

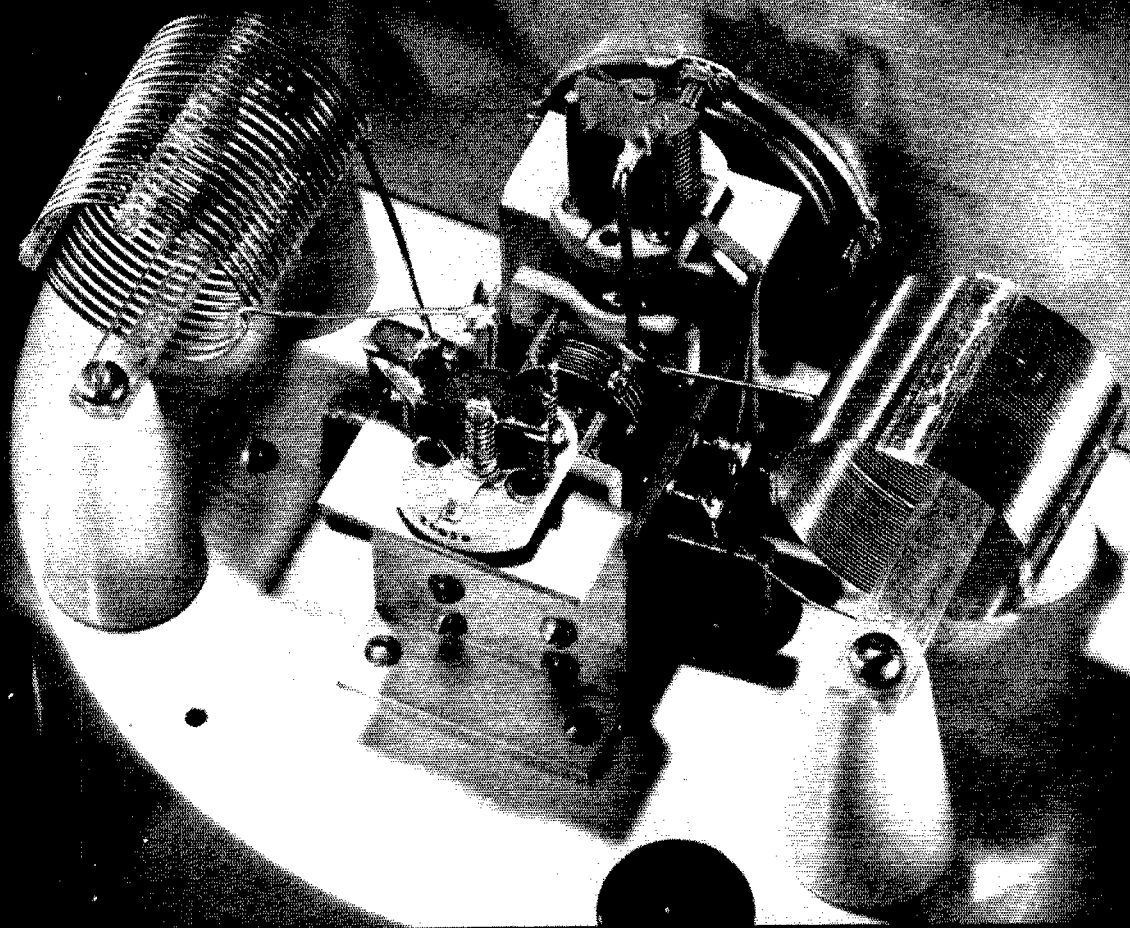
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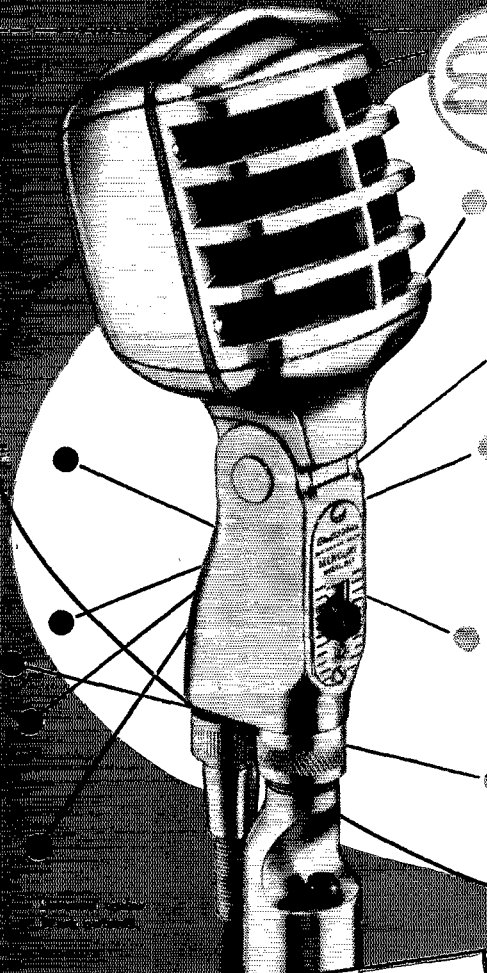
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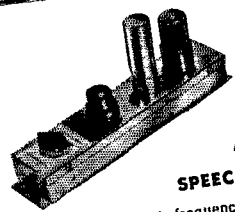
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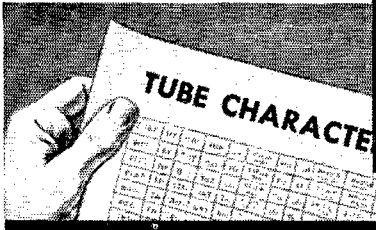


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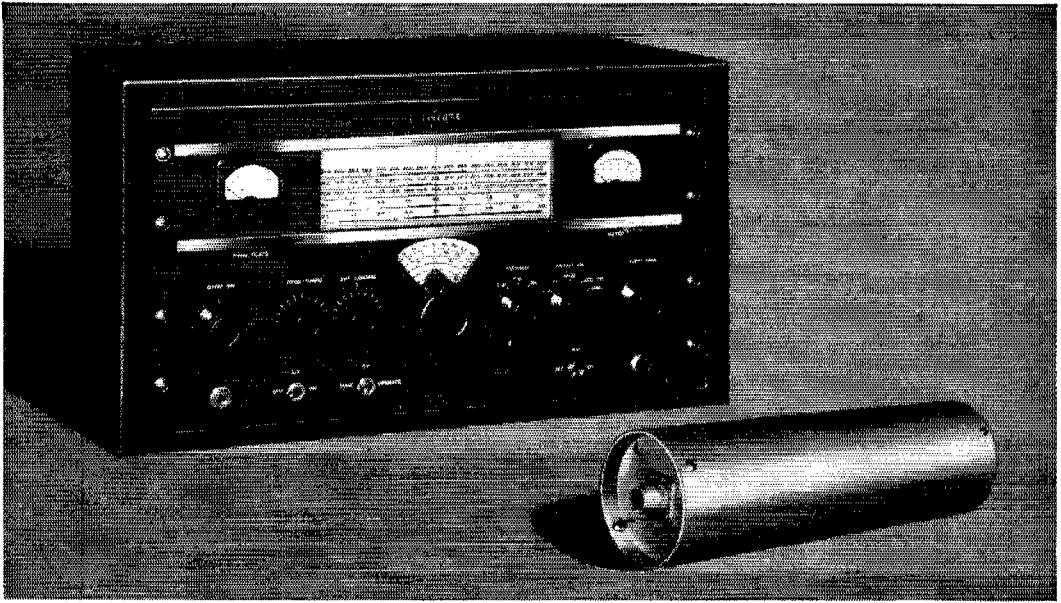
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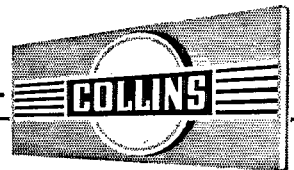
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OFFICES

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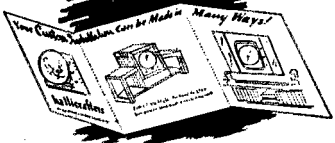
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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors.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

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

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

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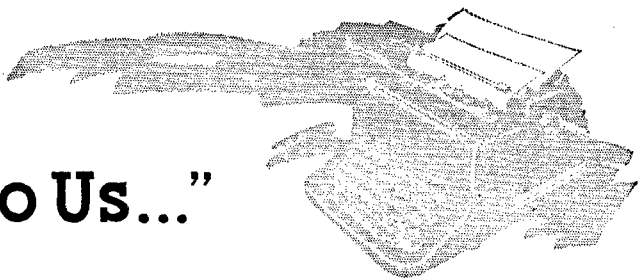
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"It Seems to Us..."



GOVERNMENT REGULATION OR GOVERNMENT DIRECTION — WHICH?

THE ACTION of the League's Board of Directors on May 28th with respect to the FCC proposals has since been subject to a variety of interpretations over the air and in print. People who aren't on the Board and didn't attend the meeting appear to be able to discuss at length just why the Board did what it did, and what that action means. Since most of what we've heard and read misses the point completely, it seems to us to be in order to give the straight dope for the information of any amateurs who may be in doubt as to the meaning of the Board's action.

First of all, it might not be a bad idea to turn to page 33 of the July *QST* and, in paragraph 59, read the Board's resolution (it is apparent some of the commentators haven't). It is a carefully-worded job, which winds up doing two things: First, it directs the Secretary of the League to withdraw the proposals of the League now on file with FCC, resulting from Board action a year ago; second, it directs that FCC be advised that it is the intention of the ARRL to submit the representative opinion of radio amateurs opposing the "overall plan or blueprint to provide scope and direction for the immediate and long-range development of the amateur radio service."

The issue the Board considered is the issue of whether or not the course of amateur radio is to be directed from Washington, the issue of whether or not the future development of amateur radio is to be blueprinted by a Government agency. In its notice, FCC says perfectly plainly that just such direction is what amateur radio needs, in its judgment, and that we would very much benefit from a "new overall plan or blueprint to provide scope and direction for the immediate and long-range development of the [amateur] service." It states clearly that its current proposals are "interrelated and constitute an overall plan." It explains at length the purpose of this plan in language characterized by references to "directed enhancement," "continued improvement . . . through a program" and "establishment of an integrated and continuously reviewed and revitalized plan for improving operations and techniques." Directed activity, a planned program of development in both technical and operating fields, a blueprint for our future . . . of which this is the beginning. All by Government.

It is on this point, on this basic philosophy of regulation, that the League's Board of Directors felt it could take no other course of action than to express its disagreement. It has done so. It is not necessarily opposing the specific proposals; it may very well find itself in agreement with many of them. But it doesn't believe we can discuss the merits of individual proposals until the basic issue has been settled — and to clear the air to the extent it can, pending settlement of this all-essential point, it has withdrawn the proposals it previously had on file with FCC.

The League isn't going to argue League recommendation against FCC rule; it is going to argue a philosophy of regulation. FCC says it thinks we'd be better off if someone (Government in this case) took over and gave us a planned and directed future. The Board takes a different view; its action expresses its conviction that the phenomenal accomplishments of amateur radio in the United States have come about only because of the freedom it has enjoyed from "planning" or "direction" — by Government or anyone else; that the unique thing which amateur radio is today in this country has come about as a direct result of a philosophy of minimum

regulation consistent with protection to other services, of freedom of the amateur in this country to try whatever the ingenuity of the American ham has seen fit to contrive in his search for newer, different, better — or even crazier — ways of doing things.

The Board believes that when you have someone spending his own time and money and energy on something for the sheer love of it you get better results, and eventually a stronger and healthier amateur body, by letting the guy alone. Its action reflects its serious doubts that a planned future, a directed program of development, would have got us "across the pond" in 1923 on the "useless" high frequencies. Its action reflects its concern over the ability of blue-printing, even by the best-intentioned, to come up with such things as the months of work by Ross Hull and other v.h.f. pioneers which eventually gave us a whole new concept of the manner in which these frequencies are propagated. Would, or could, a planned development have produced the initial work and eventual general acceptance by amateurs of crystal filters in receivers, the determination of an initial handful of persistent experimenters to convert an interesting laboratory gimmick into a practical operating tool? Would programming produce a Twin-lamp, or the host of other ingenious answers hams dream up to their practical problems? Could direction by Government imbue the amateur body with the high flame of devotion to public service that is the fiber of our voluntary emergency work today?

The Board doesn't think so. It appreciates deeply the good intentions behind the new philosophy expressed by FCC, and it respects just as deeply the acknowledged real desire of the Commission to achieve only what is best for amateur radio. But it believes just as sincerely and feels just as strongly that what is best for amateur radio must evolve from amateur radio itself, that to "plan" or "direct" our art, despite the sincerity of objective by the planners, is to circumscribe and limit its development.

Let there be an end to loose talk of what is involved in the Board's action. The Board's action is simply a declared intention to defend, and to guarantee unhindered the continuance, if it humanly can, of the priceless ingredient of amateur radio that has made us what we are, that has resulted in our becoming the invaluable asset we are to our country — the probing inquisitiveness, the infinite ingenuity, the "I-guess-it-can't-be-done-but-let's-try-it-anyway" spirit of the individual amateur.

— A. L. B.

Your QSL Manager

IN an attempt to get data concerning another of the pioneers of the ARRL QSL Bureau system, we hounded Frank E. Pratt, W7DXZ, who finally came up with the following:

"For over a year, I've been stalling on that QSL manager story dope you've been asking for in the hope you would forget I'm around. However, since you're so persistent, I'll break down. As you can see from the enclosed snap, I'm anything but photogenic. In fact, all the neighbors with children have asked for a copy of this picture; they want to use it to frighten their kids into behaving!

"Here goes: Been interested in amateur radio since I was eight years old. Have held present ticket since 1932. Mainly interested in DX chas-



ing. Have worked 157 countries; 148 confirmed. Member of A-1 Operators Club, WAC, WAS and DXCC. Station: homemade VFO-xtal unit, Millen exciter unit, 812H buffer, p.p. VT127A final, 750 watts input; DB20 preselector, HQ129X, Q5-er; 3-element 20-meter rotary beam, 347-foot Zepp. Bands used: 10-20-40, with 20 as favorite; c.w. is used 95 per cent of the time. Have done my share of experimenting with early equipment; Ford coils, crystal detectors, rotary and quenched gaps, etc. Once made WAC in one day using eight watts to a single 46. Try to do it today!

"Have on hand approximately 35,000 unclaimed DX cards. Between 500 and 700 envelopes are mailed each month. Approximately 7000 cards are received each month. Pet peeves: guys who don't send for their cards and those who make much extra work for me by incorrect procedure when they do send.

"Married, have two married daughters, four grandchildren — was grandpa at 36! My job — a postman's holiday from hamming: foreman of communications and radio for the City of Tacoma Light and Water Departments, and also in charge of radio equipment for the Peninsula Light Co. We have five fixed f.m. stations and considerable carrier-current, telemetering, metallic-phone and other allied equipment. Other

(Continued on page 44)

A 28-Mc. Installation for the Car

Simple Equipment for the Mobile Ham

BY G. P. MCGINNIS,* W3ENR

• Mobile operation is becoming increasingly popular, not only among those hams to whom it is a diversion from home-station operation, but also within a growing group of apartment-house dwellers who find a car station the only feasible means of getting on the air. The complete installation described here by W3ENR can be duplicated quite easily without marring the car so as to reduce its resale value.

This article describes a simple 10-meter mobile station, including the constructional details of the transmitter as well as several hints on mobile installations in general. The transmitter, which runs at an input of 17 watts, is sufficiently compact to mount in the glove compartment of an automobile. Long-distance contacts on ten meters do not require the high power often found necessary on lower frequencies. Under good band conditions 10-meter DX contacts are common with quite low power. Comparative tests have been run between this transmitter and transmitters running as high as 50 watts input; the signal strength difference, as noted by a distant receiver, is normally less than one "S" unit.

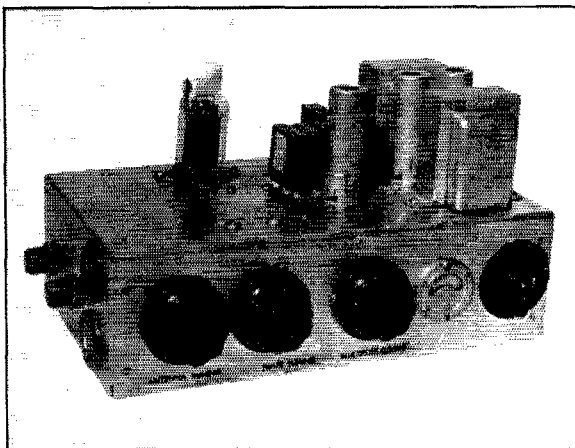
The Transmitter

The transmitter utilizes the increasingly-popular tubes with instant-heating filaments. They make possible a decreased average drain on the automobile battery. Referring to Fig. 1 for the transmitter diagram, a 2E30 tube is used as a regenerative harmonic oscillator, quadrupling, with 40-meter crystals, to 10 meters. The oscillator drives the 2E24 final amplifier directly. The modulator consists of a pair of 2E30 tubes in Class AB₂, driven simply from a carbon microphone and push-pull input transformer. This modulator stage provides more than sufficient audio with normal-volume close talking.

*Traffic Mgr., Washington Mobile Radio Club, 24 Decatur St., Kensington, Md.

The transmitter is constructed on a 5½ × 10 × 3-inch aluminum chassis. The photographs show the general layout. The microphone and modulation transformers are mounted on the right side of the chassis with the modulator tubes between them. The oscillator tube is slightly to the left of the modulator, the final amplifier is to the rear of the chassis, submounted for better shielding. Six 40-meter crystals are mounted between the oscillator tube and final amplifier. Miniature parts are used throughout. For example, miniature coils mounted directly on trimmer-type variable condensers are used in the oscillator, final and antenna circuits.

The under-chassis space is divided into two compartments by an aluminum shield; the oscillator and modulator on one side, the final amplifier and antenna-tuning assembly on the other. A coaxial relay is used to switch the antenna from the transmitter to the receiver.



The transmitter is built on a 5½ × 10 × 3-inch aluminum chassis. Only the tubes, crystals and audio transformers appear on top. Power and control cables enter at the left-hand end. The switch at the right is for the milliammeter.

The antenna loading coil is cemented to a short length of 5/8-inch diameter plastic tubing and this tubing is inserted in the final tank coil. The antenna loading can be adjusted by varying the spacing of these two coils and, at the same time, adjusting the antenna tuning condenser, C₁₃, for maximum output. When this optimum con-

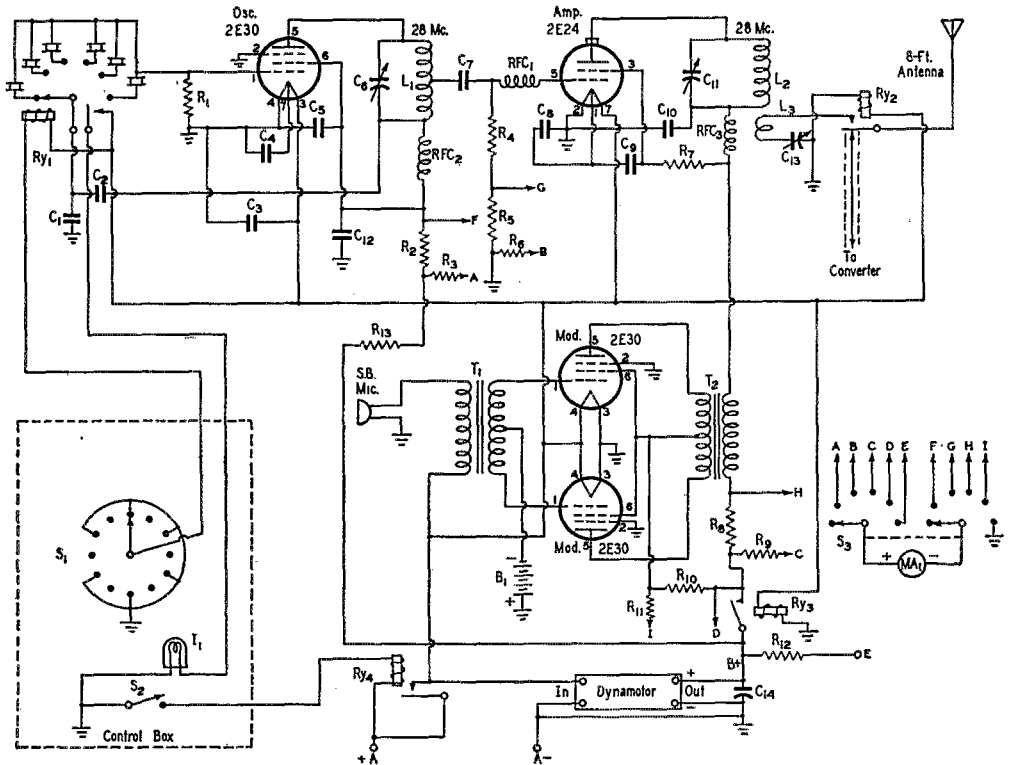


Fig. 1 — Circuit diagram of the 28-Mc. mobile transmitter.

