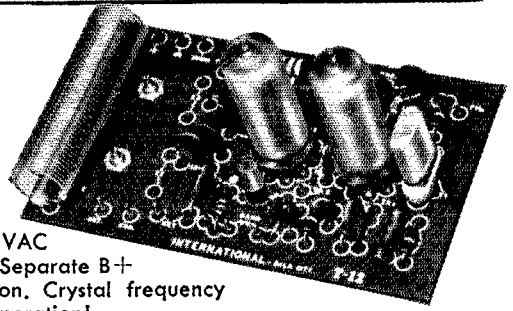
MISSOURI—SCM, James W. Hoover, WØGEP—Net reports: MEN, 13 sessions; NCS, VPQ-4, DWX-4, OHC-5; QNI, 443, OTC 118, SMN and MON, 50 sessions; NCS, OUD and WFF; QNI 223, QTC 159. New officers of the Heart of America Radio Club are KØEJB, pres.; RDI, vice-pres.; UHB, secy.; KØAWT, treas. New officers of the St. Louis Amateur Radio Club are LDO, pres.; KØHZW, vice-pres.; AUB, secy.; CDA, treas. New officers of the Northwest St. Louis Amateur Radio Club are AMN, pres.; GYL, vice-pres.; KØCVS, secy.; KØGDI, treas. The club paper, *Tuning the Bands*, is edited by AMN. Officers of the new Tri-State Radio Society, Joplin, are KØLHY, pres.; KØBCU, vice-pres.; KØJAY, treas. The club is conducting code and theory classes. KLQ has been appointed V.H.F. Phone Activities Manager. OVV has a new Q-multiplier. ECE reports good results using "fishing pole" verticals. RXE has installed a 10-meter mobile rig. KNØPH is on with an S-38B and an AT-1 which he received for Christmas. KØBGB has installed a 10-meter mobile. KNØLGT, in Patterson, claims to be the only amateur in Wayne County. IFC has built a 6-meter mobile. RYB is attending the U. S. Naval Academy but will be active from Springfield during the summer months. KØCCI has a new DX-40 transmitter in operation. Traffic: WØCPI 1325, GAR 536, BVL 345, GBJ 153, VJD 108, OUD 88, WFF 72, KIK 68, VPQ 60, KØLNQ 46, WØOVV 38, RTW 29, IIR 24, KØIHY 20, KNØLWX 20, JPJ 16, WØBUL 10, KA 8, KØDEQ 5, WØCKQ 4, EBE 3, VVU 2. (Dec.) WØKA 46, KØAQO 20, WØEEE 14, ECE 12. (Nov.) WØKA 47.

NEBRASKA—SCM, Charles E. McNeel, WØEXP. The Nebraska C.V. Net, DDT as RM, reports 27 sessions with QNI 336 and QTC 136. As of Feb. 1 twenty active members were on roll call. The Nebraska S.S. Net, with MAO reporting QNI 143 and QTC 53, had a roll call of ten as of Feb. 1. The Nebraska Emergency Phone Net is on 3983 kc. at 1230 CST daily. MAO as PAM reports QNI 585 and QTC 91.

(Continued on page 122)

● T-12 TRANSMITTER 12-WATT
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Pi-network output enables operator to couple into almost any type antenna. Low drive oscillator with International FA or F-6 crystals; may be used in close tolerance applications. 12BH7 Oscillator-buffer and 5763 final. Power requirements: Filaments 6.3 VAC @ 1.35 amp. Plate supply 350 volts dc @ 50 mils. Separate B+ input connection to final for addition of modulation. Crystal frequency same as output frequency; uses straight through operation!



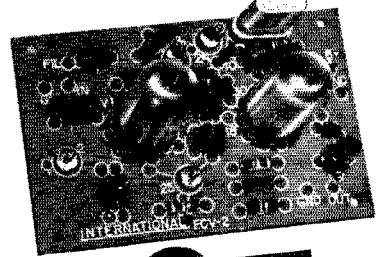
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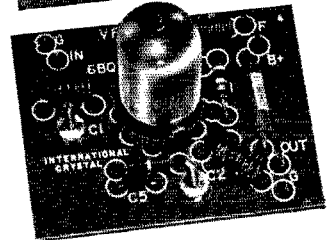
Kit with crystal (less tubes).....\$12.95
 Wired with crystal and tubes.....\$17.95



● VFA-1 CASCODE PREAMPLIFIER

For 2 Meters or 6 Meters, using the 6BQ7A in a low noise circuit. Designed to mount in a standard 3" x 4" x 5" minibox.

Kit, less tubes.....\$4.75
 Wired, with tubes..... 6.95



● IFA-10 IF AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox.

Kit, less tube.....\$5.75
 Wire, with tube..... 8.50

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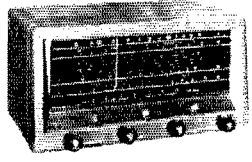
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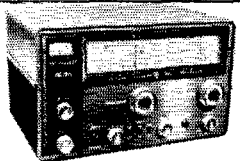


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with a roll call of 32 active members. K0LXS is a new member. The Western Nebraska Net, NIK as RM, reports 27 sessions with QNI 519 and QTC 44. KDW received the MARS "Operator of the Month" award from the 5th Army Headquarters. Zita, K0KUA, sends code practice at 5, 7 1/2, 10, and 13-w.p.m. each Sun. at 1800-1845 CST on 3695 kc. New officers of the North Platte Amateur Radio Club are CVC, pres.; UOV, vice-pres.; and VEA, secy-treas. Traffic: W0LDT 167, M4O 162, K0DGW 128, BDF 76, W0ZJF 58, VZJ 38, EGQ 33, K0LXS 25, W5AT 23, K0KUA 20, W0OCU 20, ZOU 19, K0KHI 18, GVE 16, W0NKR 16, DQN 15, BOQ 11, QHE 11, K0EPI 8, W0PDI 8, HOP 7, KLB 6, K0DFO 6, W0VEA 5, K0LQY 4, LTR 4, CYN 3, W0OOX 3, QKR 3, SPK 3, ZNI 2, FBY 1.

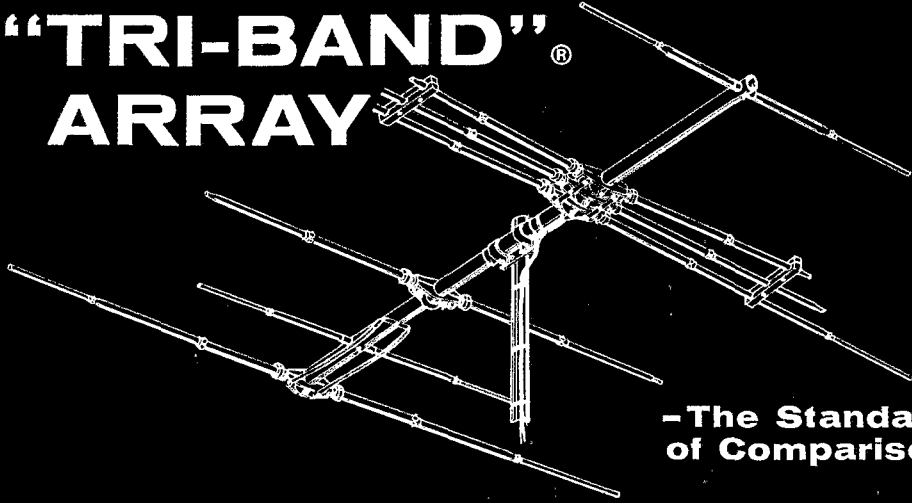
NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ
—SEC, EOR, RM: KYQ, PAMS: YBH and FHP.
Traffic nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2130 on 3640 kc.; Conn. V.H.F. Net, Mon., Wed., and Fri. 2030 on 145.980 Mc.; CTN, Sun. 0900 on 3640 kc. Because of the lack of Connecticut stations and the small amount of traffic MCN has been closed. DHP recently was presented with the first "Worked all Connecticut" award. The award is sponsored by the Willimantic Jaycees and will be issued to any Connecticut amateur who submits two QLSs from each of the 8 counties in Connecticut. Write HHR for further details. YBH advises CPN handled 234 messages in 31 sessions with an average daily attendance of 29 stations. QNI honors go to DHP, 31; KIAQB, 30; JIK and YBH, 28; K1BEN, DAV, NQL and VQH, 27, and ZHM, 26. Bill has the new CPN bulletin finished. Write him for one. KN1BAM is the first Connecticut Novice to get an OES appointment. FHP notes that the N. Y. Amateur Radio Assn. is giving a certificate for working 25 stations above 146 Mc. New officers of the Hamden Amateur Radio Club are WHL, pres.; UKX, vice-pres.; QXT, secy.; PKQ, treas. KN1BJ has dropped the "N." WLL reports the 6-meter net handled 40 messages during December with an average attendance of 15 stations. The Stamford Amateur Radio Club has elected TZK, pres.; K1DVO, vice-pres.; NER, treas.; K1BEB, secy. New Novices in Winsted are KN1EHS, KN1EFB and KN1EFC. The Southington Amateur Club recently elected GYG, pres.; ZKZ, vice-pres.; K1CSY, secy.; MEZ, treas. New appointments: K1BEN, Falls Village EC; LDE, Waterbury EC; K1BML as OPS; MWB and RAN as OOs; K1BML, KN1BMM, M1WB and FOM as OESs. Appointments renewed: CGD, NFG, OS and RWD as EC, CGD and GEA as OPS, ORP as ORS, CGD as OO, Traffic: (Jan.) W1YBH 378, TYQ 304, AW 297, K1BEN 268, W1KYQ 193, FYF 170, EPW 169, CUH 117, CVK 112, H1D 111, LV 104, N1JM 88, FHP 87, MQT 73, BDI 54, ULY 47, DHP 46, NQL 33, RFJ 26, M1WB 25, V1Y 21, EJV 20, ECH 18, K1BML 14, W1WBV 13, KUO 13, KAM 12, K1BFJ 11, W1MDE 11, Z1AI 10, KN1DZI 9, W1GFA 9, KN1BAM 6, W1EHI 5, FWM 5, QJM 3, YKZ 2, KN1BHM 1 1/2. (Dec.) W1G1X 6.

MAINE—SCM, John Fearon, W1LKP—Sec: QJA, PAM: VYA, RAI: EFR. New appointments: JMN and K1ADY as OPSS, IHN as ORS. Endorsements: OBT as ORS and KEZ as EC. UZR and TZ's son were married Jan. 11. The Spudland Net for rag chews offers a certificate to any station contacting 10 Aroostook County members on 75 meters, or 5 members on the other ham bands. Lists with date worked go to W1EPN, Northland Apt-B3, Presque Isle, AHM and VYA have new viking Valiants. JMN is the new V.H.F. PAM in the Portland Area. YDA has a new 40-ft. steel tower with 10 and 15-meter beams. Sorry to report that GJY is on the sick list. FLY and TIQ are attending National Guard School in Oklahoma. ZAG has a new 32V-3. CRP is building a new 150-watt rig. HAG received a YL-OM 10 cc certificate. YSL is handling traffic into Loring AFB. K1ANM and CVU have dropped the "N." KN1EIA, KN1DIM, KN1DTW and KN1DVG are new Novices. The Augusta Hamfest will be held June 15 at the Calumet Club. GJY has a new rotor for his 10-meter beam. FNT is now chief of police at Thomaston. KYO has a new NC-200 and has passed the Extra Class exam. BRE, ICN, OEU and K1ASP joined the AREC. K1DVH is a new ham in No. Berwick. K1DXV is back from California. EIO is on 40, 15, and 10 meters using a DX-35. JPN is building the modulator for his Globe Chief. K1ADY is State Representative of WRONE. EBJ is building a new rig. ZKL is using a Viking Valiant and on NC-500. ISO is active on 40, 20, and 15-meter c.w. KNV has moved to Newburg, N. Y. New officers

(Continued on page 124)

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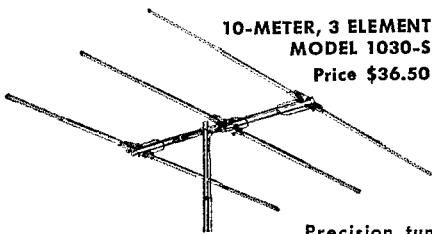
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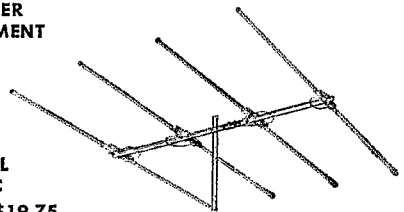
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West Hartford 7, Connecticut

of the PAWA are BTR, pres.; KIBAY, vice-pres.; K1AIB, treas.; BCD, secy.; JMN, chief op.; K1BAZ, asst. chief op. The Coast Guard Auxiliary Net, which operates on 3265 kc, at 0900 Sun., is interested in expanding. If interested, please contact AGM or D.V.J. Traffic: (Jan.) W1LKP 261, QJA 73, IHN 70, FVE 50, CEV 49, HYD 45, EFR 42, FFD 36, K1BAZ 30, W1EPN 22, K1AKO 17, W1GYP 17, LCX 17, IHA 17, LXA 17, IGYP 16, K1DYN 16, W1NXX 15, HAG 13, EWM 12, JMN 12, AHM 11, BX 10, K1BX1/1 9, BAY 8, W1RJE 8, FNI 7, FV 7, AGB 7, TKE 7, SNE 5, UOT 5, OTQ 4, K1BQT 3, W1LWD/1 2, K1BWB 1.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr.—W1ALP—PAM for 6 meters; THO, PAM for 75 meters; DFS, PAM for 160 meters; EPE, RM for 40 meters; AQE, RM for 80 meters; UE, RM for 20-160 meters; EPE. We have joined hands with the Western Mass. section and now have the Mass. Phone Net on 3870 kc, at 1800 Mon. through Fri. We are glad that PAMs MNG and DFS worked this out. Our Eastern Mass. Net is on 3660 kc, at 1900 Mon. through Fri. The Federation of Eastern Mass. ARA, held a meeting in Lynn with IUU, FRR, EQQ, ALP, NSY, DDN, AAS, BAH, YVE, COH, SHV, DDI, VRK, JLN, MFM, QXX, TY, K1BIB and K1BTF attending. The New England Emergency Phone Net is on 3870 kc, Sun. at 0900. HPV is manager. TCPN is on 3970 kc, daily at 1700. SJO is manager. Those active on 6 meters are K1S BJP, BNX, CMS, CNX, CQL, CTY, DBJ, DGF, DOQ, Wis LEG, LPH, LUS, MRX, TBB, UIC, UVE and ZUP. The Framingham Radio Club held two meetings with HJP heading up a panel on technical questions and Mr. Ratts of WBZ-TV showing slides on the construction of the station's tower. New appointments: LMZ and DXQ as OBSs, DUR and JPL as OOs, DDF Watertown and YHQ Eastham as ECs. Appointments endorsed: MME Hull, KWD Weymouth, VAN Norwood, OSS Townsend, PYT Ipswich, SH Delham, KO Hanover, RO for Sector 2B, RCJ Marlboro, PO Norwell, MIM Milton, WCI Newburyport, MRQ Groveland, COL Cambridge, ZDN Medford, EIQ Bedford as ECs; UIR, GDJ, TZ and THO as OOs; MME, TZ and AAR as OBSs; THO as PAM for 6 meters, AQE as RM for 40 meters; BB, AAR, CAM, TY, AQE, AOG, AUQ, CZW and MRQ as ORS; AOG as OBS; BB, AAR, CZW, MRQ and MME as OPS. IG is on 75 meters. QOI is building a new receiver for 2 meters. FJJ has WAC and VJF. WU is working DX on 10-meter c.w. KNIBVD is going mobile. LAX is on 10-meter c.w. LUM visited WU. BGW still is RTTYing. NTK has a Globe Scout 66, a Heath v.t.o. and an HQ-150. K1AWW/4 is his twin brother. COL and ZBR are coming along fine in their c.d. set-up. K1IECD is new in Winthrop, SM5WI, Award Manager for "Worked All Vasteras" (WAV), wants a contact for his WANE in Dukes and Suffolk Counties. He is on 4-Mc. c.w. at 2000 GMT. New officers of the So. East Mass. ARA are ATL, pres.; TZU, vice-pres.; CZW secy.-treas. UTD, custodian, LAZ, board of directors. KNIBZL has a Globe Scout and an HQ-140X receiver. New calls in the New Bedford Area are K1EEQ, K1NIERN, ERS and EFR. DIY has been working UA3, SM7 and ON4 on 20-meter c.w. The South Shore Club held a meeting. K1NCG is on 80 and 6 meters, with a Globe Scout 680. This section is made up of the following counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth and Suffolk. ETH was in the CD Party and 11-meter Contest. SMO has a Willys station wagon for portable and Field Day work. UE works the c.d. drill on Mon. on 2 meters for Wellfleet, NCs for the Eastern Mass. Net: IBE Mon., AUQ Tue., EAE Wed., DIY Thurs., EMG Fri. UIR is our new PAM for 2 meters. EPE sent in his ORS, RM and PAM certificates for endorsement. SS claims he was the first in N.E. to hear and report on "Explorer" at 1218.15 A.M. Traffic: (Jan.) W1EMG 547, FJJ 139, EAE 116, DIY 113, UKO 104, CZW 66, AQE 43, AUQ 32, IBE 26, LMZ 20, ZEN 20, WU 19, TY 15, ATX 14, BGW 12, ETH 12, UE 12, NJL 11, ALP 8, NTK 8, AOG 7, AKN 6, BY 6, SMO 6, K1BUF 4, W1AHP 2, DTB 2, (Dec.) W1AOG 31, IBE 28, UE 21, LMZ 16, KBS 11, ATX 8, K1ACJ 5, W1ADR 4, BPW 3, DWO 2, K1BUF 1.

WESTERN MASSACHUSETTS—SCM, Osborne R. Ackeraghan, W1HRV—SEC: RRR, RM: BVR, PAM: MNG. The West Mass. C.W. Net meets on 3560 kc, at 1900 EST Mon. through Sat. RM BVR reports the net is going along nicely but more representatives are needed from the larger cities in the section. Plans are under way to combine the West Mass. Phone Net and the East Mass. group into a statewide net. PAM MNG and the E. Mass. PAM are working

(Continued on page 126)

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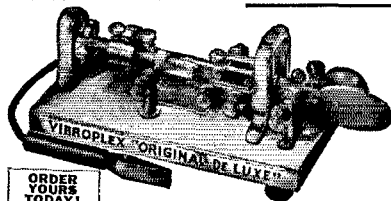
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on this. KGJ has been appointed OBS in the Fitchburg Area. Certificate endorsements go to the following: AJX as ORS, WPW as EC and RVW as OES. The Hampden County Assn. won out over the Hartford County group in the fifth and final year of their interclub v.h.f. contest. Having won the engraved gavel 3 out of 5 years they get to keep it. Seventy-eight of the Hampden County members took part in the contest to pile up a score of over two hundred thousand. The up-and-coming Pioneer Valley Club in Holyoke has over 60 members on its roster and has many activities planned for the year. The Massachusetts Club in Fitchburg has a club paper called *Key Klix and Splatter*. New club officers are OME, pres. UDK, 1st vice-pres. and FOX 2nd vice-pres. EKO reports 114 countries worked and 82 confirmed on his way to DXCC. AGM lost his 15-meter vertical antenna during one of our recent storms. Sector 4C has 7 towns represented on the 6-meter e.d. net. Weekly drills are held Mon. evenings. Code and theory classes are being held by the Northampton and Easthampton e.d. radio units to train operators for amateur licenses and provide operators for the e.d. units. STR, a teacher at Trade High in Springfield, has a dozen enrolled in a code and theory class at the school. KIBBV recently became a General Class licensee. TVJ, a recent OO appointee, is being heard on WMN again and reports working some choice DX. Traffic: (Jan.) W1UEQ 744, KGJ 117, BVR 86, DZY 50, FZY 34, AGM 20, DGL 20, HRV 4, TVJ 2, (Dec.) W1DZY 36.

NEW HAMPSHIRE—SCM, John A. Knapp, W1ALJ —SEC: BXU. RMs: CRW and COC. PAM: CDX. PAM: V.H.F. T.A. GSPN meets at 1900 Mon. through Fri. on 3842 kc. and 0900 Sun., N1N Traffic Net. 1900 Mon. through Fri. on 3685 kc. N. H. State RACES Net (BXU, NCS), 1300 Sun. on 3993 kc. Congrats to T.A. Nashua, newly-appointed V.H.F. PAM who is founder and manager of the Northeast V.H.F. Net which meets nightly at 1930 on 145.36 Mc. Your SCM had an enjoyable time at the Annual Banquet and Election of Officers of the Nashua Mike and Key Club in January. Officers of this club are BXM, pres.; OLY, vice-pres.; NAZ, secy.; QKA, treas.; KNICKD, act. mgr. Newly-elected officers of the Great Bay Radio Club are EIO, pres.; BIU, vice-pres.; KCE, secy.; TAM, treas. MOI has a new GPR-90 receiver. Betty now holds WAS and VAJF. KIBCS is alternate NCS on the United Trunk Line. HAK now has WAS and CP-20. KIDGS is doing PB on 40 with 7 watts. KICLD is active on 10, 15 and 20 meters with a Hallicrafters HT-20 and Meissner Signal Shifter. Endorsements: BYS as OPS, IP as ORS. The Concord Brasspounders Hamfest committees, headed by CNX, gen. chairman, are busy with plans for the 19th N. H. State ARRL Convention to be held May 24-25. Traffic: (Jan.) KIBCS 234, WIENM 55, GMH 55, CRW 43, PFU 34, YMJ 31, KIAHE 19, W1MOI 16, HQ 11, WBM 9, HKA 7, TDI 5, (Dec.) KIAHE 14, WIENM 5, EVN 3.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMs: KCS and YNE. RMs: BBN and BTY. January club elections show the following new officers: NCRC—JFF, pres.; TXL, vice-pres.; A. Sweet, rec. secy.; P. Gaudett, sr., corr. secy.; and E. Hopf, treas. PRA—TQW, pres.; VZP vice-pres; CPC, rec. secy.; FIG, corr. secy.; and CJT, KKR and SGA, board of directors. ARESB—LFW, pres.; SMU vice-pres.; MOP, secy.; and LQG, treas. BBN has been endorsed as RM. A new 6-meter rig is under construction at DDD. TGD has received WGSa from Sweden and WAC. GR has been keeping regular s.s.b. schedules with KP4AB and KV4AA while his son has been stationed in their area. YKQ's daughter, KNIGBP, is on the air with an AT-1 Heath. UHE worked Texas for his 38th state on 6 meters. CRA graduated 20 from code class and many have received Novice Class licenses; among them, KNIEH, KNIEGI and KNIEJY, all in the same family. TXL's son is KIDQS. CMH received the first VA-JF certificate for Rhode Island. KIABR is on 6 meters and uses a five-element beam. YRC has received WAC on phone. KCS is teaching code and theory to a Boy Scout troop in Providence. "KC" has 3 new states on 6 meters, bringing his total to 44. Word comes from QVZ in New Hampshire that SM5WT is looking for Rhode Island stations in Washington County on 14-Mc. c.w. at 2000 GMT for his WANE. Traffic: (Jan.) W1YRC 153, KIABR 54, W1HDW 44, HKN 42, TXL 37, CCN 35, TGD 21, YKQ 16, HFC 15, DDD 3, (Nov.) W1CMH 72, (Dec.) W1CMH 87.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK —SEC: B1B. RM: BNV. PAM: ZYZ. Traffic nets: (Continued on page 128)

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No. "333" MASTER MIGHTY-MIDGET

engineered to provide the highest "Q" consistent with good design. Compact, extremely rugged, yet lightweight, its operation assures precision tuning with the new adjustable silver-plated roller that stays put! Perfect for 40-20-15-11-10 meters. "Get 5 Bands Plus on 1 Coil."

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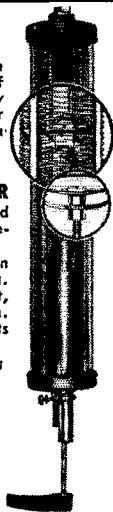
HY "Q" construction with wider spacing of turns for high frequency bands. Use as center or base loaded antenna with 60" whip.

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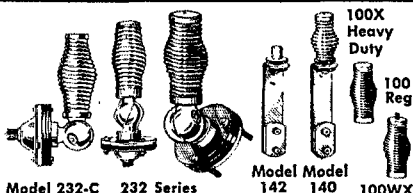
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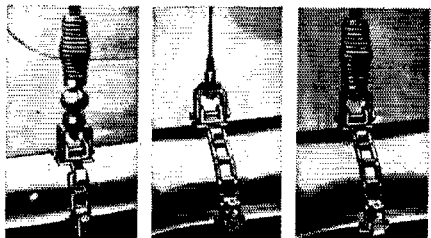


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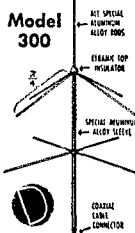


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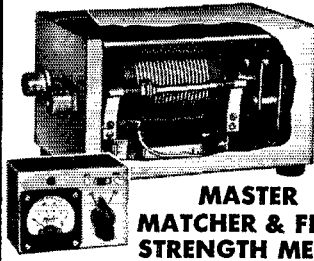
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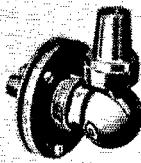
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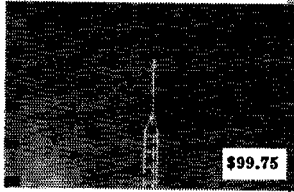
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VTN, Mon.-Sat. on 3520 kc. at 1830; VTPN, Sun. on 3860 kc. at 0900; GMN, Mon.-Sat. on 3855 kc. at 1700. VTN held 27 sessions during January clearing messages with the following high QNI: ELJ 17, JLZ 17 and KIBGC 15. GMN held 27 sessions, clearing 107 messages. The newly-appointed SEC is EIB. Many thanks to SIO for his work in the past as SEC. New appointments: TBG and FMK as V.H.F. P.A.M.s; KIBGC, BXT and ZYZ as new OBSs; KIBGC as new ORS. Endorsements: BXT and KJG as OPSs; ELJ, OAK and VSA as ECs; OAK and TXY as ORSs. Members of the BARC, Inc., have completed new meeting quarters at the Mallett's Bay Road. Meetings are held alternate Fri. and Sat. nights at two-week intervals at 2000. Officers are WPY, pres.; EOY, treas.; KDY, clerk. CCR is modulating the neighborhood porch lights with 4 watts on 75 meters. International June 15 at Mallett's Bay. Attention Vermonters: SM5WI would like to contact any station in the following counties for VFT and WANE: Addison, Bennington, Caledonia, Essex, Franklin, Grand Isle, Lamoille, Washington and Windsor. SM5WI operates c.w. only on 14 Mc. at 2000 GMT. Traffic: (Jan.) WIBXT 355, OAK 238, KRY 116, JLZ 52, BNV 50, ELJ 35, K1BGC 16, AUE 10, WIKJG 10, TXY 6.

NORTHWESTERN DIVISION

ALASKA—SCM, Eugene N. Berato, KL7DZ—1958 officers of the Anchorage Amateur Radio Club are KL7PIV, pres.; BVY, vice-pres.; BLL, secy.; BYN, treas. The club meets on the 1st and 3rd Fri. at 8 p.m. in the Library. The AARC again voted to sponsor the all-Alaska Hamfest for 1958. BWR was appointed chairman. MF made WAZ and is the third KL7 to receive this award. The others are UM and PJ. BES finally got back home for a permanent assignment after spending more than a year above the Arctic Circle. The YL Parka Club sponsored an amateur station which functioned during the Annual Fur Rendezvous in February and handled traffic to the States. BJD was in charge. AYZ, BJD and WL7CCZ handled an emergency at Anvik, relaying doctor's instructions until the arrival of the Air Rescue to evacuate the patient. MZ and BK are RTTY. Traffic: KL7BJD 218, BHE 3, CP2.