- C₁ — 200- μ fd. mica.
- C₂, C₃, C₄, C₅, C₈, C₉, C₁₀, C₁₂ — 0.002- μ fd. mica.
- C₆ — 15- μ fd. air trimmer.
- C₇ — 100- μ fd. mica.
- C₁₁ — 15- μ fd. air trimmer, double spaced.
- C₁₅ — 100- μ fd. air trimmer.
- C₁₄ — 8- μ fd. 450-volt electrolytic.
- R₁ — 0.1 megohm, $\frac{1}{2}$ watt.
- R₂, R₆, R₈, R₁₀ — 10 ohms, $\frac{1}{2}$ watt.
- R₃ — 470 ohms, $\frac{1}{2}$ watt.
- R₄ — 20,000 ohms, 10 watts, wire-wound.
- R₅ — 33 ohms, $\frac{1}{2}$ watt.
- R₇ — 5000 ohms, 10 watts.
- R₉, R₁₁ — 1200 ohms, $\frac{1}{2}$ watt.
- R₁₂ — 500 ohms, $\frac{1}{2}$ watt.
- R₁₃ — 3000 ohms, 10 watts.
- L₁, L₂ — 9 turns, $\frac{3}{4}$ -inch diameter, $1\frac{1}{8}$ inches long.
L₁ tapped 3 turns from plate end. (B & W 3010 Miniductor.)
- L₃ — 4 turns, $\frac{3}{4}$ -inch diameter, $\frac{1}{4}$ inch long (B & W 3011 Miniductor).
- B₁ — Bias battery — 33 volts (Burgess XX22E hear-

- ing-aid battery).
- I₁ — Indicator lamp.
- MA₁ — Miniature milliammeter, 1-ma. scale.
- RFC₁ — Parasitic choke — 8 turns No. 18 enameled wire, wound around a 200,000-ohm $\frac{1}{2}$ -watt carbon resistor.
- RFC₂, RFC₃ — 28-Mc. r.f. choke (Ohmite Z28).
- Ry₁ — Stepping relay to control crystals (Philco part number 77-0257 — see text).
- Ry₂ — Miniature coaxial relay (Advance Electric).
- Ry₃ — Miniature plate-voltage control relay.
- Ry₄ — Starting solenoid.
- S₁ — Single-pole 12-position rotary switch (Mallory 32112-J — see text).
- S₂ — Push-button switch on microphone.
- S₃ — Single-section 2-pole 6-position rotary switch (Mallory 3226-J — see text).
- T₁ — Single-button microphone transformer (Thordarson T20A02).
- T₂ — 10-watt modulation transformer; pri.: 10,000 ohms, e.t.; sec.: 4500 ohms (Thordarson T21M52).

dition of loading is reached the tubing should be cemented in place.

Crystal Switching

One unconventional part of the transmitter that deserves special attention is the stepping relay, Ry₁, used in the oscillator circuit for switching crystals. This relay is mounted vertically, on the rear edge of the chassis near the center. It is a standard Philco part, originally intended to

change the frequency of an automobile receiver. All wafers except one were removed, thus providing a six-position single-pole switch, plus one additional pair of contacts at the first position. The relay is of the rotary-action type; each time voltage is applied to the solenoid the contacts advance one position, the contacts returning to the original position on the sixth pulse. It is necessary to provide some method for remotely following the action of the relay in order to determine

which crystal is in the circuit. This is accomplished with a 12-position rotary switch, S_1 , and a pilot lamp. Alternate contacts of the 12-position switch are wired together, the switch being wired to control the stepping relay as shown in Fig. 1. As S_1 is rotated through 360 degrees, six pulses are applied to the relay. It is therefore necessary only to number "off" the positions on the face plate of the rotary switch for the proper crystals and remember always to turn the switch in the same direction. The synchronization problem thus is solved. As an added precautionary measure, the extra set of contacts on the stepping relay is wired to a pilot-lamp indicator, mounted on the control box, so that the indicator will light when the first position is reached. Although this relay may appear operationally complicated, actually it is very simple. In six months of operation the stepping relay has never failed to follow the switch perfectly. This system provides a rapid means of QSY not otherwise possible without manually switching crystals. Crystals differing in frequency as much as 600 kc. may be used without retuning with no appreciable drop in output.

A miniature milliammeter, MA_1 , supplied with the necessary shunts, is provided to monitor oscillator plate current, final grid current, final plate current, modulator plate current and combined final and modulator plate voltage. The meter is switched by a six-position double-pole switch, S_3 , with the first position open. Typical circuit readings for the transmitter are as follows:

	Unloaded Value	Loaded Value
Oscillator plate current ¹	25 ma.	40 ma.
* Oscillator plate voltage	205 volts	200 volts
Final grid current	4.5 ma.	3 ma.
Final plate current ¹	20 ma.	55 ma.
Final plate voltage	325 volts	312 volts
Modulator plate current	30 ma.	60 ma. ²
Modulator plate voltage	325 volts	312 volts

* This reading cannot be made with the milliammeter; a separate voltmeter is required.

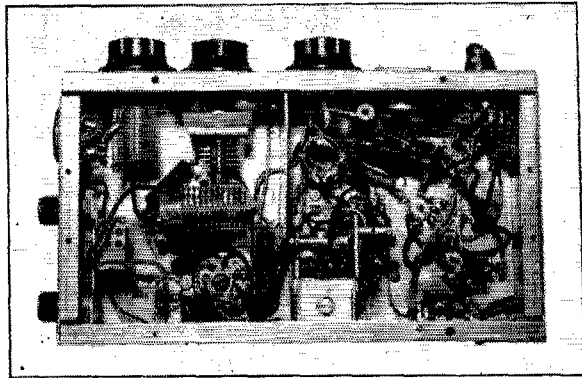
¹ Includes screen current.

² With modulation.

Power and Control

The diagram of the power and control system is included in Fig. 1. All circuit controls terminate

◆
The dynamotor power supply is mounted under the hood in a steel box close to the car battery.



Bottom view of the mobile transmitter. A small baffle shield separates the oscillator tank coil to the right and the amplifier inductance to the left. The large variable in the upper left-hand corner is in the antenna circuit. The stepping relay that selects crystals is below the oscillator tank coil; the antenna change-over relay is in the lower left-hand corner.

in a 2 × 4 × 4-inch box, shown in the photograph of the receiving installation. S_1 is to the right, the microphone plug and stepping-relay pilot-lamp indicator to the left. The push-to-talk switch on the microphone controls all power circuits. When this switch is closed the following occurs:

1) The dynamotor solenoid, Ry_4 , closes, starting the dynamotor, and applying voltage to the filaments of the tubes.

2) Ry_3 closes, connecting plate voltage to the transmitter. This relay is necessary in order to work quick break-in; otherwise the transmitter will remain operative for a short time, blocking out the receiver until the 8- μ f. filter condenser is discharged.

3) The antenna change-over relay closes.

4) Voltage is applied to S_1 . The stepping relay will not change position unless S_1 is rotated.



5) Voltage is applied to the microphone.

The installation draws the following current from the automobile battery:

Receiver and converter	8.0 amp.
Transmitter filaments	2.6 amp.
Dynamotor (loaded)	13.0 amp.
Starting solenoid	0.5 amp.
Relay Ry_3	0.2 amp.
Antenna relay Ry_2	0.3 amp.
Total	24.6 amp.

Power Supply

Approximately 300 volts at 160 ma. is required to operate the transmitter. A surplus 12-volt dynamotor operating at 6-volt input is used. The dynamotor, together with its starting solenoid and filter condenser, is mounted in a metal cabinet bolted to the fender of the automobile, inside the motor compartment, as shown in in one of the photographs. By mounting the dynamotor inside the motor compartment near the battery, voltage drop is held at less than 0.1 volt. Both positive and negative leads are run from the battery because the automobile chassis cannot be depended upon as a good ground return. No provision has been made for additional charging of the automobile battery beyond that supplied by the car generator. The installation has been used throughout an entire day without discharging the battery. During this time the automobile motor was not run to charge the battery. It must be understood that only the receiver, representing a drain of 8 amperes, was operating during most of this period. The additional current required by the transmitter was drawn only when actually transmitting. The instant-heating filament tubes thus save considerable battery current.

The Receiver

The receiver consists of a Gonset converter operated in conjunction with a Philco model CR-12 automobile receiver. On the lower right side of the converter a slide-type switch for operating the noise limiter can be seen. Voltages to operate the converter are obtained from the CR-12 receiver. A 5-prong tube socket is mounted on one side of the receiver housing. This acts as the terminal for B positive, B negative, A positive, and the two noise-limiter leads. A 5-conductor shielded cable connects the Gonset converter and the automobile receiver.

Noise Limiter

Man-made electrical noises are the mobile enthusiast's greatest enemy. With every automobile (including your own) a potential all-wave transmitter, the problems are greatly multiplied. A noise limiter will go a long way toward eliminating this difficulty. Several types of commercial noise limiters are available. These, however, can be duplicated at little cost and effort.

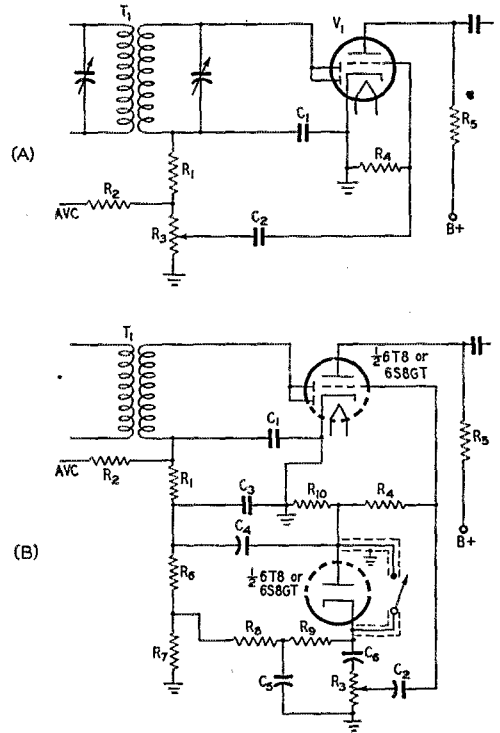


Fig. 2 — Diagrams showing the addition of noise limiter to the receiver.

- C_1, C_3 — 100- μ fd. mica.
- C_2, C_4, C_6 — 0.01- μ fd. paper.
- C_5 — 0.1- μ fd. paper.
- R_1 — 47,000 ohms.
- R_2, R_{10} — 1 megohm.
- R_3 — $\frac{1}{2}$ megohm.
- R_7, R_8, R_9 — 0.47 megohm.
- R_4 — 10 megohms.
- R_5 — $\frac{1}{4}$ megohm.
- R_6 — 0.1 megohm.
- T_1 — i.f. transformer.
- V_1 — Second detector.

Fig. 2 shows the circuit of the limiter used with this installation, together with the necessary changes in the original receiver circuit for its addition. The second detector in the receiver was replaced with a miniature Type 6T8 tube. This tube contains an extra diode which serves as the noise limiter. The second-detector circuit of some automobile receivers may differ slightly from that shown. With little difficulty or change in receiver performance, those desiring to employ this circuit can rewire the second detector to agree with this. A 6S8GT tube can be used instead of the 6T8 if the receiver uses octal instead of miniature tubes.

As mentioned above, the switch for removing the limiter from the circuit is mounted inside the Gonset converter. The wires leading to this switch, regardless of its location, must be

shielded to prevent excessive hum pick-up. The noise limiter effectively removes most man-made electrical noises, particularly those generated by other automobiles. Most of the electrical noises generated by my own car motor were removed by other means.

The Antenna

Several types of commercial antennas are available. The standard police-type "whip" antenna is excellent, but is fairly expensive and requires a large mounting hole in the body of the automobile. Additionally, it is awkward in appearance and presents a problem when the time comes to dispose of the automobile. Used-car dealers have an aversion to automobiles with holes in them. They claim, with good cause, that they cannot explain the reason for the holes to prospective buyers.

Several extra-long receiving-type antennas, intended for mounting on the front cowl of an automobile, are on the market. These are adequate for transmitting and can be sold with the automobile. A Ward model DCF4 receiving antenna is used with this transmitter. This antenna extends to 100 inches, yet collapses to 9 inches when not in use. It is equipped with a coaxial lead and is electrically insulated with heavy bakelite washers. These insulating washers appear to offer adequate insulation for the low power involved, especially since the bakelite insulating washers are located at a voltage node on the antenna.

There are some tricks with coaxial cable which can be applied here to good advantage. The cable between the antenna and the coaxial relay is made an electrical half wavelength long. A half wavelength of coaxial cable is an effective 1-to-1 transformer, hence the transmitter and antenna base, although several feet apart, are automatically placed at the same effective r.f. potential. A quarter wavelength of coaxial cable is used between the antenna relay and the converter. This acts as an inverting transformer, i.e., the effect at one end is reversed at the other. Thus, when the transmitter is operating, the coaxial-relay contact is disconnected from the converter. A quarter wavelength away at the converter input, this appears as a direct short, preventing r.f. picked up by the coaxial cable from burning out or overloading the converter r.f.

The receiving equipment and the transmitter control unit are mounted in a convenient spot below the dashboard. The switch remotely controls selection of crystal frequencies.

Equipment	Preferred Location	Alternative Location	Remarks
Transmitter	Under instrument panel	In trunk	
Power supply	Adjacent to battery, under hood	In trunk	If this unit is placed in the trunk, extra heavy leads must be run from the battery.
Antenna	Front cowl	Rear fender	Mount adjacent to the transmitter, as high on the automobile as possible.
Control box	Under dash in front of driver	On steering column	
Converter	Under dash in front of driver	On steering column	Mount so that it can be tuned easily while driving.
Microphone			Mount holder on instrument panel, adjacent to control box.

stage. The formula for calculating a quarter wavelength of coaxial cable is as follows:

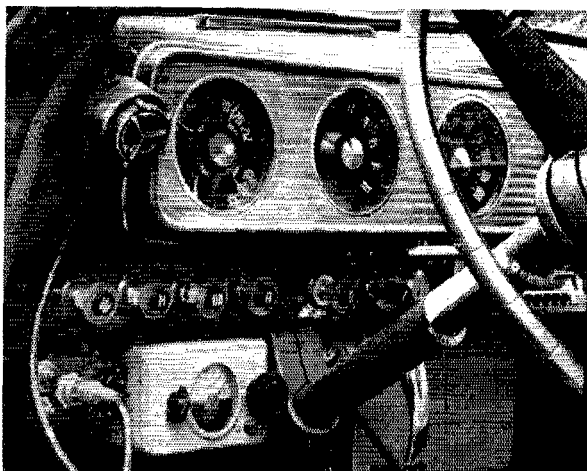
$$L \text{ (inches)} = \frac{2802 \times 0.65}{\text{frequency (Mc.)}}$$

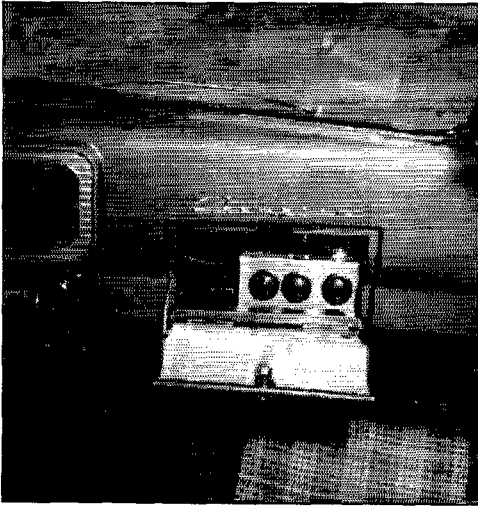
This value should be multiplied by two in order to obtain the half-wavelength value.

Noise Elimination

A thorough study of noise elimination was given in a previous issue of *QST*.¹ Postwar auto-

¹ Price, "Eliminating Car Noise in 28-Mc. Mobile Reception," *QST*, May, 1947, p. 37.





The glove compartment provides more than ample room for the 17-watt transmitter. In operation, adjustment is required only for large frequency changes.

mobiles are relatively simple to "delouse" for noise. The following measures were adequate in my case:

1) 10,000-ohm carbon suppressors were installed on each spark plug. *Wire-wound suppressors are not effective against 10-meter ignition noise.*

2) A 20,000-ohm carbon suppressor was installed on the distributor.

3) A wavetrap, tuned to 10 meters, was placed in series with the generator lead. The coil consists of 5 turns of No. 12 enameled wire wound on a flat Lucite strip $\frac{1}{4} \times 2 \times 5$ inches. Slots were cut in the edges of the Lucite strip to hold the windings in place. The 100- μ fd. ceramic variable condenser, used to tune the coil, was mounted on one end of the Lucite strip. The wavetrap was adjusted by placing it near a 10-meter transmitter tank circuit, and tuning the variable condenser for maximum absorption. After the unit was installed in the generator lead it required no further adjustment.

4) By-pass condensers of 0.5 μ fd. were installed at the ignition switch, gas gauge, and ammeter terminals.

Location of Equipment

The location of the various items of equipment in the automobile contributes materially to their efficient operation. There are many alternative locations for each piece of equipment. Table 1 shows the preferred placement, together with acceptable alternatives.

A mobile installation admittedly requires more work than the usual low-power home station, but the fun it provides is correspondingly greater.



RECEIVERS — their circuits, construction and power supplies — continue to hold the limelight in August, 1924, *QST*. Continuing his voluminous symposium on "Building Superheterodynes That Work," Technical Editor Kruse delves into the practical aspects of the receiver art, drawing on the talents of such additional contributors as Henry A. Rand, R. B. Bourne, Don Canady, H. A. Snow, H. S. Bixby, Raymond Moore, R. T. St. James and Brent Daniel. Eyebrows are expected to be raised at the announcement of a vacuum-type air-core radio-frequency transformer. Of equally revolutionary design is J. L. A. McLaughlin's "Super Calamityplex," a neutrodyne set featuring ganged tuning condensers for one-control tuning. Exponents of the "blooper" will be especially interested in Dr. Lewis M. Hull's discussion of methods of preventing receiver radiation; a non-regenerative r.f. stage or "radiation muffler" is prescribed. An Audubon, N. J., amateur, George Grammer, 3AII, describes a simple method of calibrating receivers using broadcast station harmonics. His curves check within 1 meter of WWV!

How many volts per rectifier jar? What are the specs for a good homebuilt filter condenser? How should a fellow go about winding a low-loss coil? These commonplace questions are adequately answered in this issue to assist the gang in their quest for better signals on the shorter waves. And to help put these improved signals into rapidly-expanding DX frontiers, we have a pair of timely antenna articles, F. Dawson Bliley's discussion of how to operate a 150-meter aerial on its third harmonic and Don C. Wallace's explanation of a one-man method of raising a mast.

An all-out effort to work two-way with Australia and New Zealand is planned for the coming season. President C. D. MacLuran, 2CM, of the Australasian Radio Relay League, has ironed out details of the test with Traffic Manager F. E. Schnell. Meanwhile, the Pan-American tests continue at a profitable pace, with long lists of U. S. and Canadian calls being logged by Argentine amateurs. With only a meager "all's well" to go on, speculation is rampant here at home as to whether or not the MacMillan Arctic Expedition *Bowdoin*, with ARRL operator Don Mix aboard, has started home.

Gleanings! Amateur radio has been born in Sweden, with the issuance of thirty transmitting licenses. . . . RCA has adopted a policy of selling power tubes direct to hams. . . . A new fad, SWL cards, is catching on with radiophone listeners.

A Super Interlaced Beam for 10 and 20 Meters

BY ARLAND USSHER,* ZS6Z

THE author has been a ham for over 21 years, but it would be a mistake to assume that he is an authority on beams. This is a brief description of some months of work in an endeavor to achieve what now seems to be impossible — viz., a 10-, 15- and 20-meter beam on the same boom — but which resulted in an outstanding dual beam being constructed the hard way.

The first introduction to beams was about two years ago, when a visiting ham from England was due in a few days and reliable 10-meter contact with the Gs was a "must."

An enthusiastic and expert friend produced a formula for a wide-band beam that could be fed directly from 52-ohm coax cable, and in a couple of hours this was translated into a few bits of wire about 7 feet above a flat iron roof. This makeshift fixed beam worked exceedingly well. The formula was derived by the U. S. Signal Corps to meet their requirements of a simple beam that could be cut and put up without any tuning. As the average ham seems to have similar requirements, the formula is quoted here:

Director length =	0.41 wavelength
Spacing =	0.1 "
Driven aerial =	0.47 "
Spacing =	0.15 "
Reflector length =	0.52 "
A wavelength =	<u>984</u> feet

(Mc.)

The Bug Bites

The forced introduction to a beam and the surprisingly good signal reports were fatal, and the idea of putting up a super triple beam began to receive consideration. But, not knowing much about beams, it was necessary to consult the expert. "The matter is easy," he said. "Just allow at least a tenth wavelength between the elements of one beam and another, and stick it up about 65 feet in the air." What could be simpler?

A young edition of the Eiffel Tower was designed and built, and on the top a welded tubular steel boom 32 feet long was added, with a suitable rotating mechanism.

A 10-meter 4-element beam occupied one-half of the boom, a 15-meter 3-element beam the other, and a 20-meter 3-element array was supported on light steel trestles 42 inches above the

lot. The coaxial feed line went to a relay box on the boom, and switches in the shack selected the desired beam, leaving the others earthed.

On test the 10-meter beam gave wonderful reports from England and U. S. A., but the 20 was not so hot and would not load properly.

Tuning the Beams

Then a "W" was heard laying down the law on beams and saying most emphatically, "You gotter toon 'em." So, if you must tune one — what price two or three? In any event, the mechanical gear was not quite robust enough, so the boom and mechanism were taken down at the end of the last DX season.

The boom was "temporarily" erected on the front lawn, with the lowest elements about 8 feet off the ground. The XYL was told it would be there over the week end only, as a gang of willing helpers was coming out on Sunday to help tune the arrays. (Actually it remained on the lawn for four months.)

A field-strength meter was fixed up about 200 feet in front of and somewhat below the beams, and all three were tuned, retuned and tested. They appeared to work OK, although the final lengths of the various elements were definitely much longer than the textbooks said they should be. The general arrangement now was a wide-spaced 3-element 20-meter on the boom, with a wide-spaced 4-element 10 interlaced with it in the same plane.

The 10A¹ was 39 inches behind the 20A.

The 15-meter beam was a wide-spaced 4-element about 42 inches above the other two. All fired in the same direction, the frequency on twenty was 14,120 kc. and 28,240 on ten (i.e., harmonically related) and the 15 was put in the middle of the new 21-Mc. band.

As the sun went down everything seemed to be tuned on the nose and, after consuming r.f. and other beverages, the gang of helpers dispersed and it only remained to hoist the lot up again. But next Sunday it was stated on the SARL Headquarters Bulletin that for DX we should, if possible, operate above 14,350, so it was decided to retune the 20-meter beam to this frequency.

The elements had to be shortened considerably, and when this beam was finally retuned it was found that the lengths of the elements coincided

* 5, Sauer St. Extension, P.O. Box 3450, Johannesburg, Union of South Africa.

¹ 10A is the abbreviation for 10-meter antenna, 10R for 10-meter reflector, 10D for 10-meter director, and so on.

almost exactly with the table in the *Handbook!*

A quick check on the 10-meter beam indicated that it was now shooting about 30° off to the right! All 10-meter elements were then moved one-tenth wavelength to the rear, in an effort to reduce the interaction, but this merely shifted the 10-meter lobe around another 10°. The 20-meter elements were then removed one by one but that did not correct the pattern on 10.

Then the gray matter began to work, and the field-strength dipole was moved to the highest available position, where it was about 5° above the beams. Another check on 10 showed that this beam was now firing straight ahead! Moral — have your f.s. dipole above the beam. The 20A was then replaced and the 10-meter field strength dropped 10%. Replacing 20D and 20R dropped the strength on 10 another 10%. Earthing and unearthing the unused radiators affected the results, indicating interaction.

The f.s. meter was of the remote-indicating type, so that the meter could be observed at the beam position, but in spite of r.f. chokes and bypass condensers it seemed to be very temperamental. Using the highest possible meter current ironed out a lot of small differences, but it was still found that the beam was definitely “off” in the direction of the cable connecting the f.s. pick-up and the meter. This was brought home forcefully when the baby and cat were found to be playing with this cable and upsetting the meter readings.

Accordingly, the indicating meter was left at the pick-up dipole, and much running back and forth to observe it reduced the weight of the one-man gang by 4 pounds in a day! (It all came back overnight.) Then a telescope was used for reading the meter and this reduced the wear and tear considerably. The tuning went on week ends for about four months, during which period almost every practical arrangement of the 10-, 15- and 20-meter beams was tried, but always there was

a drop in f.s. from the 10-meter beam when the others were added, even after returning the 10 for maximum field strength. Some results seemed to be so crazy that much time was spent on a study of the placing of the various radiators, and it would appear that when interlacing beams the short radiator must be in front of the longer ones — i.e., 10 must be in front of both 15 and 20, and 15 in front of 20. Up to this stage an endeavor had been made to maintain a spacing of one-tenth wavelength (on ten) between any 10-meter element and any other but, as no success had been obtained, this theory was discarded and the idea of having the 10 and 20 radiators very close together was tried. It was also becoming obvious that a 10-, 15-, and 20-meter beam on the same boom was something to be dreamed about — or left to the experts to develop. Consequently, the self-imposed assignment was altered to finding an efficient arrangement for 10 and 20 only. If that was achieved, 15 could be added later.

One of the local DX merchants has a commercial dual 10 and 20 beam with which he gets good DX results, but he put out a terrific local 10-meter signal to the back, which is assumed to come from shock excitation of the 20-meter beam that is arranged to fire in the opposite direction to the 10. Hence it was logical to assume that if the 10-meter power wasted in the 20 beam could be made to assist the 10 it would be a distinct step forward. After many more tests an arrangement was found where, for the first time, the f.s. on 10 of the twin beam was actually higher than for the 10-meter beam by itself. The position of the 10A was then experimented with. It was tried 6 inches and 9 inches above, behind and in front of the 20A. At 9 inches in front it gave the best results. Then the separation was gradually increased until the peak position was found to be from 24 to 28 inches in front of 20A. As 25 inches was the most practical arrangement, the 10-meter beam was retuned in this position and the field-strength meter showed that on 10 the twin beam was just twice as good as the 10-meter beam alone.

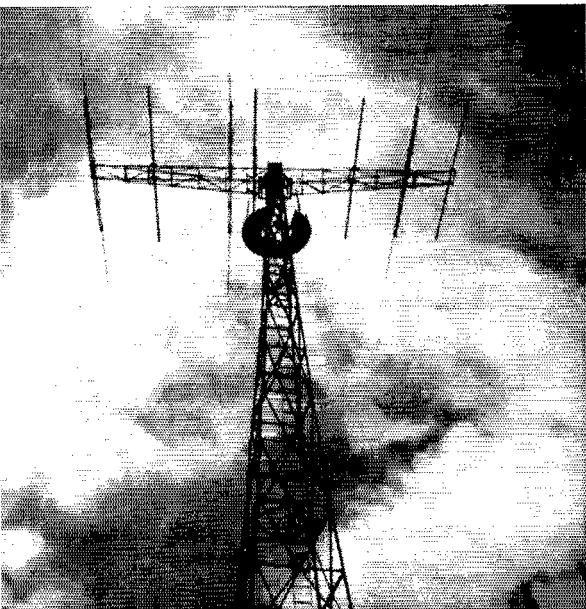
The 10-meter beam gave a front-to-back ratio of about 40:1 and the 20-meter beam 26:1, expressed in field-strength meter current readings. The 15-meter beam was then tried in several positions on or near the boom but, since the “best” position resulted in about a 50% loss of field strength from the 10-meter beam, it was reluctantly decided to scrap 15.

The final arrangement of the 10 and 20 beams is shown in the photograph. The two beams are practically in the same plane but each set of ele-



The dual 10- and 20-meter beam at ZS6Z, the result of many months of careful work.

QST for



ments can be sighted through without the other set interfering.

All parasitic elements are earthed to the boom at their centers, and the radiator not in use is earthed in the relay box that is mounted on the side of the center section of the boom.

The 10-meter elements are made of $1\frac{3}{4}$ -inch o.d. dural tube. The 20-meter elements are commercial corrugated-steel telescoping tubes that, since they showed signs of rust after a few months, were all zinc plated again. After tuning, the joints were taped and the whole painted with aluminum paint. The feed from the transmitter is RG-8/U 52-ohm coax cable about 200 feet long.

The gap at the center of the radiators is about $\frac{1}{4}$ inch, so that the coax can be connected without any appreciable fanning out of the leads. Experiments were made with a "T" match but the best standing-wave ratio that could be obtained was 3.5:1. With the coax directly connected the s.w.r. on 10 was 1.5:1 and on 20, 1.75:1, which is considered to be highly satisfactory.

During the tune-up process various combinations were tried out on DX with surprising results, and the final arrangement at 8 feet high brought in some S9-plus reports from England and the U. S., after which it was decided that the tuning job was done.

After installing the beam at a height of 70 feet, a short "CQ 10" on 'phone seemed to bring back all the Ws at once. Reports of "9 plus," "An outstanding signal," "The strongest ZS," "Rarely heard a ZS so late," etc., became commonplace. One ham in Detroit said he had been on 10 meters exclusively for 11 years and had never heard such a loud DX signal. Local tests indicate a front-to-back ratio of about 35 db.

The 20-meter beam also performs very well and evokes similar reports to those obtained on 10. At 800 miles the pattern is reported as very sharp and inaudible off the back and sides, and it regularly puts an S9 signal into W6 the long way 'round. And all that with exactly 100 watts input.

This beam was made the "hard way," but it was worth it and it all goes to confirm what that W said — "You gotter toon 'em!"

The author wishes to thank his many ham friends who lent physical and theoretical assistance, and even if their pet theories did not give the desired results at this location they at least gave fresh starting points when the author had exhausted his very limited knowledge of beams and wasn't quite sure what to try next.

Support and Rotation

The tower for supporting the beam is an engineering job that is beyond the scope of the average ham, but a brief description may be of interest. The height to the top of the elements is 70 feet above ground. The base is 18 feet square and the top 14 inches square. The tower is made of mild steel angles and is self-supporting on four

concrete bases (which between them weigh 14 tons). The boom can be tilted into a vertical position for painting or moving the beam elements. The circular platform at the top is 6 feet in diameter, and is extremely useful when servicing or adjusting the mechanism.

Rotation is provided by a $\frac{1}{4}$ h.p. 1440-r.p.m. motor, direct coupled to a double reduction worm gear that rotates the boom once in 68 seconds. The motor is controlled by push buttons in the shack and on the top platform.

A motor of this type operating through a speed-reducing gear of 1600:1 gets up to full speed almost instantly and when the power is cut off it stops almost as fast, with the result that tremendous stresses are developed in starting and stopping the boom (which, with its elements and center section, weighs about 500 lbs.). The final worm-reduction gear of 50:1 will not overrun like the back axle of a car, and when the motor stops suddenly the effect is rather akin to blocking a spoke in a wheel. The reaction would tend to "wring the neck" of the tower.

Friendly consulting engineers were asked for ideas but the only practical ones were for some sort of slipping clutch which would start and stop the boom slowly, but this did not appeal as the construction would be expensive and maintenance a problem.

Finally the author hit on the idea of a simple flywheel on the motor shaft and this worked like a charm. The motor takes about $1\frac{1}{2}$ seconds to reach full speed and the starting current is within the capacity of the starting winding. When switched off, the motor gradually comes to a standstill in about 5 seconds. There is no trace of overswing of the boom. The flywheel dimensions were found by trial and much error, but ended up as a steel disk 6 inches in diameter by $\frac{3}{16}$ inch thick. A Selsyn motor is driven by a cycle chain from the final shaft, and the shack indicator is a clear plastic pointer that rotates over a great circle map of the world.

Limit switches were tried in the first arrangement, but were discarded as an unnecessary complication. Instead, the pointer engages with a toothed wheel each time it passes and the wheel indicates by colored arrows which push button should be pressed to restore the boom to its central position. Two revolutions in each direction are allowed, but on one occasion when the Selsyns were disconnected the boom rotated unnoticed for 20 minutes without doing any damage, but one more revolution and the cables would have parted. This RG-8/U coax is great stuff for the amateur!

One more refinement is an illuminated sign above the map that shows the figures 14 or 28 according to which relay has been switched on. The figure 21 can also be shown, but that one must remain dark until some expert can devise a simple triple beam.

Noise-Generator Technique for the V.H.F. Man

A Simple Way to Improved Receiver Performance at 50 and 144 Mc.

BY EDWARD P. TILTON,* WIHDQ

As new techniques are developed the men responsible for them tend to develop a special language for talking about their work. This specialization, in both the nature of the work and the talk about it, often leaves those of us who are most in need of its beneficial results completely in the dark. A typical example is the use of the noise generator for receiver testing.

For some time most amateurs whose interest in their receivers extends beyond working the bandswitch and turning the bandspread dial have known that there was a new way of checking receiver performance which differed radically from previous practice. They knew that technical literature had featured considerable mathematical mumbo-jumbo concerning "noise figure," "equivalent noise resistance," and "Johnson noise," but as these articles were usually full of equations and abstruse technical language most of us decided that this technique was not for us. This was a bad mistake, for, as we shall see, the noise generator is actually a real step forward in the simplification of receiver testing.

The first popular treatment of the idea was presented in *QST* by Goodman¹ in the fall of '47. He described a practical noise generator, and explained its use in low-pressure language. We suggest that you dig that article out of your *QST* file right now and give it a careful reading. It tells all you need to know about the noise generator — material we do not intend to repeat here.

The noise generator pictured in the *QST* story was designed primarily for use at 28 Mc., but the idea behind it is a natural for the v.h.f. worker.

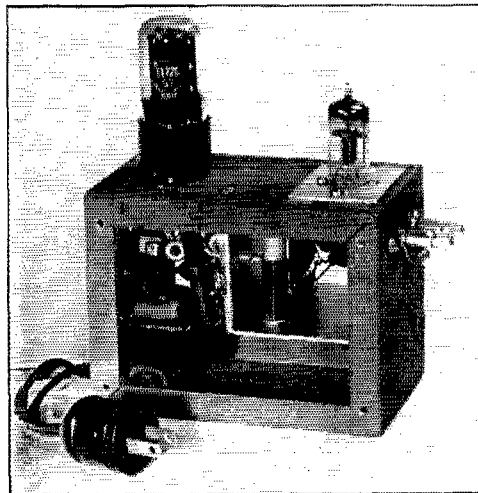
As we go higher in frequency from 28 Mc., noise developed within the receiver becomes an ever greater problem. Signal-to-noise ratio is determined almost entirely by the receiver itself, and small variations in receiver design may make tremendous differences in performance. The noise generator provides the only simple means of telling how we are making out in our attempts to

improve receiver performance.

In an attempt to adapt the Goodman noise generator to v.h.f. work we soon found that even 50 Mc. was near the top limit of its usefulness. By shorting out RFC_1 , removing C_3 , and plugging in a 50-Mc. tuned circuit across the output terminals (Fig. 2 in the article referred to), we were able to get satisfactory operation, but the output circuit could not be resonated at 144 Mc. The next step was the installation of a 316A "door-knob" tube in place of the 801A originally used. The use of plug-in resonant circuits then permitted use of the

generator for either 50 or 144 Mc. Results were not completely uniform from day to day, however, indicating that the 316A was not the best tube for the job.²

Hearing that a diode had been developed by Sylvania especially for noise-generator use, one of these was obtained, and the generator was rewired in accordance with the manufacturer's recommendations for his Type 5722. The result is shown in the accompanying photograph and circuit diagram. This arrangement worked nicely at 28 and 50 Mc. without any external tuning, but a plug-in tuned circuit was needed for best results at 144 Mc.



Revised version of the *QST* noise generator. The 801A originally used has been replaced with a Type 5722 noise diode, and the circuit altered as shown in Fig. 1. It is usable on 28, 50, or 144 Mc.

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

¹ Goodman, "How Sensitive Is Your Receiver?" Sept., 1947, *QST*, page 13.

² Other v.h.f. workers have reported reliable results with the 15E and 24G in v.h.f. noise-generator work.

Using the Noise Generator

The beauty of the noise generator is its utter simplicity in both design and use; yet it will tell you more about your receiver in five minutes than could be obtained in hours of work with the most expensive laboratory signal generator. Every operation in receiver adjustment and testing can be done with it, with the exception of calibrating the dial, and when you are through you will know exactly where you stand.

Here's how you do it: Put a noninductive resistor across the generator output terminals, the value to be determined by the type of transmission line you have on your antenna (50, 75, 300 ohms, etc.), and connect the generator to your receiver or converter antenna terminals by the shortest possible leads. Hook up an a.c. voltmeter (or db. meter, or milliwatt meter, if available) across the receiver output terminals. The carphone jack is a good place on some receivers, or the meter can be connected across the speaker terminals. Adjust the receiver volume or r.f. gain control to some level which gives a convenient reading on the output meter. The a.v.c., b.f.o., and noise limiter should be off. Now turn up the diode filament voltage, by means of a Variac or a variable resistor in the filament-transformer primary, until the noise power output of the receiver is doubled, as indicated by an increase of 41 per cent in the a.c. voltmeter, 3 db. on a db. meter, or double the reading on an indicator which reads directly in milliwatts. Read the diode plate current, which is a direct indication of the performance of your receiver. The lower the current required to double the receiver noise output, the better your receiver works. That's all there is to it.

If you want to talk about your receiver's "noise figure," substitute the current reading in the formula $F = 20 IR$ where I is the diode current in amperes and R is the value of R_1 . The noise figure in db. is 10 times the common logarithm of F , or the value may be obtained from various decibel conversion tables. If you come out under 5 db. for 50 Mc. or 7 db. at 144 Mc., you have quite a good receiver.

The value of noise figure arrived at by amateur technique may not be strictly accurate, but the important fact is that it provides a reference with which to work. When you lower that reference by a receiver adjustment you have made an improvement. If the diode current required for doubling the noise output goes up after a change you're going in the wrong direction.

This reference can be put to work in many ways. Anyone who has played with receivers knows how confusing the results can be when one tries to adjust mixer injection, antenna coupling, and other variables, by listening to a test signal. When the signal gets louder after an adjustment it often appears that the receiver

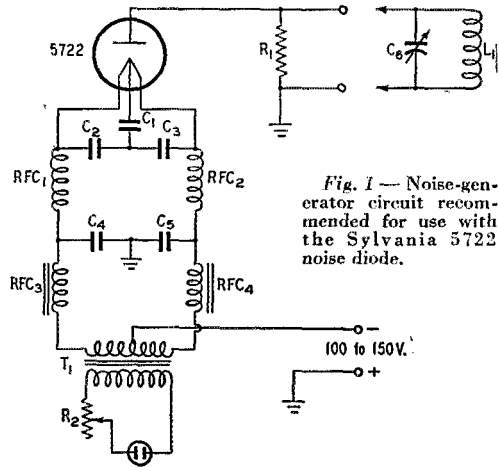


Fig. 1 — Noise-generator circuit recommended for use with the Sylvania 5722 noise diode.

- C_1, C_2, C_3, C_4, C_5 — 500- μ fd. miniature.
- C_6 — 3-30 μ fd. trimmer.
- R_1 — Value to equal line impedance (50, 75, 300 ohms, etc.).
- L_1 — 2 turns No. 16, $\frac{3}{8}$ -inch diameter. Use this L_1-C_6 combination plugged into generator output terminals. Use only if needed for full output at 144 Mc.
- RFC_1, RFC_2 — 6 turns No. 22, $\frac{3}{16}$ -inch diameter.
- RFC_3, RFC_4 — 30 turns No. 22, close-wound on $\frac{3}{8}$ -inch diameter slug-tuned form, with core centered in winding.
- R_2 — Variable resistor or Variac for adjusting filament voltage.
- T_1 — 6.3-volt 2-amp. transformer.

noise has increased along with it. Just working for maximum signal alone is almost certain to result in inferior performance, except in alignment adjustments.

As a typical example, let's take the case of the 6AK5-12AT7 converter described in the 1949 *Handbook*, and currently used in 50-Mc. work at W1HDQ. Though considerable time had been spent tinkering with the antenna coupling when the converter was first put to use, application of the noise generator made it possible to effect a real improvement in performance by adjusting the position of the antenna coupling coil. Less than five minutes was required, yet the noise figure of the converter was dropped from 8 to 5 db. by that one simple adjustment. Reason: too-loose antenna coupling introduced regeneration, which whooped up the S-meter readings and made loud signals seem louder, but actually reduced the signal-to-noise ratio. It fooled the ear and eye, but not the noise generator.