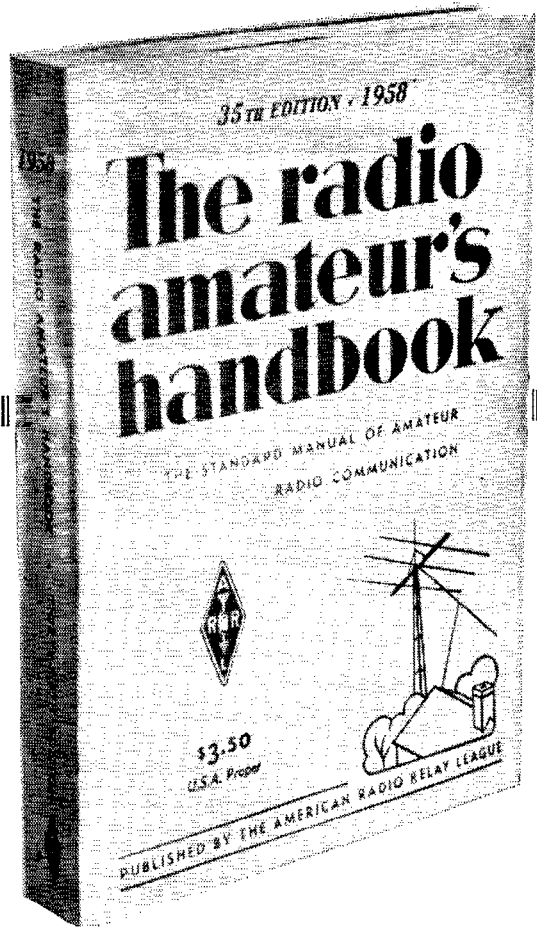
IDAHO—SCM, Rev. Francis A. Peterson, WTRKI—Congratulations to the Twin Falls Club on its FB *Hambone* paper. See NTQ to subscribe. The Pocatello Club now has a receiver and is getting a club ticket. Novice classes are producing new members. BGB showed films and gave talks to the club members. The GGV Net meets at 8:30 a.m. on 3935 kc. RKL built a 10B and WNR is planning an s.s.b. rig. HHF is back in Burley from the Army. FJD is now K5DMU working on the top end of 75 meters on s.s.b. each evening. VQC burned up a transformer but now has it fixed. EMT is handling traffic like mad; NH likewise. Rexburg has a new college station, says WBK. The Boise Club is very active with 2-meter hunts each Sun. OA and ASA are using ultramodulation. There was not much news from up North. The Idaho C.D. Net meets Tue. at 7:30 p.m. on 3997 kc. YBA built a new rig—no. TVI. Aren't you a RACES member yet? Traffic: (Jan.) W7EMT 42, VQC 38, W7NH 35.

MONTANA—SCM, Vernon L. Phillips, W7NPV/ WX1—SEC: KUH, PAM; EOJ, KGI; KGI, KGI. The Montana Phone Net meets Mon.-Wed.-Fri at 1800 MST on 3910 kc. The Northwest Sideband Net meets Tue.-Thurs.-Sat. at 2130 MST on 3910 kc. The YRC Novice Net meets Sun. at 1300 MST on 7176 kc. MM, NCS, RIL and VHK supplied communications in connection with an airplane crash. Members of the Gallatin Radio Club participated in a civil defense drill in cooperation with the Police and Sheriff's office. YQZ celebrated his 86th birthday. BJV moved from Butte to Puyallup, Wash. New calls: IUM at Cutbank, K7BON at Hardin, K7BQN at Havre, K7BYN at Columbia Falls, K7CCZ at St. Regis, KN7CHA at Harlowton, KN7CHJ and CHK at Missoula and KN7CHL at St. Ignatius. Seven of TPE's pupils took the Novice Class exam. New gear: JHL, a DX-100 w/VOC and UWY a 10-meter beam. Recent appointments: FLC and VHK as ECs, FLC as OO and SPK as OBS. Traffic: (Jan.) W7MM 70, SPK 56, DXK 24, TNJ 16, VHK 16, NPV 13, YHS 12, JFR 10, OOG 10, YPN 6, CQC 5, K7BVO 4, OIQ 4, K4ILA/72, KN7AER 2, 57BK2, K7BON 2, W7FIS 2, OIP 2, TGM 2, WMT 2, YQZ 2, YZQ 2, EWR 1, MQI 1.

OREGON—SCM, Hubert R. McNally, W7JDX—EC QYS made a trip around Central Oregon and contacted quite a few of the gang. ZLT will have her own rig on the air soon. UQI reports good meetings of the Clackamas County Radio Club. WNV reports the OARS code class now is running with good attendance. K7AII, ex-80GZ, now is located in Silverton. PQJ expects a better showing in the next Frequency Measuring Test. WSP and PKG now are in Gresham

(Continued on page 130)

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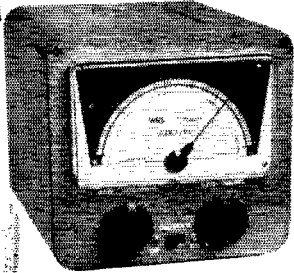
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and are active on 6 meters. JCJ still is working on a teletype set-up and hopes it will be ready soon. RM AJN reports a big gain in attendance and traffic on OBN since the start of the contest. New stations are SUX, OMO and AWD. BRATS were AJN, OMO, YKT, ZFH and BZD. JDX attended a meeting of the Salem Radio Club and heard all about the convention to be held in Salem May 3 and 4 and also attended a meeting of the 6-meter group of Portland and found about 40 members present. EUG is back home after a siege in the hospital but will be bedridden for sometime. He can talk directly from his bed on OEN. GWB has been appointed V.H.F. EC for the Portland Area to help care for the added v.h.f. activities. Elsie Peel, the XYL of LT, is now K7CDL. Traffic: (Dec.) W7SPB 17, QYS 13, YUY 5, UQI 4, (Jan.) W7APF 836, OMO 79, YKT 72, ENU 71, AJN 64, CUW 63, SUX 50, ZFH 48, LT 43, BVH 21, JDX 18, SPB 15, GUR 13, JCJ 2.

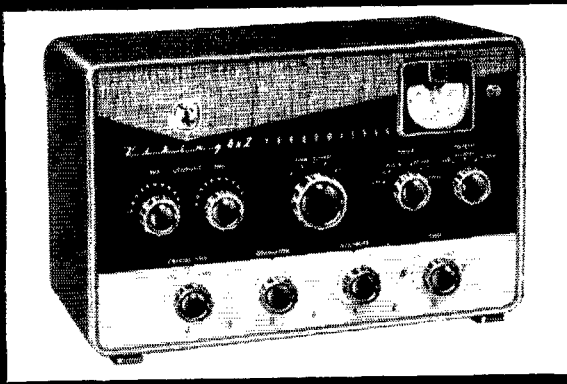
WASHINGTON—SCM, Victor S. Gish, W7FIX,—BA went on a ten-day trip to San Diego. BSW (of K7FAE) and AZI and his XYL, WLX, visited the SCM. ACU lost his antenna and tower in a storm. PGY is retiring from traffic for a while. MIB is QRL. WSN and RM duties, he is getting after all trafficers to get ORS appointments. USO, WSN Manager, flew to England for a ten-day business trip. AMC lost all his antennas except the 10-meter beam on Jan. 29. BXH made 2nd-class telegraph. EHH received a life membership in ALN. CWN has the hand-switching transmitter about finished and now is thinking of 6 meters. TZ is looking for case-hardened gear to fit the P-38 prop-pitch motor. The Clark County Radio Club and the OARS handled Christmas messages from Barnes Veterans Hospital. The Lewiston-Clarkston Club's new officers are KGZ, pres.; VIO, vice-pres.; PKR, secy-treas. OHS is the new EC for the Richland Area. RGL is a new OBS. The Spokane Radio Amateurs now is incorporated. New officers are DPZ, pres.; EQU, vice-pres.; ZNN, secy.; UOJ, treas.; JYO, OEH, HCJ and OPR, trustees. The Walla Walla Valley Amateur Radio Club's officers are NSU, pres.; YBF, vice-pres.; CHL, secy.-treas.; GVC and ZEL, directors. GEM is on 20 and 10 meters with 40 watts and hopes to get into traffic. 6REF (ex-7PTC) is back in the Washington section once again. Welcome back, Betty. Your SCM cannot prepare a good column for QST without your news. Get it to him by the seventh of each month; preferable before the date, if possible. Traffic: (Jan.) W7BA 2226, K7FAE 639, W7PGY 573, BSW 187, DK 176, UWT 137, APS 111, AIB 73, USO 47, AMC 42, LVB 42, WQD 41, RNH 36, FZQ 24, WVC 23, EHH 22, DZX 17, JCJ 17, NWP 17, JEY 11, AGJ 8. (Dec.) W7USO 172, HDT 2.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—New appointments: AYG as EC for Hawaii, AAJ now OBS with the following schedule: Tue, 1730 HST, Thurs, 2000 HST, Sun, 3900 HST, all on A-3. 7275 kc. and special transmissions with the beam on South Pacific A-3, 1700 HST, Tue, only on 28.7 Mc. M/Sgt. D. F. Slagle, at KR6AF, has been appointed OO, OPS and OES. Incidentally, KR6AF is on the air with a new final pair of grounded grid 837s driving a G-G 4-1000-A. AW and AED deserted the ham bands to keep watch on 108 Mc. AFC and KB8 are "between s.s.b. rigs" and strictly c.w. now. ARE, who first dropped the carrier, now has gotten rid of one sideband too. He seems to like s.s.s.c. The Kaunoi Amateur Radio Club will host the Territorial Convention July 4, 5 and 6. Watch LI's column on Wed. for details. YU installed a new tri-bander. Traffic: (Jan.) KR6AF 691, (Dec.) KR6HN 155.

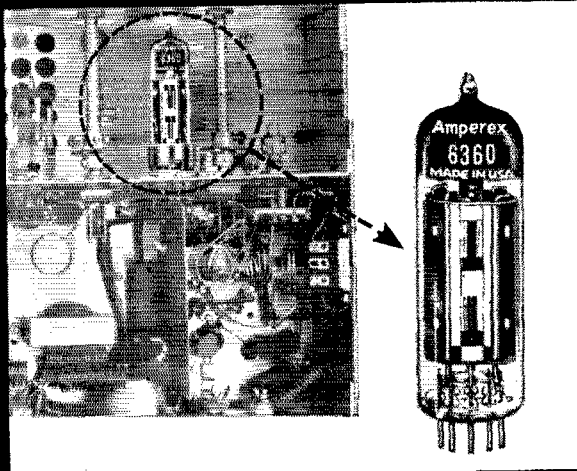
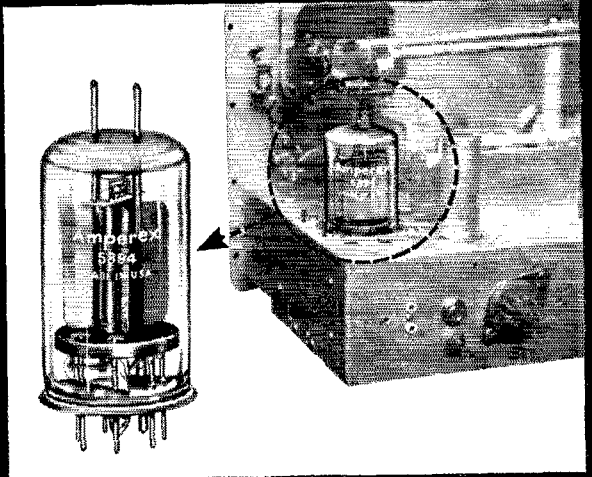
NEVADA—SCM, Albert R. Chin, W7JLV, SEC; JU. JDI reports from Scott Field AFB that they're keeping his nose to the wheel but feeling him well. The ZCAs have a new jr. operator. The Las Vegas High School has a new radio club called the Wilcat Amateur Radio Club. This may be the first high school radio club in Nevada. Its' sure good to see this interest in the high school. The Nevada achievement awards for 25 Nevada contacts still are going out, thanks to the FB job being done by BJY who reports No. 56 to 6EQA and No. 57 to K6CLP. Send your 25 Nevada QSLs to the Southern Nevada Amateur Radio Club, Inc., c/o John H. Kelly, BJY, 323 Birch St., Boulder City, Nev. GVA is attending the U. of Nev. and putting in FB signals to the home Qth of Las Vegas. Hidden transmitter hunts still are going great guns in Reno. JPI has returned to the air after a few years' absence. MAH and JLV are enjoying the 6-meter openings with contacts to Cuba, Alaska and Hawaii.

(Continued on page 132)



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SANTA CLARA VALLEY—SCM, G. Donald Eberlein W8YHM—SEC: NVO, RMs: ZRJ and QAO. The following new appointments have been made: HZV and K6BYG as ECs; K6CQM and VJH as OESs; RSY and AIT as ORSS; MYL is Asst. EC. Endorsements: K6FQ as EC; ZLO as ORS; PLG, VZT, YBY, K6QCI and K6GZ as ORSs; OII and K6CGA as OFSS. NCN reports a 6-meter division is being activated with K6JFS as Net Manager. The net will hold sessions Mon., Wed., and Fri. at 1830 PST on 50.85 Mc. All 6-meter stations in the section are welcome to check in. The NCN 80-meter section now is running sessions six days a week at 1900 PST on 3635 kc. CTH was appointed Asst. RO for the Redwood City Area. New members of the PAARA are K6COD and KN6JVV. QYO has been appointed FD chairman for the PAARA. ZDIFG, from Sierra Leone, was the guest of K6FD. SIG and GME. RSY is heard on NCN and RN6 and well as PAN. CYD gave a talk on c.d. before the Fort Ord RC. K6LSG is putting up a Dipole on 3.5 Mc. with loading coil at the ends. CBE reports 141 countries. PLG was QRL on a trip to New Mexico. JCG still is working the swingshift, so is not able to push much traffic. VZT is building a receiver to end all receivers. Traffic: (Jan.) K6EWW 412, W6BPT 338, K6DYX 262, GZ 254, W6QMO 232, YBY 134, RSY 108, PLG 107, VZT 82, NW 84, ZLO 58, YHAI 48, HIC 44, AIT 31, OII 28, K6QCI 14, PQG 11, W6JCG 8, K6PQH 8, W6FON 7, K6LSG 2, W6MIM 1.

EAST BAY—SCM, B. W. Southwell, W6OJM—SEC: CAN, ECs: LGW, ZZF, IUZ, K6BYQ, EDN, GXU and JNW. RVC resigned as Asst. SCM because of the press of personal business. Sorry to lose you, Harry. NCN has an experimental 6-meter division traffic net on 51.9 Mc. on 2000 PST. Mon. AKB is awaiting a new Gonset tri-band beam. The Skyriider Net changed its meeting time to Tue. at 8 p.m. on 28,560 kc. ZLC and MJY have new tri-band beams. TLM has a new SX-101 inhaler. BSE is phone-patching on s.s.b. ELP is ready to go on 6 meters as soon as he gets his antenna up. HLH has gone back to 28-Mc. phone. TI is chasing golf balls when not looking for DX. HBF is at Mass. Inst. of Tech. and is looking for the Bay Area on club station 1MX on 14,050 kc. He also reports that he is on 6-meter phone from 9 a.m. to noon every day looking for East Bay for phone patch. WLI built a new converter and transmitter for 6 meters and wants to know why everyone crowds the low end. AEE is putting out a new RTTY call book. VVF will inaugurate a new 21-Mc. RTTY transmission. K6OUR is alternate OBS for VFC and ASI. The Forty RTTY Net, on 7149 kc. at 12 noon PST Sun., is going great guns. KUY/M is on 21,095 kc. RTTY between Honolulu and Yokohama. KR6AKN and KR6JL can be worked on this frequency. VVP is the new president of the NCARTS. ACN is a grandpa again. KN6FMR are new Novices. KTF has a 522 on 144 Mc. The CCRRC held its Jan. meeting in Irvington. LGW is starting his code class again. HC reports the Pacific Division Convention will be held in Fresno on June 7 and 8, 1958. BEI, BLP, OHR, FKX, K6KRF and VLB are new AREC members. MDARC members are very active on 2- and 6-meter mobile. The Silverado Six Shooters Net elected K6BYQ, pres.; NOP, vice-pres.; K6EZZ, secy-treas.; and K6RZR, sgt. at arms. EC ZZF reports a new AREC in the Vallejo Area. The East Bay Radio Club saw a demonstration of stereo sound equipment by K6GY at its Jan. 10 meeting. K6GK is the mainstay on UTL, 3565 kc. K6DMI still is phone-patching KL7 traffic. K6IGN reports 3 new Novices and one General class licensee at Richmond Union High School Radio Club. The Hayward Radio Club's officers are K6JNW, pres.; K6YBS, vice-pres.; K6OCD, secy.; K6TYI, treas.; and KH6BSG, sgt. at arms. The HRC is starting a Novice school at Arroyo High School on Mon. and Thurs. at 7 p.m., Room C8. CBF is building a new model 15 RTTY. LGW reports 3 new AREC members. Traffic: (Jan.) K6GK 935, W6QPY 58, K6OSO 25.

SAN FRANCISCO—SCM, Fred H. Laubseher, W6OPL—Asst. SCM; Ed Olmstead, K6LCP, SEC; John Smith, GXH. This is THE month and here we are again. The following unverified reports have been received from our usual unreliable sources. KZF has reported that he no longer cares for a.m. and henceforth will be only s.s.b. K6LCP is working on his 35 w.p.m. Code Proficiency certificate. BYB has torn up all of his DX certificates and is handling traffic on 160-meters. PW is maintaining 24-hour traffic schedules manned by the officers of the San Francisco Club. JWF has deserted the Red Cross and is working C.D. nets on 10 meters. In tuning the bands only 7 carriers were heard, all the rest were s.s.b. The 7 carriers belonged to COL, INF, TSQ, SP and three unidentified mobiles operating at opposite ends of 2

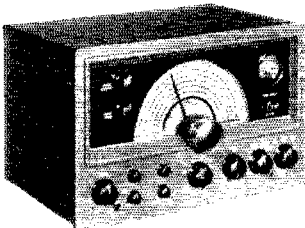
(Continued on page 134)

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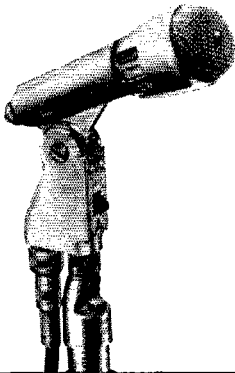
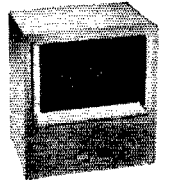
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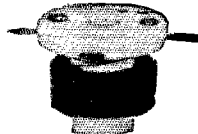
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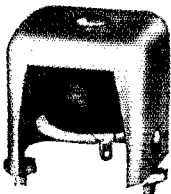


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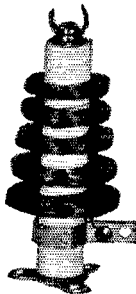
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meters. OKI was heard calling CQ DX on 1215 Mc. The Marin Amateur Radio Club has regular listeners with the NBC staff in New York for the code and theory TV sessions and talent scouts are on their way westward. GWI is taking swimming lessons in preparation for the Fresno Convention. K6RFE bought a swimming suit and an armored car. The Tamalpais Radio Club is planning a 12-transmitter Field Day. The Cathay Club has finally managed to erect an antenna. GQA missed the F.M.T. by 5 Mc. Most of the XYLs have agreed to turn off the TV and send the jr. operators to bed so the OMs can operate in peace and quiet. If anyone can find a grain of truth in the above items, please contact us before NEXT April Fools Day. The following reports have been verified! K8YZZ is looking for San Francisco traffic on 40-meter c.w. K6GES still is in the process of station reconstruction. Plans call for a 304-TL running a k.w. on CW and RTTY. 80, 40 and 20 meters. His rig is capable of keying speeds of 150 w.p.m. or better, using tape "canned" traffic for point to point. SLX reports from Eureka that 5JOW from Dallas, Texas, ex-6PAP, has moved to Eureka; PKJ has moved to Sacramento to work for PT&T on microwave gear; K6VZO and K6YBT have dropped the "N" from their calls; K6DVV gave a report to the Humboldt Club of his visit to WWV while back East attending National Guard Officers Training School; JRU, in the U.S. Air Force, is now stationed at Hamilton Air Force Base after a year in Alaska. His dad is W6JSH. Congratulations on the 2.4 parts per million score GQA made in the last F.M.T. GQI took us to task for lousing up his BPL for the last three months. The Cathay Club is now the proud possessor of an ARRL Affiliated Club certificate. Traffic: (Jan.) W6GQY 507, K6AIR 105, G6S 87, W6GGC 14, GQA 3, W6GNH 1, K6LYC 1, W6OPL 1.

SACRAMENTO VALLEY—SCM, LeVaughn Shinley, K6CFE—The Tehama County Amateur Radio Club has "lined-up" a receiver to go with the 50-watt club transmitter. Listen for KN6YLS, KN6YLT and WN6DYF—they will be Generals soon. Anyone interested in traffic circles should subscribe to *Pacific Area Net News* (PANN). Write 7FLX for details. DX is so good that some of our traffic men are finding it rough to ignore. It is most gratifying to see more monthly reports rolling in. If we can just get them to the SCM no later than the 4th of each month we'll have it made. K6VYV is a new OBS. K6YBV and OMA are new ORSS. The first report from VJ was received recently. We are in need of OOs in every part of the section. Why not apply to your SCM for appointment as an Official Observer so you can render a real service to amateur radio. The Radio Amateur Mobile Society (RAMMS), McClellan Amateur Radio Society, Sacramento, North Hills and Aerojet Radio Clubs have formed a new TVI committee in the Greater Sacramento Area. All cases will be handled on an official basis with reports to the FCC. Plan now to attend the Pacific Division Convention, which is to be held in Fresno this June. Congratulations to the Camellia Capital Chirps of Sacramento on its first birthday. Our thanks to PIV and K6QIF for the outstanding job they are doing with the civil defense nets in Sacramento. Traffic: K6YBV 272, W6CMA 207, VIJ 104, K6VYV 2.

SAN JOAQUIN VALLEY—SCM, Ralph Sarovan, W6JPU—K6RLX made BPL in December. The Northern and Southern California DX Clubs held their annual confab in Fresno Jan. 18-19. YY was chairman. PXP won a Gonset 3-30 converter. K6AYA is running a 304th on 20-meter c.w. Portable units of the Tuolumne Amateur Radio Society and the Turlock Radio Club helped in a Motorcycle Enduro Run. Those who helped are K6KSX, K6DYM, RAF, GHW, K6RPK, K6VYG, EWW, K6YDX, K6YPV, UTU and WN6UKE. K6UVY put in ten days searching for the *Twip Beach* that was lost in Northern California. GZQ was hot in the SS contest. VKD is on 2 meters. K6ZPZ has a good signal for TVI. K6RUQ is on 6 meters. K6YXE is having DX-35 trouble. K6ZCD got a QSL for operating on 5538 kc. from "you know who." The Delta Valley Radio Club is for v.h.f. only. K6QLW is having hum problems in his HT-9. K6OGR is going back on 75 meter. SARC officers are K6SHJ, pres.; K6TNZ, vice-pres.; K6RBB, secy; OVR, treas; RNN, sgt. at arms. K6LKJ is the newest novice in town and has a 75A-4 receiver. PGU has a 10-meter quad. QON is going s.s.b. K6LLF worked South Africa on 6 meters with a Gonset. KN6KOZ also is a new novice in Fresno. WYB is heard on 15, 20 and 75 meters with an HT-32 s.s.b. YMH has worked more than 200 countries. The Fresno Radio Club is going strong and is putting together the finest Pacific Division Convention ever held in Fresno, June 8-9, 1958. Traffic: (Jan.) W6ADB 103, K6RLX 52, W6EBL 11, ARE 1. (Dec.) K6RLX 256.

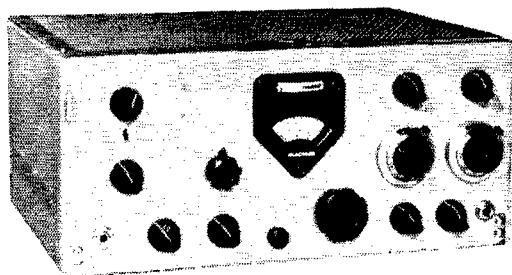
(Continued on page 138)

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ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM; DRC. V.H.F. PAM; ACY. A report from James W. Denning, Communications Officer, N. C. Council of Civil Defense, indicates that we now have 45 counties represented in civil defense. The latest county is Franklin. The plan was submitted by YLZ. Each month we have more and more counties covered by RACES, which bears out what I have said over and over. RACES will grow in spite of the attitude of some amateurs. You had best get on the handwagon. Two amateur radio clubs are putting out a bulletin—Asheville and Greensboro. I am sure that others have such publications and I would be most happy to get on their mailing lists. Your SCM had only three copies of the EC Annual Reports to mail to ARRL, those of BAW, DSO and YQX. I hope the other ECs at least mailed their reports to ARRL. Get with it, boys. I know we have a good report for the State, but failure to make your Annual Report doesn't make us look so good at Headquarters. The happiest amateurs are busy amateurs. Give a look at the districts actually drilling each month. Give a listen to Burke, Craven, Mecklenburg, Catawba, Anson, Onslow and Alamance Counties. Drills are held each week, and the amateur has profited by these drills. A joy of accomplishment comes from a job well done. Are any other counties or districts drilling? Possibly Guilford and Wake? I can't report it if I don't have the dope.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—Congrats to K4HQK on making the BPL. Thanks to K4GAT, who played host to the c.w. area net control stations at a meeting held in Columbia, which was headed by our RM, AKC, and W4s AKC, HAMG, PED, NTO, CJD, DAW, ZRH; K4s BVX, GAT, HDX, LNO, AVU, IIE, BGI, DFR, DGE, HQK and KN4ROE. CXO and OBN are newcomers to s.s.b. Thanks to NTO and HDX for the fine talks and demonstrations on 6-meter gear. Thanks to K4BVX, who has served as NCS for the past 6 months on the c.w. net. K4AVU takes over the helm for the next 6 months. K4AXV is doing a nice job on s.s.b. with a new LAI Linear. VJ1 is being kidded by his best friends about being NCS of the informal net after 6 p.m. K4AII is plugging along with RACES with several counties now approved. We all like the fine new bug being used by K4GAT. K4BFY uses more rigs than anyone. Congrats to HAQ on the new 600-watt. The *Work Hill Bulletin* is getting larger and better with each issue. IIE is doing fine with the new type voice control on his a.m. rig that keys as fast as s.s.b. Traffic: (Jan.) K4GAT 137, HQK 103, AVU 89.

VIRGINIA—SCM, John Carl Morgan, W4IKX—SEC: PAK. VFN and VN were both in action continuously to handle Satellite Explorer traffic. Excellent cooperation was reported throughout. ZPE says the Va. 2-Meter Net shows good promise. BPL activity continues apace, too, with four making it during January. VN will miss K4JLO, who is leaving the State. Ex-Virginian KRR showed up on VN as K3CYA from D.C. K4AET has been working hison, 40VI/3DAD, now ET2US, who is about to return Stateside. VQZ is secretary of the M.L.T. Ham Club. APQ and EMN now are at G.W.U. K4BYS sends a 3-word report, "Studying is terrible." K4DPX lost his steel mast to an ice storm and replaced it with wooden power poles. K4JKK made the A-1 Operators Club. CPN and K4KIF acquired XYLS, OOL built a phone patch and is trying to reunite IT and an old buddy via ham radio. IT is home after 9 months at Kecoughtan Vets Hospital and is back on VFN. K4HPD has RTTY and built a new converter for same. BGP has a patch available for the Greater Washington Area. K4QES has been mixing 80-meter DX with VSNING. JUJ added 3 new ones to his countries list and now has 144, he also reports VA-1F applications still are rolling in. BRF says DX is good on the low end of 80 meters. K4LPR is looking for Utah to complete WAS from his Virginia QTH. K4QIX has a new jr. operator. We regretfully record the passing of ZA, former ARRL Vice-Director. With this report your SCM starts his fifth year. Thanks for the fine cooperation from all hands. Traffic: W4PFC 1605, K4AET 373, W4QDY 304, K4KNP 294, W4APM 269, K4EZZL 266, W4SHJ 229, K4JKK 194, DSD 161, PTC 87, W4PVA 86, K4GWO 68, ELG 53, JLO 48, W4KX 48, CFV 45, K4QIX 44, ASU 42, W4YVG 35, IT 32, RHA 32, K4NEV 30, W4IA 28, BZE 22, K4ECD 16, W4BGP 15, LW 10, YZC 10, K4HPD 8, QES 6, EAQ 5, W4LK 5, OOL 4, K4ORQ 4, DPX 1, W4JUJ 1. (Dec.) K4ASU 83, DPX 12, W4BGP 12, JUJ 6. (Nov.) W4UCJ 2.