The Best Receivers Are Home-Built

There is an increasing tendency on the part of many amateurs to leave the receiver work to the manufacturers. While a good many of us have continued to build our own converters for 50 and 144 Mc., even that field is now receiving com-

(Continued on page 90)

The Coffee-Can VFO

An Inexpensive Easily-Built Crystal Substitute

BY EDWARD HAYWARD,* W1PH

UNFORTUNATELY some of us don't have the cash, the time or perhaps the ability to build the commercial-looking gear that so often is considered a necessity in these days of chromium grilles and plastic dashboards. We have to be content with something we can toss together with simple tools over a week end from whatever parts we may find in the junk box. This doesn't necessarily mean, however, that the stuff we manage to eke out under such circumstances can't work much better than it looks.

The rather strange-looking object in the photographs may not be recognized readily as a Clapp VFO, but you can start building it from scratch on a Saturday afternoon and have it driving your rig by Sunday night — maybe earlier. And you won't have to apologize for the signal it can put out. All reports we've had have been of crystal quality. Even though the coil is confined in a tight enclosure with the tube, frequency drift is amazingly low. Checks against a GR standard over a period of four hours on 80 meters show a maximum drift of 80 cycles from a cold start, most of the drift taking place within the first twenty minutes. I have tried keying the oscillator and also my 807 final and there is little to choose so far as chirp is concerned. Both methods give equally clean-cut keying.

The circuit diagram is shown in Fig. 1. It adheres quite closely to similar arrangements shown in previous *QST* articles. A 6V6 is connected as a

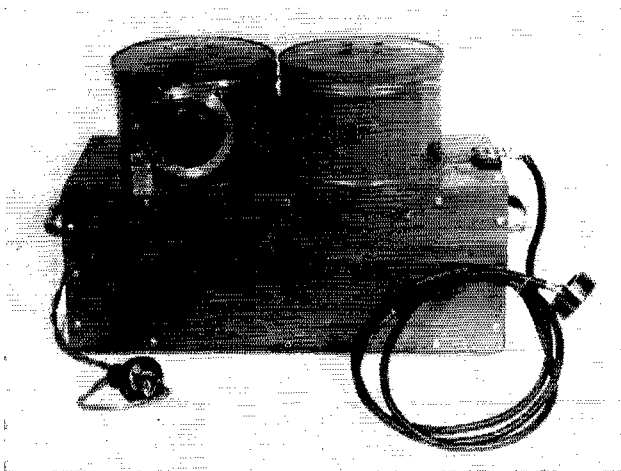
* 15 Woodbine Terrace, Auburndale, Mass.

triode in the oscillator. The untuned amplifier, also using a 6V6, is capacity coupled at the cathode of the oscillator. A regulated voltage of 150 is used on the plate of the oscillator and also on the screen and plate of the amplifier. C_2 in parallel with C_1 spreads out the 80-meter band over about half of the dial scale. While personally I have found this spreading entirely adequate for tuning to the desired frequency with a straight 3-inch dial — even on 40 and 20 meters — there are doubtless those who would prefer a dial with vernier reduction. A National type BM or one of the miniature square-frame dials can be easily substituted for the straight dial if desired.

Construction

There isn't a great lot that can be said about the construction that isn't evident from the photographs. The two stages are built in a pair of vacuum-pack coffee cans fastened to a wood base that can be used to house the power supply. These cans don't look half bad after they have been given a couple of coats of enamel in your favorite color. You will find too that parts are quickly mounted, since holes are easily made, the drill leaving a nice clean hole. Both covers are perforated with several holes to provide a measure of ventilation.

The oscillator components are placed in one of the cans. The tuning condenser is single hole-mounted in what will be the front of the can. Then the tube and coil are placed so as to leave



The "coffee-can VFO" ready for operation. The strip at the left provides a dial marker for the oscillator tuning control.

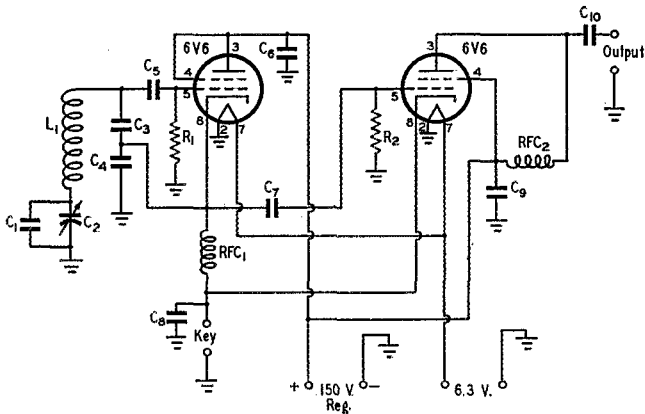


Fig. 1 — Circuit diagram of the "coffee-can VFO."

C₁, C₅, C₇, C₁₀ — 100- μ fd. silver mica.
 C₂ — 75- μ fd. midget variable.
 C₃, C₄ — 0.001- μ fd. silver mica.
 C₆, C₈, C₉ — 0.01- μ fd. mica or paper.
 R₁ — 0.1 megohm, $\frac{1}{2}$ watt.

R₂ — 47,000 ohms, $\frac{1}{2}$ watt.
 L₁ — 3.5 Mc. — 27 turns No. 18, 2 inches diam., 2 $\frac{3}{4}$ inches long (B & W 3907 strip coil) (inductance 20 μ h).
 RFC₁, RFC₂ — 2.5-mh. r.f. choke.

as much space as possible around the coil (obviously not too much in any event). The coil I used is a section of B & W 3907 strip coil, 2 inches in diameter, 10 turns per inch. A small strip of wood is screwed to the bottom of the can and the coil is then cemented to the wood strip. The socket is wired up with loose leads and then mounted on $\frac{3}{4}$ -inch spacers.

The few parts needed for the buffer stage are assembled in the second can and the two cans are bonded together with a wire connected to the negative high-voltage terminal.

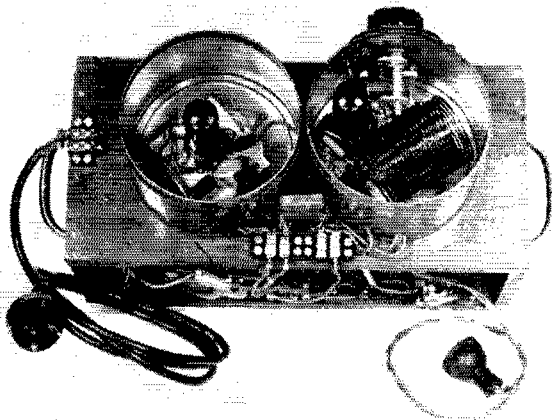
Almost any small power supply delivering around 250 or 300 volts with a rating of 75 ma. or more should be satisfactory for use with this unit. A VR-150 and the usual dropping resistor

are connected across the output of the supply to obtain the regulated voltage. The resistor is adjusted until the VR tube just stays ignited with the key closed.

If the signal shows any evidence of mechanical vibration, the unit can be mounted on a sponge-rubber pad. I haven't found this necessary.

I've been using this VFO for some time now, driving the 6V6 crystal-oscillator stage in my rig. I use a length of coaxial cable fitted with a plug that fits the crystal socket. Although it cost me practically nothing to build, since the parts were mostly from the junk box, I couldn't be more satisfied with it had I paid a good price for it. Several other hams around here have built similar units with equally good results.

The oscillator is in the can to the right, the buffer amplifier in the one to the left.



TVI Reduction—Western Style

Eliminating QRM from a Kilowatt

BY CLAYTON E. MURDOCK,* W6OMC

THERE have been many good articles written on TVI and another may seem superfluous. But instead of just going off the air, read on—maybe a new idea will be found to help cure your TVI. There are many causes of TVI, and this article is not meant to be comprehensive, but to describe the details of how one severe case of TVI was completely cured.

The transmitter runs a “brimful gallon” on 10, 11, 20, 40 and 80 c.w., using push-pull 4-250As in the final. The transmitter is just 40 feet from the TV receiver. The TV antenna is the same height as the 3-element 10 and 20 rotary and just 50 feet away. There is also a 66-foot vertical just 50 feet away from the 30-foot-high TV antenna. The TV signals are average suburban signals on Channels 5 and 7.

The TV antenna and receiver are in the direct field of the transmitting antenna and one can pull a quarter-inch arc off the TV antenna feeder where it enters the TV receiver. An indication of the intense field is that lamps light up in the neighbor's house, both upstairs and downstairs, when transmitting on 40 and 20 meters.

Several tests have been made to prove that the TVI elimination has been positive and complete. This station was operated in the last ARRL DX test and made 259 contacts during the two week ends while the neighbors watched the afternoon ball games and the regular nightly programs, never knowing the transmitter was on the air.

The television set was installed two weeks before the start of the DX test and initial testing showed that operation on any band caused serious interference—the screen going white, cross-hatching appearing on the picture, black parallel bars blanking part of the screen, etc. Disconnecting the antenna from the transmitter removed most of the interference. The problem then seemed simplified, in that the interference

*209 Elder Ave., Millbrae, Calif.

• Can your TV neighbor draw quarter-inch arcs off his receiver antenna terminals when you're on the air? That was the situation at W6OMC before the OM went to work.

was probably associated with blocking of the receiver because of the intensity of the radiated power, plus probable high-order harmonics falling in or near the TV channels. It also showed that there probably was no direct connection via the house wiring, or direct radiation from the exciter.

It was then decided to attack the problem by reducing the higher-order harmonics in the transmitter output and to do something to reduce the fundamental voltage appearing at the receiver input.

Tackling the Harmonics

The first thing to do is to make up a sensitive wavemeter. The one used was simply a 1N21 crystal and a 50-microamp. meter coupled to a coil and variable condenser. With this meter on the operating table in front of the exciter, indications of harmonic output on 28, 35, 42, 49 and 56 Mc. were found. This was the range of the tuned circuit in the wavemeter. These harmonics were found in various degrees in the grid circuit of the final as well as at the antenna. It was thought that the harmonics should be reduced or eliminated in the grid drive so that the harmonic suppression added after the final would only have to deal with the power levels of harmonics generated in the final itself. That is, it was hoped that a pure fundamental driving frequency could be obtained for the final.

The harmonic reduction was accomplished simply by using high-*C* tank circuits in the plate of the driver tube and using single-turn coax pick-up loops and high-*C* grid circuits in the final. The exciter is a 6SK7 VFO and a string of three 6V6 frequency doublers capacitance-coupled to the grid of a 4-65A tetrode. The 4-65A plate

◆
The transmitter on which the work described in this article was done. The enclosed relay rack at the right houses the three final amplifiers and the power supplies. The exciter is on the operating table, in the lower left corner in this view.

QST for



uses a B&W 50-watt bandswitching turret, end-linked, and a 50- μ fd. tuning condenser. The appropriate 6V6 is capacitance-coupled to the grid of the 4-65A by a gang switch. The B&W 10-meter coil was removed and replaced by a 7-turn $\frac{3}{4}$ -inch diameter coil that tunes with about 35 μ fd. The B&W 15-meter coil is used on 20 meters, the 20-meter coil on 40 meters and the 40-meter coil on 80 meters. Additional capacitance must be added on 40 and 80 meters to make the 20- and 40-meter coils resonate; 100- μ fd. variables were added, set in capacitance so that the 50- μ fd. condenser tuned at approximately the same setting on 40 and 80 as on 20. After increasing the C in the 4-65A tank condenser, it was necessary to add a 6-inch antenna to the wavemeter to find indications of higher-order harmonics.

There are three separate finals, each using push-pull 4-250A tetrodes. The 40-80 final uses a B&W 50-watt center-linked turret in the grid and a B&W 1-kw. plug-in center-linked coil in the plate, tuned by a Johnson 200- μ fd. split-stator variable condenser. The 20- and 40-meter grid coils in the turret are used on 40 and 80 meters, respectively. The regular center links were removed and replaced by single-turn coax loops. Additional tuning capacitance was needed to make the coils resonate, and 100- μ fd. APC-type padders were added from each grid to ground and set so that the regular grid tuning condenser hits resonance at the same setting on both 40 and 80 meters. The plate circuit was also made high- C by using the regular 20-meter coil on 40 and the 40-meter coil on 80. For the necessary additional capacitance across the plate tank coil an Eimac 50- μ fd. fixed vacuum condenser was connected from plate to plate.

The 10- and 20-meter finals use small 50- μ fd.-per-section split-stator condensers in the grid and Eimac fixed vacuum condensers in the plate, with tuning accomplished by turning a ring or flipper inside the plate coil. The 10- and 20-meter grid coils were pruned so that nearly all the capacitance of the 50- μ fd. variable condensers was used, the 10-meter coil being adjusted so that it hits 11 meters with the condenser all the way in. The plate coils were pruned so that the 20-meter coil tunes with two 50- μ fd. fixed vacuum condensers (one from each plate to ground) and the 10-meter coil with two 25- μ fd. fixed vacuum condensers. Four separate RG-58/U coax links were used between each of the 4-65A plate coils in the turret and the appropriate final grid coil, each with a single-turn shielded coax loop at each end; that is, one turn around the 4-65A plate tank coil and one turn around the center of the grid coil.

With grid drive on the final, it is now impossible to find any harmonics with the sensitive indicator on any of the four grids. There is plenty of grid drive with one-turn loops because with a

high- C circuit fewer turns are needed in the pick-up loop. It is easy to overcouple and have broad bandpass characteristics by sliding the single turn loop up on the 4-65A plate tank coil. When properly overcoupled, there is no need to retune the grid circuits of the finals or the plate circuit of the 4-65A to cover 100 kc. on any band.

Antenna Couplers

The next step was to prevent the now-reduced harmonic output from getting to the antenna. Antenna tuners were built for each band, again coupling with shielded coax links, this time using RG-8/U because of its higher power rating.

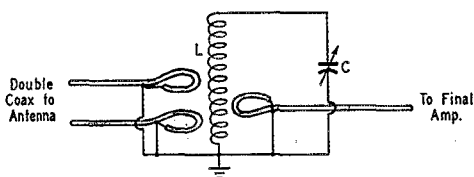
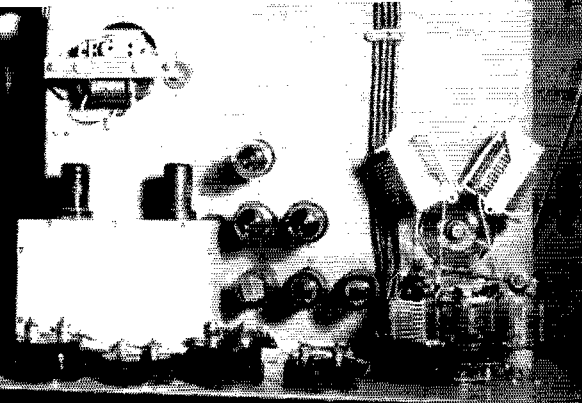


Fig. 1 — The 14-Mc. antenna tuner uses a link-in link-out arrangement with individual links for each line of the dual coax running to the antenna. Circuit constants are given in the text.

There are three antenna tuners. The 20-meter antenna uses a pair of RG-8/U coax feeders, and the antenna tuned circuit for 20 consists of a 50- μ fd. single-section 7000-volt condenser and a coil of 7 turns, 4 inches in diameter, 7 inches long, of $\frac{3}{8}$ -inch copper tubing. A one-turn coax link loose-coupled around the final coil, and a single turn tight-coupled around the antenna coil, give adequate coupling. Each of the feeder coaxes terminates in a one-turn loop around the antenna coil. This makes three shielded coax loops around the antenna tuning coil, two for the feeders and one for the link to the final, as shown in Fig. 1. Variation in antenna coupling is accomplished by varying the diameter of the shielded loop around the final tank coil. The coupling is easily varied by soldering an extension of 3 or 4 inches of small-diameter wire between the center conductor of the pick-up wire and the point of ground connection on the pick-up loop. By varying the length of this wire, thus varying the diameter of the pick-up loop, a wide variation in the degree of coupling is easily accomplished.

The 10-meter rotary uses 300-ohm Twin-Lead as feeders. Again a single-turn shielded loop is used around the final and one around the antenna tuner coil. The Twin-Lead is simply clipped on the antenna tuner coil across the center turn. The 10-meter antenna tuner uses a 50- μ fd. split-stator condenser with the rotor grounded and a coil of 6 turns, $3\frac{1}{2}$ inches in diameter and 6 inches long.

The 40-80 meter final uses a single-turn coax pick-up loop mounted on the link arm of the



The 4-65A output circuit in the exciter, showing the modified turret with its extra padding condensers for 3.5 and 7 Mc. and the coax links. Separate coax cables run to the final amplifiers on each band.

B&W tank coil. The old link was removed and the coax link simply strapped on to the bakelite arm, allowing normal variable coupling with the pick-up loop. RG-8/U is run 50 feet to the base of the 66-foot vertical antenna. On 40 meters the coax is clipped on to one turn of the 40-meter antenna tuner. This tuned circuit uses a 60- μ fd. variable condenser and 9 turns, 5 inches in diameter, 9 inches long, of $\frac{3}{8}$ -inch copper tubing. The 66-foot vertical is clipped to the coil about halfway up and the bottom end of the coil is run direct to ground with 4 feet of heavy wire. On 80 meters the center of the coax goes directly to the bottom of the 66-foot vertical and the outside shield of the coax direct to ground. With these changes—that is, high-*C* circuits and shielded coax loops—no harmonics can be found on any antenna with the sensitive wavemeter when running full power input.

Fixing the Receiver Input

However, there was still some occasional TV interference, generally when it was raining. The television antenna seemed to be poor when it was wet. It was found that the input of the TV set (marked 300 ohms) actually was a piece of 100-ohm coax, 18 inches long. The receiving feeder was 300-ohm Twin-Lead, and when coupled to the TV input made a bad unbalance—one side of the Twin-Lead was grounded. A "balun" to couple from the balanced 300-ohm Twin-Lead to the coax input circuit of the receiver was made using a split-stator 15- μ fd. condenser and 6 turns, $\frac{1}{2}$ inch in diameter, $\frac{3}{4}$ inch long, of No. 18 wire. A single turn of RG-58/U around the center of the coil goes to the television-receiver input, as shown in Fig. 2. The 300-ohm Twin-Lead is clipped across the center 3 turns of the coil. The rotor of the condenser is grounded to the shield of the coax. This not only removed completely any traces of transmitter interference, but improved the TV signal as well. The balun also removed the high r.f. voltage from the input of the TV receiver.

Transmitter Notes

There are several significant design factors incorporated in the transmitter that contribute to the satisfactory operation of this installation.

During the course of experimenting, it was found that key clicks, oscillation in the final, line voltage fluctuations, etc., could still cause rather severe interference with TV reception. Very soft keying is used in the cathode of the 4-65A stage, using a vacuum-tube keyer. Great care should be used in adjusting the v.t. keyer to keep on the side of soft make and break keying (anyway, it will be more pleasant to listen to on the air). It was found that by simply sharpening the keying to a faint trace of a tick on the make caused a few random black bugs to run across the television screen, similar to some types of automobile ignition interference.

It was also found that under some conditions of transmitter adjustment, occasionally one of the finals would oscillate near the fundamental frequency under key-up conditions. Several corrective steps were taken. All finals were cross-neutralized with a small wire protruding through the chassis alongside the 4-250A tubes. The wires are crossed over under the chassis and connected to the grid leads at the sockets. Neutralization is

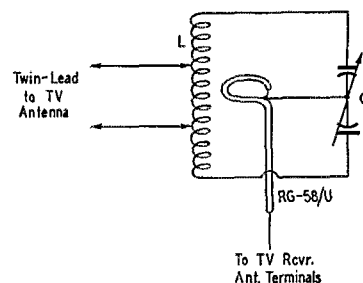


Fig. 2—Balancing circuit for going from 300-ohm line to unbalanced receiver input. With a 6-turn coil and 30- μ fd.-per-section condenser, as described by the author in the text, this circuit will cover the range through TV Channels 5 and 7. For lower or higher channels the coil size can be changed appropriately.

accomplished by varying the height of the wires or by changing their length by nipping off the protruding ends. Any common neutralizing procedure may be used. It has been found that a quick and easy method is to watch the grid meter of the final when tuning the plate circuit through resonance with full plate voltage on. The amplifier is neutralized when the maximum grid current occurs exactly at the minimum plate current setting, and the grid current falls away uniformly on either side of plate-circuit resonance. Neutralization is easy and very worth while.

There were, however, occasional traces of random oscillation, which could only be detected

by a click in the receiver on the make and break of the keyed signal. This condition was completely eliminated by adding 90 volts of battery bias on the 4-250A grids. It should be added that the screens of the 4-250As receive their voltage from the plate supply through a 50,000-ohm screen dropping resistor. In order to keep the key-up plate current and screen voltage to a low value, two 2A3 triodes are used as protective tubes as

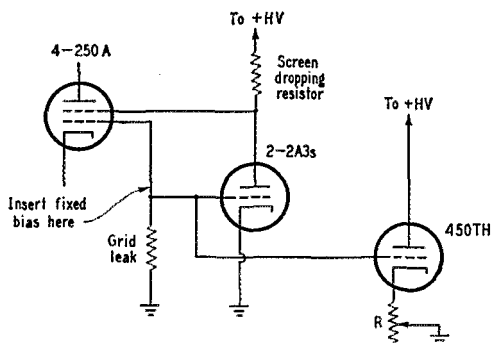


Fig. 3—The 2A3s are protective tubes used in the same way as the 6Y6Gs shown in several tetrode amplifiers described in the current *Handbook*. At W6OMC the 450TH is used as a bleeder across the plate supply, coming into operation automatically during keying spaces when a preceding stage is keyed, to maintain a fairly constant load on the plate supply and thus prevent line-voltage variations with keying. The current bled through the tube can be adjusted to the desired value by adjusting the cathode resistor, R.

shown in Fig. 3 to reduce the key-up screen voltage. When the key is up and no grid current flows in the 4-250A grid leak, the screen voltage is below 50 volts. With 90 volts of battery bias, 50 volts on the screen and as much as 5000 volts on the plates of the 4-250As, no plate current flows, no grid current is indicated and the stage is perfectly tame.

Besides the neutralization and the screen voltage clipping, parasitic suppressors are used in all 4-250A plate leads. Each suppressor is made up of an 80-ohm noninductive resistor with 6 turns of No. 18 wire wrapped around the outside. These suppressors are placed directly at the plate of each 4-240A.

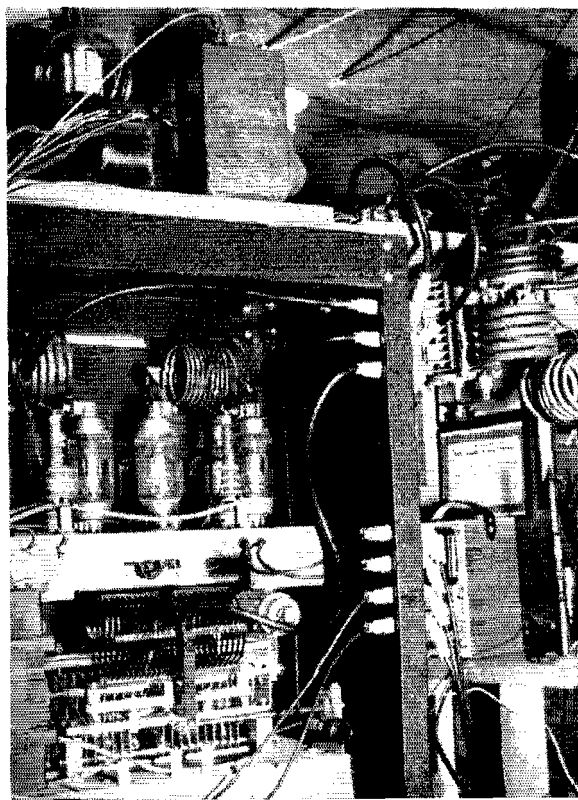
One other thing was found to cause annoying interference to TV reception and that was those minor line-voltage fluctuations resulting from keying. With only a 2-volt variation in line voltage when keying, the picture would move around and change intensity. This phenomenon could be

◆
A rear view of the final amplifiers. The 28- and 14-Mc. finals are on the top deck, the 3.5-7 job below. The antenna tuners are mounted outside the cabinet at the top right. Note the 20-meter tuner with its three coax links.

demonstrated by turning on the refrigerator and other loads having a high current surge in the home of the TV set owner. The transmitter line-voltage fluctuations were minimized by increasing the key-up current on the final power supply. This was done by using a 450TH with the grid connected to the 4-250A grid leak and the plate connected to the final power supply. A variable cathode resistor is used between filament and ground to adjust the key-up current through the 450TH. The operation of this tube is similar to the 2A3s in the screen circuit. It should be noted that in using both the 2A3s and the 450TH any fixed bias must be connected between the grid of the final and the point where the grids of the 450TH and 2A3s are connected. That is, one side of the bias resistor must go directly to ground; the bias pack or bias battery must not have the positive grounded. This imposes no major problem since the voltage built up across the final grid leak should not be more than about 200 volts.

Since the DX Test checks have been made with two other neighbors less than a block away who have TV sets, and they are not bothered by the transmitter. One of them did have bothersome interference and it was traced to his own refrigerator. An electric blanket in the same house was also very noisy. Helping to clear their TVI, incidentally, made my receiving conditions quieter. These TV friends can be militant emissaries tracking down noisy vacuum cleaners, loose light bulbs, bad wall switches, and other

(Continued on page 82)



Happenings of the Month



ELECTION NOTICE

To All Full Members of the American Radio Relay League residing in the Dominion of Canada, and in the Atlantic, Dakota, Delta, Great Lakes, Midwest, Pacific and South-eastern Divisions:

An election is about to be held in Canada and in the above-mentioned divisions to choose both a director and an alternate director (in Canada, a Canadian General Manager and his alternate) for the 1950-1951 term. These elections constitute an important part of the machinery of self-government of ARRL. They provide the constitutional opportunity for members to put the direction of their association in the hands of representatives of their own choosing. The election procedures are specified in the By-Laws. A copy of the Constitution & By-Laws will be mailed to any member upon request.

Nomination is by petition, which must reach the Headquarters by September 20th. Nominating petitions are hereby solicited. Ten or more Full Members of the League residing in any one of the above-named divisions may join in nominating any eligible Full Member residing in that division as a candidate for director therefrom, or as a candidate for alternate director therefrom. No person may simultaneously be a candidate for both offices. Inasmuch as all the powers of the director are transferred to the alternate in the event of the director's death or inability to perform his duties, it is of as great importance to name a candidate for alternate as it is for director. The following form for nomination is suggested:

Executive Committee

*The American Radio Relay League
West Hartford 7, Conn.*

We, the undersigned Full Members of the ARRL residing in the Division (or in the Dominion of Canada), hereby nominate of as a candidate for director (or Canadian General Manager); and we also nominate of as a candidate for alternate director (or alternate Canadian General Manager); from this division for the 1950-1951 term.

(Signatures and addresses)

The signers must be Full Members in good standing. The nominee must be a Full Member and must have been both a member of the League and a licensed radio amateur operator for a continuous term of at least four years immediately preceding receipt by the Secretary of his petition of nomination, except that a lapse of not to exceed ninety days in the renewal of the operator's license and a lapse of not to exceed thirty days in the renewal of membership in the League, at any expiration of either during the four-year period, will not disqualify the candidate; provided that if a candidate's membership was interrupted by reason

of service in the armed forces of the United States or Canada between September 1, 1939, and May 3, 1947, he shall not be deemed to be disqualified so far as concerns continuity of membership if within those dates he resumed his League membership within the 90 days following his release from active military duty. He must be without commercial radio connections; he may not be commercially engaged in the manufacture, selling or renting of radio apparatus normally capable of being used in radio communication or experimentation, nor commercially engaged in the publication of radio literature intended, in whole or part, for consumption by licensed radio amateurs. Further details concerning eligibility are given in By-Law 12. His complete name and address should be stated. The same requirements obtain for alternate as for director. All such petitions must be filed at the headquarters office of the League in West Hartford, Conn., by noon EDST of the 20th day of September, 1949. There is no limit to the number of petitions that may be filed on behalf of a given candidate but no member shall append his signature to more than one petition for the office of director and one petition for the office of alternate. To be valid, a petition must have the signature of at least ten Full Members in good standing; that is to say, ten or more Full Members must join in executing a single document; a candidate is not nominated by one petition bearing six valid signatures and another bearing four. Petitioners are urged to have an ample number of signatures, since nominators are occasionally found not to be Full Members in good standing. It is not necessary that a petition name candidates both for director and for alternate but members are urged to interest themselves equally in the two offices.

League members are classified as Full Members and Associate Members. Only those possessing Full Membership may nominate candidates or stand as candidates; members holding Associate Membership are not eligible to either function.

Present directors and alternates for these divisions are as follows: Canadian General Manager, Alex Reid, VE2BE; Alternate Canadian General Manager, Leonard W. Mitchell, VE3AZ. Atlantic Division: director, Walter Bradley Martin, W3QV; alternate, Henry W. Wickenhiser, jr., W3KWA. Dakota Division: director, Goodwin L. Dosland, W0TSN; alternate, Robert A. Kimber, W0BLK. Delta Division: director, Victor Canfield, W5BSR; alternate, James W. Watkins, W4FLS. Great Lakes Division: director, Harold C. Bird, W8DPE; alternate, John H. Brabb, W8SPF. Midwest Division: director, Leonard Collett, W0DEA; alternate, Alvin G. Keyes, W0KTQ. Pacific Division: director, William A. Ladley, W6RBQ; alternate; Kenneth E. Hughes, W6CIS. Southeastern Division: director, William C. Shelton, W4ASR; alternate, William P. Sides, W4AUP.

Full Members are urged to take the initiative and to file nomination petitions immediately.

For the Board of Directors:

A. L. BUDLONG
Secretary

July 1, 1949

BUDLONG NEW SECRETARY

For the first time since World War I, ARRL has a new Secretary and General Manager. When the Board of Directors chose a successor to the late Kenneth B. Warner, they picked a man with a thorough background of service to the League: Arthur Lyle Budlong, WIBUD, who this past February rounded out 25 years on the Hq. staff.

In 1911, as a young native of Washington, D. C., "Bud" had become interested in a magazine article concerning ham radio; he promptly scraped up enough money to buy a crystal detector, a single headphone and to build a single-slide tuner. With this gear he listened faithfully in spare time, and finally was rewarded when NAA began putting out a whopping signal from nearby Arlington. Later he built a Ford spark-coil rig and went on the air signing "A. B." In



March of 1917 he was finally persuaded by a friendly Department of Commerce official to take the amateur exam; his operator license came through promptly, but War I was declared while his application for a station license was being processed.

Bud came to Hq. from Washington in 1924 to become editor of ARRL's syndicated newspaper column, "Current Radio." During his first year in Hartford he also organized the PRR Emergency Net—probably the first amateur net devoted solely to emergency communications preparedness, and from whose activities was born the amateur's land-SOS signal QRR (now QRRR). Subsequently he became assistant traffic (communications) manager for a brief period and then, when Charles Service resigned in 1926 to become a Floridian, Secretary Warner picked this young Washingtonian as his new assistant and right-hand man, which post he held until KBW's untimely passing last September and Bud's appointment by the Executive Committee as Acting Secretary.

In recent years frequency allocations

As a prime means of coordinating amateur sentiment, representatives of the radio clubs and amateur networks in the Pacific Division meet annually with their director just before the ARRL Board Meeting. In this picture of the 1949 council, seated at the far end of the table are Vice-President McCargar, W6EY; Director William A. Ladley, W6RBQ; and Alternate Director Kenneth E. Hughes, W6CIS.

have been his specialty, wartime service as chief of that work in the U. S. Coast Guard, as a Lieutenant-Commander, contributing to his background on such matters — and, of course, frequency allocations and conference work rate A-1 priority in the responsibilities of the Secretary. Besides regular trips to Washington, his travels to represent the amateur at international conferences, while Senior Assistant Secretary, have taken him to Santiago, Chile; Rio de Janeiro, Brazil; Moscow; and of course Atlantic City. The late Secretary Warner, in the postwar structure of the Hq., in fact had turned over to Bud practically all the legislative and regulatory matters in which the League participates. Currently, he has just ended a two-month mission in Washington representing the amateur service on the U. S. delegation to the Fourth Inter-American Radio Conference.

Budlong is perhaps as well known personally to as many amateurs as WIBUD is on the air, since he is without question the most-traveled staff member. Over the years he's made numerous field trips to conventions and affiliated clubs, climaxed perhaps by a recent country-wide journey which in 91 days on the road included 62 club and convention meetings. Feeling that the position of Secretary requires an appreciable amount of membership-contact travel, Bud plans to continue, and in fact at the moment contemplates as a starter an autumn journey covering as much of the Western half of the country as time permits. So, perhaps you'll be seeing him in person soon.

V.O.A. BROADCASTS FOR HAMS

The Voice of America, the international broadcast division of the Department of State, has started a series of programs, with the cooperation of ARRL, devoted entirely to amateur radio and directed to hams all over the world. Program material consists of interviews with prominent amateurs, technical tidbits, propagation predictions, contest announcements and results, and

(Continued on page 82)



A Power-Distribution Panel

Improving the 115-Volt Side of the Rig

BY BENSON B. BOSS,* W3DAZ

THE 115-volt wiring of amateur transmitters consisting of a number of units is often complicated and messy. Here described is a piece of apparatus that has simplified the wiring and control of the author's rig.

As indicated in the photographs, it is a 5½-inch relay-rack unit. Two switches and four pilot lights are on the panel. The 4 × 4 × 17-inch chassis mounted on the back of the panel has a plug for the incoming power, fuses and numerous receptacles for separate circuits to each relay-rack unit requiring a.c. The end of the typical cable shown terminates in a receptacle. This attaches to a plug on one of the units.

As shown in Fig. 1, the heart of the idea is the use of *three-pole* receptacles and plugs. Terminal 1 of the receptacles is energized by closing the

*317 West 89th St., New York 24, N. Y.

filament switch, S_1 , Terminal 2 is energized by closing the plate switch, S_2 , and Terminal 3 is connected directly to the grounded service conductor.

This power-distribution panel has the following advantages:

1) Only one cable and plug are required for each unit that has both filament and plate transformers, instead of the usual two cables. No additional wires are required for switching.

2) Once this unit and the connecting cables are made up, the 115-volt wiring will never again have to be changed, no matter to what extent other units are added, removed or changed.

3) No separate ground wire is required to each unit, or even to the frame of the entire rig. Each chassis may be connected to Terminal 3 of its plug, which can only be connected to the neutral-

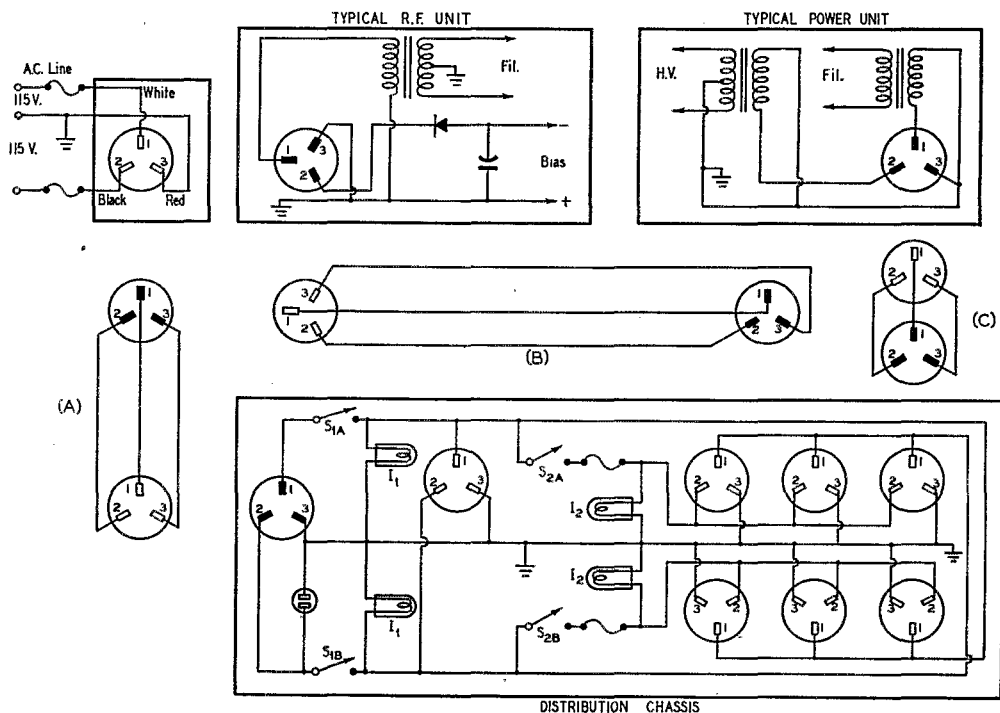


Fig. 1 — Wiring diagram of the power-distribution panel. The insets show connections to typical r.f. and power units. A, B and C are interconnecting cables. S_1 and S_2 are d.p.s.t. switches. S_1 controls all filaments, S_2 all plate-voltage transformers.

service conductor, which, in turn, is always grounded at the entrance switch to the building.

4) No separate wire for negative high voltage is required to each unit. By connecting the negative h.v. wiring of the unit to the chassis (as should be done for safety considerations), use is made of the 115-volt neutral. Thus the power-distribution panel is the point at which the negative h.v. leads for all units are tied together.

This arrangement has the disadvantage that separate filament and plate transformers are required throughout; the negative-h.v. lead cannot be switched. A third switch for c.w.-'phone operation could well be added.

In order to keep the load reasonably balanced between the two ungrounded service conductors, each supplies both filament and plate power. Although designed for three-wire 115-0-115-volt service, this panel could be used on two-wire service by connecting together Terminals 1 and 2 of the receptacle on the incoming power cord.

One three-pole receptacle is not plate-switched, in case it is desired to have some plate voltage during stand-by periods. A pair of two-pole receptacles is provided for use of a receiver, soldering iron or work light.

The switches are two-pole snap switches of the type used in building wiring. The four-inch chassis is just the right width to hold them. The switches are fastened to the chassis and then the panel is attached to the switches — not to the chassis; the threaded holes in the switches ordinarily used for switch plates provide a means for fastening the panel. To eliminate noise, a mercury switch is used as the plate switch. The fuse receptacles are the porcelain sockets for use in electric heaters with cone elements. Both switches and fuse receptacles as well as No. 14 rubber-covered wire (which should certainly be used rather than hook-up wire), may be obtained from any distributor of electrical-wiring devices. The pilot lights are connected with flexible wire.

With a light bulb and a waterpipe, the house wiring system should be checked to make sure there is a good ground at the entrance switch. An additional ground should *not* be used at the rig. The National Electric Code (the standard used by the Fire Underwriters) prohibits additional grounds to the neutral service conductor, because



Rear view of the power-distribution unit, showing the fuses and polarized receptacles.



Interior view of the distribution unit, showing the mounting of the plate and filament switches and indicator lamps on the panel.

they make it possible for current to reach the load by routes other than the wire.

Now, the N.E.C. prohibits using the neutral service conductor for grounding equipment (as has been done in this panel), except in the case of electric ranges or by special permission. Ranges are excepted because they always employ three-pole polarized receptacles and plugs, which prevent any possibility of reversed connections making the frame hot. Since this power-distribution panel uses the same type of receptacles and plugs, it appears that the N.E.C. would permit using the neutral service conductor as a ground for the rig.

Silent Keys

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

W1MAD, Walter R. Mitchell, jr., New Bedford, Mass.

W1PLS, Kenneth Callahan, Sharon, Mass.
W2YXC, Ralph R. Berckmuller, Rochester, N. Y.

W3CUU, Paul S. Atkins, Pottstown, Pa.
W3GUR, Roy K. Reifsnnyder, Pottstown, Pa.

W3UG, Edward E. Sly, South Connellsville, Pa.

W5EAT, C. W. Smith, Van Buren, Ark.
W5KRY, Sam Paola, Winnsboro, La.

W6SSN, Milton R. Winsby, Oakland, Calif.

W7FQH, ex-7KV, James R. Howerton, Ilwaco, Wash.

W7IO, Charles Middleton, Phoenix, Ariz.
Ex-W8COT, Charles E. Just, Syracuse, N. Y.

W9CAH, Robert W. Bentley, Evanston, Ill.

W9NKJ, Edward M. Kulpa, Chicago, Ill.
W0EYE, Ward D. McIntyre, Chadron, Nebr.

W0VJH, Ashley Ingerson, Browns Valley, Minn.

I1BHN, Gigi Bossi, Udine
OK1WA, Alex Schaeferling, Harachov
VE3ARG, E. J. Millet, Sudbury, Ont.
VE5BF, A. C. Cox, Saskatoon, Sask.

• Technical Topics —

Adjusting the Antenna Coupler and Harmonic Filter

IN the article on harmonic reduction in April *QST*¹ space did not permit including a detailed description of the method of adjusting a link-coupled antenna tuner with a harmonic filter in the coax link. There is nothing highly complicated about it, but for best results it does require treating the link as something more than just a means for obtaining inductive coupling between two physically-separated tuned circuits.

For optimum operation, the coax link between the transmitter and antenna tuner should be handled exactly like any other transmission line that is to be terminated in its characteristic impedance. A good set-up for doing it is shown in Fig. 1. The s.w.r. indicator can be any of the coax types described in the *Handbook* or *Antenna Book*; if you don't have one already you'll find either the resistance-bridge or the Maxwell-bridge type easy to build and adjust; the cost of either type is little more than the cost of the d.c. current-indicating instrument used.