(Continued on page 138)



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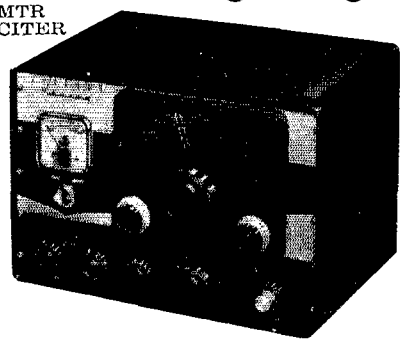
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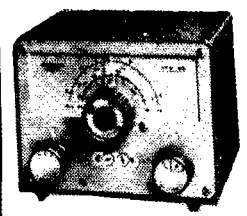
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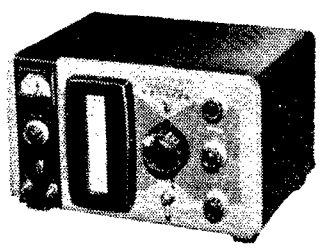


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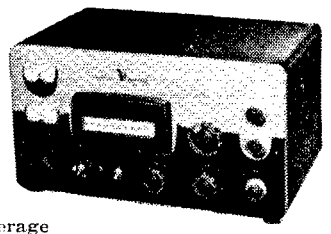
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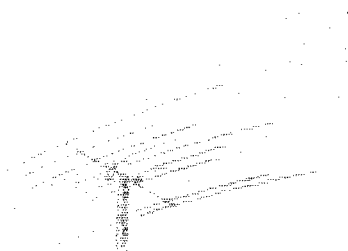
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WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM; Festus R. Greathouse 8PZT, SEC; FND, PAM; FGL, RMs: GBF, HZA, PBO and VYR. V.H.F. PAM; K8AON. The Dayton Amateur Radio Assn. is going to give an award on an annual basis, for outstanding services, to an amateur residing in Michigan, Indiana, Kentucky, West Virginia and Ohio. Amateurs are invited to take part in the W. Va. QSO Party in April. The Dayton Hamvention will be held Apr. 19. YBZ, GCN, PQQ, and CLX are on s.s.b. working lots of DX. DDB renewed his OPS appointment. KN8HTS is a new ham at Mt. Hope. K8AVP, Judy, is engaged to PRM. Stan, SNP has ordered a new kw. amplifier. EAB, in White Sulphur Springs, is very active. KN8LTU is a new ham in Roncererte. K8DUO is a new ham in White Sulphur. VII, of White Sulphur, is on with a DX-100 and is working lots of DX. VYR, SNP, CNB, PBO, DPT, PJI and GBF have been working 160 meters lately. 6IC, SILX, and 4KPX visited GBF. GAD has a new mobile rig. CNN and JM have new DX-40 rigs. REH is active again. QR is very active on all bands. AKQ has returned from a vacation in Florida where he visited his son CQD/4. DPT is back on c.w. after spending a long time on phone. GGC is back home and active again. We wish you a speedy recovery. Harry, K8HAI is operating 20 meter phone. Traffic: (Jan.) W8FNT 93, HZA 48, VYR 45, PBO 35, K8HID 21, W8GBF 17, NYH 17, PZT 10, CNB 9, CSG 3, (Dec.) W8FNT 608, PBO 535, DFC 20, (Nov.) W8FNT 242.

WEST VIRGINIA QSO PARTY APRIL 11-13

The Mountaineer Amateur Radio Association will sponsor a W. Va. QSO Party from 6:00 P.M. EST April 11 to 6:00 P.M. EST April 13. The contest is open to all West Virginia amateurs and to all others who have held calls in W. Va. in the past. Only these contacts may be counted. There are no power or band limitations and the same station may be worked on different bands for credit. C.w.-to-phone QSOs are allowed but cross-band contacts are not permitted. Score 1 point for each message sent and 1 for each received or 2 points per contact. For each message sent/received where at least one end of the QSO is a Novice, Novice-to-Novice or Novice-to-General or higher class license, score 3 points or a maximum of 6 points per contact. Mobiles operating in more than one county may be worked once in each county by a fixed station. The mobile can count the fixed station once from each county. When contacting stations outside of W. Va., obtain the call of the former W. Va. station. All logs must contain information consisting of the date, call, time, city, and county. To be eligible for prizes, logs must be postmarked not later than April 25 and mailed to James A. Ford, W8QR, MARA Secretary, Box 909, Fairmont, W. Va.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, W8DML—SEC: NIT, OBS; K8BTU, OOS; OTR and RRV. OES; K8CLJ, PAMS; CNW and IJR. RMs: KQD, K8DCC and IA. K8JTZ recently returned to Greeley. K8JTI has a new TBS-50. K8JSQ has a Technician Class license and is working 6 meters. K8BLE has a new 10-meter beam. K8AYK is working 2 and 6 meters. Committeemen and chairmen of the Western Slope Radio Club are QWW, QEL, INT, FKY, IQV and ZJO. K8GHQ of Glenwood Springs, 12 year of age, is an active member of one year's standing. K8LZY is the new publisher of the El Paso Radio Club News. By this time Woodie should be basking in Sunny Florida as a guest of Uncle Sam. TWA, GGS and K8MIA recently installed a transmitter in the club airplane. Look for them at 3890 kc. According to BARK, a recent round table included K8DUA, K8IYE, K8NBR, K8DTJ, K8GWU, K8CEZ, IA and K8EEH. Wonder what happened to CHAI and AAK? The Boulder Amateur Radio Club meets each Wed. on 3890 kc. with club news and other information. Jack and Gene are the news men. How about this 180-watt mobile, no transformers? The LCL-YL Net has three officers, K5GYZ, pres.; K8HFB, secy-treas.; and K8FVG, publicity. K5YSJ is drawing up the club constitution. K8ADB, Maio, recently was honored into the group. Others present were K8KFX SFV, K8EPE, K8BTY, K8EYG and PG. Traffic: K8BCQ 887, W8IA 747, KQD 465, WMK 273, K8DXF 64, DCW 56, DCC 12, W8NIT 36, NVU 34, QOT 20, ENA 19.

UTAH—SCM, Thomas H. Miller W7QWH—Asst. SCM: Col. John H. Sampson, jr., 70CX; SEC: FSC;

(Continued on page 140)

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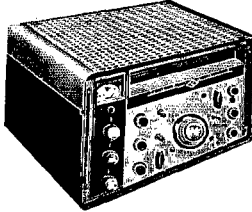


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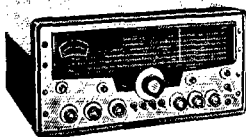


\$169⁰⁰

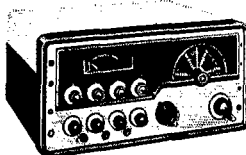
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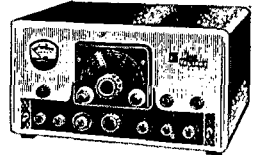
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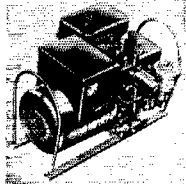
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PAM: BBN: RM: UTM: V.H.F. PAM: SP. The Utah section phone net has been named the Beehive Net. OXX sent out a questionnaire to determine if a c.w. section net should be started. It was decided that Utah should join the Rocky Mountain Net, which is a combination of the New Mexico, Colorado and Utah section nets. RMN meets daily at 1900 MST on 3750 kc. 8IC, ARRL Rocky Mountain Division Director, was guest speaker at the Ogden ARC Annual Installation Banquet. IKL, GDH, GXC and JBW are now the proud holders of General Class licenses. VFY and BOB are keeping the JAs busy on 6 meters. KPI now is on 2 meters. EZM has a new 58-ft. vertical and checks in on five nets daily. The SEC is looking for AREC members. Traffic: (Jan.) W7EZM 33, OXX 31, CXZ 12, QWH 4, FSC 2. (Dec.) W7UTM 3.

NEW MEXICO—SCM, Allan S. Harrett, K5DAA—SEC: K5DAA, PAM: ZU, OO: L.E.F., ORSS: DWB, WNU, and K5IPK. The NMEPN meets Tue, and Thurs. at 1800 MST and Sun. at 0730 MST on 3838 kc. The Breakfast Club meets Mon. through Sat. at 0700 on 3838 kc. The RMN C.W. Net meets on 3570 kc. every night at 1900 MST. A Novice net has been started in New Mexico. All interested please write to K5GFC, Box 873, Roswell, New Mexico. Any visiting hams in Albuquerque can find a contact on 29.6 Mc. Albuquerque provided communications for the March of Dimes Parade. Carlsbad hams aided in the March of Dimes using mobiles and fixed stations. SBJ now is operating a new Viking 500. KN5OWE is the newest ham in the San Juan County Area. The C.W. Net is well on its way. More check-in in the southern part of New Mexico would be appreciated. The Alamogordo Radio Club now has a club call, K5LRW. The former SCM is much improved and has been heard on the air recently. Good luck, Ray, PAM ZU has been doing a grand job with the NCS, Traffic. (Jan.) W5DWB 451, K5IPK 225, GFC 12, W5CIN 10, K5CEV 6, DAA 6, DAB 4. (Dec.) W5DWB 711.

WYOMING—SCM, James A. Masterson, W7PSO—SEC: MINW: RM: BHH: The Pony Express Net meets Sun. at 0830 on 3920 kc. with AAU and MWS alternating as NCB. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DNV and MWJ alternating NCS. New officers of the Sheridan Club are UZR, pres.; YXM, vice-pres.; and KNTAAL, secy. CRP reports that the club recently gave six prospective Novices their exams and have started a new Novice class. The Casper Club elected the following new officers: UFB, pres.; and PSO, secy.-treas. SZZ has a new Heathkit DX-100 and Power Alerter. LAV is now on 2 meters. TJ was inadvertently omitted from the December list of Wyoming amateurs holding DXCC certificates. Good news! The Sheridan gang has consented to sponsor the Wyoming Hamfest this summer. Watch this column for further details.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, Jr., W4HKK, SEC: EBD. PAMs: DGH and K4BTO. RM: RLG. Don't forget to mark your hamfest calendar for May 4, Birmingham, and May 24 and 25, Mobile. We understand Montgomery will have a hamfest, too. Welcome to new hams KN4TNG, K4TNT, RIL, and THG. With the new year most of the clubs have new officers. My best wishes for successful terms of office go to all. To the secretaries, don't forget to mail your news items to me. K4KZQ is having mobile growing pains. After 14 years of steady operating PHY has all commercial gear and is looking for a farm to raise antennas. DS reports luck on 11 meters, with 99 stations in the recent contest. RLG is going strong on 6 meters both local and D.X. Congratulations to the Birmingham Radio Club, which has a new club house near the center of town. Did you know dept.: K4AAQ is a grandpa twice. New additions—(ET) a Thunderbolt, Traffic (Jan.) W4RLG 382, YRO 98, K4JDA 71, AOZ 63, W4JGH 55, PVG 54, K4LOE 50, W4JH 36, HON 28, K4BWR 19, W4ICI 18, K4JBW 16, K4JZ 14, W4CEF 12, CRY 12, K4HJM 12, W4RTQ 12, W4WH 11, K4AAQ 10, MHO 10, MJO 10, W4WOG 10, K4CYC 9, W4DS 9, K4KJD 9, KQN 9, KZQ 9, W4PHY 9, K4JBW 8, W4EBD 8, K4KAK 5, W4TOT 2. (Dec.) K4OCY 66, W4EJZ 12, K4KJP 9, W4USM 2.

EASTERN FLORIDA—SCM, John F. Porter, W4KGI—SEC: IYT, RM: LAF. PAMs: TAS and JQ. The Gator Net is with K4SJJ as net mgr., beginning to roll again with an average for January of 8.5 QNIs per day. The net's average speed is 10 w.p.m. K4GPI is a new ORS. K4SEN is now Tech. class and is looking for 6-meter activity. We regret to report the passing of L.A.B. of St. Petersburg, ILC, (KW6CA) is back in the States permanently. The St. Johns AREC Emergency Net is now on 10 and 2 meters using I.m. gear. K4DSN and BDC are new ORSs. K4MTP has eight continuous years of active membership in Army MARS. The Gainesville Amateur Society is forming a traffic and emergency net called the Hoop Owl Net complete with

(Continued on page 142)

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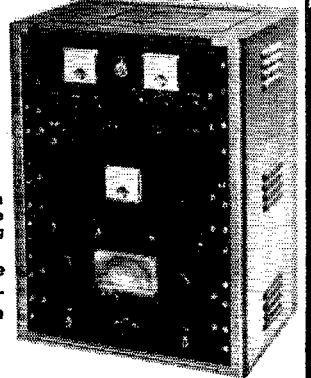
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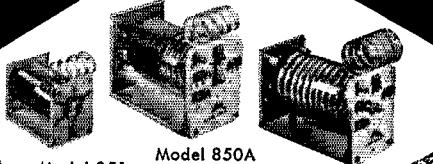
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certificates. K4QPT, ex-W6DYK, is now with RCA at a missile test center. The Ft. Myers Amateur Radio Club's booth at the South West Fair was a big success. NEK, club station at the Jacksonville NAS, is equipped with a 75A-1, a 75A-2, two SX-101s, a HQ-100, a KWS-1, two Globe Champion 300s and quite an array of antennas. SIIJ, IRN net mgr., reports a total of 45 QXIs from Eastern Florida for the month of December. The Broward Amateur Radio Club's Second Annual Auction was held in Ft. Lauderdale Feb. 15. New officers of the Ft. Lauderdale Radio Club are: ZYK, pres.; AYJ, vice-pres.; and K4PAE, secy.-treas. The Floridians have mailed out more than 24 certificates. The Key West Club enjoyed a fine turkey dinner at the home of GAEI. The Miami Springs Radio Club operated its club station, K4OSQ, from a booth at the Hobby Show. I would like to remind everyone that the Form I report cards should be mailed to me by the third of each month. Every active ham should report. Traffic: (Jan.) W4FPC 474, K4DAS 283, GPI 219, KDN 149, W4WS 138, K4SJI 133, W4YF 103, K4AKQ 100, BNE 82, EXN 78, W4LMT 77, TAS 72, EIIW 69, PZT 69, HTH 64, K4BLAI 59, AHW 40, AEE 39, W4FSS 39, K4AHA 29, COO 27, TFS 27, BDC 22, PAE 18, W4SJJ 16, K4JJZ 16, W4KPO 11, BJI 10, K4MDN 10, M4P 10, W4BWR 6. (Dec.) W4FPC 404, K4BDC 39, W4DTV 39, ZCD 14, WHK 5.

WESTERN FLORIDA—SCM, Frank M. Butler jr., W4RKH SEC: PQW, RM: AXP. HYL has a kw. on 10 meters with an FB phone patch. LQU and GSK have swapped rigs. SJT has a new NC-300. HPJ is set up to record the U. S. satellite. Panama City: Navy Lab Club officers are IDX, pres.; FRQ, vice-pres.; MAP, secy.-treas. The club has 20 members and participated in Armed Forces Day activities and emergency drills. Pensacola: PARC *Parasitics* increases its circulation and has lots of news items. RKH, your SCM, visited hams in the Pensacola Area, and hopes to get to other areas in the section soon. DD's antenna-raising saw SRK, LQX, JV, EWG, SPP, IVD and EYI on hand. KN4TTP and TTU are new hams. HBK and RSD are new on 10 meters. MS is active on 20-meter s.s.b. and 6 meters. AXP is awaiting more LO and CD parties. RMO is QRL traffic skeds. CNK gave an FB talk on TVI at the PARC. KIF worked TG9W on 6 meters. ALI now is on 10 and 6 meters. SRX, the Eglin Club station, has three rigs and four receivers on the 1.1. bands. Traffic: (Jan.) W4JJK 46, MS 2.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 on Sun. ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Sat. at 1900 EST on 3595 kc. with PIM as NC; the 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc. with UUH as NC.; the Atlanta Ten Meter Phone Net each Sun. at 2200 EST on 29.6 Mc. with VHW as NC; the GTAN each Sat. at 10 A.M. EST on 7290 kc. with K4ORR as NC; the GPYL Net each Thurs. on 7260 kc. at 0900 EST with K4FF as NC. Carolyn, K4AIQ, is membership chairman for the GPYL. K4HYK is assistant net control for GTAN with K4LEH, secy.; and K4MOG, business mgr. The new net frequency is 7290 kc. PIM and ETD handled phone patch traffic on c.w. The Barnesville Radio Club's new officers are FYC, pres.; K4LS, vice-pres.; K4PZQ, training officer; K4IBT, act. mgr. and property officer. ZD and CFJ had a fine visit with the Barnesville Radio Club. K4LVE is now using a Windom antenna and doing very well. The Atlanta Radio Club Hamfest will be held June 8; the Augusta Radio Club's July 13. The Confederate Signal Corps Picnic will be held August 17. W4ETD had a recorder set up to receive the satellite. DDY is using a pair of 813s in a grounded-grid amplifier, driving with a DX-10 running 50 watts. ZWT is doing a nice job as OO. K4APC installed a new 80-meter antenna and is getting FB results. RS is back on the air. CAN has retired. We're sure glad to get a report from FD each month and wish others would report. Check your League appointments for renewal and also your AREC cards. They must be renewed each year. Traffic: K4MCL 378, LVE 210, FCI 192, W4PIM 131, EDT 116, DDY 93, K4BAI 71, W4BXV 20, HYW 16, ZWT 15, AQL 10, K4APC 9.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: KP4AAA. Your SCM was Stateside during December/January and therefore unable to report for Feb. and Mar. QST. Our QSL Manager, KP4KD, says some of the KP4s ought to be more careful how they send call on c.w. and to use phonetics on phone because a lot of cards are arriving for non-existent stations. W4SHJ, manager of the Fourth Regional Net (4RN) that operates on 3547 kc. daily at 1945 and 2130 EST, is looking for some KP4 station(s) interested in regular traffic-handling on this ARRL Net. Anyone interested who can run considerable power and has a good 80-meter antenna should contact the SCM or W4SHJ. AED, at the Colegio Ponceño, writes that his DX-35 is getting out fine on 15-meter phone and he is putting up a new 80-meter antenna to work the WP4s

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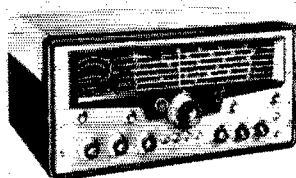
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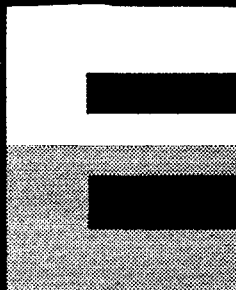
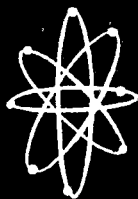
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and the San Juan gang on 3925 kc. CA transferred to St. Thomas with the Radio Corp. of P.R. DP twice had front-page articles in *El Mundo* detailing his contact with the Antarctic to enable the doctor and commander of the base to speak with his parents here. KP4JM heads a network of 108-Mc. observing stations and their object was front-page news in *El Mundo* on the day Explorer was launched. The first QSO for KP4AMG was with his father-in-law, KP4DJ, on 3925 kc. AMG uses a TBS-50 an HRO-5 and a bent antenna in Rio Piedras. DJ put up a 21-ft. pipe on the end of his house to support a bent 80-meter antenna. Traffic: (Jan.) KP4WT 82, (Dec.) KP4WT 33, (Nov.) KP4WT 82.

CANAL ZONE—SCM, P. A. White, KZ5WA—Some of the gang report working ex-KZ5BD, now W8HXE, on 15 meters. Ex-KZ5PB now is in VO2-Land but soon will return to St. Louis. MARS is once more active with a phone net on 7305 kc. on Sun. mornings at 0800. It is expected that a c.w. net will be set up soon on 27,994 kc. for some evening during the week. An attempt to run the c.w. net at night on 7305 kc. was defeated by heavy QRM from Stateside. DN has received his General Class license. We have our first YL Novice in KZ5HSN. VR and RV check into the Western Pennsylvania C.D. Net on 10 meters on Sun. mornings and FL meets the Philadelphia and the Denver Nets, also on 10 meters Sun. morning. Traffic: (Jan.) KZ5JS 126, VR 50, KA 34, EL 21, CC 13, RM 10.

SOUTHWESTERN DIVISION

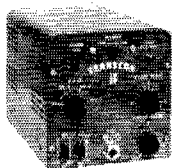
LOS ANGELES—SCM, Albert F. Hill Jr., W6JQB—SEC: LIP, RMs BHG and GJP. PAMs: K6BWD and ORS. Traffic is increasing in fine shape and there are many new reporters. These reports are greatly appreciated and thanks a meg, gang! New appointees this month are K6SLM and W6FSJ as OO, K6TUU as an OES. RPL was earned by W6GYH, K6MLL and K6MCA. Late December reports included 6PLs for ZJB, K6MLL and K6OQD. Congrats, gang! K6MLL has a new AB1 304-TL amplifier. K6MCA is coming on with a new Johnson KW gear. K6OQD has new twin ten Yagis on 2 meters and a tri-bander beam for 10, 15 and 20 meters. NTN has AREC nets operating on 29.2 and 146.34 Mc. in Pasadena. BES made a nice score in the 11-meter contest. K6MON is back with traffic work, but still is plenty QRL with school work. CIS is getting a new rig in shape. K6COP has an s.s.b. phasing rig and a new 'scope. K6EPY was awarded the MTHC. Congrats. Milt! K6GTG is looking for contacts on 221.5 Mc.; he is using a 44-element vertical beam and reports K6RBJ, K6ZYF and K6ZYD are active on 220 Mc. New officers of the Associated Radio Amateurs of Long Beach are K6IFU, pres.; LSO, vice-pres.; K6CPX, secy.; and K6KNP, treas. K6HNK is the new proxy of the Whittier Radio Club. VSH, K6GJY and K6GOK are active handling traffic by RTTY. K6GUZ is fighting transmitter troubles. K6GCC now is on the night shift for three months. K6JQB reports that K6RMT received the 6x6 6-meter certificate from Brattleboro, Vt.; the first K6 to receive the award. Congrats, Shirley! K6KYJ has a new 225-wattner on the air. 30 through 10 meters. SRE and the San Gabriel gang were very QRL tracking the "Explorer." ZMX received his DXCC certificate. Congrats, Eric! Support your section net, the Southern California Net, 3600 kc., 1930 PST daily. Traffic: (Jan.) K6MCA 1338, W6GYH 635, K6MLL 549, OZJ 417, W6BHG 175, HJY 90, K6OQD 78, W6INH 70, VSH 69, K6JQB 61, HLR 60, QMK 56, EA 46, GCC 45, KYJ 43, MON 42, W6USY 42, K6UYK 35, HVC 30, GUZ 26, W6BUK 23, K6EPY 23, COP 20, W6NTN 16, SRE 11, K6BWD 10, ICS/69, W6ORS 9, K6GTG 3, W6AM 2, BES 2, K6HOV 2, KZY 1, (Dec.) K6MLL 1172, W6ZJB 991, K6OQD 349, HVC 59, KYJ 39, W6QLM 38, K6GTG 10.

SAN DIEGO—SCM, Don Stansifer, W6LRU—New Officers of the South Bay Amateur Radio Society are K6BCG pres.; ORX, vice-pres.; K6BUM, secy.; K6UTZ, treas.; K6OLS, act. director; and K6TOP, safety director. BGX is out of town for six months because of a job change. IWPO gave an interesting talk to the San Diego DX Club at the January meeting at the home of ZVQ. New officers of the State College Aztec Club, K6PGO, pres.; NLO, vice-pres.; K6JHD, secy-treas.; and K6EFF, trustee. The club call is HTJ. New officers of the Silvergate Club are K6IIR, pres.; K6LWU, vice-pres.; and K6LJS, secy-treas. The club call is K6SSQ. ATZ no longer is secy-treas. of the Helix Club because of working the swing shift. K6IPV is replacing him. New Novices in Escondido are KN6s LKD and LSC. Ex-7SQD, of Douglas, Ariz., is now K6LFS in Vista. Now Generals instead of Novice class are K6s KPE and CSL. A new Technician in the south bay is KN6UY. KSE is active on 28 Mc. with a DX-100 and a three element beam. ONP has a rig on all bands, with beams for the high

(Continued on page 146)

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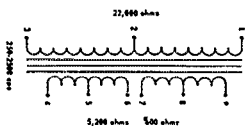
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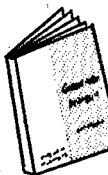
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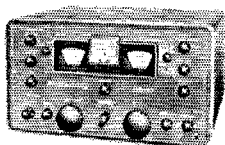
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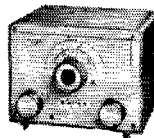
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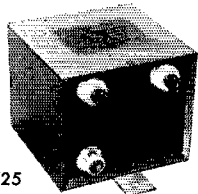
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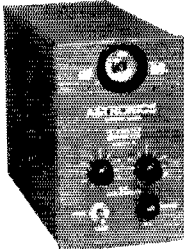
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frequencies. 5CWK/6 is active in the San Diego Area. SK handled 34 phone patches during January, including one emergency patch that was nicely written up in the local papers. The San Diego DX Club hopes to break a million points in the c.w. portion of the contest this year. The February meeting was held at the home of LRU, where logs were handed out, and last minute strategy was discussed. Traffic: W6EOT 608, K6UOD 524, W6YDK 436, UQF 44, LYF 8.

SANTA BARBARA—Acting SCML, Robert A. Henke, K6CVR—PAM: IHD, ORSs: YCF and JPP, OPSs: JPP, YCF and K6KPU, OOS: YCF and ENR, OBSs: PWK and K6IPF. REF has resigned as SCM and K6CVR will take over as Acting SCML. Good luck to you, Betty, at the new QTH. The Pointsetta Radio Club is making an all-out effort to gain members. It has an FB club rig, shack and newspaper. The SBARC elected K6KPU, pres.; K6SDE, secy.; K6DQW treas.; K6UEC, sgt. at arms. The York Mountain Club is all mobile on 3870 kc. YCF is repairing the main antenna with the help of WN6OUL. LB is installing a mobile rig in his car. WN6OUL had a rotating 15-meter dipole ready for the Novice Roundup. MTO is active again on 40-meter c.w. IHD is back on 2 meters again. JEP reports a "Blackwidow" on order. DOB is handling traffic with contacts for relatives living locally to KC4-Land. Traffic: W6YCF 13.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TEF—Asst. SCM: Bruce Craig, 5JQD. SEC: BNG, PAMs: K5AEX and IWQ, RM: ACK ACK was heard "talking up a storm" on his 20A. The Panhandle ARC enjoyed two very successful club auctions recently and highly recommends this activity for any club. GY reports the following stations on stand-by, helping to locate a 73-year-old man who wandered away from home: K5AHG, PSL, QQU, YUL, WKK and GY. GY is a new ORS appointee. The WHO girls of Ft. Worth have "manned" a portable set-up at the Ft. Worth Fat Stock Show, meeting with a tremendous success, to say nothing of making BPL. Congratulations, ladies! We sure do appreciate the FB job our Official Observers and Official Experimental Stations are doing and thank them for the required monthly reports. Keep 'em coming, fellows! We are getting set for s.s.b. at the QTH and have finished a Model B Slicer kit and a 458 v.f.o. conversion kit. I must admit I have been one of the worst "die-hards" about this business of s.s.b. If you have like feelings, just listen (with an open mind), for a few evenings. If you do, I'll look forward to "quacking" at you. Traffic: (Jan.) K5LZW 591, W5ACK 509, K5AEX 312, W5DAG 185, BOO 147, GY 100, SMK 93, BKH 90, K5BNH 65, ETX 64, ILL 47, EMR 34, BKH 30, W5TFP 30, K5HTH 28, IGD 21, W5AYX 11, LR 10, K5DNQ 6, W5UBW 6.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC—SEC: LXH, PAMs: EJK and MFX, RM: JXM. ADC has resigned as Asst. SCM because of business activity. New officers of the Cleveland County ARC are FII, pres.; K5IQU, vice-pres.; UZD, secy.-treas.; QVU, act. mgr. New Novices, all graduates of the Bartlesville ARC radio classes, are KNOVC, OVP, OVI, OVJ, OVT, OVV, OVX and OXP. VLW made over 42,000 points in his first CD Party. AZO was appointed Asst. SEC. New officers of the Northfork ARC are CCV, pres.; ZDI, vice-pres.; K5IZP, secy.-treas. K5HXO and K5LDN have new Valiants. K5KTW made BPL on 2 meters. The Lawton-Ft. Sill ARC relayed traffic for the March of Dimes. I am still receiving reports too late to be included in the activity report for the month in which they occur. Please send your reports as soon after the end of the month as you can. Oklahoma Ham of the Month: Official Observer RRM. Cecil sent 181 discrepancy reports in January, mostly for harmonics. Traffic: (Jan.) K5KTW 579, W5FSB 287, W4RCM/5 140, K5EGQ 102, EGS 92, W5KY 76, K5LAP 75, W7ESO/5 71, W5KWK 46, FEC 42, K5DUV 41, W5CCK 28, PNG 28, K5KFS 27, DVE 24, W5GOL 24, MFX 24, K5INV 23, W5MGK 23, K5CBA 20, W5FKL 20, K5BNQ 14, W5EHC 14, ERI 8, VLV 7, K5DUJ 6, W5IER 2. (Dec.) W5KWK 52, K5KFS 48, W5VNG 30.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF, RM: FCX. Congratulations to FCX and his NYL on their new baby girl. It is with deep regret that we record K5KEG as a Silent Key. He will be missed by his many friends. The NAAS Kingsville Radio Club's call is K5KHH, W4BVX is trustee. President of the club is K5KZO, activities manager is ZMK. ZMK is RTTY on 7140 kc. and MARS. CTE has moved from Arkiv to Louisiana, and K5MGE moves from Louisiana to San Antonio. EYV has a new HT-32. QLT was the only station on handling traffic from Port Aransas during the recent heavy rain and flooding in South Texas. ABB has a

(Continued on page 148)

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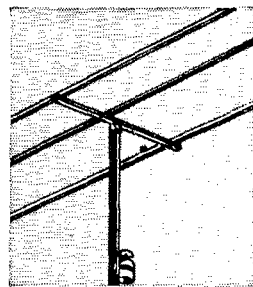
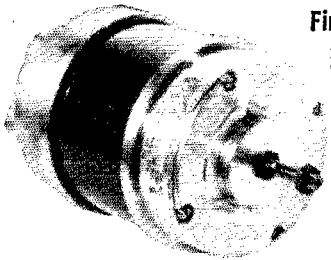
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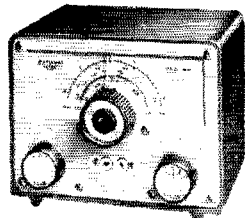
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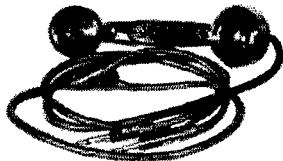
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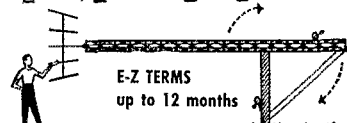
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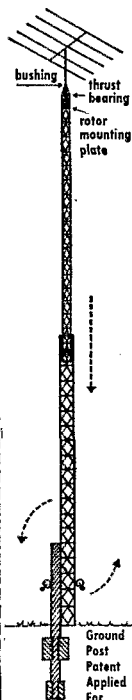
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new SX-101, K5OFR and KN5OFS are new hams at Eagle Pass. K5BSZ has a new Navigator, PM visited in Corpus Christi. He is working UX from over Houston way with a new Tri-Band beam. SAH received his BS degree in E.E. from the University of Texas in January. K5GPP and KN5OIZ are new hams in Old Ocean. ETA, KQKF, QEM, K5COZ and K5CPA visited the San Antonio Radio Club. ANQ joined the ranks of the welded. TTF has moved back to Austin and is attending the U. of Texas. QDX has a new Oldsmobile Super 88. How about getting a mobile in it. Morley? The Austin Amateur Radio Club is in the process of building a new club house. Traffic: W5EGD 392, UMY 306, K5MZS 218, W5EPL 85, W8PHA/5 86, W5FCX 85, K5BYV 80, RMP 62, W5ZIN 57, K5JCC 56, BSZ 10. (Dec.) W5FCX 187, K5MZS 68. (Nov.) K5MZS 198.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM; Aaron Solomon, IOC. Hon F. W. Hyndman, BZ, has been appointed Lieutenant-Governor of Prince Edward Island. Congratulations, Walter, and best wishes. Congratulations to AO AAQ on the arrival of a new jr. operator. Mobile amateurs in New Brunswick are sporting their recently-acquired call letter plates. New calls include ACG, NT and YE. BA is active again and now operates from Charlottetown. YR has joined the rapidly-expanding 50-Mc. group. ST reports working VU2CQ. XD has been handling Far North phone-patch traffic for the Sydney Area. The St. Croix Valley Club has been issued the call PF. Ed Morgan, who formerly held this call, is now 3GX, at Ottawa. HT reports working HB9RG, SM6ANR, LA9T, CT1CO and EI2W on 6 meters (all on the same day, Jan. 26) New appointments include DQ, FQ, ADH and LY as OPSs; HJ and ADH as ORSs. HT has received an award for his consistent reporting of useful information in connection with his v.h.f. activities in the IGY. Please check those harmonics, especially the second of 75 meters! Traffic: (Jan.) VE1FQ 105, AV 33, VN24, ADH 18, ABJ 16, OM 4, YJ 3. (Dec.) VE1OM 12.

ONTARIO—SCM, Richard W. Roberts, VE3NG—BZB reports that the OSN/PQN nets are doing P.B. The Kingston ARC operated in the Kinsmans Hobby Show and handled traffic to all parts of Canada and the U. S. The call used was 3QCD. VE2II now resides in Ottawa. BFW worked a W7 and got an SWL card from G-land. He was on 6 meters. AGU hooked a KP4, a JA and a KL7 on 6 meters. GI has turned to curling. Ex-DL2ZQ is a newcomer to Ottawa. DNG is now G3MFM in Scotland. DCL is pres., EAP, secy, and EIT, vice-pres. of the Sudbury Club. KMI is chairman of the Hamilton RC Convention to be held in October. AAS is moving to VE2-Land. The Quinte ARC is putting on a financial drive for a new transmitter. 2AEV, of the Norquibont Net, relayed information from a doctor at Arvida, P.Q., to a ham in the North to help a patient who was suffering from food poisoning. KMI and NG recently visited the Niagara Pen. Radio Club. The v.h.f. gang had a swell time at Oakville in January. BBD, Civil Defence Comm. Officer, Toronto, is now an AREC member. DKY obtained her DXCC. HB is working the Russians. AJA may go s.s.b. AEJ worked Gambia. RH runs a swap club each Thurs. on 3770 kc. The OARFI is striving to help all amateurs solve their TVI problems. DTO visited W2-Land. ARF uses a vertical on 75 and 20 meters. Traffic: (Jan.) VE3RUR 135, NG 94, TM 57, EII 55, AUI 49, DTB 43, KM 33, RH 33, BZB 32, BTY 30, STC 24, AJR 19, DWN 19, CO 15, AML 14, EAU 14, DH 11, ACQ 10, AES 8, AIB 8, CE 8, DQA 8, EOW 7, RW 6, APL 5, ELC 4, OT 4, SG 4, DTO 3. (Dec.) VE3DPO 79, BZB 27.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—SEC; ON, C.W. Net; OSN/PQN, 3535 kc. at 1900. AYR and AXS sked daily at 1230 on approximately 28,490 kc. and invite others to join. All VE2s in the Montreal Area (35 miles or less) are invited to report to the Montreal Area Net every Sun. at 1330 on 3673 kc.; object—traffic. The BERU C.W. Contest proved popular with many VE2s, among them: AIO, AKF, AYY, BK, DR, JJ, LI, NV, PA, PZ, WA, WW and YU. WW was the section leader. VE6HI, now located in Montreal, wanted 2HI but had to settle for 4HW. HI is the old call of an active YL who prefers 75-meter phone. AZU has a new boss (he got married!). The Montreal Amateur Radio Club's well-known photographer, Flash, finally joined the ham ranks and is now AXR. XR is trying a Ranger transmitter and soon may be heard on phone. DR's NYL, visiting Pasadena, Calif., keeps truck of the OM through the courtesy of K6QFS's phone patch on 10 meters. A father-mother-and-daughter team at Victoraville is AHB, AJJ and AVZ. AFC is editor of QTC, the bulletin of Amateurs de Quebec. GE is Communications Coordinator for C.D. at Pointe Claire. KG deserves much credit as

(Continued on page 130)

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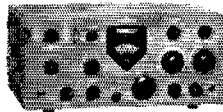
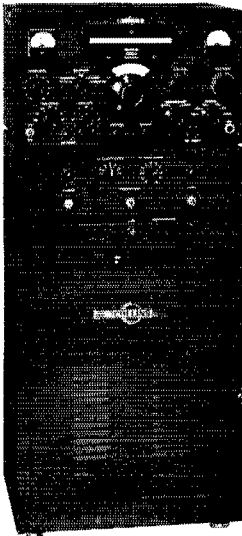


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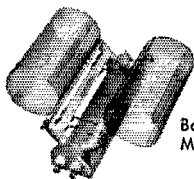
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editor of *Skywave*, the newsy publication of the South Shore Amateur Radio Club, Inc. Reports from all parts of our section are solicited to enable your SCM to present a column of general interest to all. Traffic: VE2DR 75, ATL 54, ATQ 1.

ALBERTA—SCM, Sydney T. Jones, VE6MJ—Since this will be my last report as your SCAM I would like to take this opportunity to thank all who have contributed to the overall effort during the past ten years. I deeply appreciate the honor of serving as your elected leader for such a long time. I shall always remember the wonderful support given by the faithful few. I wish my successor every good fortune and assure him of my wholehearted support. EA is now active on 144 Mc. TG has a new DX-100. HM has snagged some rare DX. Traffic: (Jan.) VE6HAM 218, OD 28, SS 7, TG 7, TT6, PV 4, EJ 3.

MANITOBA—SCM, James A. Elliott, VE4HF—The first meeting for this year of the ARLM Inc., shows promise of a full and active year with many contests and outings planned. Awards will be given for various phases of ham activities, so turn out, gang, and get the dope. ER has been in and out of the hospital again. CB is the NYL of ER. Welcome to the ranks. LS has been convalescing from an operation. EF has been busy with many conventions and curing, and will have the big rig back on the air soon. MP's NYL was hurt in an accident while on her way to code class. HB is back on the air after a long illness. KN was a recent visitor to Winnipeg. She has a DX-100 on the air. CP has had trouble with the new rig, but he will be back on soon. SA and SH have been DXing on 10 meters. SA, BP and VJ are working out well on 10- and 20-meter phone. TJ has a new 3-band rotary. The press has been inquiring about hams picking up satellites. Let's get going, gang, and give them some news. Traffic: (Jan.) VE4QD 60, JY 12, GE 9, RR 9, VJ 9, KN 7, AN 5, FG 6, GF 4, JW 4, RB 4, DU 2, VX 2, WR 2, VE5YR 2.

High Power on 20

(Continued from page 19)

monly available in hardware stores, would make a more beautiful, but probably not more effective, shield cover. The cover should be in place when tuning operations are done; otherwise radiation losses are excessive. It is advisable to make preliminary adjustments at reduced drive, as the screen current may be excessive in initial tuning phases. The need for constant metering of the screen current cannot be overemphasized.

Normally the amplifier is run at 1250 volts on the plate, drawing about 200 ma. This is well below the rated maximum for the tube, but it supplies all the signal I have use for. Screen current runs between 8 and 15 ma. Grid current of 10 to 15 ma. is adequate. The amplifier worked smoothly from the first, with no bugs of any kind.

Ground-Plane Antenna

(Continued from page 29)

coil in the vertical element until a minimum value of v.s.w.r. was achieved. As this mini-

(Continued on page 152)

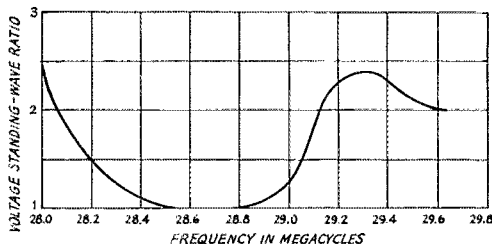
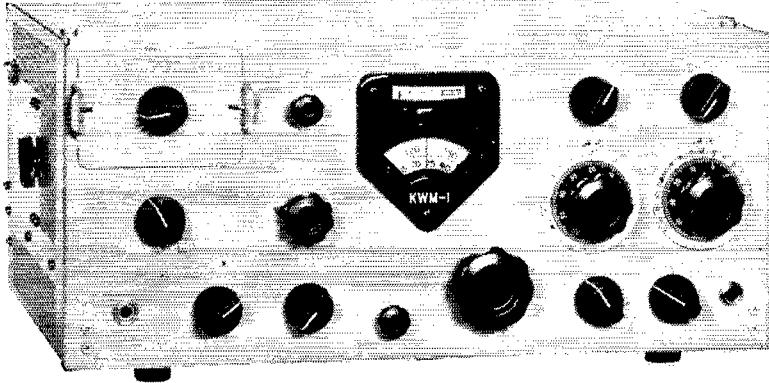


Fig. 2—Standing-wave ratio vs. frequency after adjustment of the loading coil in the vertical element and installing a 52-ohm quarter-wave matching section between the base of the antenna and the 75-ohm transmission line.

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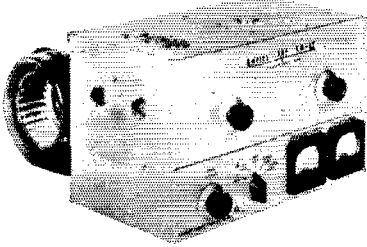
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imum value was 2 to 1, use of a matching system was indicated. The matching section chosen was a quarter-wave length of RG-8/U coaxial line (5 feet 8 inches), inserted between the antenna and the RG-59/U cable finally used for the feed line.

The graph of v.s.w.r. versus frequency, while not to be taken too seriously because of the crude nature of the bridge used for obtaining it, indicates that satisfactory operation should be possible over a large portion of the ten-meter band. It is conceivable that greater band width could have been achieved by varying the inductance of the loading coils on the radials, but the desire to get the antenna erected and working overcame any urge to further experimentation.

No concrete comparison of this antenna with the coaxial vertical which it replaced can be made, but local mobile coverage seems to be about the same with the two antennas.

Oh yes, neighbors occasionally ask me when the rocket is to be fired!

Happenings of the Month

(Continued from page 61)

original comments may be filed within ten days from the last day for filing original comments or briefs. No additional comments may be filed unless (1) specifically requested by the Commission, or (2) good cause for the filing of such additional comments is established. The Commission will consider all such comments that are submitted before taking action in these matters and if any comments appear to warrant the holding of a hearing or oral argument, a notice of the time and place of such hearing or oral argument will be given.

8. In accordance with the provisions of Section 1.764 of the Commission's Rules and Regulations, an original and three copies of all statements, briefs, or comments shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

MARY JANE MORRIS
Secretary

APPENDIX

IT IS PROPOSED TO AMEND SECTION 12.91 (b) OF PART 12 OF THE COMMISSION'S RULES, AMATEUR RADIO SERVICE, IN THE FOLLOWING PARTICULARS:

Delete the text of Section 12.91 (b), (b) (1), and (b) (2), and insert the following language:

(b) When outside the continental limits of the United States, its territories, or possessions, an amateur radio station may be operated as portable or mobile only under the following conditions:

(1) Operation may not be conducted within the jurisdiction of a foreign government except pursuant to, and in accordance with express authority granted to the licensee by such foreign government. When a foreign government permits Commission licensees to operate within its territories, the amateur frequency bands which may be used shall be as prescribed or limited by that government. (See Appendix 4 of this Part for the text of treaties or agreements between the United States and foreign governments relative to reciprocal amateur radio operation.)

(2) When outside the jurisdiction of a foreign government: operation may be conducted within Region 2 on any amateur frequency band between 7.0 Mc. and 148 Mc. inclusive; and when not within Region 2, operation

(Continued on page 164)

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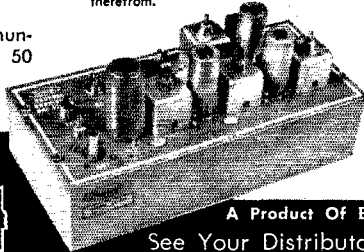
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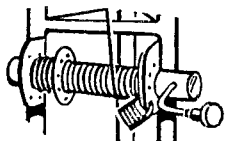
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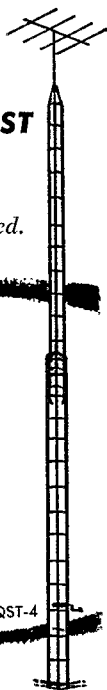
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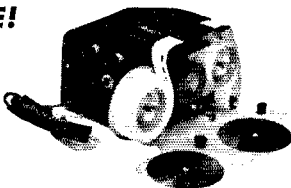
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intersection with parallel 72° north; thence by Great
Circle Arc to the intersection of meridian 50° west and
parallel 40° north; thence by Great Circle Arc to the
intersection of meridian 20° west and parallel 10° south;
thence along meridian 20° west to the South Pole.
On the west, a line (C) extending from the North Pole
by Great Circle Arc to the intersection of parallel 65° 30'
north with the international boundary in Bering Strait;
thence by Great Circle Arc to the intersection of meridian
165° east of Greenwich and parallel 50° north; thence
by Great Circle Arc to the intersection of meridian 170°
west and parallel 10° north; thence along parallel 10°
north to its intersection with meridian 120° west; thence
along meridian 120° west to the South Pole.)

V. H. F. Sweepstakes Results

(Continued from page 67)

K9AQP...1952-61-6-B	W8UJC...1300-50-3-A
W9IYN...1852-59-4-AB	W8UJL...1354-40-6-A
K9KGI...1568-56-4-A	W8UML...884-34-3-A
W9TTL...1442-52-4-AB	K8EBX...868-31-4-A
K9EEK...1316-47-4-A	K8AYR...872-24-4-A
W9OVL...1302-47-4-AC	K8EAP...264-12-1-A
K9BLI...1184-38-6-A	K8BHZ...176-8-1-A
W9PJK...816-34-2-A	K8GMB...68-3-1-A
K9HEY...756-27-4-A	W8QOL...25-1-1-A
K9KCO...616-28-1-A	W8IWZ/8 (4 oprs)
W9DLI...546-21-3-B	6156-162-9-A
W9ORW...348-17-4-B	W8LMK (4 oprs)
K9BHYV...448-16-4-B	1995-67-5-AB
W9BDM...338-15-3-B	
K9ABV...336-14-2-A	

(into)

W9JAQ/9	5050-156-6-AB	W8HNT/1	9920-155-22-A
W9TQ	1696-53-6-AB	W8UMF	6380-145-12-A
W9UJM	1022-36-4-B	W8LLO	6300-175-8-AB
K9IFP	780-30-3-A	W8NAF	5644-666-7-AB
K9GOS	648-27-2-A	W8IGL	5238-146-8-AB
W9HIX	520-20-3-A	W8MVE	5058-141-8-AB
W9JCT (4 oprs)	5364-149-8-A	W8GFN	5040-168-5-AB
		K8HNV	4640-116-10-A
		K8GFW	4572-127-8-AB
		W8MVL	4320-144-5-AB
		K8EXJ	4250-125-7-A
		K8BSC	4192-131-6-A
		W88VW	4032-126-6-A
		K8HRD	3582-111-6-A
		K8BPC	3300-110-5-A
		W8LUF	3150-105-6-B
		W8SVL	3090-103-5-ABC
		W8TEK	2940-105-4-A
		W8EHW	2910-97-5-B
		W8SDJ	2790-93-5-B
		K8BVF	2700-90-5-A
		W8DPW	2416-109-2-AB
		W8CHX	2610-87-5-A
		W8ZCV	2600-100-3-AB
		W8ENH	2587-100-3-AB
		W8NPE	2550-75-7-A
		W8NBF	2324-83-4-AC
		K8B8E	2214-89-3-B
		W8BAX	2144-67-6-ABCD
		W8PLQ	2132-82-3-AB
		W8JRN	2106-81-3-B
		W8AQ	2100-35-20-A
		W8INQ	2100-75-4-A
		K8BPY	2100-70-5-A
		W8FPZ	2054-79-3-B
		W8JPQ	2054-79-3-B
		K8BRU	2040-68-5-A
		W8RHA	2028-78-3-B
		W8TEX	1968-82-3-AB
		W8PDT	1950-75-3-B
		W8AAL	1937-78-3-B
		W8IIP	1876-67-4-B
		W8DMV	1846-71-3-B
		W4MME/3	

DAKOTA DIVISION

South Dakota

W8RSP...168-7-2-B

Minnesota

W8QIN...768-24-16-A

W8JES...168-7-2-AB

DELTA DIVISION

Louisiana

W5KTD...270-9-5-B

Tennessee

W4IKK...5846-79-27-A

W4HHE/4

1450-29-15-A

K4OSF...1272-58-2-A

K4DNG...1050-35-5-A

W4ZZ...540-18-5-A

K4KYL...260-10-3-A

K4CNX...132-6-1-A

K4KRW...77-4-1-A

K4IOY...85-4-1-A

K4EPR/4 (W4PHW K4EPR)

781-36-1-A

GREAT LAKES DIVISION

Kentucky

W4VLA...1420-51-4-AB

W4MKJ...1260-42-5-B

Michigan

W8RMH...11,700-150-29-AB

K8DKR/1...4140-138-5-A

W8CVQ...3360-80-11-AB

W8FFU...2142-63-7-B

W8NOH...2100-50-11-AB

K8AKQ...1908-53-8-A

W8JXU...1898-73-3-AB

W8LVH...1620-63-3-B

W8WTP...1560-65-2-AB

W8WRN...1508-58-3-ABCD

W8JPC...1430-55-3-B

W8M1W...1430-65-1-B

K8SDVK/2

1430-65-1-B

W8QDI...1408-64-1-B

(Continued on page 156)

Sorry . . .

**No Mermaids
nor Sea Monsters !**

● Old maps are quaint but ARRL does not compete with ancient cartographers . . . we leave that market to the antique shops. Our World Map is strictly modern.

No active amateur can afford to be without one of these popular and useful adjuncts to good operating. Here is why the ARRL World Map is such a favorite:

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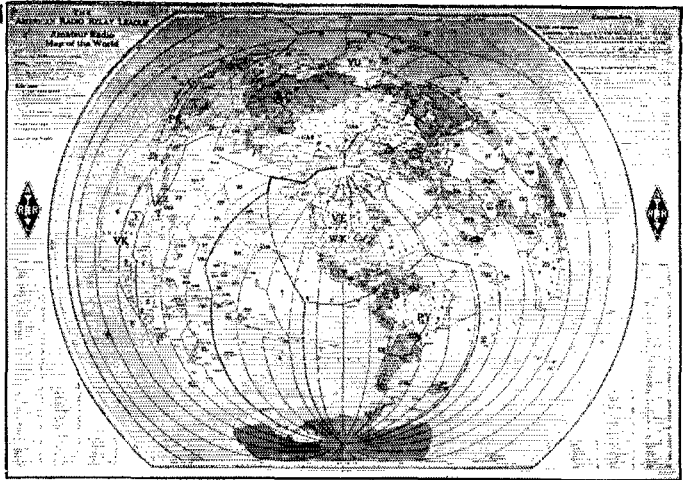
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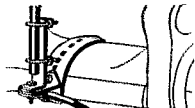
38 LA SALLE ROAD

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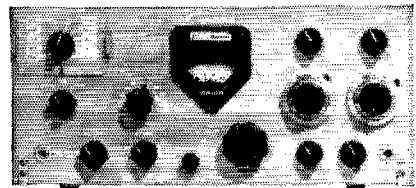
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2-pc. adjustable aluminum mast, bracket, universal bumper hitch. No holes to drill. Co-ax feed line not inc. Net. \$16.95

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FIRST Mobile SSB Transceiver — 175 watts PEP input, 14-30 mc. Excellent frequency stability. Use as mobile or fixed station without modification. Break-in CW using VOX circuits, side tone for monitoring CW. Ten 100 kc. bands available anywhere in the 14-30 mc range. 6¼" H x 14" W x 10" D. Net price \$820.00

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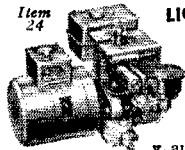
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- Item 24. Wt. 75 lbs. Be prepared if war or storms knock out power lines. \$143.50
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"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

I USE MY GOTHAM ALL BAND VERTICAL ON 6, 10, 15 AND 20

ME TOO, TOM-AND LAST NIGHT I SWITCHED TO 40, 80, AND 160. WORKED SOME REAL DX!



Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

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Enclosed find check or money-order for:

- V40 vertical for 40, 20, 15, 10, 6 meters.....\$14.95
- V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....\$16.95
- V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....\$18.95

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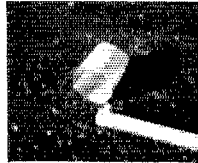
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BELVA LOCKWOOD



For President !!!




Political cartoon from "The American Past" by Roger Butterfield, Simon and Schuster, Inc., publishers.

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SAVINGS BELONGS IN
U.S. SAVINGS BONDS



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 She was small and slender and very handsome in her new blue gown as she stepped onto the roughhewn platform. Above her, flags snapped against the summer sky. Before her, the lady delegates of the Equal Rights Party stood up and cheered.

Belva Anne Lockwood accepted their cheers, and their nomination, to become in 1884 the woman who ran for the Presidency of the United States.

A gallant choice she was, too. Defying massive prejudice, she had fought for and won a college education, a law degree—the first ever given an American woman, and, finally, the right to plead cases before the Supreme Court. (Where, among other triumphs, she won a \$5,000,000 settlement for the Cherokee Indians.)

SHE didn't expect to be President; that wasn't her point. She would run to make America conscious of women's right to political equality. And run she did. Ridiculed in the press, hooted on the street, even denounced by fellow-suffragist Susan Anthony, she nevertheless received 4,159 popular ballots from six states.

More important, of course, she dramatized, as no one else had, women's battle for the right to vote.

Before Belva Lockwood died, her fight was won and America had gained the strength of millions of new "first class citizens," her women. That strength today mightily reinforces the living guarantee behind one of the world's soundest investments—United States Savings Bonds. It is one more reason why you *know* that in America's Savings Bonds your savings are safe and your return is sure. For real security, buy Savings Bonds, through Payroll Savings or at your bank.

Now Savings Bonds are better than ever! Every Series E Bond purchased since February 1, 1957, pays 3- $\frac{1}{4}$ % interest when held to maturity. It earns higher interest in the early years than ever before, and matures in only 8 years and 11 months. Hold your *old* E Bonds, too. They earn more as they get older.