Fig. 1 suggests using a dummy antenna, in the interests of avoiding radiation while making adjustments. However, with either of the s.w.r. indicators mentioned above the power must be reduced to a rather low level, to avoid overloading the instrument, and in this case the regular feeders can be substituted for the dummy antenna. Testing at a power level of a watt or two will give

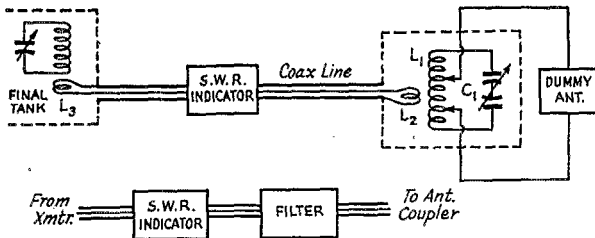


Fig. 1 — Steps in adjustment of antenna coupler and harmonic filter. A standing-wave-ratio indicator (see *Handbook* chapter on "Measurements") facilitates arriving at the optimum adjustments.

results that are just as valid as with a kilowatt, and there isn't much likelihood of causing serious QRM to anybody. The power reduction can usually be brought about temporarily by using a low-voltage supply (from the oscillator, for example) and loosening the coupling between the final tank and L_3 until the s.w.r. indicator shows the proper deflection.

The object is to maintain reasonably high Q in the antenna tank and at the same time eliminate standing waves on the coupling line. For a first trial, use a moderate degree of coupling between L_1 and L_2 , and then try various settings for the antenna taps on L_1 until the indicator shows the lowest possible s.w.r. If the s.w.r. cannot be brought down near 1, tighten the coupling a bit and try again. After satisfactory settings are reached, remove the s.w.r. indicator (if it is the sensitive type), bring the power input up to normal, by raising the final plate voltage and by tightening the coupling between the final tank and L_3 , and then let the transmitter run awhile to see if any part of the antenna tank coil gets unduly warm. The best adjustment is the one that gives, with the loosest possible coupling between the coils, normal power output and a low s.w.r., and does not cause excessive heating of the antenna tank coil. After a suitable set of adjustments has been obtained the coupling between L_1 and L_2 should be left permanently at the value so determined.

Once the antenna-tank coupling and loading have been adjusted for the lowest s.w.r., the filter may be inserted in the line and the s.w.r. indicator placed between it and the transmitter, as in the lower drawing of Fig. 1. The shunt condenser of the filter (C_2 , Fig. 8, p. 19, April *QST*) is then adjusted for the lowest s.w.r. and the series-trap condenser adjusted to minimize the given harmonic. The two condenser adjustments may interlock somewhat, but once the proper settings are reached the shunt condenser in the filter need not be touched again. The trap condenser may need readjustment when the operating frequency is changed within the band, since the tuning for maximum attenuation is rather critical, as shown by Fig. 9 of the April article.

If the testing has been done on a dummy antenna, the coupling between the final tank and L_3 should be left fixed at the full-power value. Then when an actual antenna replaces the dummy, the taps on the antenna tank should be adjusted to load the transmitter to the same input (the antenna tank being kept at resonance, of course); this automatically brings about an impedance match between the antenna tank and the coupling line. This same tune-up procedure should be used when changing bands during regular operation.

¹ Grammer, "Pointers in Harmonic Reduction," *QST*, April, 1949.

It will be realized that the method of setting up the antenna-tuner circuit outlined above amounts to impedance matching. So long as this procedure is followed the matching will be quite good over most amateur bands.

Adjustment Details

So much for the basic method of adjustment. A few additional details may require attention. At 28 Mc. sufficient coupling usually can be ob-

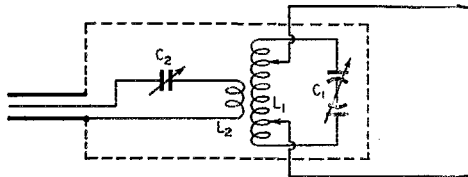


Fig. 2—Reactance compensation at the antenna-coupler link. If there is difficulty in getting the s.w.r. down near 1, in the set-up of Fig. 1, the number of turns in L_2 may be increased and the circuit made partially resonant by use of the series condenser, C_2 .

tained with a link of one or two turns, but on lower frequencies this may not be the case. Increasing the number of turns in the link will generally tighten the coupling, but at the expense of added reactance in the link circuit. This tends to reduce the current and so reduces the energy transfer. It can be overcome by tuning out some or all of the reactance, by inserting a series variable condenser as shown in Fig. 2. The condenser should have a capacitance of 250 $\mu\text{fd.}$ or more, but the voltage across it is small and so receiver spacing is adequate for moderately high power.

A satisfactory method of adjustment is to start with full capacitance at C_2 , resonate the antenna tank, and then decrease the capacitance (while maintaining the antenna tank at resonance) until the transmitter loads normally. If L_2 has several turns, the same coil usually will work on several bands, providing C_2 is readjusted on each band to give the right degree of coupling. On any given band it will not usually be necessary to change the setting of the series condenser, if used, once it has been adjusted for the mid-frequency of the band.

Incidentally, if the coupling at the final tank end cannot be made tight enough to load the amplifier properly, when the antenna tank is adjusted to give an s.w.r. of 1 in the coupling line, this link circuit must also be partially resonated.² While the use of series condensers at each end of the line may seem to be a nuisance, it is actually so only in the initial set-up. The Q s of the link circuits usually can be kept low enough so that little, if any, readjustment is required over a band.

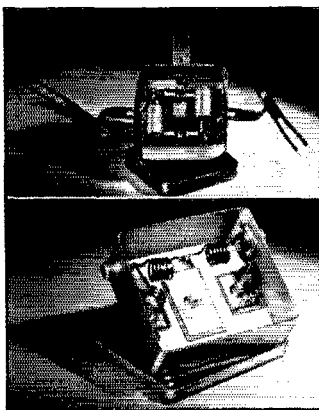
—G.G.

² Goodman, "Coupling to Flat Lines," *QST*, August, 1947.

New Apparatus

TVI Filters

The two filters shown in the accompanying photograph are designed for the reduction of interference to television reception. The upper unit is intended for installation at the antenna terminals of the receiver and is of the high-pass m -derived type having a 50-Mc. cut-off. While it will not reject amateur harmonics actually falling in a TV channel, it will help prevent receiver overload by the fundamental of a near-by amateur transmitter. The attenuation in the television channels themselves is negligible.

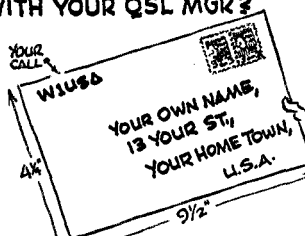


The lower unit is designed for preventing transmitter harmonics from getting into the antenna. It is an m -derived low-pass filter for use with 52-ohm coaxial line. The cut-off frequency is 40 Mc. and at frequencies above 56 Mc. the attenuation

is greater than 40 db., increasing with frequency. It is conservatively rated to handle a kilowatt on a line having a low standing-wave ratio, and will not detune a line actually working at a low s.w.r. It may be used in the transmission line with antennas fed with 52-ohm cable, or may be used with any type of antenna and line when inserted in a 52-ohm link between the transmitter and an antenna tuner, as described in April *QST*, page 19.

The new filters are made by R. L. Drake Company, 11 Longworth St., Dayton 2, Ohio. The receiving type is known as the "TV-300-50HP" and the transmitting type bears the designation "TV-52-40LP."

IS YOURS ON FILE
WITH YOUR QSL MGR?



Results, Seventh ARRL Party

THE Seventh Annual ARRL-Member Party was the concluding event in the celebration of ARRL Week, a busy period of amateur operating activity that included the highly-successful Second V.H.F. Sweepstakes and the first postwar Governors-to-President Relay. League members in 67 ARRL sections were active in the competition for the special combination membership and call-letter pins. As usual, the old-time contest operators were in there pitching and many newcomers showed up to give the veterans a good run for their money. Special point credits were offered before multiplier for radio copy of President Bailey's ARRL Week Message and for the holding of a Code Proficiency Certificate. Many of the high-scoring participants took advantage of these bonuses, but others overlooked the opportunity to garner additional points. Entries were received from 344 League members.

Award Winners

The following members scored the greatest number of points in their respective sections and are being awarded the special pins:

W1BIH	W4FBJ	W6SFS	W0GBJ
W1CJH	W4ILE	W6SRU	W0HMM
W1CRW	W4KFC	W7BOH	W0IC
W1GKJ	W4MCM	W7BSU	W0PHR
W1JYH	W4OIX	W7EMT	W0RJF
W1KRV	W4TL	W7JPY	VE1PA
W1OJM	W5DEJ	W7JQU	VE2GN
W2BBK	W5DRW	W7UTV	VE3AW
W2CLO	W5JD	W8GSJ	VE4AM
W2IOP	W5JPC	W8JM	VE5QZ
W2QED	W5KC	W8WZ	VE6MJ
W3EIS	W5OAI	W9NII	VE7SW
W3FUF	W6GTM	W9CYU	W4LSW/KL7
W3LIW	W6IPH	W9RQM	KP4IQ
W3NF/2	W6ISQ	W0BQJ	KZ5VB
W4BBT	W6MYP	W0CAQ	KH6IJ
W4CYC	W6RBQ	W0DXY	

For their consistently good performance in ARRL Member parties, W8WZ and W9RQM deserve special mention; each has won a section award in every Party thus far held! Hearty congratulations are extended to all members who came out on top.

High Scores

Battle-hardened contest veteran W4KFC was the leading operator in the Party. Vic worked 482 stations in 70 sections for 73,360 points. Only 6 contacts behind W4KFC, W8WZ also worked 70 sections and scored 72,170. In third place we find W9RQM with 65,240 points, 426 QSOs and 70 sections. Next in line were W2IOP 64,101, W2BBK 53,312, W9BRD 52,095, W1BIH 50,895, W9LVR 49,956, W9CYU 48,888,

W9WEN 48,576, W9STE 44,544, W5KC 44,352, W8MQR 43,676, W4CYC 43,112, W9NII 43,028, W1JYH 42,578, W5IUW 41,382, W3FUF 40,992, W2GFG 40,310.

In the members-worked category, W4KFC also reigned supreme with his 482 QSOs. Other noteworthy contact totals: W8WZ 476, W2IOP 464, W9RQM 426, W2BBK 379, W9LVR 362, W9BRD 360, W1BIH 350, W9NII 347, W9CYU 345, W9WEN 340, W3FUF 336, W8MQR 323, W5KC 312, W1JYH 309, W9STE 309, W3EIS 306, W2GFG 305, W5IUW 301.

The three top scorers, W4KFC, W8WZ and W9RQM, each worked 70 sections. Nine other members worked 65 or more: W2IOP W9BRD W9LVR 69, W4CYC 68, W5IUW W8GSJ 66, W1BIH W0IC 65.

A special letter of recognition from President Bailey was offered for what was considered to be the best report of constructive projects initiated in the direction of better or fuller League organization during ARRL Week. After careful examination of all such reports submitted, that of T. J. Rigby, W7COH, of Missoula, Montana,

A.R.R.L. WEEK MESSAGE

In this week dedicated to participation in ARRL Membership Activities, it gives me pleasure to address my greetings to you. I hope each of you who has a station on the air will work at least one other member during the operating party planned for Saturday, Sunday, January 22nd and 23rd, and report results. In order to permit special recognition of constructive and unusual accomplishments in ARRL Week, I solicit reports of projects started or assisted by clubs or individuals in the direction of better or fuller ARRL organization.

Every amateur, ARRL member or not, should join the Emergency Corps as a supporting if not a full member. The success of our public service and emergency communication plans requires the support of numbers. Ask our Headquarters office to send full information. We amateurs must constantly demonstrate our proficiency and skill as we do in working in Field Days, emergency tests and other operating activities and in striving individually for the awards offered in different fields of amateur interest. It is essential to our welfare that we remain strong in numbers as well as constantly strive to increase the skill for which we are traditionally famed. I suggest that sometime during this week each of us tell the story of our interesting communications work to some person or group that could benefit from this knowledge. Follow through by assisting in the study of radio techniques wherever we find interested persons. I am grateful for your interest and support which continues to make our ARRL organization able to meet every challenge.

GEORGE W. BAILEY, W2KH
President, ARRL

was chosen as winner of the citation. Among W7COH's activities during the week were: (1) speaking before a meeting of the Hell Gate Amateur Radio Club on "Monitoring Stations and the Need for Keeping Amateur Signals Clean"; (2) the lining up of a station in Helena, Montana, to originate the GPR message and arranging schedules for transmission of the message from Helena via Trunk Line A to Washington; (3) he got two of the young boys in his neighborhood interested in amateur radio and started teaching them the code.

Special letters were also offered to each pair of League members who conducted a QSO over the longest distance on each amateur band from 3.5 through 144 Mc., the contacts to have been confirmed by submission of written confirmations to ARRL. Claims for these awards were received, but none was considered valid since in each case the necessary confirmations were not submitted.

SCORES

1949 ARRL Member Party

(Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is winner for that Section. . . . Asterisks denote stations not entered in contest, reporting to assure that stations they worked get credit. . . . Listings show score, number of Sections worked, number of ARRL members worked. . . .)

ATLANTIC DIVISION

E. Pennsylvania

W3FUF.....	40,992-61-336
W3ADE.....	27,384-56-202
W3DZ.....	9114-31-107
W3AXA.....	4560-24-60
W3NOK.....	3796-26-73
W3OML.....	2394-19-48
W3QSS.....	1824-16-32
W3EU.....	560-5-6

Md.-Del.-D.C.

W3EBS.....	42,004-62-306
W3FQB.....	39,804-62-279
W3BOU.....	36,900-60-283
W3JHW.....	32,214-59-231
W3GZH.....	23,744-56-187
W3CIQ.....	20,592-52-173
W3MCG.....	18,144-48-149
W3ZY.....	16,650-50-124
W3ECP.....	11,894-38-114
W3LVJ.....	10,125-45-95
W3MYM.....	9072-36-86
W3HVM.....	4284-28-64
W1CDZ/3.....	4092-31-66
W3HTK.....	3618-27-57

So. New Jersey

W3NF/2.....	25,245-55-217
W2REF.....	3841-23-41
W2BEL.....	3332-28-47
W2RXL.....	1424-16-32
W2QLX.....	1200-16-25

Western New York

W2CLO.....	35,341-59-262
W2PQT.....	31,610-58-235
W2WZQ.....	28,080-54-260
W2AW.....	22,440-60-187
W2KEL.....	14,658-42-137

W2PYC.....	1615-19-30
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W. Pennsylvania

W3LIW.....	32,804-59-253
W3VCJ.....	26,607-49-229
W3KSR.....	23,244-52-174
W3HXA.....	21,684-52-209
W3AVY.....	12,152-49-113
W3RWJ*.....	7600-38-100
W3PAB.....	7030-37-95
W3DLE.....	900-18-25

CENTRAL DIVISION

Illinois

W9BRD ¹	52,095-69-360
W9NII.....	43,028-62-347
W9GFF.....	34,368-64-226
W9GMZ.....	27,480-60-187
W9OLU.....	18,356-62-164
W9EBX.....	13,489-41-127
W9EHS.....	9844-46-92
W9MSV.....	8132-38-92
W9MRQ.....	4239-27-61
W9ADO.....	3410-22-40
W9TAL.....	1804-22-31
W9ZRG.....	1207-17-23
W9ZPC.....	480-10-14

Indiana

W9CYU.....	48,898-63-345
W9NH.....	28,098-63-208
W9OKY.....	24,380-63-215
W9UKT.....	17,542-49-164
W9NXU.....	11,592-42-123
W9TT.....	7544-41-75
W9AB.....	7410-38-80
W9QLW.....	7040-32-70
W9MBL.....	1417-13-17

Wisconsin

W9RQM.....	65,240-70-426
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W9LVR.....	49,956-69-302
W9WEN.....	48,576-64-340
W9STE.....	44,544-64-309
W9DJV.....	24,051-67-172
W9KXK.....	14,553-49-142
W9JBF.....	12,000-48-115
W9ERW.....	9266-41-81
W9AQD.....	2100-25-42

DAKOTA DIVISION

North Dakota

W8CAQ.....	3016-29-53
W8BJG.....	1102-19-29

South Dakota

W8PHR.....	24,090-55-196
W8WUU.....	23,045-55-172
W8GFG.....	6680-40-85
W8VTT.....	2464-22-31

Minnesota

W8RJE.....	17,300-50-133
W8FID.....	15,463-47-126
W8VIP.....	7137-39-79
W8PKQ.....	4760-35-58

DELTA DIVISION

Arkansas

W5DRW.....	20,700-60-210
W5BG.....	14,964-43-175
W5OHL.....	6072-33-60

Louisiana

W5KC.....	44,352-63-312
W5IUW.....	41,382-66-301
W5VT.....	31,030-58-225
W5KWY.....	15,950-55-145

Mississippi

W5DEJ.....	3105-27-40
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Tennessee

W4BBT.....	17,836-52-154
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GREAT LAKES DIVISION

Kentucky

W4FBI.....	31,388-59-266
W4ZWR.....	14,310-45-146
W4FQQ.....	6808-37-92
W4OMW.....	4031-29-62
W4JCN.....	1276-22-29

Michigan

W8GSJ.....	36,036-66-231
W8SCW.....	34,633-59-251
W8ONK.....	32,940-59-240
W8TRN.....	32,640-60-232
W8NOH.....	18,460-52-170
W8DDR.....	12,700-50-87
W8URM.....	12,299-49-113
W8KPL.....	2626-26-33
W8EGI.....	2217-21-72
W8FX.....	2025-15-25

Ohio

W8WZ.....	72,170-70-476
W8MQR.....	43,676-61-323
W8SUR.....	27,956-58-241
W8DAE.....	26,675-55-200
W8TAQ.....	26,163-57-187
W8NZI.....	22,840-61-220
W8WE.....	21,175-55-150
W8DWP.....	19,936-56-143
W8HOX.....	17,542-49-154
W8ZJM.....	14,418-54-121
W8PBX.....	13,416-39-172
W8RAL.....	13,200-48-100
W8OUR.....	11,408-46-124

W8ZAU.....	11,340-39-128
W8DQC.....	10,252-48-107
W8TZO.....	7200-32-75
W8MXO.....	4814-29-84
W8BEW.....	3696-29-66
W8LOT.....	3344-22-39
W8YPT.....	990-15-18
W8YGR.....	364-13-14
W8RRH.....	280-7-10

HUDSON DIVISION

Eastern New York

W2QED.....	36,698-59-271
W2TER.....	19,550-50-156
W2WIK.....	16,211-43-156
W2PKY.....	1440-16-35

N.Y.C. & L.I.

W2IOP.....	64,101-69-464
W2KTF.....	33,208-56-257
W2TYU.....	18,924-57-166
W2GPI.....	15,950-50-142
W2TUK.....	11,281-29-152
W2YJB.....	9176-37-124
W2UAL.....	8019-33-104
W2BOU.....	3914-19-63
W2JAU.....	3570-30-42
W2YDG.....	2046-22-32
W2GTL.....	1995-21-35
KV4AF/2.....	1680-12-20
W2ETL.....	1152-12-48
W2EC.....	1120-14-25
W2AA.....	168-3-3

No. New Jersey

W2BBK.....	53,312-64-379
W2GFG.....	40,310-58-305
W2CWK.....	34,200-57-260
W2TPJ.....	30,525-55-235
W2DRV.....	19,317-47-163
W2NIY.....	17,190-45-156
W2EWZ.....	15,795-39-166
W2VJN.....	15,288-39-171
W2EQS.....	14,319-43-127
W2ATE.....	10,080-40-126
W2ANW.....	4293-20-62
W2YOB.....	2661-23-34
W2LXL.....	1794-23-39
W2BWW.....	1089-11-17

MIDWEST DIVISION

Iowa

W8HMM.....	22,464-52-176
W8YX.....	17,850-51-135
W8FDL.....	13,400-50-124
W8QVA.....	9248-34-96
W8FGW.....	7326-33-74
W8FP.....	7140-35-65

Kansas

W8BQJ.....	34,208-64-261
W8DYX.....	34,335-63-260
W8AWP.....	19,095-57-150
W8AHA.....	6031-37-74
W8OAO.....	4240-40-53
W8DEB.....	3724-38-49
W8JY.....	450-5-5
W8PAH.....	288-4-4
W8KXL.....	82-1-1

Missouri

W8GBJ.....	39,300-60-285
W8DEA.....	31,200-65-240
W8MCX.....	7344-36-102
W8CCL.....	72-6-6

Nebraska

W8DXY.....	14,420-47-114
W8DMY.....	6697-37-73

(Continued on page 84)

¹ Hq. staff member. Not eligible for awards.

The World Above 50 Mc.



CONDUCTED BY E. P. TILTON,* W1HDQ

NEVER, in the memory of the oldest inhabitant of the v.h.f. bands, has there been a month like June, 1949! *On 50 Mc.*: An almost continuous opening, with hour-long rag-chews over 1000-mile hops. . . . Double hop, a rarity in 1948, occurring again and again. . . . The first contacts between New England and Mexico; the first XE-VE 50-Mc. QSOs. . . . Idaho, Wyoming and New Mexico contacts with W1, 2 and 3. . . . Scores of operators in all sections of the country on the verge of 50-Mc. WAS. *On 144*: Florida and Texas linked crossband, 50-144 Mc. . . . Two-way work from Mississippi to Missouri, Illinois and Iowa at distances which may have exceeded the 1947 record. *On 220 Mc.*: The first VE1 - W1 contacts, 220 to 235 Mc., and a new DX record for 1¼-meter work. Of such stuff are our June headlines made.

We need a new term to describe the skip conditions on 6 in June. How can a layer be called "sporadic" when it supports communication day after day for weeks on end, often practically around the clock? Operators who were fortunate enough to be able to work the band in daylight hours found 50 Mc. opening frequently by mid-morning or earlier, and often the nighthawks quit from sheer exhaustion, with signals coming through as much as 18 hours later. High-density ionization, evidenced by skip as short as 350 miles, opened up paths that are seldom worked on 50 Mc. At times almost the whole country seemed to be audible at once, and double hop in the 1700-2000 mile region tapped other regions which have been stumbling blocks to WAS aspirants in sections other than the Middle West.

A new 2-meter record was missed by a narrow margin on June 14th, when W4QN, Orlando, Fla., heard W5JLY, San Antonio, Texas, at 7:20 p.m. EST. The two had been in contact on 50 Mc., with very strong signals, and when W5JLY changed to 144 Mc. he was heard at once, S7. Signals soon faded, however, and were gone by the time W4QN had changed to the higher band. Repeated attempts failed to provide 2-way 144-Mc. communication over this 1000-mile path.

The two-year-old record of W3GV and W0WGWZ may have been shaded slightly two nights later, when W5JTI, Jackson, Miss., and W0NFM, Solon, Iowa, worked on 144 Mc. The

exact distances between all stations concerned are not known as we write, but map checks indicate that the two hops are almost identical.

Several firsts were made this evening. W4HHK, Collierville, Tenn., worked W0KYF, University City, Mo., W0HQA, Des Moines, Iowa, and W9UED, West Frankfort, Ill., in addition to W0NFM. It is believed that these were the first contacts with Iowa and Missouri from Tennessee on 144 Mc. DX worked by W5JTI included W0ZIS and W0BJL, St. Louis, Mo., W0KYF, W9UED and W9EHX, McLean, Ill., and W0NFM, also Mississippi firsts for each state. It all started for W0NFM when he worked W4HHK at 10 p.m. CST, and W4BYN, Memphis, at 10:20. W5JTI was worked at 11 p.m., followed by W5NYH, Lexington, Miss., 10 minutes later. Signals between W5JTI and W0NFM were running about S7 at first, but they peaked far above S9 each way just before midnight. Clair reports that Tim was still pounding in

2-Meter Standings

	Call				Call		
	States	Areas	Miles		States	Areas	Miles
W8UKS	14	7		W1BDF/1	9	3	
W9NFM	14	7	660	W1JMU	9	3	
W8WJC	14	6		W1OOP	9	3	
W2NGA	13	5		W1QXE	9	3	
W2BAV	13	5		W4AJA	8	4	
W8WXY	13	-		W3KWO	8	4	
W8CYE	12	6		W4NRB	8	4	
W3KUX	12	5	575	W0HAQ	8	-	
W3RUE	12	5	530	W4HHK	7	5	500
W1BCN	12	4		W0WGWZ	7	4	660
W1PIV	12	4		W9NFK	7	4	
W2NLY	12	4	515	W2FEJ	7	3	
W2WLS	12	4		W8DIV	6	4	
W4FBJ	11	5	500	W8RDZ	6	4	330
W3PGV	11	5		W4MKJ	6	4	355
W2DPB	11	5		W0BZE	6	3	
W2QNZ	11	5		W4FQI	6	-	
W1CTW	11	4	500	W0GOK	6	-	
W3GKP	10	5	400	VE3AIB	5	4	
W9JMS	10	5		W2RPO	5	4	
W4CLY	10	4	500	W1AW	5	2	
W1HDQ	10	4	480	W4KKG	5	-	
W1JSM	10	3		W9OBW	5	2	
W0IFB	9	6		W0HXY	5	2	
W3BLF	9	5		W9UTA	4	3	205
W3HB	9	5		W0JHS	4	2	
W8WRN	9	5		W4LNG	4	1	
W2PJA	9	4		W3LWN	3	3	
W3GV	9	3	660	W5JLY	1	1	1000*

* Crossband

* V.H.F. Editor, QST.

at 1 A.M. — another example of the possibility of greater DX on 144 Mc. if only there were well-equipped stations in the right places at the crucial moments. Surely someone north of Solon or south of Jackson could have made it that night!

Apparently only the difference between the Canadian and U. S. 1¼-meter bands prevented a new record for 220-Mc. 2-way work before now. For some time VE1QY, Yarmouth, N. S., has been listening for W signals on 220, and on the night of June 2nd they began to roll in. While the 2-meter gang in eastern W1 listened in amazement, VE1QY retransmitted the 220-Mc. signals of W1MNF, East Orleans, Mass. The following evening the same trick was worked with W1IO, Danvers, and W1PZA, Allston, Mass. None of these fellows had a receiver which would tune the 235-Mc. Canadian assignment, but this condition was soon corrected. Another opportunity, on the 29th, found W1IO and W1CTW, Arlington, Mass., ready with receivers capable of tuning to 238 Mc., the frequency of VE1QY. Credit for the first two-way contact goes to W1IO, but the record he set thereby, 260 miles, was his for only a few seconds. W1CTW heard VE1QY faintly while he was working W1IO, and when he signed at 7:20 the signal had reached a partially-readable level. Contact was established, with some difficulty, and the 1¼-meter record came back to W1CTW. It is 275 miles from Arlington, Mass., to Yarmouth, Nova Scotia. W1OOP, Boston, made a crossband contact, 220 to 144 Mc., shortly thereafter.

Here and There on 6 and 2

This has been a big season for the low-power boys on 6. Scores of fellows have demonstrated that skip can be worked with 15 watts or less. Converted 522s are popular, and the 6J6-832 rig described in November, 1948, QST is getting a big play. W5PVR, Forbing, La., has run up a total of 25 states. VE and XE in short order with one of the latter, and he has worked out with a 4-watt rig on 6. W7ILL with 3 watts on 6 made the first Wyoming-W1 contact, with your conductor, who was running 150 times that power. W4LNE/4, Chattanooga, Tenn., is doing all right with 5 watts. W7ACD works his 6-meter DX with a converted 522. There is not much transmission loss when the E layer is running at top form!

When the normal skip signals (700-1200 miles) start to waver and drop out, don't jump to the conclusion that the band is going dead. "When WPK fades, look for the double hop!" has been a byword among the W1s since 1947. It has worked often this year, and not only with W9s. Several times W4 and W5 signals have dropped down or out, and then XEs have come through. This happened on June 14th, and again, twice, on the 19th. The second opening of the 19th was good enough for scores of W1s, 2s and 3s to work XE1GE and XE1FU, Mexico City, and XE2FC, Tampico. Only once before had XE signals ever been heard in north-eastern U. S.

What was probably the first XE-VE 50-Mc. QSO was made by XE1GE and VE3ANY, at 10:32 EST on the 19th. Another 50-Mc. XE-VE first was made on June 23rd when VE1TR, Chester, N. S., worked XE1GE.

Shelley, Idaho — It was back in June, 1940, that W7ACD made the first 5-meter contact between his state and the East Coast, with W2BYM. Since then Louie had broken through to W1, 2 or 3 only once again, in June, 1947. But on June 21st and again on the 25th he had a busy time of it

supplying Idaho contacts. On the 25th, an opening which got underway well after midnight (EDST), he was ably assisted by W7EHP. Wyoming business was booming also during both these openings, being well handled by W7s ILL, KOP, JRG and others.

Santa Barbara, Calif. — The call XE1KE is no longer heard on 2, 6 and 10, but that well-known voice is still with us. BJ is now K6BF and is active on 50-Mc. from Santa Barbara. He is also on the low end of 2, with a horizontal array, looking for DX.

Collierville, Tenn. — Not so long ago there was some doubt about being able to work anyone on 144 Mc. at a distance from the Memphis area. This should be dispelled by now as the result of the work of W4HHK and W4BYN. After working Iowa, Illinois and Missouri on the 15th and 16th, as reported earlier, W4HHK added W8CYE, Miamisburg, Ohio, about 450 miles, on the 23rd, bringing his total to 7 states and 5 call areas. W5JTI, Jackson, and W5NYH, Lexington, Miss., are worked at frequent intervals.

Bremerton, Wash. — The evening of June 15th was great stuff for W3CIR/7. Beginning at 5:30 PDST, 50-Mc. double hop to east permitted contacts W1s LLL, ELP, AEP, CK, HDQ and CLS. W1CGX, Brattleboro, Vt., was heard, so take heart, you W6s who lack only that state for 50-Mc. WAS!

Bedford, N. Y. — Having worked the extent of the vertical area, VE1 to Virginia, last summer, W2BAV decided he'd have to do something drastic to extend the 2-meter horizon from his tower location. This took the form of a 48-element (6 high, 4 wide) array, and right away things started to happen. Stations in central and western New York were worked; fellows who, because of the cross-polarization barrier, never worked into the metropolitan area before. These include W2s TGU and PW, Ithaca, ZUZ, Jacksonville, SFW, Vestal Center, UAD, Rochester, HJS, Binghampton, and RRQ, Geneva. Other horizontal DX has included W3CJB/8, Elkins, Va., W3KBA, Dover, W3OYB, Williamsport, W3RUE, Pittsburgh, W4OLK/3 west of Gettysburg, Penna., W4BCT, Reliance, Va., and W8WJC, Everett, Ohio, as well as numerous W4s in Southern Virginia. W4IKZ seems slightly better on horizontal under poor conditions, with vertical having the edge on better nights. This is 350 miles, mostly over water. W3BLF, 175 miles over land, is about equal on horizontal or vertical, regardless of conditions.

Spokane, Wash. — W4s please note: When the 6-meter band is open to W9 and W8 look for the W7s in there, too. W7FGQ spent from 6:25 to 7:50 PST on the evening of the 20th calling W4s and 5s with no result. He is running 375 watts, 'phone or c.w., so he should be able to make himself heard.

Exeter, N. H. — This one is a bit old, but we just missed it last month. Just after 10 P.M. on the night of May 30th, W1LSN ran across the signal of an LU6 calling CQ. This was in the midst of an aurora session, and almost everyone but Jerry had his beam north. Jerry was aiming south, however, and the signal came in quite strong, with the fading characteristics usually associated with sporadic-E skip. Copied as LU6VO (probably LU6DO) it was also heard by W1DA, but his beam was north and the signal was less intelligible. Maybe north isn't always the best direction during 50-Mc. aurora!

June V.H.F. Party Scores

Remember the old story about the blind men identifying an elephant by feel? Same with a v.h.f. contest — it all depends on where you are. If you were in W1, 2, 3 or parts of W4, 5, 6, 8 and VE3, you no doubt feel that the June V.H.F. Party was the best ever. The scores from these areas will bear you out, yet in the more than 100 reports listed at the end of this column there is not a single one from all of W7 or W8. Why is a v.h.f. contest a howling success in some sections and a dismal failure in others?

Good tropospheric conditions throughout the East made possible many fine extended-groundwave contacts on 6 and 2. Several outbreaks of aurora brought in hard-to-get areas. A short burst of sporadic-E Sunday morning added more, and section multipliers hit an all-time high as a result. With

50 WAS Mc.

Standings as of June 25th

W9ZHB	48	W4WMI	33	W7CAM	25
W9ZJB	45	W4FNR	33		
W9QUV	48	W4MS	33	W8QYD	44
W9BJV	48			W8NQD	31
		W5AJG	47	W8LBH	30
W1CLS	45	W5VY	43	W8RFW	25
W1CGY	44	W5ML	42		
W1LLY	43	W5V	42	W9HGE	47
W1HDQ	42	W5JLY	41	W9ZHL	47
W1KHL	39	W5HLD	40	W9PK	47
W1LSN	37	W5FRD	38	W9ALU	46
W1HMS	36	W5FSC	37	W9QKM	45
W1JLK	35	W5DXB	35	W9JMS	43
W1ELP	35	W5ZZF	34	W9RQM	43
W1EIO	35	W5GNQ	32	W9UNS	42
W1RO	34	W5JBW	32	W9UIA	42
W1DJ	31	W5IOP	30		
W1HIL	31	W5NHD	30	W8USI	47
W1CGX	28			W9QIN	47
W1AW	17	W6UXN	47	W9DZM	47
		W60VK	40	W9NFM	47
W2RLV	45	W6ANN	38	W9CJS	45
W2IDZ	40	W6IWS	37	W9INI	45
W2BYM	39	W6BPT	35	W9KYF	44
W2AMJ	38	W6AMD	35	W9JHS	44
W2QVH	37	W6FPV	31	W9SV	42
W2FHJ	29	W6BWG	20	W9HXY	41
				W9TKX	36
W3OJU	42	W7BQX	47	W9PKD	36
W3OR	35	W7ERA	43		
W3RUE	34	W7DYD	41	VE3ANY	33
W3MKL	33	W7HEA	40	VE1QZ	31
W3MQU	31	W7FDJ	36	VE1QY	28
		W7FFE	35	VE4GQ	20
W4EQM	44	W7KAD	35	VE3AET	16
W4FBH	42	W7JPA	35	HC2OT	16
W4LNG	42	W7ACD	32	XE2C	14
W4QN	40	W7QAP	32	VE2GT	14
W4G1Y	40	W7JRG	32	XE1QE	10
W4EID	40	W3CIR/7	30		
W4DRZ	38				
W4FQI	34				
W4GMP	34				

the contest coming just two weeks ahead of the Field Day, a number of club groups used it as a dry run for their v.h.f. set-ups.

The national high score was posted by W1PZ/1, who operated from a fire tower atop Blue Job Mountain, in Farmington, N. H. Handling the entire operating schedule, but assisted in packing the gear up the mountain by W1DGV and Fred Perkins, Jim piled up 140 contacts on 50, 144, 220 and 420 Mc. His section multiplier of 24 gave him 4320 points, the highest score ever run up in any v.h.f. competition. Another portable station, W2IQQ/2, North Caldwell, N. J., made use of 4 bands to score 2033 points.

The highest 2-meter score was turned in by W1JKC, Stratford, Conn., who worked 140 stations in 14 sections on 144 Mc. Three QSOs in two sections were added on 420, for a score of 2190 points. W1RMZ shared in the operating at W1JKC, ruling out this entry as the Connecticut Section winner. Top 6-meter score was that of W1CLS, Waltham, Mass., who worked 66 stations in 19 sections for 1254 points. W1MHL/1, operated by the Waltham Amateur Radio Association, atop Pack Monadnock Mountain, Peterboro,

N. H., worked 100 stations in 11 sections on 144 Mc. for 1100 points.

High home-station score was reported by W1GJO, Brookfield, Mass., who worked 86 stations on 2 and 6. His section multiplier, 27, was also the highest reported, giving him a total of 2322 points. The 220- and 420-Mc. bands were used to good advantage by several leaders. The contest rules were set up so as to give a premium for versatility, and the section winners were, almost without exception, those who could do a good job on more than one band. The work of W1CTW, Arlington, Mass., in making 121 contacts on 6, 2 and 1½, for 2295 points, is an outstanding example. One station, W9GLY, Chicago, reported a QSO on 2400 Mc., the only work listed above 450 Mc.

Western New York has the largest representation in the tabulation, with Western Pennsylvania, Eastern Massachusetts, and Ontario Sections having sizable listings to their credit. The Chicago and New York areas, both centers of large v.h.f. populations, have relatively few reporters. The Pacific and Great Lakes Divisions accounted for most of the reports outside of the above. The 1440-point total of W8WSE, Garfield Heights, Ohio, shows that one need not be on the Atlantic Seaboard to run up an impressive score. Mike had 72 contacts on 6 and 2, and good use of the 50-Mc. aurora openings boosted his section multiplier to 20. Complete claimed scores appear at the end of this department.

The World Above 420 Mc.

Altitude works wonders for the operating range on 420 Mc., according to W2MWB, Woodhaven, L. I. With W2WOQ/airborne, operating on flights into New York, it has been possible to maintain communication at distances up to 90 miles, at an altitude of 9000 feet. The airborne rig consisted of a 788 receiver and a single 6J6 oscillator, with a quarter-wave vertical stub antenna. Sample reports show S4 signals at the first contact, 9000 feet, 90 miles; S5 at 8000 feet, 70 miles; S8 at 7500 feet, 60 miles; and gradually increasing signals at intervals on in, despite decreasing altitude.

We reports good ground conditions to W1PBB and W1JKC coincidentally with a stationary warm front extending from New Hampshire to West Virginia. Low rain clouds covered the New York area, with a haze about 1500 feet thick above.

The superiority of the superhet over the superregen extends even into the microwave region, according to W1BBM, North Harwich, Mass. Bates has a superregen that has been adjusted to peak performance. It is good enough to operate radar-fashion, bouncing its own output from trees 100 feet away, and detecting cars passing along the street. But a 1N23 mixer, with a cavity local oscillator, working into an S-53 receiver produced strong signals from a test source which could not even be heard on the superregen.

W1BBM has a pulsed transmitter on 2400 Mc., with a parabola mounted above the treetops. He will be glad to conduct tests with any interested parties. How about the microwave specialists of the El Ray Radio Club in Waltham, Mass.? W1ARC and W1DJK are also set up for operation on 2400 Mc.

CLAIMED SCORES

V.H.F. QSO Party, June 4th-5th

Scores are grouped by ARRL divisions and sections. These are claimed scores, in most cases as submitted. As they have not been completely checked the final standings may vary from those shown. Columns are as follows: total score, number of contacts, section multiplier, and bands used. (A is 50 Mc., B 144 Mc., C 220 Mc., D 420 Mc., E 2400 Mc.)

ATLANTIC DIVISION

R. Pennsylvania	
W3KKN	2160-108-20-A-B
W3MQU	1848-77-24-A-B
W3KBA	385-35-11-B
W3LVF	222-37-6-B

Md.-Del.-D. C.