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THE 12 AV

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W8WVM...1320-60-1-B
WRKSE...1300-60-3-A
W8WPH...1274-49-3-A
K8DKU...1242-47-3-A
W8PFP...1188-46-1-AB
K8ECF...1166-43-1-A
W8MDK...1144-52-1-B
K8DMZ...1144-44-3-B
KN8DXT

W8FV...1104-46-2-B
W8FV...1067-58-1-B
W8RKL...1056-44-2-A
W8MGA...1040-40-3-B
W8RLW...1034-47-1-A
W8GNX...1032-48-2-B
W8RKJ...1014-39-5-B
W8CJL...1012-46-1-B
W8WYU...1012-46-1-B
W8KDY...990-45-1-B
W8DNW...984-41-2-A
W8HTD...960-40-2-A
K8AEW...960-40-2-AC
W8ASZ...938-42-1-B
W8DUB...902-41-1-B
W8NGV...884-34-3-A
K8AEJ...884-34-3-B
W8RLY...880-40-1-B
W8RNM...858-39-1-B
K8GDN...858-34-2-A
W8KJT...832-32-3-B
W8NGG...792-36-1-A
A8DEO...792-33-2-A
K8BBC...770-35-1-A
K8BOB...754-29-3-A
W8ZOP...748-34-1-AB
W8WPA...744-31-2-A
W8SEL...726-33-1-B
W8VFD...726-33-1-A
W8ZKH...726-33-1-B
W8QFA...716-29-2-A
W8ZYV...698-26-5-B
W8KIE...688-29-1-B
W8DHJ...616-28-1-B
W8YCP...616-28-1-B
W8MOH...572-26-1-A
W8ZRV...572-26-1-B
W8YFS...552-23-2-B
W8KOT...550-25-1-B
W8OVG...550-25-1-B
W8KWS...539-25-1-B
W8TSA...506-23-1-A
K8ADI...506-23-1-A
K8COA...506-23-1-A
K8AOH...492-21-1-AC
W8KBL...456-19-2-A
K8HNS...456-19-2-A
W8BRU...440-20-1-A
K8ASX...440-20-1-A
W8SEM...418-19-1-B
W8MFB...392-14-2-B
W8GNT...330-15-1-B
W8CXB...264-12-1-A
W8ISK...264-11-2-A
W8IPZ...220-10-1-AB
W8RKW...220-10-1-B
W8ULV...176-8-1-A
W8VZE...176-8-1-B
W8AYF...154-7-1-A
KN8HBM...144-6-2-B
W8RLI...110-5-1-A
W8SZN/8 (8 oprs)
2528-79-6-ABC

HUDSON DIVISION

Eastern New York

K2CBA1...8208-114-26-A
W2HBC...3752-134-8-ABC
K2BVC...3982-91-12-A
K2LYL...2130-71-5-B
K2MIB...1008-32-6-B
K2YNB...924-34-4-A
K2YTD...884-34-3-B
KN2CZ...750-25-5-B
W2TGD...686-25-4-B
K2GCH...640-20-6-B
W2HEV...608-19-6-B
K2YRG...330-11-5-A
K2YJL...168-7-2-B
W2LWI (5 oprs)
9555-140-25-AB
K2IUU (K2s IUV VXX)
6716-146-13-A

N.Y.C.-L.I.

W2YHP...8450-109-15-AB
K2VXI...7632-161-14-A
K2VDR...7544-184-13-A
K2JVT...4598-12-6-B
W2AOC...392-6-11-BC
K2MRV...2760-69-10-A
W2VSA...2624-82-6-BD
W2WQU...2415-81-5-B
W2AOD...2176-68-6-AD
K2KRC...2106-60-2-A
K2LDG...2080-65-6-B
W2BNX/2
1960-70-4-B
K2AZT...1755-59-5-A
K2VTX...1736-62-4-A
K2BAW...1680-40-10-A

W2SJJ...1832-51-6-B
K2CYB...1504-47-6-B
W2KDC...1500-50-5-B
KN2ZLE
1456-52-4-B
W2SEU...1440-40-8-A
K2SFS...1440-45-6-AB
K2ETQ...1400-50-4-B
W2QAN...1280-40-6-B
K2LDB...1248-39-6-B
W2TNI...1232-44-4-B
K2CMV...980-35-4-B
K2YVF...980-35-4-B
K2MRS...870-29-5-B
K2GZ...870-29-5-B
WN2KQX...840-30-4-B
W2KU...806-31-3-B
WN2LDC...700-25-4-B
W2BQ...660-22-5-B
W2MFP...384-16-2-B
K2RCC...288-12-2-B
K2ORN...280-10-4-A
KN2ZXX...247-18-3-B
K2JND...168-6-4-A
W2TUK...154-7-1-B
W2YB...92-6-1-B
K2SHQ (K2s SHQ TGH)
9520-170-18-A
W2DYM/2 (5 oprs)
1904-68-4-AB

Northern New Jersey

K2LXI...9050-182-15-A
W2BDL...5900-140-22-AB
W2OIB...7088-186-4-B
K2KIT...3654-102-8-B
K2KJ1/2...3564-99-8-B
W2QFI...3468-102-7-B
K2GLS...3392-106-6-B
WN2NKP
3360-105-6-B
W2DZA...3240-81-10-ABC
W2RGV...2916-54-17-AB
W2CBB...2700-68-10-B
K2LSX...2370-79-5-B
WN2MKS
2336-73-6-B
K2ICE...2304-64-8-B
K2RWB/2
2166-57-9-A
WN2SSU...1924-74-3-B
K2LDG...828-23-8-AC
K2YH...792-35-2-B
K2DW...468-18-3-B
K2GDR...416-16-3-B
W2DEN/2...408-17-2-B
W2BVE...22-1-1-B
K2MYQ (K2s IZY MYQ)
28-1-1-B
K2KFE (K2s KFE RKEH)
2356-124-9-B
KN2DTV (4 oprs)
1918-70-4-B
K2ESC (K2s ESC RZT)
1290-48-5-AB

MIDWEST DIVISION

Illora

W0SMJ...3197-70-13-AB
W0USQ...1952-55-8-AB
K0EMQ...680-20-7-B

Kansas

W0ZJB...1818-51-8-AB
W0CIK...1050-35-5-AB
W0ETX...910-35-3-AB
W0DK...824-24-3-AB
K0GIA...552-23-2-AB
W0JAS...546-21-3-AB
K0GIC...528-22-2-AB
K0AQJ...504-21-2-AB
W0APG...432-18-2-B
W0EJ...416-16-3-B
W0ENG...336-14-2-AB
K0DTM...312-13-2-B
KN0LGV...242-11-1-B
K0EDT...220-10-1-B
W0CRN...88-4-1-B

Missouri

W0WEQ...2888-84-6-A
K0ITF...924-33-4-AB
W0YZZ...750-25-5-A
W0LFE...728-26-4-B
W0RUF...672-28-2-B
K0BVL...432-18-2-A
K0DK...432-18-2-B
KN0IPD...432-18-2-B
K0DGE...312-12-3-A
KN0KIW...312-13-2-B
K0IQH...242-11-1-A
W0TJW...168-7-2-A
KN0MUQ...144-6-2-B
K0LEP...110-5-1-A
K0LSK...110-5-1-A
K0LCM...96-4-2-A
KN0MUR...66-3-1-B
W0ODI/0 (6 oprs)
2240-80-4-A

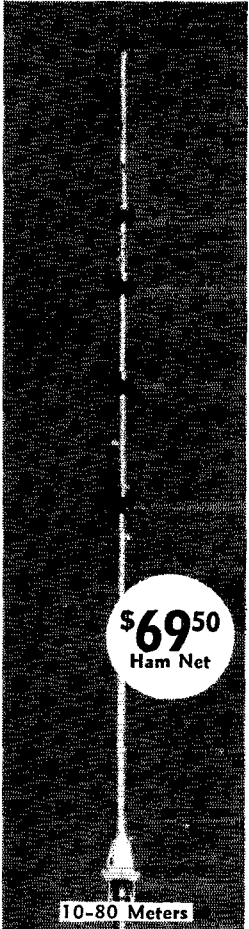
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Self-Supporting

TRAP VERTICAL Antennas from

THE 18 AV

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**\$69⁵⁰
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10-80 Meters

Trap Vertical for automatic coverage of 10-80 bands. Insu-Traps isolate sections of Vertical; develop 1/4-wave resonance on 10 & 15M, and 1/2-wave resonance on 20, 40 & 80M. 52 ohm coax feed. Less than 2:1 SWR all bands. Incl. side-mount kit for use at 18' height; self-supporting above. Height: 38'. Detailed instructions.

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(Continued on page 160)

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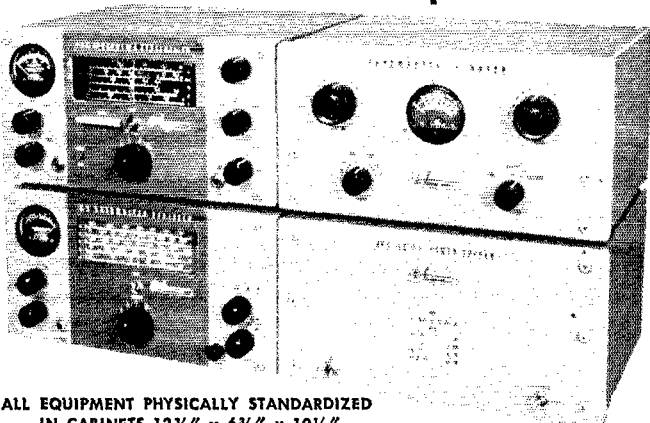
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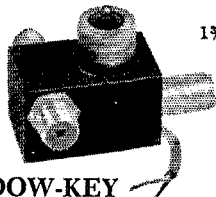
We have the complete line of world famous Collins Amateur equipment, outstanding for SSB, AM or CW operation. We're generous on trade-ins, and offer the convenience of an easy Time Payment Plan. We'll talk swaps and deals, so write, call or come in for more information on whatever you need.

- Collins KWS-1 SSB Transmitter,
Net Price **\$2,095.00**
- Collins 75A-4 SSB Receiver,
Net Price **695.00**
- Collins KWM-1 SSB Mobile Transceiver, Net Price **820.00**

GENESEE RADIO & PARTS CO., INC.

2550 Delaware Avenue 144 Genesee Street
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NEW!



SIZE:
1 1/2" x 1 3/4"
x 2 3/4"

with a performance rating never before possible.

DOW-KEY ANTENNA SWITCH MODEL DKC-TR

The DKC-TR features a gain of zero db at 60 mc to plus 6 db at 3.5 mc. Can be close-coupled to the transmitter for easy, compact installation with a Dow DKF-2 connector. Instantaneous recovery, powered from transmitter accessory terminal. Matches 52 and 72 ohm impedance without insertion loss. Handles one KW with ease.

POWER SPECS: B plus 125-150 volts, consumption at 125 volts, 6.2 mls; .450 amps at 6.3 volts; uses 6AH6 tube.

GUARANTEED! Fully backed by factory warranty for unit replacement. PRICE, \$12.50 (price subject to change without notice).

DOUBLE MALE-CONNECTOR (DKF-2) for mounting relay directly onto output of transmitter. \$1.45

See your local electronics dealer or write direct for complete specifications.

DOW KEY CO., INC.
THIEF RIVER FALLS, MINNESOTA



Nebraska

- W0HWN 1290 43- 5-AB
- W0HTG 432 43- 6-AB
- W0HOP 480 20- 2-B
- K0IAN 480 20- 2-A
- W0WRT 456 19- 2-B
- W0EOM 308 14- 1-AB
- W0FCN 176 8- 1-A
- K0GPK 110 5- 1-A

NEW ENGLAND DIVISION

Connecticut

- W1HDQ 24,402-297-32-AB
- W1LGE 20,124-258-29-AB
- W1PHR 12,360-207-20-AB
- W1OAX 8184-186-12-B
- W1YDM 8112-156-16-AB
- W1DXE 7788-177-12-B
- W1FTX 6882-112-21-AB
- W1YOB 6816-142-14-AB
- W1COT 4800-120-10-B
- W1RVZ/1 4788-133- 8-B
- K1NCRO/1 4352-128- 7-B
- W1BYN 4048 88-13-A
- W1VSE 3660-122- 5-AB
- W1DFA 3612-129- 4-B
- W1IAW 3600 75-14-A
- K1CAP 3600-100- 8-B
- W1FWM 3510-135- 8-B
- W1YDS 3072 97-6-AB
- W1AWV 2912-112- 3-B
- W1FHP 2880-96- 5-B
- W1VNO 2880 72-10-A
- W1QAK 2800 70-10-B
- W1FOO 2682-102- 3-B
- W1SPN 2646 64-11-A
- W1UFW/1 2600-100- 3-B
- W1DEF 2553-57-13-A
- W1TZW/1 2380 85- 4-B
- K2ESO/1 2304 96- 2-B
- KN1DD 2220 74- 5-B
- W1WHL 2184 52-11-A
- KN1AZG 1944 81- 2-B
- W1UFV 1924 74- 3-B
- K1AZF 1896 79- 2-B
- W1GKR 1890 45-11-A
- KN1DCS 1884 79- 2-B
- KN1BMM 1860 62- 5-B
- KN1BDP 1800 75- 2-B
- K1BML 1717 52- 7-B
- W1FVY 1710 48- 8-A
- KN1DZI 1680 70- 2-B
- KN1DDO 1632 51- 6-B
- W1AW9 1612 62- 3-AB
- W1DLW 1584 44 8-A
- W1OIT 1320 55- 2-B
- W1HDF 1290 43- 5-AB
- KN1DPL 1284 54- 2-B
- K1CVJ 1164 49- 2-AB
- W1KXH 1104 46- 2-B
- KN1CSH 1080 45- 2-B
- K1AZF/1 1066 41- 3-B
- W1EOR 960 40- 2-B
- W1YNR 960 40- 2-B
- K1AOY 936 39- 2-B
- W1WHR/1 810 35- 2-B
- W1CE 768 32- 2-B
- K1AEM 728 28- 3-A
- W1TXV 676 26- 3-A
- W1RFJ 672 45- 4-AB
- W1VH/1 672 28- 2-B
- W1TCJ 624 26- 2-B
- W1IMG 608 19- 6-A
- W1FFP 576 24- 2-B
- K1AQE/1 552 23- 2-B
- KN1H8C 550 25- 1-B
- W1MNB 504 2- 2-B
- W1DND 484 17- 1-B
- KN1DWA 360 15- 2-B
- K1AOX 312 13- 2-B
- W1KHM 288 12- 2-AB
- W1EJV 240 10- 2-B
- W1MBX/1 176 8- 1-B
- W1KE 154 7- 1-B
- W1BD 132 6- 1-B
- KN1CJ 132 6- 1-B
- W1ANI 88 4- 1-B
- KN1DW 88 4- 1-B
- W1PSE/1 (W18 FSE ZIF, K6AMV) 9200-230-10-AB
- W1ZTT (6 ops) 8944-176-16-AB
- K1BCI (5 ops) 902 41- 1-B

Maine

- W1GKJ 3528 63-18-A
- W1NUT 1008 36- 4-B
- W1TJN 592 19- 6-A

Eastern Massachusetts

- W1HOY 23,940-315-28-A
- W1QXX 17,064-316-17-AB
- W1QMN 8640-160-17-AB
- W1DDN 7756-140-18-A
- W1OOP 7400-150-15-ABC
- W1EUF 7112-128-18-AB
- W1EJP 5970-100-20-A
- W1LWZ 5320-141- 9-AB
- W1YLB 4980-102-10-AB
- W1JRM 3536-104- 7-B
- W1NSY 3132 87- 8-B
- W1AHE 2944 92- 6-AB
- W1LUW 2831 75- 9-AB
- W1QIB 2156 77- 4-AB
- W1NYL 1980 66- 4-A
- W1FRR 1770 59- 5-AB
- K1ALO 1764 63- 4-B
- K1ADE 1720 44-10-A
- W1UOJ 1600 50- 6-AB
- KN1EBO 1560 60- 3-B
- W1ZUP 1488 49- 6-A
- W1QOE 1440 48- 5-A
- W1SSU 1428 51- 4-B
- W1QKJ 1260 42- 5-B
- W2BVU/1 1230 41- 5-B
- W1MEG 1072 35- 6-AB
- W1LHV 1066 41- 3-B
- K1AIU 1050 35- 5-B
- W1BCN 904 32- 6-AB
- W1FQD 896 32- 4-A
- W1MCR 840 30- 4-B
- W1NAX 756 27- 2-B
- W1HZR 728 26- 4-B
- W1JMS 702 27- 3-B
- W1WMK 700 25- 1-B
- W1LEC 698 29- 2-A
- W1ELW 650 25- 3-B
- W1ELT 584 16- 2-A
- W1AHT 330 15- 1-B
- W1ZLQ/1 288 12- 2-B
- KN1CZY (4 ops) 4160-130- 6-B
- K1AGR (W1PFX K1AGB) 2816 88- 6-B
- KN1CWE (KN18 BSM CWE) 2744 98- 4-B

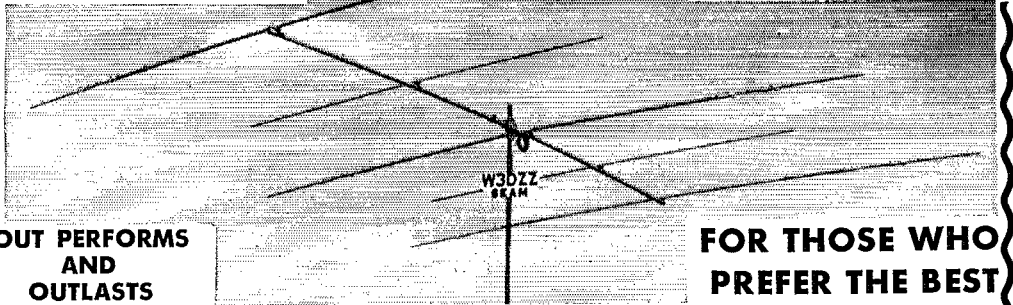
Western Massachusetts

- W1RFU 17,608-286-21-AB
- W1VNH 12,990-220-20-AB
- W1MNG 9984-192-15-AB
- W1LHM 9360-180-16-AB
- W1EOB 6920-155-12-AB
- W1KOR 6468-152-12-AB
- W1NY 6288-131-14-AB
- W1BXB 5890-155- 9-AB
- W1DVT/1 5356-103-16-A
- W1OBO 5120-129-10-AB
- W1LKR 456-143- 6-AB
- W1HYO 4278 94-13-A
- W1STR 4237-112- 9-AB
- W1RVW 4012-118- 7-AB
- W1KUL 3556-127- 4-AB
- W1AJX/1 3304-118- 4-AB
- W1FAB 3160-79-10-AB
- KN1CZY 2996-107- 4-B
- W1NDW 2860-110- 3-B
- KN1DAI 2850-102- 4-B
- W1JO 2784 87- 6-AB
- W1AKI 2704-104- 3-B
- W1OY 2688-112- 2-AB
- W1ALL 2652-102- 3-B
- W1MQK 2616-109- 2-B
- W1BCI 2546 88- 9-A
- KN1BRZ 2544-106- 2-B
- KN1DAJ 2392 92- 3-B
- W1JWV 2340 90- 3-AB
- W1JYH 2304 72- 6-AB
- W1KUE 2262 86- 3-AB
- W1DHA 2210 85- 3-B
- W1QV 2156 83- 3-AB
- W1CJF 2132 82- 3-B
- W1RRX 2112 88- 2-AB
- W1ESA 2054 79- 3-B
- W1CSP/1 2016 84- 2-B
- W1ZWL 2016 84- 2-B
- K1ABS 1992 83- 2-B
- W1MTV 1941 81- 2-B
- W1REB 1920 80- 2-B
- W1HRE 1846 71- 3-AB
- W1LH 1800 75- 2-B
- W1EEL 1768 86- 3-AB
- W1NLE 1752 73- 2-B
- K1BZM 1688 70- 2-B
- KN1CZZ 1656 70- 2-B
- W1HUN 1632 51- 6-A
- W1GCP 1610 58- 4-AB
- W1WFL 1588 66- 2-B
- W1AUF 1524 64- 2-B
- W1VNE 1452 61- 2-B
- W1TCW 1410 60- 2-B
- W1HMN 1410 47- 5-A

(Continued on page 162)

The **ORIGINAL**
THREE-BAND

A NEW LINE OF
BEAMS COMING!



OUT PERFORMS
AND
OUTLASTS

FOR THOSE WHO
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- ✓ **NO STACKING REQUIRED**—all elements are at the full height yet wind resistance is held to a minimum.
- ✓ **UNIQUE WINDMILL DESIGN**—permits ready access to all parts of the beam from the tower.
- ✓ **WIDE-BAND BALANCER**—affords perfect pattern symmetry with coaxial feed line. No adjustment required.
- ✓ **MAXIMUM GAIN**—over 8-db. gain on 20 and 15 meters, somewhat higher on 10 meters.
- ✓ **HIGH FRONT TO BACK RATIO**—in most installations the front to back ratio exceeds 30 db. on 10, 15, and 20 meters.
- ✓ **RUGGED DESIGN**—Boom consists of two 12-foot lengths of 2¼" dia. tubing with .065" wall. Three-band elements are made of 1½" tubing with .058" wall. All tubing is of 6061-T6 heat-treated aluminum alloy for maximum weather resistance and strength.

MODEL FT-100 BEAM ANTENNA PARASITIC ARRAY operating on 10, 15 and 20 meters. Complete with chromate dipped hardware and aircraft type stainless steel clamps (to assure against corrosion and rust), assembly instructions and prints.
MULTI-BAND DESIGN FOR WIRE ANTENNAS—The W3DZZ design employs a concentric coil and condenser completely potted in Polyester Resin. Polystyrene insulation of concentric capacitor can withstand highest amateur transmitter voltages.
MODEL FT-200 TRAPS for 5-band antenna operation on 10/15/20/40 and 80 meters. (75 ohm feed line). Pair, postpaid. **\$12.50**

\$225.00



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 414 PINE AVENUE, FREDERICK, MARYLAND

at last! what thousands of hams have wanted for years

THE FIRST QSL ALBUM

designed specially to hold your W. A. S. cards!



Here's the practical, easy way to keep your W. A. S. QSLs — a handsome, well-planned album with heavy leather-texture covers, sturdy wire binding, and individual spaces for all 48 states!

As each new one is worked, you mark the QSO date, band, report given, QSL sent, etc., in spaces for individual states. Then, when cards are received, you mount them over these records, using one of the 50 special adhesive hinges supplied with the album. Both sides of QSLs can be readily inspected; any card may be removed or replaced later without damage.

This attractive album lets you see quickly how many states are confirmed, what you've worked, and what you

still need to work. It's fun, too, when submitting QSLs for the W. A. S. certificate. And you'll be proud to show friends your cards, neatly displayed in this 10" by 14" album designed by hams for hams.

The cover is planned to include your own QSL card, or — for only \$1 extra — we'll send your call letters in gold for affixing to the front of the album.

A limited supply of W. A. S. QSL ALBUMS is on hand — so it has to be first come, first served. The cost? For W and K, \$3.50; for VE and VO, \$3.75; elsewhere, \$4.00. We pay the postage if you order direct. Or ask your favorite ham equipment dealer. If he doesn't have this brand-new W. A. S. QSL ALBUM, he can get it for you from —



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(Bill Leonard — W2SKE; Dick Dorrance — W2LEJ-K2EAD)

NOW IN PREPARATION:
 For the DX-minded, we'll soon offer the DXCC ALBUM, the W.A.Z. ALBUM, and individual QSL ALBUMS for each continent. Watch Hanover Electronics for other useful operating needs, too — things you've always wanted but never been able to buy.

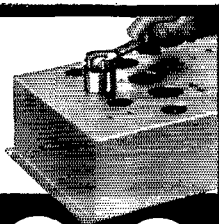
HANOVER ELECTRONICS, INC., 126 EAST 37TH STREET, NEW YORK 16, N. Y.
 Dear OMs —
 Rush me _____ W. A. S. QSL ALBUMS, postpaid. I enclose check, money order or bank draft for \$_____ (at \$3.50 each in U.S.; \$3.75 in Canada; \$4.00 elsewhere. Call letters in gold for affixing to cover, \$1.00 extra per album.)

My name

Call letters Street address

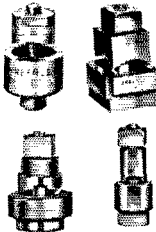
City State or Country

CUT CHASSIS HOLES FAST!



Smooth, accurate openings made in 1½ minutes or less with Greenlee Radio Chassis Punch

Quickly make smooth, accurate holes in metal, bakelite, or hard rubber with a GREENLEE Chassis Punch. Easy to operate . . . simply turn with an ordinary wrench. Round, square, key, and "D" types . . . wide range of sizes to make openings for sockets, plugs, controls, meters, terminal strips, transformers, panel lights, etc. Assure perfect fit of parts and professional finish to every job. Write for descriptive literature. Greenlee Tool Co., 1864 Columbia Ave., Rockford, Ill.



WIEVZ. 1353-52-3-B
 WIHRV. 1320-55-2-B
 WIUUB. 1320-55-2-B
 WILJF. 1204-43-4-A
 WIOSK. 1080-45-2-B
 KICYP. 984-41-2-B
 KIDZW. 980-35-4-A
 WIDUE. 960-30-6-A
 WIRQY. 960-40-2-B
 WIBH. 888-37-2-B
 WIZER. 864-36-2-B
 WIVBG. 720-30-2-B
 WIUCR. 676-26-3-A
 KNIBRY. 616-22-4-B
 KNICYD. 600-25-2-B
 WITHD. 176-8-1-B
 WIMOK. 144-2-1-B
 WIGYM. 1 (2 ops)
 3556-127-4-AB

New Hampshire
 WIGEF/1
 8120-140-19-A

Rhode Island
 WLAJR. 8700-156-19-AB
 KNIDUO? 1540-55-4-B
 WIKGR. 1512-45-7-A
 WIUHE. 1496-34-12-A
 WIWTR. 784-25-6-A
 WIGFH. 494-19-3-B
 KNIDPU. 480-20-2-B
 KNIDWI. 288-12-2-B
 WIOP (13 ops) 797-171-13-AB
 KIBZA (4 ops) 3534-93-9-AB

Vermont
 WIETF. 1728-38-14-A
 WIMEP. 1691-46-9-AB
 WIEXZ. 1380-38-10-A
 WIMMN. 420-14-5-B
 KICYP/1 (WIJO KICYP)
 156-6-3-B

NORTHWESTERN DIVISION

Alaska
 KL7CDG. 3968-67-22-A
 KL7AUV
 1323-25-17-A

Montana
 W7BXW. 338-13-3-A
 W7EPZ. 203-8-3-A

Oregon
 K7AAD. 7650-116-24-A
 W7ANG. 7128-108-23-A
 W7HBB. 4816-86-18-AB
 W7NFC. 336-78-18-A
 W7NGW. 3360-60-18-AB
 W7WSP/7

3224-62-16-A
 K7BCY. 2575-54-16-A
 W7QF. 757-18-11-A
 W7TMF. 672-16-11-A
 W7FKG/7
 494-19-3-A
 W7QND. 336-14-2-A
 W7RZ. 300-18-2-AB
 W7DIS. 264-12-1-A
 W7REV. 240-10-2-A
 W7GUH (W7GUH
 KN7CBC)
 1008-28-8-A

Washington
 W7VPT. 7582-113-24-A
 W7RDY. 6510-93-25-A
 W7BJW. 4860-82-20-AB
 W7ZOW. 3960-62-20-AB
 W7MTM. 3136-57-18-A
 W7MPH/7
 3016-58-16-A
 W7UGK. 2987-53-19-A
 W7PAE. 2943-88-17-A

(Continued on page 164)

KN7BBO. 768-32-2-B
 W7DJN. 640-20-6-A
 W7MCU. 552-23-2-AD

PACIFIC DIVISION

Hawaii
 KH6OS. 132-6-1-B

Nevada
 W7JLV. 1166-27-12-A

Santa Clara Valley
 W6RLB. 6355-104-21-AB
 W6ASH. 2160-72-5-B
 K6QQI. 1344-25-14-A
 KN6BDM
 494-19-3-B
 K6HYX. 364-13-4-B

East Bay
 W6SUEP. 8294-143-19-A
 K6KFF. 960-32-5-A
 K6LFB. 260-10-3-A
 K6RNQ (K6RS RNQ UZK)
 9240-164-20-AC
 K6AON/6 (W6GFG
 (K6AON)
 3840-128-5-B

San Francisco
 W6BAZ. 11556-161-26-A
 W6AJF. 10664-172-21-ABCD
 K6EOW. 7290-135-17-A
 K6GOW. 6555-143-13-AB
 W6NZV/6

4488-132-7-A
 W6NSNO. 520-20-3-B
 W6SPG. 210-7-5-A
 K6BLV (K6S BLV VXD)
 4444-103-12-A

Sacramento Valley
 K6GJJ. 4080-86-14-AB
 W6QIV. 2542-41-21-A
 W6NDYF
 2400-80-5-B
 K6ASZ. 1242-23-17-A

San Joaquin Valley
 K6GOX. 5510-95-19-A
 W6GQZ. 2836-69-18-AB
 W6BJI. 3078-57-17-A
 K6SVO. 2667-64-11-A
 W6VZA. 2475-50-15-AB
 K6OQJ. 1620-54-5-B
 K6SNA. 1380-46-5-B
 KN6ZCE. 882-32-4-B
 K6KYU. 700-25-4-A
 K6RPL. 480-20-2-B
 W6HBA. 240-10-2-B

ROANOKE DIVISION

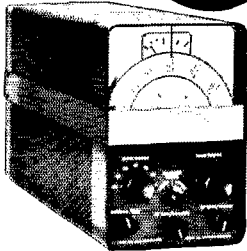
North Carolina
 W4ZNY. 5184-81-22-AB
 W4ACY. 1152-36-6-AB
 W4WDF. 456-19-2-B
 W4AJT. 442-17-3-B
 W4NHV. 176-8-1-B
 W4RXG (W4S RA RXG)
 528-22-2-B

South Carolina
 W2BHS/4. 364-14-3-B
 W4TLC. 112-4-4-A

Virginia
 W4UCH
 12,388-163-28-A
 W4UMF. 5832-108-17-ABC
 K4PCN1. 3660-93-10-A
 K4RYP. 2944-95-6-A
 K4RAY. 1968-62-6-A
 K4SKR. 1296-54-2-A
 K4SSA. 1066-41-3-A
 W4ZCG. 1050-35-5-A
 W4ZBS. 884-34-3-A
 W4AWL. 741-29-3-AB



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\$299 IMMEDIATE NET DELIVERY

All features for best SSB and CW

- Crystal-controlled, High Frequency Converter—Seven ham band tuning ranges—80, 40, 20, 15, 10, 10, 10.
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 Scaled carrier AM receiver
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We'll established TV station in Northeast with transmitter staff of 6, requires assistant transmitter supervisor. Must be technically qualified in measurement and maintenance of TV transmission equipment. Character and technical references required with application.

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ANTENNA PROBLEMS?

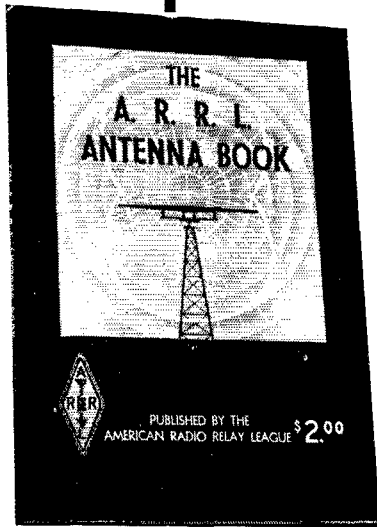
HERE is the information you may be looking for . . . all under one cover. You'll find in the pages of the A.R.R.L. Antenna Book the answers to almost any antenna problem you might encounter.

LOOKING for information on mobile whips or planning an elaborate beam to snag those rare DX stations? From basic theory to how to build 'em, horizontals, verticals, rotaries, fixed beams, transmission lines, v.h.f., u.h.f., together with dimensions, photos, drawings, radiation patterns, you'll find details in the information-packed ARRL Antenna Book. Better pick up your copy now.

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West Hartford 7, Connecticut



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TURN COUNT DIAL

Registers Fractions to 99.0 Turns

FOR roller inductances, INDUCERS, TUNERS, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2" x 4". Shaft: 1/4" x 3". TC 2 has 2 1/2" dial — 1 1/2" knob. TC 3 has 3" dial — 2 1/2" knob. Black bakelite.
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Add 8¢ for Parcel Post

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"Geo" HAMILTON, ONT. "Bill"

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Like you, I've found the new-gear ads in QST mighty tantalizing, but I had to find a way to get the gear with extra income. Then I saw a Lampkin Laboratories' ad in QST offering their free booklet "HOW TO MAKE MONEY IN MOBILE-RADIO MAINTENANCE." I sent for it—and learned how I could turn my ham experience into a profitable part-time business right in my own home . . . doing regular maintenance and FCC checks on 2-way commercial and public-safety rigs.

Now when I call CQ on 20 meter 'phone on a Sunday afternoon it sounds as though the whole band comes back to me—for I finally got that new KW and beam . . . with money I earned in mobile-radio maintenance!

THE COUPON TO THE RIGHT CAN DO THE SAME FOR YOU
BETTER MAIL IT TODAY!

LAMPKIN LABORATORIES INC., BRADENTON, FLA.

The test instruments preferred by expert mobile-service engineers are made by **LAMPKIN**



LAMPKIN 205-A FM MODULATION METER RANGE 25 TO 500 MC. PRICE \$240.00



LAMPKIN 105-B FREQUENCY METER RANGE 0.1 TO 175 MC. AND UP PRICE \$220.00

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LAMPKIN LABORATORIES, INC.
Mfg. DIVISION, BRADENTON, FLA.

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VE7BQ...1368-31-14-A
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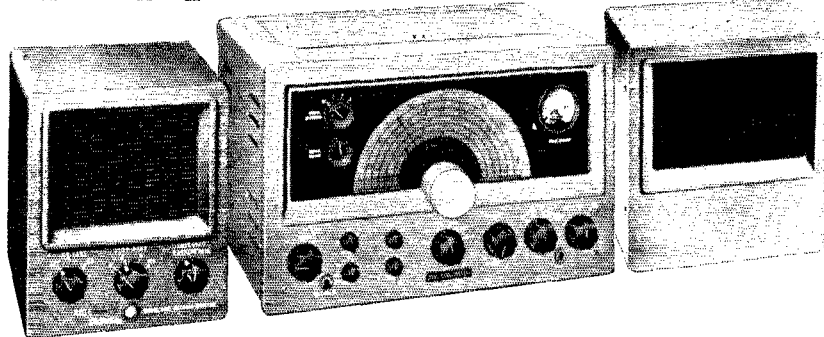
Quist Quiz

Answer to Quist Quiz on page 45: There are two possibilities, a delta (triangular) connection of three 30-ohm resistors and a Y connection of three 10-ohm resistors.

You got them both? Bully for you! Now, without opening the box, how would you determine which connection was used?



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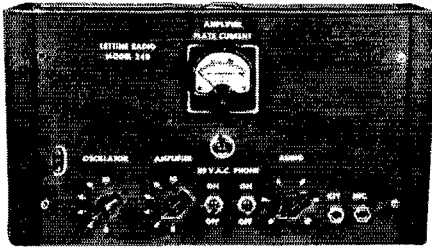
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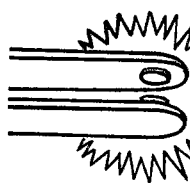
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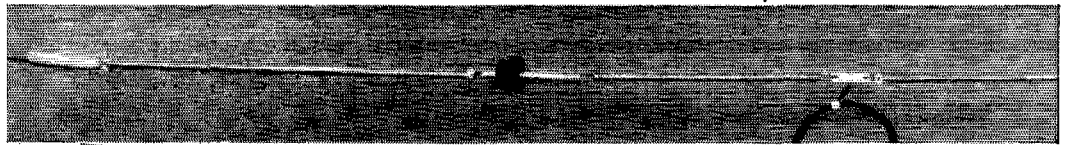
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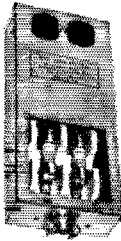
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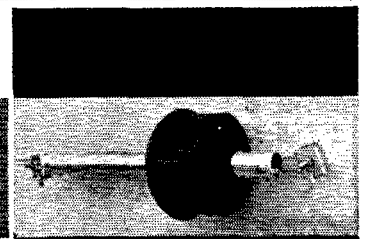
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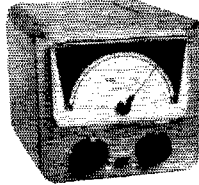
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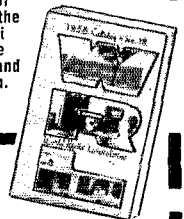
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RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallcrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas. **HALLCRAFTERS**, Central Electronics, Ham gear — others. Swartzlander Radio Limited, Fremont, Ohio. Call Jerry, W8EPI or write.

"DIG-IN-A-POKE" Not if you visit Ham Headquarters, USA, and take your choice from one hundred of "Like New" bargains in the world-famous Harrison Trade-In Center! See photographs, p. 137, March QST and p. 133, April QST. Greater values, because tremendous turnover means lower overhead! Terms, Trades, RCNU. Bill Harrison, W2AVA, 225 Greenwich St., New York City.

HAMS! In Central Illinois it's Knox Electronic Supply, Galesburg, Ill.

WANTED: BC-610E, BC-614E, JB70 Junction Box, BC-939; ART-13, BC348, BC312, BC342, ARC-1, ARC-3, other military and aeronautical surplus. Give condition, name price. We pay C.O.D. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

VAN SICKLE, Gene, W9KJF, invites you to shop his fabulous new electronic supermarket for latest gear at lowest prices. Van Sickle Radio Supply Co., 4131 N. Keystone, Indianapolis, Ind.

QSL'S? SWL'S? Finest and largest variety samples, 35¢ (refunded). Callbooks (spring) \$4.50 postpaid. "Rus" Saktors, W8LED, P.O. Box 218, Holland, Mich. (Religious QSL's a specialty.)

QSL'S, Twenty exclusive designs in 3 colors. Rush \$3 for 100 or \$5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Gladensburg, Md.

QSL'S, Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

QSL'S, Reasonable, 3 Week Delivery. Samples dime (coin), Dick, K4CJM, Box 294, Temple City, Calif.

QSL'S-SWL'S, High quality. Reasonable prices. Samples, Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSL'S of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Pa.

QSL'S, Twenty for Dollar. Curley, 200 Buftington Rd., Chester, Pa.

QSL'S, SWL'S, VLF'S, NYL-OM'S. (Sample assortment approximately 9%) Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fabulous, DX-attracting, profitable, easy, unhampered, cards. Rogers, K6AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, publishing (Vow!).

QSL'S, Taprint, Union, Miss.

QSL'S, Plain and fancy samples 10¢. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins Jr., KN6ZMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

QSL-SWL'S, 100, \$2.85 up. Samples 10¢. Griffith, W3PSW, 1042 Pine Heights Ave., Baltimore, Md.

DELUXE QSL'S, Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSL-SWL samples free. Bartnoski W2CUE Press, Williamstown, New Jersey.

QSL-SWL'S, 100, \$2.60. Samples 10¢. QSO lite cards, \$1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

HACKUS Press QSL'S-SWL'S. Samples dime. 703 Cumberland St. Richmond, Va.

QSL'S, High gloss, 2 colors, samples 10¢ (refunded). K2VOB Press, 82 Midland Boulevard, Maplewood, N. J.

QSL'S, America's first QSL printer. Samples 10¢. VYS QSL'S, 1704 Hale, Ft. Wayne, Indiana.

QSL'S-SWL'S, Samples free. Spicer, 4615 Rosedale, Austin 5, Texas.

QSL'S, Reasonable, nice designs. Samples dime. Stan, W2ZDJH, 19 Elm St., Warrensburg, N. Y.

QSL'S "Brownie", W3JCI, 3110 Lehigh Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL'S, SWL'S, 3-colors, 100 \$2.00, Samples dime, Bob Garra, W3UQL, Lehighton, Penna.

QSL'S, samples dime, Eddie W. Scott, W3CHX, Fairplay, Maryland.

QSL'S, Glossy, Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

QSL Special. Free sample. Nat Stinnette, W4AYV, Umatilla, Fla.

QSL'S-SWL'S, Samples 10¢. Mialgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSL'S, Sharp! 200 one color, glossy, \$4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

RUBBER Stamps for hams, sample impressions. W9UNY, C. V. Hamm, 542 North 93rd St., Milwaukee, Wis.

QSL'S, Samples, dime. Printer, Corwith, Iowa.

QSL'S: Cartoons, colors, something different. Samples 20¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSL Cards. Deluxe, glossy, interestingly different. Plain or multi-colored. Free samples. Jada Press, P.O. Box 85, Windsor, Conn.

WANTED: Used receivers and transmitters: Will pay cash or trade, 10% down with up to 24 months to pay. In stock: new 754.4, KWS1s, KWM-1 SSB mobile transceiver, Johnson, WRL, B&W, National, Hallcrafters, Elmac, Hammarlund, Gonset, Central Electronics; Mosley, Hy-Gain and Gotham beams. Write for list of bargains in reconditioned receivers and transmitter with new guarantee. Shipped on approval. Write Ken, W9ZCN, or Glen, W9ZKD for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Fort Dodge, Iowa.

SELL: Viking Valiant, factory-wired, \$325; DB23, \$35; DX100, \$185; Hammarlund HQ160 and speaker, \$245. F.o.b. K25LXO, RFD NR1, Millville, N. J.

WANTED for restoration purposes RCA parts made in 1922, 2-4PR535 rheostats, 2-RUP-45 reactors, 1-4UL185 choke, 1-4UC1634 condenser. Geo. N. Delaplaine, Box 861, New Brunswick, N. J.

DELTA-TENNA ground planes, commercial quality 2 mtr., \$19.95, 6 mtr., \$24.95; 10 mtr., \$29.95. Also cut to any commercial frequency 450-20 Mc. Western Gear, Dept. Q, 132 W. Colorado, Pasadena, Calif.

IMMEDIATE answer to your request for new listings of reconditioned equipment and our new complete amateur catalog. We give you a realistic deal always on all brands, new or used. Check our offer first. We deal quickly, easily and on a personal basis. Our terms tailor-made to your budget. Stan Burghardt, W9BJV, Burghardt Radio Supply, Watertown, So. Dak.

SELL: 25 to 44 Mc FM receivers, crystal controlled, double conversion, complete with 13 tubes and vibrator power supply, \$27.50; Motorola FM-30 watt mobile transmitters with dynamotor, \$16.50. Can be converted to AM. Ralph Villers, Box One, Steubenville, Ohio.

RECEIVERS and transmitters repaired by experts. Authorized factory service. Ham prices. M. T. C., 239 East 149th St., Bronx, N. Y. Tel. Mo 5-1100.

DON'T Fall! Check yourself with an up-to-date, time-tested "Sure-check Test." Novice, \$1.50; General, \$1.75. Amateur Radio, 1013 Seventh Ave., Worthington, Minn.

MICHIGAN — Used Collins 32V2, \$395; Conset Communicator II GM 12V, \$195; Conset Communicator II GM 12V push-to-talk, \$215; Globe Chief, \$250; Johnson Adventurer, \$45; SX-98, \$195; HQ129S w/spkr, \$149; RA1E50, \$135; National NC100X w/spkr and Q multiplier, \$65, etc. New: Collins, Hallcrafters, Hammarlund, Johnson, National, WRL, etc. Radio Parts, Inc., 542-548 Division St., Grand Rapids 3, Michigan.

TS-47/APR Test Osc. 40 to 500 Mc., \$129.50. Navy RBL receiver 15 to 600 Kc., \$79.50; Laviole freq. meter 375 to 725 Mcs., \$19.50; Fluxmeter 500 to 4000 Kc., \$19.75; General Radio DC amplifier type 715-A, \$2.50; Johnson Adventurer, \$45; SX-98, \$195; Bolooids, \$29.50; AN/APT-2 Jammer Transmitter 425 to 750 Mcs., \$19.95; AN/APT-5 Jammer Transmitter 300 to 1600 Mcs., \$169.50; AN/APR-5 revr 1000 to 6250 Mcs., \$98.50. All in new condx. Tech. manuals TM11-273, 120 pp covering BC-312 revrs and BC-191 xmtrs, \$2.50; ID-60/APA Panadapter maintenance manuals, \$2.75. Both postpaid in U.S.A. Write for bargain list. Electronics Inc., Box 269, Bronxville, N. Y.

WANTED: All types Aircraft Airline Military Electronics Gear: Collins, Bendix, ARC Airforce BC348, ARN6, ARN14, ART13, 51R3, ARCI, MN62A, others. We pay C.O. Advice price and condition. Ritco, P. O. Box 156, Annandale, Virginia. Phone Jefferson 2-5805.

TO Settle an estate: A "Dream Station" for sale: Johnson kilowatt final with matching desk, Ranger exciter, HRO-60 with six coils and xtal calibrator, Telrex Tri-band beam, Tri-Fix 60 ft. crank-up tower, 600 watt, 1000 ft. mikes, 400 watt, 1000 ft. mikes, 100 hours, 1000 hrs like new, cost over \$3000. First \$2,995.00 takes it. F.o.b. Safford, Arizona. Contact J. B. McNutt, Jr., Athens, Texas. Phone 3590.

SSB Transformers identical to those used in W2EWL exciter (see QST March 1956). Brand new, 3 for \$4.00. Elmac 32 KV vacuum condensers, 12µfd and 50µfd, brand new, \$5.50 each. No C.O. please. S. Tucker, W2HLT, 51-10 Little Neck Pkwy Little Neck 62, N. Y.

KWM-1 wanted. Also few high plate dissipation tubes. W2K0W, 64 Grand Pl., Arlington, N. J.

SELL: Heathkit FM-3 tuner, \$24, gud condx; Ameco Conradrad monitor, \$10; 8 resistor panel and mobile converter, \$65; 734 Permanent magnet from radar transmitter; excellent for demonstrations. Make an offer. Dow-Key 110V AC antenna co-ax relay with double male adapter. Frank Sibley, 34 Puritan Drive, Port Chester, N. Y.

THE Original Vacuum Coaxial Antenna Relay. Sideband and high power operators, end your antenna relay problems! Price \$69.90. Send for dope sheet. South Bay Electronics, 3125 Barney Avenue, Menlo Park, Calif.

WANTED: Collins K-1. W3AOH.

CAL plates, Deluxe 8" x 14" black phenolic laminate with engraved white letters. Only \$1.00 p.p. Followed plastic base, \$1.00 extra. L. & J. Products Co., P. O. Box 122, Downers Grove, Ill.

OLD QST's wanted. Need between 1915 and January through July of 1916. Will pay cash or will trade Hound Volume I, A. Morrow, W1VG, 99 Brentwood Rd., West Hartford 7, Conn. Phone Adams 3-2073.

SALE: Hi-power deal for ham who is still a do-it-yourselfer: Mod. using PP205's; heavy duty Multi-Match UTC xfrmr, speech amp using PP6L's, RF driver is a new condx Johnson Viking II and VFO, RF final. You finish it with any pwr 500-800W. All heavy duty individual pwr supplies, schematics, and interconnecting diagrams included. Enc. units enclosed in individual cabinets but for D-10 V-Ting and ease of service, will supply a Par-Metal 6 ft. eucl. cabinet rack in exe. condx. Will sell only as a package deal. Manufactured by Utah Radio Corp. Within 200 miles of Chicago, Ill. and will deliver for best offer over \$325. Write or phone 11-2-3922 after 6 p.m. weekdays. George Hamer, W9KXX, 224 McKinley Ave., Libertyville, Ill.

VTKING II and VFO for sale, factory-wired with time-sequence keying, \$220. In XC-300 with crystal calibrator and matching speaker; \$300. All are in exe. condx. David Smith, K2CHS, 54 Butler Rd., Searsdale, N. Y. Tel. SC 3-4083.

SUPER-PRO, BC-779A, excellent operating condx, \$50. Cash and carry. W2KJQ, Seaford, L. I., N. Y. SU 5-5755.

MAKE offer on this beautiful like-new equipment: 32V2 with D-104 mike, extra RK4D32. Offer must be over \$300. Also have 70E3A PTO, W0PVS.

HQ140X, #160; Model "B" Slicer, \$50. Like new. Money-back guarantee. Moory TV, DeWitt, Ark.

WANTED: Three new or OK used TZ-40s; three T-55s; three 2 1/2 in. sq. 0-50 Ma. meters. Reasonable. J. E. Whitcraft, 62 So. Main Ave., Albany 8, N. Y.

GOING TO college. Selling NC-100X spkr, \$45; Alliance rotor, \$21. Make offer on "500 watt Multiband VFO Transmitter", ptt 807s modulator, 1/2 kw. Handbook ant. tuner, pwr supplies; 300V DC 70 Ma., 400/500V DC, .3a, 1250V DC, .2a or 700V DC, .25a; Shure mike, E-V ptt stand, used 250TH, 6146s, W4GIM.

WANTED: Johnson Adventurer or Knight CW xmtr. State condx and lowest price. Bryan Hall, DeKalb, Texas.

WANTED: Unused electronic tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write for Barry's "Green Sheet", check full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 512 Broadway, New York 12, N. Y.

RELAY Rack for sale: 72 x 24 x 17 with some panels, mounted on casters. Exlnt condx: \$40. Jay Luster, W6QHD, 9861 Ramona, Bellflower, Calif.

NEW PE103 dynamotor, \$20; New PE101 dynamotor, \$4.00; eight new 813's, \$7.50 each; 813 socket, 65c; Harvey-Wells TB5501 xmtr, \$65; Heath 05 'scope, \$20; new neon transfrmr, 6000V, 60 Ma., \$5.00; BC1068 2 meter revr, \$15; Mark II dynamotor set, new, \$5.00; H&W CX45C butterfly with jack bar, \$15; H&W CX40A butterfly, \$15; approved 4200 sig. gen., \$15; BC348 revr, for parts, \$10; Millen 40671 SWP bridge, \$11.50; Botham modulator, never used, \$11; APQ9 xmtr, \$12. C. M. Crist, W9KNR, Box 169, Glenwood, Ind.

SACRIFICE: Nearly new HT32, \$525; NC300 in gud condx, with xtal calib., \$325; both for \$900. Will trade above and shack full of equipment including linear amplifier and pwr supp. for light airplane up or down. W4DYP, Maryville Br., Georgetown, S. C.

FOR Sale: Handbook single 813, 500 watt, VFO rig with 2 spare 813's. All exact parts used in construx. Must be seen to be appreciated. In exe. condx. Best offer over \$200 or trade: HQ129X revr with spkr, \$125; Meissner signal shifter mod, 9-1090, \$20; Electronics Design V7VM mod. 100, \$100; Leeco-Neville 6 volt 100 amp. system alternator, regulator and new rectifier, \$35. Sorry no phone calls. Write K2CIP, Leo W. Schubert, 44 Stanwix St., Brooklyn 6, N. Y.

SALE: QST 1951 to 1957, solid run and in exe. condx. Best offer W. Glavich, 3104 Union St., Eureka, Calif.

RCA Receiver, AR-3510 15-650 Kc, like new, make offer. W2FO, P. Ulrich, 151-02 84th Drive, Jamaica 32, L. I., N. Y.

HAM Licenses, Resident courses, Notice and general classes, 3 evenings weekly. Deleghanty Institute, 117 East 11th St., NYC 3, 4, 13-5900.

FOR Sale: Collins 75A4 revr, \$550; like new condx with 3.1 Kc and 500 cycle filters. P.O. Box 200, Punksstawney, Penna. W3PJY, Bill McLaughlin, 501 Cambria St.

WANTED: SX42. Will trade for parts, equipment. Vilensky, 512 South 5th, Columbia, Mo.

FOR Sale: Elicoo AM 40 modulator, in gud condx: \$40. W9ZPQ, Rte. 2, Box 252, Jackson, Mo.

WANTED: Sheet metal shear and brake: TV camera complete; 432 meg. skeels in Florida, Georgia or Maine. WAUCH, RFD #2, Sterling, Va.

SELL: Johnson Viking I and VFO TVI-suppressed; three 4-125A tubes, (old but never used); B&W mod. 200 audio oscillator; Raytheon RL10 limiter; Heathkit 5" oscilloscope. Best offer S. Chadwick, W9RON, 1309 Park Ave., No. Chicago, Ill.

FOR Sale or trade: 600 watt xmtr, plate modulated, Variac control, VFO, 80 thru 10, 6 ft. rack, dolly, 8 mtrs. ant. relay, easy to de-TVI suppress, rewire power supplies u by a kW. Will work on 6 mtr, u pick up for \$100; 2 mtr xtr, \$15. 2-meter tandem converter, \$15 (both for \$25); new Premax 40 mtr. vertical ant. & base, \$15; 4-el. 10 mtr. beam \$10 (it pick up); UTC LS1DX (new), \$10. I need: ant. rotator, tr switch, 6 mtr. communicator, W2MILL, 147 Farview Ave., Paramus, N. J. Tel. CO 1-9449.

ROTARY Inductor. Swap my mounted baluns, K9AOU.

HRO-60, Rack-mounted, \$350. W6UTV, 1176 Lincoln, San Jose, Calif.

GOING SSB? Want Loann' KW? 4-1000 final, 64" meters, 4 Kc plate supply, regulated bias and screen supply, all in 6 ft. gce cabinet, spare 4-1000, pr. rectifiers, Works FB. Need the space. Offer, please. H. C. Snyder, W0NVE, % Radio KFGT, Fremont, Neb.

SELL: DX-100 with keying modification. Gud condx. Best offer \$175. F.o.b. W8TEG, Box 263, Seville, Ohio.

SELL: Conset G66B with Conset 12V thin pack supply. Hardly used. In exe. condx. \$185. P.O. or bank money order only. F.O.B. Trenton, N. J. W2PZS, 21 Hout Circle, Tel. J1 7-3509.

MALORY 128A5 12V charger, \$15.00; Millen 00805 freq. meter, \$4.00; Delta blade drill press, \$35.00; Black & Decker stand and Roto Home for 1/2" drill, \$10.00; Greenlee punches, 1/4", 3/8", 1/2", 5/8", 1 1/4", 1 1/2", 1 3/4", 2", sq. \$1.50 each; QST June 1950 to present \$15.00; 132JC body mount, \$3.00; Superior 770 VOM, \$10.00; Turner 124 mike and stand, \$23.00. Fred H. Eggert, 11833 Wisconsin, Detroit 4, Mich.

FOR Sale: Viking Ranger factory wired, \$175 F.o.b. Take small rig on trade. Lawrence Lewis, Aberdeen, Idaho.

FOR Sale: Morrow Twins MBR5 revr, MB 500A xmtr, in exe. condx, complete with 12V DC mobile supplies, 120 volt AC supply and all interconnecting cables and speaker, \$400.00. WRL Globe Chief, factory-wired, in exe. condx: \$40. Prefer not to ship. Jim Baron, W9TVE, 5025 N. Pulaski Rd., Chicago 30, Ill.

FOR Sale: 12V six-meter Conset, four xtal, model seven months old, with 2 xtals and Saturn six halo antenna, \$185; DC-100, six months old, neutralized, modified, \$175, 8CR 522 transmitter, real tube conversion with black aluminum rack panel, decalred, new 8CR522 meter, etc. new rugged pwr supply, \$22 revr as is. Invested well over \$100 in purchase and conversion. Asking only \$80. Prefer a pick-up deal but will ship if you pay postage. J. E. Munroe, Jr., W1JJP, 73 High St., North Attleboro, Mass.

FOR Sale: 1.5 kilowatt phone rig, using Viking, DX100, B&W or 32V exciter. Rig built 6 months ago, \$450. Details will be mailed on request. Also have pair new Elmac 4X250B and SK600 air sockets, \$70; new Elmac 4X250B, \$30; Jennings VY-25, \$10; 2250VDC supply at 5 amp., \$45; Harvey-Wells VPS-700 mobile power supply for 6 or 12 VDC with spare vibrator, \$40; new Thordarson choke 6 hy, at Perry Ma., \$10. Also have meters and filter capacitors for KW rig, Fred Valente, WIGOL, 5 Summit Ter., Peabody, Mass.

SELL: New 10 meter 12 volt Transcon (See QST Dec. under "Recent Equipment"), \$75; Panoramic model PCA2T-200 type T-200 Pan-adapter, \$75. W2LPC, 51 Elmira St., Hicksville, L. I., N. Y.

BARCO's in Sandusky, Ohio, for your best deal in Ham Gear. National, Hammarlund, Hallcrafters and WRL Globe transmitters, Hy-Gain and Mosley beams, 1725 Columbus Avenue.

NOTICES — Technicians! Cure your TVI with WIDBAM's new TVI book. It covers Two Meter and Six Meter TVI as well as other bands. Just the book to give your TV neighbors to explain TVI to them. \$1.75 in U.S.A. and \$2.00 foreign. Nelson Publishing Company, Box 28, Redding Ridge, Conn.

SELL: Globe Scout 65A and Heath VFO. In vfy gud condx: \$90. Bob Beatty, K4EXE, 2025 Radcliffe Ave., Charlotte, North Carolina.

TOWER: Perfect, \$130 (cost me \$180). See page 128 February QST; 24 el. 2-meter beam (4-6 el. Yagis), 1/2" solid aluminum elements, \$30; 45 ft. 50-ohm Spirafit with sealed fittings both ends, \$30. Sorry, won't ship. Pick-up deal. W2UTT, 408 Glen Road, Woodcliff Lake, N. J. Tel. PA 6-3026 after 7 p.m.

CODE Tape wanted: Will buy or rent code tapes for TG-34-A code keyer, W3J3N, Paul Hoffman, 1733 Katima Rd., N.W., Washington, D. C.

WANTED: Old telegraph keys and bugs not now manufactured. Also homebrewed antique, GI. Write price and condx. Everyone will get answer. W1HGM, Virginia Zitoz, 11 Oak St., Reading, Mass.

MUST Sell due to other interests. National NC-300 revr with matching sprk and plug-in xtal calibrator 3 months use, in immaculate condx, \$330, new Slim-X "777" mike with desk stand and swivel mount, \$13; CDR FR-2 rotor, in perfect condx, \$20. Gene Gault, K4AIG, Rte. 1, Hickman, Ky.

NOTHING BUT 220 volts around this place so to sell transformers 1 yr. old: 1 UTC, 5-50 600V 500V CT @ 300 Ma, \$50; 1 UTC, 5-45 400V 50V CT @ 200 Ma, \$12; 1 UTC, 5-54 5V @ 4 amp, \$3.00; 1 UTC 8-59 5V @ 12 amp, \$5; 1 UTC 8-87 choke 20 hr., 550 Ma. @ 6000 volts, \$10. Also used 1 yr. and in 100% condx: 8 G-14 4 ud @ 400V v. caps for \$22. New cost, \$40 and 8 used 4 ud @ 300V v. caps, cost \$25; for only \$12.00. A few used but read 4-250's and 4-400's, Don Taylor, 5A2TF, 7485 Spw. Wq., APO 207, N.Y.C.

FOR Sale: 1 kw. 10-meter xmitter, 1-3000-1-2500, 1-700 volt pwr supplies; AM & FM. Also much more equipment incl. converter, 3/4 scope, etc. Just \$300 takes the works. R. H. Mount, Jr., RD-1, Mansfield, Ohio, Tel. LA 2-5470.

TRADE: Dark-room equipment valued at \$160 or more for 110 volt 6 meter (communicator or Ranger. Will give \$25 to \$30 over this equipment. Write for details. Jesse Trickle, W9KGZ, Laketon, Ind. RUD Coils: Complete sets with bases and links VCL 500W MCL-MLS 1000W MLA2. C. Storen, 5 Winfield Terrace, Great Neck, L. I., N. Y.

NEW, Collins 70E-8A VFO, with instruction manual, never used, in original carton, \$60. W0ATP, 6210 West 76th Pl., Prairie Village, Kansas.

HRO60, new condx, original carton, about \$350; Hlido TR75 and Johnson VFO; Elmac AF67, perfect, make offers, W2HQH, 644 Wildwood Rd., W. Hempstead, L. I., N. Y. Tel. IV 1-1875.

ANTENNA Farm: New Hampshire 20 acres, two state highways, near capital, Brook, good water supply; 80 ft. sky hooks. Move in with your trailer, \$1000. W2TJ.

NATIONAL NC-109 with matching speaker, like brand new, \$177. D-20 and VE-1 perfect, \$50; Johnson SWR bridge, \$7; local deal preferred but will ship F.O.B. Baltimore, C. R. Avery, 129 Hopkins Rd., Baltimore 12, Md.

SELL: Elmac PMR7 receiver with matching PSR-612, 6-12V DC pwr supp, like new, \$130; Elmac A54 xmitter, \$70; Teraft 2-meter converter, 26.30 Mc output, like new, \$28. A. Porsch, W3NFT, RFD #4, Brookville, Pa.

SELL: General Electric plate voltage transformer with center tap, 120 volt supply, gives 3200 volts each side of center tap at 1000 mls. Boxed, ready for shipment, \$20. E. H. Brockway, 524 E. Third St., Flint, Mich.

FOR Sale: Factory-wired 20-A used approximately 45 hrs, bought new 16 mos. ago, with home-made plug-in QT-1, all band BC-458 VFO, home-made 1625 grounded grid linear with 1300 volt power supply, both enclosed in 10 in. top lid cabinet, \$225 cash. You pay shipping. R. Mosca, 928 North Grove St., Bowling Green, Ohio.

CODE Worries over 2 hour tape recorded courses unequalled. Novice, \$6.50. Advanced, \$5.50. Both \$11.00. Tapecode, Box 31E, Langhorne, Penna.

10 MTR 12W mobile xmitter \$12.50; 10 Mtr. Converter, \$8.50; 10 or 15 Mtr. Preselector, \$4.50; F.O.B. W. W. Deane, 910 Redwood, Oxnard, Calif.

HQ140X, Johnson Ranger, Matchbox, \$350 NY area only. Roger Freeman, K2JCK/2, 2624 E. 22nd St., Brooklyn, Tel. Sheepshead 3-9721.

FOR Sale: Mobile xmitter, Palco Bantam 65, 6-12V, BS80-10, VFO xtal, 6146 Mon, 2-1614, \$70; 6V, Vibrapack sup. for ABVE 500 V., 200 Ma., \$18; Elmac PMR6G6, \$70; PSR8G pwr sup. for Elmac, \$15; Viking Mobile xmitter, new, with tubes, \$75; Heath grid dip meter, complete, \$15; Eico model 1050 6812V battery charger, \$20; Superior model 670A VOM, \$15; Johnson all-band loading coil, \$8.00; Ranger 505C h-ni, \$15; 8/sq. W. H. Wiley, Box 97, CR #2, Keesler, A. Miss.

FOR Sale: National NC-109 and spkr. brand new and in original cartons. Price \$150. C. W. Ehlers, 319 Union St., Jersey City 4, N. J. Tel. HE 2-2145.

SALE: DX-35, \$50; AT-1, \$25; VF 1, \$15; AC-1, \$10; VHF 152, \$40. Buy 100± watt xmitter, all F.O.B. Phila., Pa. W3EFT, 1211 Haworth St.

SELL or swap: Phasemaster II SSB transmitter and companion Bandhopper VFO; desire medium pwr. fone/c.w. rig and/or complete mobile station. Kasper, K2YIB, 609 Eighth St., Riverside, N. J.

HARVEY-WELLS TBS-50C with power supply, \$50; Sonar 2-meter mobile revr, \$20; National MB-40SL, \$10; 1250 volt 300 Ma. with 450 volt 200 Ma. on same chassis, \$20. Jerry Pais, W9FZA, 686 E. 155th St., South Holland, Ill.

F455C31 Mechanical filter, 455 Ka., 3.1 Ka wide, plug-in type, like new, inst \$25. K4GYO, 702 Jackson, Williamsburg, Va.

LATEST Model HQ129X and Drake Q multiplier, \$160, like new. Moneyback guarantee. Quinn LaFarque, DeWitt, Ark.

SELL: AC Instructograph with 10 tapes. Originally \$38. Will take \$20 F.O.B. Waynesboro, Va. M. E. Armentrout, 200 Isle Ave.

HALLICRAFTERS FX-23, 11 tube receiver with 15 meter converter, both in EB condx, will deliver and demonstrate within 50 miles; \$60. Howard Hopkins, W1VBR, Rte. 1, North Setaute, R. I.

FOR Sale: Viking I TVI-suppressed; Viking VFO, SX-71 w/spkr; Heathkit Q1 and AM-2 coux relay, B&W ant. switch, mike, key, phones, plus misc. junk. Complete station now operating. \$375 F.O.B. Norfolk, Va. or make offer any part. K0JEJ, 522 S. Minnesota, Wichita, Kansas.

SELL: Factory-wired Viking II, \$200 and Viking VFO, \$35; Johnson low-pass filter, \$50; Viking Matchbox-250, \$35. Will ship. O. H. Ketchum, 10125 Flora Vista Blvd., Bellflower, Calif.

ATTENTION Overseas hams! Foreign stamp collections or accumulations wanted in exchange for new U. S. radio parts or magazines. Write indicating wants and details of your collection. Walter Lindren, W2AJR, Box 1158, Easthampton, N. Y.

KWS-1 Almost new, complete with dolly and EV-664 mike, \$1500. Hatry-Hartford, 203 Ann St., Hartford, Conn.

COMPLETE Station 4 months old. Johnson 500 factory-wired, NC-300 with crystal calibrator and speaker, antenna relay, low pass filter; D-104 mike. Keyco all-band antenna, 50 ft. RG11U, complete, \$1200 or will sell Viking 500 alone, \$850, or best offer. K0JEJ, 522 S. Minnesota, Wichita, Kansas.

SELLING Out: DX-100 xmitter, \$185; SX-28 receiver, \$115. R. W. Watts, R.D. 1, Apalachin, N. Y.

FOR Sale: Mobile rig consisting of Viking mobile transmitter, Viking Mobile VFO, PE103 dynamotor, Elmac PMR6A, Elmac PSR8 receiver power supply, Johnson Whipload, Instrux books for receiver, transmitter and VFO. On receipt \$165 certified check will crate and ship express collect. G. R. Webster, W2CPT, R.D. No. 2, Princeton, N. J.

FOR Sale: HQ129X, spkr, model B slicer, Deluxe 458 VFO 160 to 10, 20A, QT1 factory, aligned, 600L linear, all in new condx, etec station, \$800; mobile out AB67, Super Six converter, and Super-ciever, all brackets and rack for AF67, Dynamotor 600V 200 mill, Vibrapack 280V-85 mill enclosed cabinet - relays, 12 volt input, mt. coux relay, \$275; original manuals and crate for both rigs, F.O.B. L. I. W2KHV, Bellerose, L. I. Fieldstone 7-4062 evenings.

FOR Sale or trade: WEL three-element Tri-Band beam. Never used. W1RDC, 917 Homestead Ave., Holyoke, Mass.

WAVERLY Wholesale, Box 21, Waverly, Illinois. Best deals. New and used Ham Gear, antennas, tubes, etc.

FOR Sale: HQ129X, with matching speaker, \$125; Heathkit Q-Multiplier, \$7.00; Viking II (push to talk), \$220 (factory wired); Johnson Matchbox, \$40; Viking VFO, \$35; Johnson low pass filter, \$9; D-104 mike with push to talk stand, \$20; 40 ft. Telem tower with TR4 rotator and Radio Specialties tri-band 3-element beam, \$110; Bud xtal calib., \$12.00; Low-Key ant. relay, \$7.00. All in clean, unmodified condx w/instr books. C. Black, K4MHW, 411 Cherokee Hdl., Richmond 25, Va.

100 Watt complete transmitter, 6146's push-pull output, 80-40-20 10-plug-in coils; commercial built VFO; 70 watt modulator; four chassis; 4V suppressor; 4V suppressor; 4V suppressor; 4V suppressor; dolly; will demonstrate, \$95.00. Come and get it. W1RHZ, 1285 East Rodney French, New Bedford, Mass.

SELL-Trade: Following equipment new or like new: 75 meter 25 watt mobile phone transmitter, \$35, complete, 80 meter 50-watt BC-457 xmitter, converted to operate either xtal or VFO, including supply, key, etc., \$30; dual supply, 900V/200 Ma., 375V/100 Ma., \$18; Sells Carlison 18 watt amplifier \$12; 6V-400V/780 V/18V-15; 85; transistor circuit practice oscillator, \$4; 16 ud, 2000V. Duplicator condens., \$8, pair; \$40-400/200 Ma. transformer, \$9; 750V/250 Ma.-6.3V supply, \$15. Stanley Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

SELL Stancor transformers, \$80, c.o.d. freight collect (never used); plate P-832, 2000 volts, 300 Ma., 300 watt modulation, A-3898. Write for list of other miscellaneous capacitors, chokes, transformers and equipment also for sale. W8BGH, 441 Smith, Birmingham, Mich.

TRADE: Ham station for good 1949-1951 car, K4HQH, 2228 Vaughan St., South Boston, Va.

PRINTED Circuit kit: \$4.25. Boards, chemicals, instructions. Circuit Laboratories, Box 52, Norwalk, Conn.

WILL Sell or trade electronic test instruments. Want press camera, Polaroid camera, slide projector, binoculars or small printing press. Leo A. Holbrook, 199 Main St., Montpelier, Vt.

SELL SX-28, speaker, returned February 1957, rad condx, \$100; wind-up instructograph, all tapes, in exc. condx, \$21; ICA 4301 code practice osc., exc condx, \$9; prefer cash & carry deal. Bob Walker, 526 Scott St., Vincennes, Ind.

HOUSECLEANING: BC-453, \$10; BC-454, \$7; BC-946, \$5; BC-654 transceiver with cable, \$30; BC-1335, \$50; BC-683, \$20; BC-923, \$15; Jap portable receiver 300-5700 Kc., \$25; pair sekaya, \$10; complete set 120 xtals every 25 Kc. 5675-6650 Kc. in C&H-137 case, \$25. H&I tuner, \$10. Offers considered. Need L.M. freq. meter. W6NHF, 824 San Miguel Rd., Concord, Calif.

FOR Sale: Measurements Model 80 signal generator, \$425; Lamplin 105-B frequency meter, \$195; Federal 304 signal generator with cables and pad to .1uv \$105.00. All in excellent condx. Bill Peacock, W4MIU, 1660 Central Ave., St. Petersburg, Fla.

FOR Sale: Viking Ranger, Dow-Key relay, Shure xtal mike, harmonica for \$165. Bert Felsburg, W3VN, 726 W. 5th St., Hazleton, Penna.

FREQUENCY Meter: BC-221M and other gear for sale or trade. Prefer hi-fi, photography or firearms. Floyd, 552 Leona Lane, Mt. View, California.

RANGER: Latest model. Excellent condition. Will ship. First \$180. Tony Doss, K6PZW, Rte. 1, Box 112-2, Summerville, S. C.

FOR Sale: Heathkit service instruments, new, unused, assembled and FB with manuals. AG-9 audio generator, \$25; TC-2 tube tester, \$20; LP-2 TV pattern generator, \$15; SG-8 RF generator, \$5; also the following: DX-100, \$150; Viking Mobile xmitter, \$55; S40-13 with Heath Q Multiplier, \$55; Presto K-10 disc recorder, \$150. Back issues of QST, 1937 through 1954. Make an offer. All inquiries will be aused. J. G. David, K4HQB, Box 205, Bishopville, South Carolina.

WANTED: W2EVL SSB exciter. Sale: All hand made, 65 watts, home brew, \$35 or best offer. Keith Hall, K4RLV, 4825-F Rose Terrace, Ft. Knox, Ky. Tel. Windsor 2-2029.

FOR Sale: Viking I and Viking VFO, gud condx, \$150; SX-71 receiver, \$140 or both for \$275. R4FCQ, 37 University Circle, Charlottesville, Va., Tel. 33334.

HARVEY-WELLS T-60 with APS-80 power supply, instruction manual, in original cartons: \$165. BC-342 receiver, 115 volt AC unmodified, good, \$40; Stancor ST-202A 120 watt CW xmitter with 40 meter coils and xtals, \$50; Simpson Mod. 380 wave meter-modulation indicator, all coils and book, \$12; 2 brand new RCA 8005 tubes, \$7 each; new JAN 2C39 tubes, \$5 each; new 12 volt dynamotor, \$40 v. s. 200 Ma. outcp, \$12. All F.O.B. W8CUL, Bob Beatty, 623 E. Judson Ave., Youngstown 2, Ohio.

NEW Planetary crystal lapping machine. Used calibrator, etching cabinet, diamond wheels, Quartz blanks, holders, etc. Value \$1000. Sell or trade. Dave Williams, W5AJF, Municipal Airport, Bartlesville, Okla.

REAL Bargains. Terms available. SX-100, \$225; Deluxe 20A with VFO, \$260; B & W TR switch, \$18; Viking Ranger, \$160; several 200 watt linear finals, \$65 each, Spring house cleaning. Send for list. W4WQT, Route 5, Clarksville, Tenn.

BRAND New Contina 11A camera with f 2.8 lens, deluxe carrying case and few months old 8-S3A to trade for SX62A, S. Choudhry RFD #2, Box 150, Yuba City, Calif.

TRADE For Johnson Matchbox RCA Model WO-60C oscilloscope 5", also sell new Elco Mod. 232 VTYM, \$27, Charles Kunde, Rte #1, Roselle, Ill.

SELL: Johnson Vallant, \$300; Hammarlund SP400X, excellent condx, \$175; UTC 8-50, \$30; new Triplet freq. meter 3256, \$13. WXYZL, 829 Yllabach, Dearborn, Mich.

6 Meters, Gonset II, Linear II, Kreo coax vert., 50 ft. coax with antenna, mike and xtals, \$338; AFB7 with A.C. supply s-natched 50 ft. coax with con. and mike, \$175; Matchbox, \$30; R46 SPHR, \$13; Webeor 2010, \$100; B&W 1.5 Kc. and 3 Kc. bandpass filters, \$25 pr. Misc. junk box parts, BC221's, BC610 tuning units, HRO tuning units, 1 meg. xtals, tubes, cond. and Ris. Will trade junk. W3ZJT, RD 3, Wyoming, Pa.

MUST Sell: Complete station, KWS-1, 75A-4, Telrex beam with usual quality accessories. E. C. Townsend, 1714 Arlington Dr., Corpus Christi, Texas.

BARGAIN: SX-77, like new, matching speaker, \$120; Viking II and Viking VFO, perfect con. st. looks like new, \$200. No time to ham. Harold Trimble, W5ETD, Box 406, Kilgore, Texas.

FOR Sale: Eldico TR75TV with Novice coils, \$35; S-85 revr, \$28; 125 watt home brew xmttr, 30-2 meter, \$85; prefer local sale. Will Smith, KN48AY, 375 1/2 Lentz, Louisville, Ky.

WANTED: Schematic and/or instruction manual for HC-3480 repeat, Model Oboe. J. Jamison, W2HWK, Church St., Windsor, N. J.

HQ-140-XA, in original carton, manual, used ten hours: \$190. Factory-wired Elco scope with 3 probes, orig. carton, manual, used less than ten hours: \$90. Ted Beseparis, Frackville, Pa.

FOR Sale: Uncompleted transmitter, pair 813's, \$95. Write K4CLE, Box 87, Charlotte, Tenn.

WANTED: Collins 32V2 xmitter, in gud condx. WIMVO, 7 Oliver Terr., Revere, Mass.

FOR Sale: Panadapter and scope 1D-60/APA-10 with power supply for 115v, 60 cycle operation, complete with two Handbooks, one for operating and one for maintenance, \$95. Robert B. Hupper, K2PLD, 47 Whitts Road, Glen Cove, N. Y.

BARGAIN: 100 wt. 807's modulator with power supply, \$60; 30 wt. modulator 6L6's with power supply, \$20; Heath VFO with power supply, \$15. Ronald Stier, Major Seminary, St. Meinrad, Ind.

CALLBAGGES made in Holland, \$1.50 postpaid. K9EPK, c/o Wael, 4900 E. Kansas Dr., Denver, Colo.

SELL: UTC modulation transformer, model VM-5, like new. Crated and ready to roll. Price: \$60.00. P.O. Nashville, John E. Cain, Jr., W4MB, 1101 Belle Meade Blvd., Nashville, Tenn.

FOR Sale: Viking II and VFO, PTT and improved audio. Going SSB, \$220. WJZQ, Portsmouth, R. I.

FOR Sale: B&W 5100B and 518B in excellent condx: \$450. Aileen Harrison, W2LHK, 260 Marlborough Rd., Brooklyn 26, N. Y.

FOR Sale: HT31 Hallcrafters Linear—immature—\$300. Will ship. W9YMZ, 6107 E. 149th St., Grandview, Mo.

SELL or trade: Globe Chief, WRL screen mod., Knight VFO, \$70. Want scope and bug. K9GHD, RR 2, Du Quoin, Ill.

BARGAINS: WITH NEW GUARANTEE: 8-53A \$319.95; NC-125 \$139.50; S-72 \$49.50; NC-98 \$119.00; NC-300 \$319.00; Lyseo 600 \$69.00; Eldico TR-75TV \$25.00; Heath QP-1 \$7.50; B&W 518B \$195.00; Lyseo 382 VFO \$12.50; Hammarlund Hg-100 \$139.50; EME 4350 DRAO \$189.00; Knight CW xmttr \$29.50; Morrow MAB-B \$475.00 (DEMIO); Globe Trotter \$29.50; Globe King 500A \$475.00; Globe King 500 \$449.00; Globe Scout 65 \$59.00; Scout 65A \$69.00; Scout 680 \$89.95; Gonset Compressor 11 #3077B or #3025B \$199.00; NEW "GLOBE OUT" LYSCO 382 VFO \$19.95. Free trial, terms, write Leo, W9GFO for best deals, World Radio Laboratories, 5415 West Broadway, Council Bluffs, Iowa.

TELETYPE: 85 mhy toroids, clean uncased, dollar each. DePaul, 101 Starview, San Francisco, Calif.

FOR Sale: One SS75 with both sidebands, \$100; one SS75 standard, \$85. Both operating in good shape. Will ship. Cash with order. W9MM, Converse, Ind.

WANT: 51J4. Will consider 51J3. Paul Rockwell, 5800 Hillburne Way, Kenwood, Chevy Chase, Md.

FOR Sale: Central Electronics Gated compression amplifier GC-1, \$30; Collins 310B modified with turret and TVI-suppressed, \$120; HRO50 special 27-28 Mc., 7AA coil, \$10; Hodge 110 VAC tape puller, \$12.00; B&W TVCL, BTCL, \$5.00 each; HDVL, TVL, coils, 40-watt mod. xfmr's, new Triplet 3" square dual seale 100/300 Ma. meters, \$5.00 each; 100 Ma. cased chokes, \$2.00. K6HJL, K. Nose, RR1, Little, Kauai, T.H.

FOR Sale: Radio News, 1945-1957, 10 yr. complete run, \$30; IRE Proceedings, January 1957-December 1955, \$35; QST, 1952-1957, \$15. Bob Abernethy, W2PQY, 120 Frederick Ave., Babylon, L. I., N. Y.

SALE: SX28A with matching speaker, \$135; National 101X with matching speaker, \$80; both of these are in very gud condx. New PE103, complete with cables, etc., \$20. W5IPI, Box 746, Electra, Texas.

FREE Flyer, DX QSL Radio Coop., Box 5938 Kansas City 11, Missouri.

FOR Sale: San Diego, Calif., area: Would rather not ship: Linear Amplifier, using four 837's driven by two 837's, complete with 1250 V and 400 Ma. power supply: \$60. W6BLZ, 528 Colma St., La Jolla, Calif.

TWO Complete CW-Phone (AM) transmitters in package deal with schematics. First one all-band (160 thru 10) 150 watt with 814 plate output, second one 1 KW phone (AM) using pr. 304TLE, first one used as driver. Rack and panel and completely shielded construction; has been examined and passed for TVI suppression by FCC Inspector; highest quality components throughout. Can be seen and operated at present QTH, \$600. Sorry, no shipping. Gilbert F. Anderson, W9VXD, Warroad, Minn.

DUE to ill health am selling my aluminum business to my friend Dick, W8IJJ, Cherry Avenue, Tiffin, Ohio. He will carry on. Write to Dick for listings of perforated aluminum sheet, beams, tubing, etc. Willard Radcliff, W8LAI.

FOR Sale: Hallcrafters 840A receiver, in perfect operating condx, like-new appearance, \$65. W. Baker, 457 - 26th Ave., San Mateo, Calif.

KWS-1, latest model, used only three weeks, \$1600. 75A-4, latest model, \$500. All letters answered. James E. Farnor, 3202 N. Elm, Ft. Worth 6, Texas

MOTOROLA 12VDC to 6VDC converter, \$25. Will easily handle average mobile xmttr and revr. Robert V. Blaney, W9FRU, 103 S. 4th St., Decatur, Ind.

FOR Sale: NC98 with speaker. In exc. condx. Best offer. Milton Newson, W4AGR, Lumberton, N. C.

COLLINS 32V1, TVI-suppressed, HRO50 revr, power supply, AFB7 Elmac Gonset converter, like new, perfect, all for \$500. W2CSZ, 4 Elizabeth St., Glen Cove, L. I., N. Y.

Newly HT32. First check for \$585 takes brand new HT32. Fully guaranteed, never been on the air. Write W9YEJ, Marvin, So. Dak.

SELL: 70 watt BC-458, S-40B, Elco 555 multimeter. Little used. No shipping. \$125. Richard Jeanneret, K2CCS, 12 Meadowbrook Rd., Short Hills, N. J.

WANTED: Collins 75A, 32V, 51J, Teletype equipment, converters URA-8A or similar; BC-348, BC-342, ART-13, BC-610, BC-221, etc. URM-81. Cash or trade for New Ranger, Vallant, Thunderbolt, SX-101, NC-300, HQ-110, B&W, 20-A, Gonset, Elmac, Morrow, Telrex, Fisher, HI-FL, Bell, etc. Write: Tom, W1AFN, Allronics-Howard Co., 101 Boston St., Boston, Tel. Waltham 2-0048; Stores: 278 Friend St., Boston, 60 Spring St., Newport, R. I.

SELL: DX-35 w/5 Novice xtals, pair untested 6148s, best offer, 78 rpm Ameco advanced code course rex, \$4.50; pair mtd balun coils, \$4.50. Alvin Berger, 362B Chance St., Ft. Devens, Mass.

SELL: Knight 50 watt xmttr, perfect, KN2EMD, Robert Leinwald 108-20 62 Dr., Forest Hills 75, L. I., N. Y.

SELL: Harvey-Wells T-90 xmitter, like new, \$120; Millen Grid Dipper, new, \$50. M. H. Klapp, 17 Kenosha St., Albany 9, N. Y.

PHOTO-ELECTRONIC relay system wired, Knight kit, brand new, \$11.00, light source, \$5; receiver, Ocean Hopper, 5 coils, speaker, \$9, like new, Mannie Teitoh, 625 E. 8th St., Brooklyn 18, N. Y., Tel. ULster 4-0083.

FOR Sale: Johnson Viking Ranger, \$200 or best offer. Also RME 10-20 converter, \$35. W1WXL, 14 Parkman St., Brookline, Mass.

WANTED: Cleveland Institute of Radio Electronics Master Course, Section 1 or complete. R. I. Bell, 5234 Blodgett Ave., Downers Grove, Ill.

SELL: QST 1921 through 1951, 31 bound volumes. Tennab 5110G beam. Millen R9er. Best cash and carry offer. Write to W2AEB.

HEATH AT-1 and WR1 SM-90, \$35; BC-1158 6-meter xmttr with built-in modulator, power supply, \$50. Hallcrafters S-105, \$40. WNASW, Roger Biddle, Wakeman, Ohio.

MUST Sell: Telrex 3-el 20-M, beam (20M-56-149) in exc. condx: \$100. Paul Bittner, Concordia Seminary, Springfield, Ill.

MOBILE Batteries, Vita-Plate Special Service Types, 6 and 12 volt, for all cars. Used by Police and Fire Departments. Free data. (Cornell Communications, 1340 Ford Rd., Cleveland 24, Ohio (Paul, W8FPW).

COMPLETE Station, \$395; Viking II and VFO, balun coils and antenna relay mounted on board with connector, 15-meter Amphenol dipole, insulators and lead-in, SX-28 revr with Heathkit Q-Multiplier and Hallcrafters Panoramic Mod. S-44; J730 mike with metal stand and connectors, Lewis West W9AIO, 3414 West St. Louis, Wichita 12, Kans.

SELL or Trade: Modified Adventurer with coaxial output, Behr meter and modulator, \$45; Viking VFO, \$37.50, in exc. condx. Also \$38R, gud condx, \$35. W5KRI, 1720 South "V" St., Ft. Smith, Arkansas.

ACTIVE: Radio firm seeks 1 purchasing agent and 1 store manager. Concord Radio Corp, 45 Warren St., New York, N. Y.

VIKING Ranger, push talk, \$165 or will trade for Janzen electrostatic tweeter; New Millen W9M01 transmitter-exciter with tubes, \$45. 1-cord 12-meter converter, \$20. Sam Thompson, W7POL, McAnnell Hall, Moscow, Idaho.

SELL: NC200 receiver \$75; 12 v. Dyn. 350V 160 Ma., \$4; Lyseo VFO, \$9; new and used tubes, \$3; 1/2 xfmr for pr. 813, \$3; 813; \$10; 750V 150 Ma. and 325V, 90Ma., in small metal cabinet, \$17; 300 watt mod. xfmr. PP to grid trans, 20W, mod. trans., 30V 6A trans., tape recorder, 8 mm projector, Tom Mathews, 244 W. 90th St., NYC, N. Y.

SALE or Trade—Any part of complete KW station consisting of 4-400A pi-net final, 810 modulators, 3600 volt power supply, variac, all in premier cabinet on casters with lighted meters and all latest built-in gadgets, all new parts, no surplus, no Ranger driver, NC-300 with speaker, RME clipper, lowpass filter, SSB-2 keyer, phone patch, Hy-gain three element tri-band, AR-22 rotor, Hy-gain roto-brake, 54" crankup tower and all related gear. Interested in cash or movie, fishing, hunting and boating equipment. C. C. Bradcock, W5TDO, 2015 Bermuda Drive, Shreveport, Louisiana.

SX42, Excellent, owned since new, factory-tuned one year ago. R42 speaker, Only \$180. K2LJR, Edward Waldorf, 280 North Main, Canandaigua, N. Y.

FOR Sale: Morrow CM-1 Conelrad monitor, like new, in original carton, \$32, plus shipping. J. H. Giardon, W5GXH, 820 Douglas St., Fayetteville, Ark.

BARGAINS: Recouditioned with new guarantee. Shipped on approval. Hallcrafters S38 \$29.00; 840A \$69.00; SX99 \$119.00; SX71 \$149.00; SX100 \$29.00; Viking Adventurer \$99.00; Viking II \$199.00; Ranger \$179.00; Vallant \$349.00; 640E; S85; S8545; NC98; NC183D; NC300; HQ129X; HQ140X; GPR90; A54; AFB7; PMR6; PMR7; Collins KWS1; 75A1, 75A3; 75A4; 32V3; many other items. Easy terms. Write for list, Henry Radio, Butler, Missouri.

CUSTOMIZED Chassis service. Save time and money on any project with our punched to order chassis and panels. P. Nugent, 149 Millet St., Boston 24, Mass.

"THE Saga of Telegraphy". LP recording & brochure. Historical. \$3.75. Ralph Graham, W4RJX, Box 3556, Arlington 3, Va.

COLLINS 32V2 plus 518B sideband generator. Both spotless and in top working order. Extras include Collins NBFM unit, spare 4D32, 184V 600 mA. mantels. All for only \$500, provided you pick up. My back aches. Dr. Schwalbe, K2GQ, VA Hospital, East Orange, N. J.

TELRAD T18, \$18; HR050T tubes E and F, \$27 pr; T54, 7" TV, \$15; H533, \$2; SCN dial, \$4.50; Millen 10012, \$3; postage extra, C&P \$7, C&P 55, 1000 complete, other parts and tubes, send for list, M. Marshall, 455 Washington Ave., Dumont, N. J.

CANADIANS! Selling 500 watt power amplifier using pair of new 4-125A tubes and blower; 2000 volt 300 Ma. power supply for above; 50 watt exciter unit with power supply; all in metal cabinet, 60" x 26" x 20" with 4 Simpson meters. Trade for good receiver or cash. VE3RBE, Phone CH 1-0282, Toronto, Can.

COLLINS KWS-1. Used two months. Selling because of insufficient use to justify investment. Best offer over \$1795. Location, Philly area. Deliver near vicinity. W4LDW, 5514 N. 16th, Arlington, Va. NEEDED CASH! Must sell Globe Ch'fer, modulator and xtals. In perf. condx; \$55.00. Robert Soley, Stadium Dorms, Ohio State Univ., Columbus 10, Ohio.

GLOBE King 500A on wheeled rack with VFO model 755, \$495. W. J. Donaldy, 16065 Glen Road, E. Cleveland 12, Ohio.

SK-100 with matching speaker, used only 3 months. Will not ship, sorry. Contact W3PLL, George Kabroth, 31 East Factory St., Mechanicsburg, Pa.

GOING RSB. Have HT-31 500 watt linear amplifier used only few hours. In exchange for gud xmtr CW AM about 200 watts. Corbals, K2GPR, RFD 1 Wappingers Falls, N. Y. (near Beacon).

COLLINS KWS-1 with manual, relay, cables, all like new. John H. Elder, 416 Erick Bldg., Pittsburgh, Penna.

SELL: Factory-wired Ranger, Johnson Matchbox and low pass filter, HQ140X w/spkr, D-104 mike w/stand. All in excellent condx. Best offer over \$350. Mort Brody, 248 Locust, Indiana, Pennsylvania.

MILLIAMETER 6" scale, 4 Ma., \$2.95; IRC power rheostat 500 ohm, 49¢; .001 Mica 5000V. Heavy duty, 39¢. K6SKT, 917 S. Ogden, Los Angeles, Calif.

TRADE: Webor tape recorder for Communicator with squeel or ???; for sale: unused pre-recorded tapes, monaural (some stereo) very reasonably priced; night duty study books, ATR Inverter, 6V, DC in, 110AC at 85 w. outp. \$22; wanted: Pollocrain receiver or Hallcrafters 8-94/8-95 or equivalent; Minifon recorder, W9WFT, 2029 Bradley, Chicago 18, Ill.

FOR SALE: Two meter transmitter-receivers with tubes, SCR522 and ARC4, \$35 each. Stancor 300 watt modulation transformer, \$20; Kenyon 3200V, 200 Ma. transformer \$20; Command receivers with tubes 1.5-3 Mc., \$4, 3-8 Mc., \$4; brand new 19-55 Mc. BC453, \$10; 818's, \$1, 819's, \$2; 812's, \$5; 817's, \$1; 2C43's, \$3; 446A's, 50¢. P. Sadtler, 398 Sigourney St., Hartford, Conn.

12V Dynamos: 680V, 210 Ma., 4" x 6 1/2", 1 new, \$9; 1 used, \$6.50; 350V, 225 Ma., with relay Jones connectors filter, used, \$9.50; 275V, 110 Ma., used, \$2.50; Vibrator supplies: 300V, 100 Ma. used, \$4.00; 150V, 50 Ma., \$2.50. All in gud optrd. condx. F.o.b. VIRUO, 234 Washington St., North Easton, Mass. Tel. CE 8-3781.

SILVERPLATE your coils, coax tanks, etc. Reasonable prices. Send for details. L. K. D'Airo, K2CDS, 34 Garfield Place, Brooklyn 15, N. Y.

1956 Royal Lancer hardtop Dodge 3-color automatic shift, mobile Elmac A167, 60WTS Jones SWR indicator, Elmac PMR-7 revr, Drake 1 multiplier, Davis coils, all hand operation; Leeco-Neville 12V, at 100 amp, 110AC at 250W; trunk mounted driven by Clinton 3/4 hp air-cooled engine, W2OLY, Howard Rollman, 90-15 Myrtle Ave., Glendale, 27, L. I., N. Y.

COLLINS 75A3, serial 1504, with 800 and 3000 cps filters, rarely used and in exc. condx. Owned by electronics engineer with little time for operating, \$395 F.o.b. Largo, Fla., in original carton. J. F. Marlon, K48VK, 215 Crestwood Lane, Largo, Fla.

SELL: CE Model A Slicer, \$50; PE-103, \$20. W2OJC, 54 Charles St., Clifton, N. J. Tel: PRescott 9-0639.

JOHNSON Transmitters, used: Ranger, factory-wired, \$195; Viking II with VFO, \$209; Viking II with VFO, \$219; Valiant factory-wired, \$349; 6N2 factory-wired, \$129; Mobile, \$75, guaranteed; trades accepted, easy terms. Art Brown, Brown Electronics, Inc., 1032 Broadway, Ft. Wayne, Ind.

SELL half K.W. mod. trans., Telrex 20 mtr. Super-Mini bean, 50 ft. tower, J.F.D. Roto-King, 400 rotor, 4-250A's K.W. dial; 2250 volt 500 Ma. power supply, 6 volt 10 meter Transcon, prop pitch motor, 24 volt pair of selysins, RCA color TV. Want new 4-400A, 810's, W1ERX, 919 High Ridge Rd., Stamford, Conn. Tel. DA 2-0703.

MOBILE Transmitter as per Jan, 1957 QST; Gonset SuperS3X converter, Mallory VE557 Vibropack, Thordarson Multi-Match modulation xfrmr and parts too numerous to mention here. Am interested in gud five-in. scope, Charles C. Stephen, W2CM, 1526 Maple Ave., Haddon Heights, N. J.

SELL: HQ-129X with 100 kc. calibrator, \$150; original Vibroplex, \$10; no shipping, Lou Tonik, W3DVB, 1204 Passmore st., Phila, 11, Pa.

HRO-60 Matching speaker, XCU-50-2 crystal calibrator, ABCD coils, new condx, Instrux manual, orig. carton, B&W, TR SW8 new, prop pitch motor, full conversion, selysin controls, compass indicator; best offers or trades. Smitz, W4AIX, Bonaire Motel, Hendersonville, N. C.

NATIONAL NC-240D revr and spkr, in exc. condx, \$135; Gonset 2-meter converter, \$22; SCR522, \$20; freq. meter, Lavoi model 105 SM 375-725 Mcs., \$25. W2WOF, 56 Garfield Ave., Glen Head, L. I., N. Y.

TRADE \$900.00 Magnecord Tape Recorder for 75A4 or equivalent 8SB xmtr, W9MAQ, 5609 Russett, Madison, Wis.

FOR SALE: B&W 5100-B and B&W L-1000-A amplifier. Both in like-nu condx with manuals. Anthony Martinka, 3723 Magnolia Ave., Chl, 13, Ill.

SUNDAY May 4th 1:00 PM—? Ham Auction. Bargains galore. Bring your surplus gear for sale or trade. McPherson National Guard Armory. Sponsored by McPherson Amateur Radio Club, McPherson, Kansas.

8X99 like nu, \$99; Johnson 100 Kc. cal; \$10. Mosley mod. V-46 vertical ant. never used, \$2. K2KRF, John Chooljian, 5301 Palsade Ave., West New York, N. J.

WANTED: Hammarlund HQ-129X and speaker cabinet. Must be in A-1 condition. Would like trial period, if possible. Will pay shipping costs. State lowest cash price. WN2ROH, 91 Morris Drive, East Meadow, L. I., N. Y.

VIKING One, by-passed, shielded, TVI-suppressed; low pass filter and B-plus relay installed; 829-B final plus spare 829-B. Complete 141 factory-built Johnson, #122 VFO, \$160. W2GTJ, 208 East 58th St., Brooklyn 3, N. Y.

FOR Sale: Viking Adventurer \$35; NC-98, \$110; Knight VFO, \$20; Heath "Q" mult., \$10; SCR-522 transistor completely converted and working on 2 w/pwr supp., \$60. Wanted: Gonset Comm., 12V, 6 or 2 mtr., \$135-150. Alan H. Rose, K2RHK, H.U. 2-5571, 23 Schenck Ave., Great Neck, L. I., N. Y.

SPLL: 2E26 two meter xmtr, as in 1956 ARRL Hbk, in gud condx. \$20. Russ Gershman, K2VZP, 331 Vandellins Ave., Teaneck, N. J. BC603DM, 20-28 Mc. FM revr with 24 volt dynamotor. Best offer takes it. Lloyd Conard, Riley Rd., Rd 22, Newburgh, N. Y.

MINIFON Wanted. Write Box 27, Curran, Wall St, Station, NYC, 5, N. Y.

BAY Area Hams! 2-meter Communicator II, 6 volt, perfect but for minor scratches. Complete with mike; \$150. W6OTN, George Snow, 4481 Parkridge Rd., Sacramento, Calif.

FOR Sale: Johnson Viking Adventurer, \$35. KN9LZF, 1234 S. Knight, Parkridge, Ill.

SELL: Johnson Mobile xmtr, Johnson mobile VFO, Gonset Super 814, P1403 Dynamos, all in gud condx. \$460 or will swap for Ranger. Max Hart, W5QWE, Rte 2, Ravenswood, W. Va.

JOHNSON Kihlowat for sale in exc. condx. Less than 100 hours operation, \$1100. Will not ship, sorry. W. R. West, 830 West 21st, Norfolk, Va.

FOR Sale: BC610E with BC614E complete station, exc condx; Millen VFO, 90711, Universal Radiometer, HRO revcr, tuning units, par tubes. TVI suppression. Best offer. W2GBU.

I Have some RG17/U at 35¢ per ft. and RG11/U at 7¢ per ft. Specify length. 25% deposit. W4BPD, Gus Browning, 144 Broughton SW, Orangeburg, S. C.

U.H.F. receiver for sale: Hallcrafters Mod. S27, in gud condx, best offer over \$50 takes it. C. A. Batchelder, 713 B. Buena Vista Ave., Alameda, Calif. Tel. LA 3-8096.

FOR Sale: Heathkit OM-2 oscilloscope, CM-1 capacity meter; Heathkit A-1 xmtr, AC-1 antenna coupler and factory-wired h-2 Eldico electronic key. All items in exc. wkr condx. Best offer. Lane Haviland, Covelec Dr., E. Norwalk, Conn.

FOR Sale: K.W. final with gud 4-125A's, 500 watt pwr supp Globe Chief driver, 40 watt modulator; all in a 6 ft. rack. Gud buy at \$180. Pete Gage, K2VIF, 144-01 78th Rd., Flushing 67, L. I., N. Y.

WANTED: Pacemaker, state number, condition and price. K4JZG, Room #4, Hains Bldg., Sebring, Fla.

SELL or trade: Alexander Hamilton Institute Modern business course consisting of 24 text books and reading assignments covering every phase of today's business. Valued new at over \$250. Will trade for Collins 310B or Viking Ranger with sequential keying, or sell for \$150. Will like to toss in \$50 cash for inst. model Ranger, following for sale: Stancor 400 watt 750-400-750-950 VAC at 375 Ma., \$12; Cardwell "T" type variable, 400 µfd max., .168 spacing, \$17.50; Heath WA-PI preamp, \$7.00; VT-127A, \$5.00; Mica capacitor, .002 µfd at 6000V, \$5.00. W1RWS, 316 West Point Terr., West Hartford, Conn.

FOR Sale: 6C21 surplus at \$8 each, 2 for \$15; 2C26 surplus @ \$3.00 each; 6B5P1 surplus at \$3.95 ea., f.o.b. Olin Electronic Supply, 6009 Eastern Ave., Balto, 24 Md.

CLEANING: HOU58, 30A exciter w/458 deluxe VFO, \$200; and BC-779 receiver, \$85; Collins 7018A, VFO w/Dial, \$85; new Elmac 4-250A, \$35; BC-221A, 1w/calibration book, \$65; B&W CX45 xmtrgd cond., \$5; WE 255 relay, \$5.00. All items F.o.b. W2KZF, Mills, Lt. Col. USAF, 105 Hendrickson, Beverly, N. J.

WANTED: 10B exciter, John Aht, W1BOAL, 10 Richards Ave., Stamford, Conn.

"YOUR Best Contact," a free booklet of interest to all hams telling about the spiritual side of a ham's life. Free on request. Gil Van-Wynen, Box 10, Holland, Mich.

FOR Sale: Tubes, brand new, 813s, \$8; 832As, \$6; 866As, \$1.50; 829Bs, \$6.50; 4-125As, \$15; 4-250As, \$25; 304T1s, \$8; 412Ts, \$6; 815s, \$2.00; 4E26s, \$2; 84s, \$4; 250T7s, \$17.50; 4E29s, \$6.50; H1E54, \$6; 814s, \$1.50; 6X4s, \$3; 398A, 398B, \$1.50; 6X4s, \$3; 203s, \$1.75; 6AK5, 50¢; Collins plate transformer 2000V ct, 500 Ma., \$18; Collins 50 watt modulation xfrmr, \$8; SCR-522 power supp, \$12; BC-221 freq. meter, \$65; Bendix in circuit metered condns checker, \$25; Motorola FMR-13V revr, FM, 30-40 Mc., \$50; PAIT-25V FM xmtr, \$50; ART-13 mod. xfrmr, \$8.50. All guaranteed, C.O.D.'s OK. Bill Slep, Box 178, Edenton, Va.

BUY, Sell, Trade. Collins receivers, Olson, 1165 So. St. Paul, Denver, Colo.

FOR Sale: Factory-wired Valiant. Less than 25 hours. Excellent, \$345; NC300 with speaker, \$295; both one owner. Also Collins 32V3 with spare 4D32, \$500; 75A2 with speaker, \$310. Both very clean. Karl Lipscomb, K0C'ED, 1001 West Third, Joplin, Mo.

(CRYSTALS, Airmailed, None. General, FT-243. Any kilocycle, 350 to 8600, \$1; 1700 to 3499, \$1.95; 8601 to 20,000, \$1.95, .01% .455, 500 kilocycle, \$1; 1000 Kc. octal, \$4.85. Crystals since 1933. C-W Crystals, Box 2065, El Monte, Calif.

COLLINS 75A2 (latest like new) \$290.00; 8X-28A like new condition \$125.00; pair RK-65's (new) \$10.00; 815 Driver and modulation transformer pair; Thordarson CET 2000-200 500 ma power transformer 110 v primary \$35.00; Thermador 13812 4 Henry-900 ma swinging and 13811 16 Henry-450 ma smoothing chokes pair \$22.00; Barker Williamson CX-62 Butterfly condenser with N-2 neutralizers and National R175 Choke (new) \$20.00; BC-439 7-8 Mc (new) \$10.00; Dual vibropack 6-12 volt—450 volt—new vibrators \$12.50; P16-103 generator only (new 6-12 volt \$10.00; Miniature Speed Graphic 2 1/2 x 3 1/4, carrying case and speed gun, Range finder (like new) \$95.00, W4CDM.

NEW Mercury outboards and hosts. Will take ham gear on trade. Write: Boyd Reter, K01MO, Boy's Marine Shop, Clinton, Iowa.

LIKE Ham Radio? You'll love Dayton Hamvention. See Hamfest calendar this issue!

WANTED: Schematic diagram and/or technical manual for F R A frequency shift converter. Manufactured by R.C.A. navy department. James A. Mose, Box 131, Sharsburg, Md.

8X-7 with speaker and Heathkit DX-35, \$165; Bendix TA-12D, \$15. Want: Elmac AF-67, W5FDL, 503 Edward Gary, San Marcos, Texas.

Designed for



Application

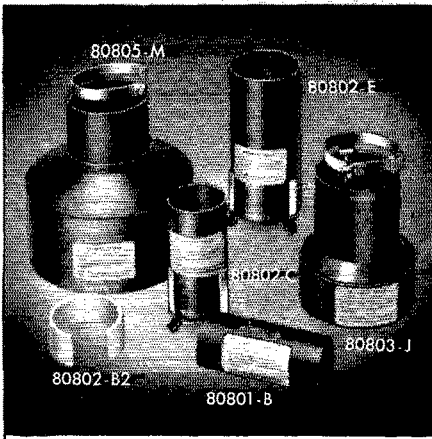


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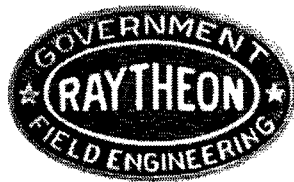
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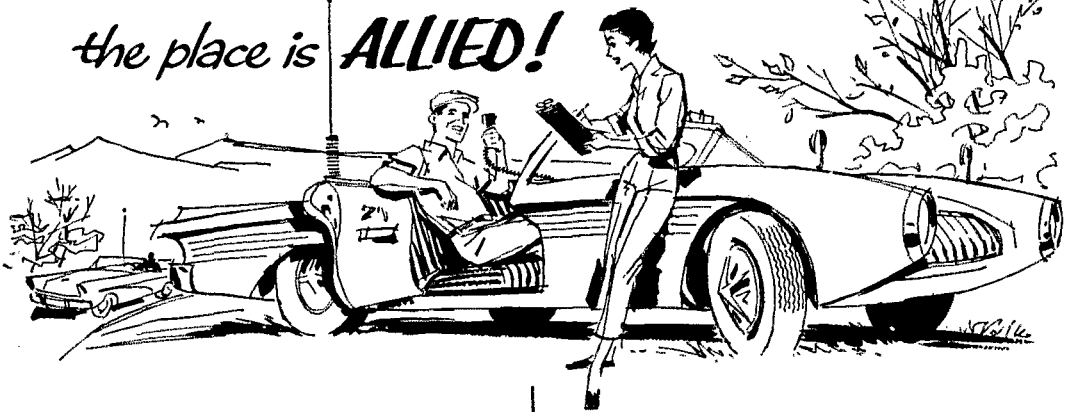
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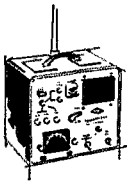
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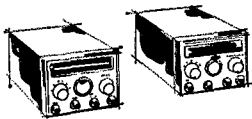
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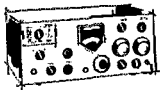


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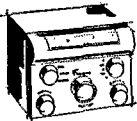
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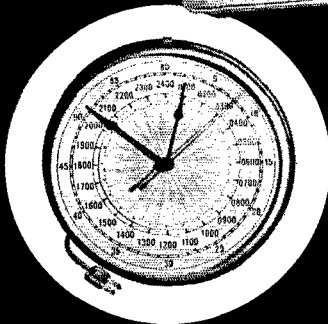
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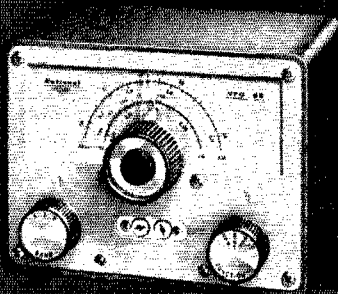
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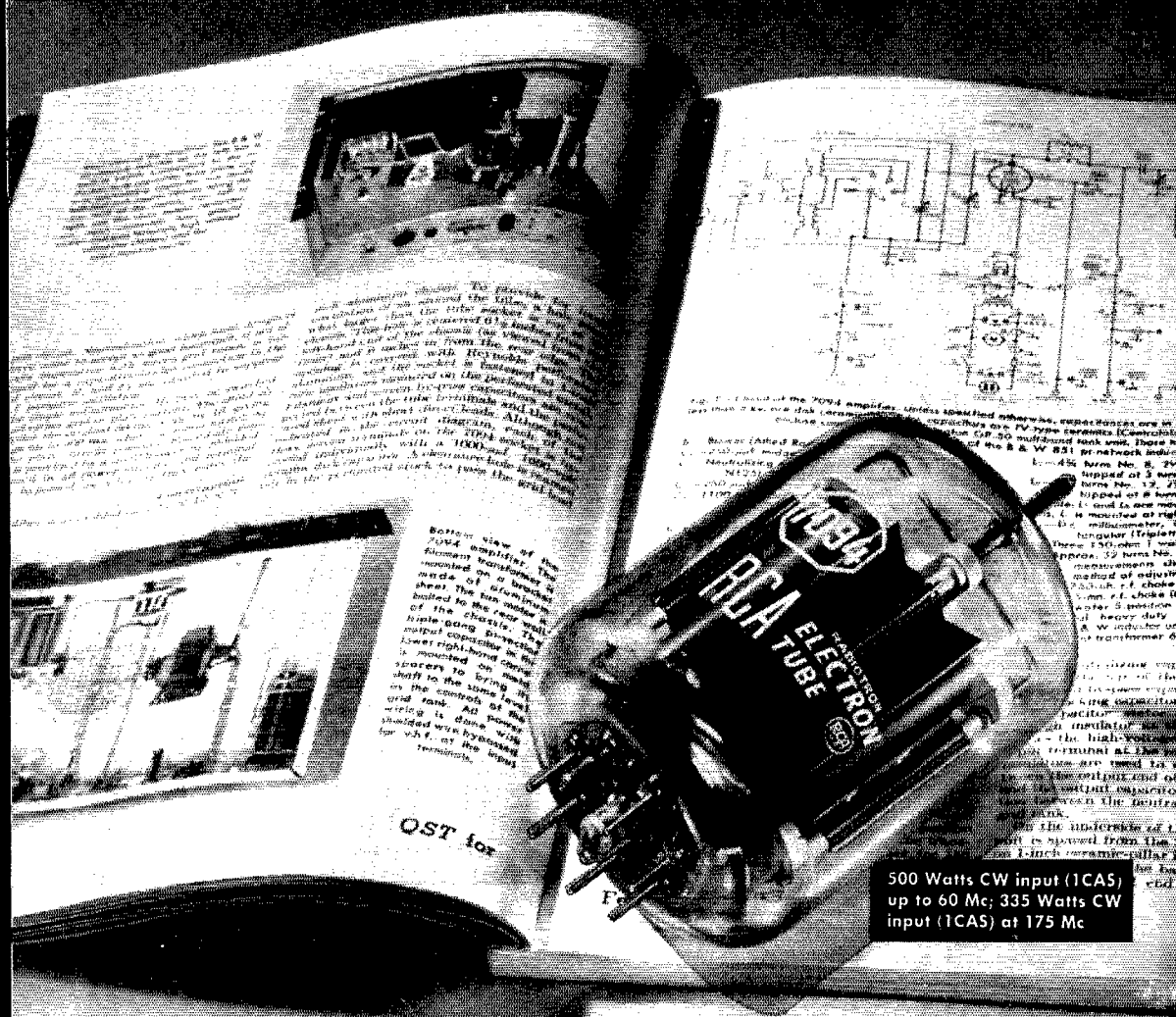
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Bottom view of the
7094 amplifier tube
mounted on a bracket
inside of the chassis
of the chassis. The
input capacitor is
lower right-hand corner
is mounted on a
screws to bring it
up to the same level
as the control of the
grid and all power
leads are connected
for 50% at the input
terminals.

500 Watts CW input (1CA5)
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For construction details, see your copy of QST. For technical data on RCA-7094, write RCA Commercial Engineering, Sect. D-37N, Harrison, N. J.



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