W3CGV	738-41-18-A-B
W3JVI	525-35-15-A
W3IZL	351-39-9-A-B
W3GKP	264-33-8-B
W3OTG	198-33-6-B
W3MIR	39-13-3-B

W3AHQ 30- 15- 2-B
So. New Jersey
W2QVH 1500- 75-20-A-B
W2CEE 60- 15- 4-B

W. New York
W2RLV 640- 40-16-A-B
W2ZUZ¹ 312- 35-13-A-B
W2UPT 275- 25-11-A-B
W2PLU 255- 50- 5-B-D
W2OSK 148- 37- 4-B
W2UTH 136- 34- 4-B
W2KZ 84- 28- 3-B
W2SXY 66- 33- 2-B
W2TGU 38- 19- 2-B
W2OW 36- 12- 3-B
W2GWY 36- 12- 3-B
W2UAD 24- 12- 2-B
W2FCG 7- 7- 1-B

W. Pennsylvania
W3RUE 848- 53-16-A-B
W3KWH 540- 60- 9-B
W3KWL 192- 32- 6-B
W3MQW 44- 22- 2-B
W3LWN 36- 9- 4-B
W3CJF 30- 15- 2-B
W3IHF 2- 2- 1-B

CENTRAL DIVISION

Illinois
W9GLY¹ 325- 40- 7-A-B-E
W9TKL 220- 44- 5-B
W9OBW 150- 30- 5-A-B

Indiana
W9AAQ 56- 14- 4-A-B
W9ZHL 48- 8- 6-A-B

Wisconsin
W9RQM 9- 3- 3-A

DELTA DIVISION

Tennessee
W4FWH 30- 6- 5-A-B
W4HHK 30- 10-3-A-B

GREAT LAKES DIVISION

Kentucky
W4FBJ 416- 32-13-A-B
W4OXC 75- 15- 5-A-B

Michigan
W8RWW 231- 33- 7-B
W8DIV 21- 7- 3-B
W8CZQ 1- 1- 1-B

Ohio
W8WSE 1440- 72-20-A-B
W8BFQ 576- 64- 9-B
W8WRN 120- 20- 6-B
W8LBH 66- 11- 6-A

HUDSON DIVISION

E. New York
W2JPK 240- 24-10-A
W2PV 32- 16- 2-B

N.Y.C. & L.I.
W2FIJ 756- 42-18-A-B

No. New Jersey
W2IQQ 2033- 95-17-A-B-C-D
W2IDZ 1216- 67-19-A-B
W2COT 936- 72-13-A-B
W2AMJ 466- 37-18-A
W2DZA 90- 6- 3-C

NEW ENGLAND DIVISION

Connecticut
W1HDQ² 2511- 93-27-A-B
W1JKC^{1,3} 2190-143-16-B-D
W1REZ² 1529- 68-11-B-D
W1PBB 1449- 54-21-A-B
W1CGY 760- 38-20-A
W1KHL 544- 34-16-A
W1MPO 330- 22-15-A
W1AW² 15- 5- 3-A-B
W1BDI² 2- 2- 1-B

Maine
W1EIO 456- 38-12-A-B

E. Massachusetts
W1CTW 2295-121-15-A-B-C
W1HLL 1680- 96-14-A-B-C
W1CLS 1254- 66-19-A
W1OOP 847- 77-11-A-B-C
W1LS 305- 61- 5-B
W1MCR 132- 33- 4-B
W1MUD 108- 36- 3-B
W1NXY 68- 17- 4-B
W1OIZ 52- 26- 2-B
W1CTR 51- 17- 3-B

W. Massachusetts
W GJO 2322- 86-27-A-B
W1QXE 1530- 89-17-A-B
W1JSM/1 384- 48- 8-B

New Hampshire
W1FZ/1 4320-140-24-A-B-C-D
W1MHL/1¹ 1100-100-11-B

Rhode Island
W1GJZ 1122- 66-17-A-B

Vermont
W1CGX 72- 12- 6-A-B
W1MEP 16- 8- 2-B

PACIFIC DIVISION

Santa Clara Valley
W6GCG 576- 72- 8-A-B
W6TFZ 305- 61- 5-B
W6ZBS 265- 53- 5-B
W6YGX 170- 34- 5-B
W6YHL 100- 20- 5-B
W6BHR 90- 18- 5-B
W6WIS 42- 14- 3-B

East Bay
W6AJF 285- 57- 5-B
W6WQU 120- 40- 3-B

San Francisco
W6VCG 215- 54- 5-B
W6BUR 130- 26- 5-A-B

Sacramento Valley
W6PIV 56- 14- 4-B

San Joaquin Valley
W6EKP 115- 23- 5-B

ROANOKE DIVISION

Virginia
W4JAZ 960- 64-15-A-B
W4AO 477- 53- 9

West Virginia
W3CJB/8¹ 144- 18- 8-B
W8TDJ 36- 9- 4-A-B

SOUTHEASTERN DIVISION

E. Florida
W4EID 364- 26-14-A-B
W4GYO 140- 14-10-A

W. Florida
W4MS 209- 19-11-A

SOUTHWESTERN DIVISION

W6BHG 206-103- 2-B

WEST GULF DIVISION

Southern Texas
W5JLY 218- 24- 9-A-B
W5FSC 96- 12- 8
W5PFM 66- 11- 6

MARITIME DIVISION

VE1QZ 20- 5- 4-A-B

ONTARIO DIVISION

VE5BNG¹ 448- 64- 7-A-B
VE3AIB 350- 72- 5-A-B
VE3ANT 256- 64- 4-B
VE3AQQ 192- 48- 4-B
VE3TW 168- 42- 4-B
VE3BW 140- 35- 4-B
VE3EAH 54- 27- 2-B
VE3TI 34- 17- 2-B

¹ Not eligible for award, multi-operator station.

² ARRL Hq. staff member.

³ Report mailed after deadline.

COMING A.R.R.L. CONVENTIONS

August 5th-6th-7th — Vanalta Division, Vancouver
August 26th-27th-28th — West Gulf Division, Dallas
September 3rd-4th-5th — Maritime Division, Halifax
September 17th — New Hampshire State, Manchester
October 7th-9th — Hudson Division, New York City
October 8th-9th — Midwest Division, Omaha

A.R.R.L. WEST GULF DIVISION CONVENTION

Dallas, Texas, August 27th-28th

The idea of an "unofficial" day preceding the regular sessions met with such success at the West Gulf Convention last year that the Dallas Amateur Radio Club, sponsors of this year's event, have incorporated it into their plans for the coming 19th Annual West Gulf Division Convention, to be held at the Baker Hotel, Dallas, August 27th-28th. For those who want to come early and spend the day seeing Dallas, taking shopping tours, and making chin music with old friends, mark your calendar for August 26th. An informal night of fun and frolic is promised for Friday evening to top off the day.

The convention officially gets under way on Saturday, August 27th. The two days will be jam-packed with technical talks — including the latest on BCI and TVI, inspection of equipment exhibits, personal ragchews, and other activities dear to the heart of convention-goers. For those who have been waiting an opportunity to take the amateur license examination, FCC personnel will be on hand to oblige. Nor have visiting ladies been neglected in the program: an interesting series of events is in store for them. The grand ball, put on as only Texans can, promises to be a highlight long to be remembered. And, of course, there'll be the banquet, complete from soup to after-dinner speakers.

Earmark \$7.50 per person for your registration fee. Better yet, send it along to Howard Davenport, Dallas Amateur Radio Club, P. O. Box 2995, Dallas, Texas, for advance registration. At the same time, it would be well to request your hotel reservations. See you in Dallas!!

Simplicity on 6

75 Watts Output on 50 Mc. with Two Stages and Low-Cost Components

THOUGH many 6-meter men use the same transmitter for that band as is used on lower or higher frequencies, the simplest solution is usually a completely separate r.f. section, designed for use on this one band. The little rig shown herewith is a good example of the simple and uncluttered layout that is possible through this approach. Since it is used on no other band it is always ready to go to work at a moment's notice, and its design is so simple that only a very small investment is required to make it part of your station.

There is nothing particularly new or novel about it, except that it uses a standard circuit which has been stripped of every nonessential. The few components are arranged for accessibility and ease of duplication. Its development began when a group of amateurs in the Boston area decided to move into the higher reaches of the 6-meter band, and use that almost virgin territory for essentially local rag-chewing purposes. The original model, built by Calvin Hadlock, W1CTW, has been duplicated by several other Eastern New England W1s with good results.

Only two tubes are used: a 6AG7 crystal oscillator at 25 to 27 Mc., doubling to 50 to 54 Mc., and driving an 829B amplifier. Crystals in

the 25- to 27-Mc. range have been frowned on in the past because of their instability, but nearly all crystal manufacturers are now turning out rocks for this purpose which have little or no drift. Getting up to 25 Mc. or higher avoids much of the trouble with oscillator harmonics getting into neighboring television receivers. The

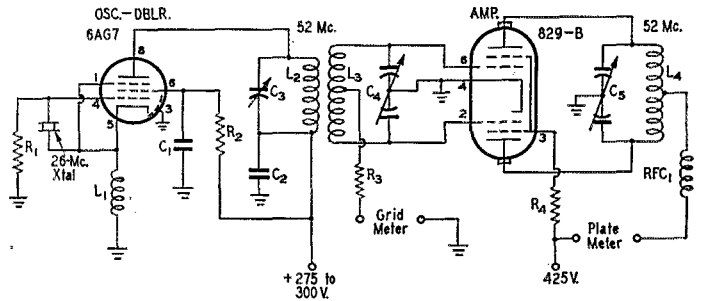
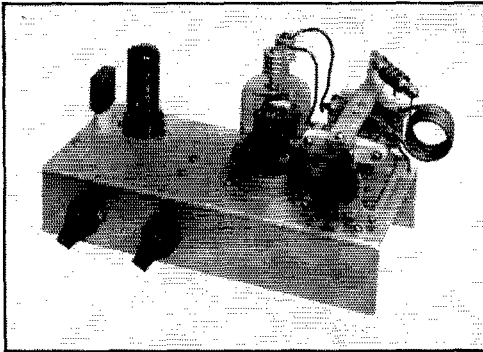


Fig. 1 — Schematic diagram of the W1CTW 50-Mc. transmitter.

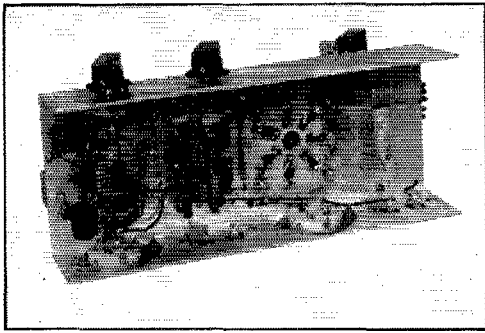
- C₁, C₂ — 0.002- μ fd. mica.
- C₃ — 25- μ fd. variable (National PSE-25).
- C₄ — 50- μ fd. per-section split stator (National STD-50).
- C₅ — 35- μ fd. per-section split stator (National TMK-35D).
- R₁ — 33,000 ohms, $\frac{1}{2}$ watt.
- R₂ — 15,000 ohms, 2 watts.
- R₃ — 5000 ohms, 1 watt.
- R₄ — 6500 ohms, 10 watts.
- L₁ — 9 turns No. 14 enamel, $\frac{1}{2}$ -inch diameter, close-wound.
- L₂ — 6 turns No. 14 enamel, $\frac{5}{8}$ -inch diameter, spaced $\frac{1}{2}$ diameter.
- L₃ — 5 turns No. 14 enamel, $\frac{5}{8}$ -inch diameter, spaced about 2 diameters.
- L₄ — 5 turns $\frac{1}{8}$ -inch copper tubing, 1 inch inside diameter, spaced $\frac{1}{8}$ inch between turns.
- RFC₁ — 2.5-mh. r.f. choke.

lowest oscillator harmonic which can cause trouble in this case is the 7th, which falls in Channel 7 when crystals below 25.7 Mc. are used; hence the "26 Mc." on the schematic diagram. Such crystals cost somewhat more than the 6- or 8-Mc. crystals more commonly employed for v.h.f. work, but the simplicity of the resulting layout more than makes up for the difference in cost.

The oscillator cathode coil is untuned. The plate coil of this stage and the grid coil of the amplifier are inductively coupled, the spacing between them being adjusted for maximum energy transfer. Arranged as shown, with the amplifier plate coil above the chassis, and all other coils below, the amplifier was stable without neutralization. Not even screen by-pass condensers were found necessary, when the new Type 829B, having built-in screen by-passing, was used. If instability does show up, external by-passing of the screen may be required.



Two-tube transmitter for 50 Mc. built by W1CTW.



The simplicity and clean appearance of the W1CTW rig extend to the bottom view. Resistors shown in the grid leads were removed after the photograph was made. The screen by-pass was also found unnecessary.

Provision is made for external metering of the plate and grid current to the final, through binding posts on the rear wall of the chassis. With 300 volts or less of the oscillator there is no trouble in getting the necessary 12 ma. grid current in the 829B, if the position of the plate and grid coils is properly adjusted. Up to about 100 watts input may be run to the final when it is to be modulated, or as much as 150 watts with c.w. or f.m. Still more power may be run with forced-air cooling. — E. P. T.

HAMFEST CALENDAR

ILLINOIS — August 21st, at 112th Street and Avenue B, Chicago. Annual picnic sponsored by the Hamfesters. Games, contests, fun for all planned. Food, ice cream and soft drinks will be available. Tickets, \$1.00 per person, may be secured in advance from Secy. W. Roberts, W9HOV, 7921 Woodlawn Ave., Chicago; also available at the gate. A true Hamfesters picnic — nuff sed!

IOWA — August 7th, at East Park, Mason City. Auspices North Iowa Radio Transmitting Association. Gala program arranged. Tickets \$1.00 in advance or \$1.50 at the gate. Advance registrations available through Secy. John C. Schultz, NIRTA, 17 River Heights Drive, Mason City, Iowa.

MARYLAND — August 14th, at Triton Beach, Mayo (follow Route 50 from Washington to Route 2; from Baltimore to Annapolis go west on Route 50 to Route 2, then follow signs marked "Hamfest Picnic"). Sponsored by the Baltimore Amateur Radio Communications Society. Tickets, \$1.00 per person (children 6 to 12 fifty cents), include bathing privileges and use of bath house locker, picnic table, pavilion, parking lot, ball field. Bring your own picnic basket — beer and soft drinks will be on sale. Registration starts at 9 A.M. Further details available from Chairman William E. Cooke, jr., W3GGB, 3019, The Alameda, Baltimore 18, Md.

OHIO — August 28th, at Maple Shade Picnic Ground, Columbus. Arranged by Columbus Amateur Radio Assn. Swimming, games, contests; supervised activities for the youngsters. Bring picnic lunch — refreshments free! Admission twenty cents per person at the gate. No reservations needed. One thousand hams and friends of amateur radio expected!

PENNA. — August 14th, at Spreading Oaks Grove, South Park. Sponsored by South Hills Brass Pounders and Modulators. Prizes, entertainment, lunches. Admission \$2.00 per person. All hams, XYLS, youngsters, YLs, SWLs invited. Make reservations through Secy. Clarence J. Lauer, W3KVL, 345 S. Millvale Ave., Pittsburgh 24, Penna.

WWV Schedule

STANDARD-FREQUENCY transmissions are made continuously, day and night, as a public service by the National Bureau of Standards over its standard-frequency station, WWV, on the following frequencies:

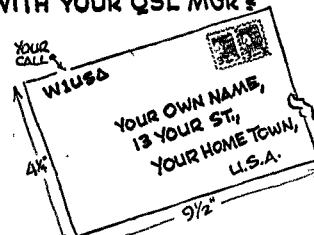
Mc.	Power (kw.)	Audio Freq. (cycles)
2.5	0.7	1 and 440
5.0	8.0	1 and 440
10.0	9.0	1, 440 and 4000
15.0	9.0	1, 440 and 4000
20.0	8.5	1, 440 and 4000
25.0	0.1	1, 440 and 4000
30.0	0.1	1 and 440
35.0	0.1	1

A 0.005-second pulse may be heard as a faint tick every second, except the 59th second of each minute. These pulses may be used for accurate time signals, and their one-second spacing provides an accurate time interval for physical measurements.

The audio frequencies are interrupted at precisely one minute before each hour and each five minutes thereafter (59th minute; 4 minutes past hour, 9 minutes past hour, etc.), resuming after an interval of precisely one minute. This one-minute interval is provided to give Eastern Standard Time in telegraphic code and to afford an interval for the checking of radio-frequency measurements free from the presence of the audio frequencies. Ionospheric-disturbance warnings applicable to the North Atlantic path are given at 19 and 49 minutes past each hour. If a disturbance is in progress or is anticipated within 12 hours, the time announcement is followed by 6 Ws; if conditions are quiet or normal, the time announcement is followed by 8 Ns. The announcements of the station's services and call are given by voice at the hour and half hour.

The accuracy of all the frequencies, radio and audio, as transmitted, is now better than a part in 50,000,000. Transmission effects in the medium may result in slight fluctuations in the audio frequencies as received at a particular place; the average frequency received, however, is as accurate as that transmitted. The time interval marked by the pulse every second is accurate to 0.000001 second. The beginnings of the periods when the audio frequencies are resumed are synchronized with the basic time service of the U. S. Naval Observatory.

IS YOURS ON FILE
WITH YOUR QSL MGR?



How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

With the W/VE slack season at hand, various quarters recommend the present time to start thumping for an increased turnout of DX stations on the lower frequencies during the better months ahead.

Under our present regulations we are not now going to emphasize the potentialities of 160-meter DX work; that can come later. But greater use of 80 and 40 for DX purposes certainly presents some advantages. Whether or not conditions approach the excellence of the past few seasons, it has been widely demonstrated through a multitude of WACs and impressive country totals that these bands can not only take a lot of pressure off the 14-Mc. band but can produce results comparable to the latter.

While many of us may feel uncomfortable without a rotary to swing around, some of the signals put out by stations utilizing mere old-fashioned pieces of wire really pay off.

So we urge all DX stations where regulations permit to give the lower frequencies a whirl during these coming months. Seasonal atmospheric in some areas may not be encouraging but a good try at the bands may bring some interesting and surprising contacts.

Activity is at low ebb at this writing, as might be expected, but Jeeves uncovered the following item or two. . . .

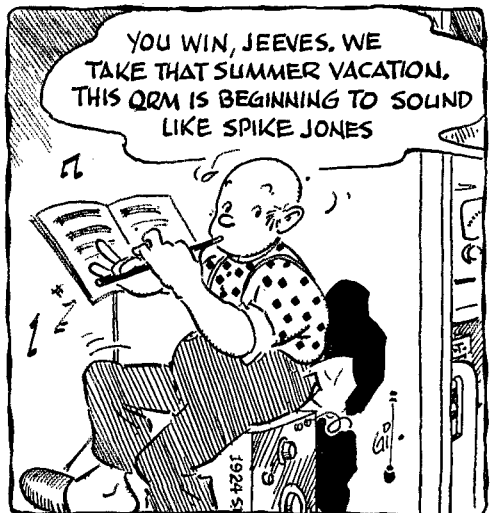
What:

While the QRN barrage may cause others to grow faint of heart, not so W4BRB. Gene squeezed HR2HZ and YS1ZG through on eighty and reached number 81 on this band. W4BRB's total of 17 DXCC members worked during the Round-up is the reported high at this writing. He's just moved to a hand-picked QTH at a W4BPD and is rebuilding on a large scale, we hear.

There is still something being worked on forty although catches are few and far between. W4MCM fished out GD3UB (7025), CT1HT (7050), FK8AB (7045) and KV4AA (7010), getting his DX start at the tender age of 15. . . . The Grants Pass boys in Oregon are in there pitching with some spirited rivalry. W7MGO dug up UA9FO (7003), W6COI/KB6 (7045), K16AF (7090) and VK6DJ (7006) while W7MQY added JA2RO (7035). . . . W6YZP's list is headed by UA9FJ (7035) and he desires to compliment KH6VP/VR4 on his snappy QSL service. . . . W2WWP has regular chats with ZL2ACV that indicate good conditions but an absence of activity on the part of the more juicy specimens.

The QRO specialists can see little sense in hunting big game with a bow and arrow and the QRP enthusiasts consider it poor sport to go deep-sea fishing with a depth charge. We're neutral, of course. But KH6VP is getting a large charge out of running 10 watts to a longwire on twenty for a total of well over 80 countries. These include such

niceties as ZD9AA, ZS9D, ZS3B, UL7BS, AC4RF and EL3A. Bill expects to unpack his beam shortly and should have little trouble accumulating a really QRP DXCC at his present rate. . . . The summer slump hasn't bothered W1IAP noticeably: LX1AS (14,082), CR9AG (14,050), EK1GW (14,010), EK1DO (14,095), FE8AB (14,025), VK9WL (14,067), VP1AA (14,001), VS2CH (14,070), KM6AI (14,061), JA2AZ (14,056), UC2AIA (14,116), UG6AB (14,056), UR2KAA (14,070), UA8KFD (14,047), and 4X4BF (14,020). Al has his fingers crossed for VP5XX in the Caeicos (14,060) and has been hearing AC4RF (14,010) and VU2AT (14,060) very QSA around 9 p.m. local time. . . . W6ZZ finally assembled his 100 cards, possessing a pretty fair percentage out of 114 worked. Recent catches include EA6AZ (14,093), TA3GVU (14,105), FK8AB (14,017), FO8AC (14,028), VK9NR (14,013) and UA9FR (14,079). . . . XB5AQ, claiming to be in Casablanca, is a unique number at W4MR. Some of Alva's less disconcerting contemporary items are MD2G, YK1UN, VR2s BD and BM, CR7s AO and AY, UH8KAA, FF8GC, HE1EC and VP7NU (14,010). . . . W6EYR's brand-new rotary enabled him to join the AC4RF club right off the bat, an auspicious way to break in a new skywire! . . . Claiming to be unable to raise any decent DX, W0FWW awaits cards from CR7BC (14,068), FA9RW (14,012), UQ2AE (14,022), UQ2KAA (14,018), KR6AZ (14,024), KX6DI (14,078), HA5BF (14,012), OQ5GD (14,012), PK4DA (14,022), 4X4CZ (14,022) and some OE1s. . . . Happy about receiving five cards from UA8KQA, W9AND interviewed CE7AP on Spring Hill Island (14,017), ZM6AL (14,015), YS1ZG (14,117), W0MCF/C3 (Formosa) and points out that many are missing a bet by thinking that KC6EA and KC6WA represent the same country. . . . W4NAP is curious about LJ2B (14,036) and the new city water tower at Moorhead, Minn., is just dandy for holding up one end of W0GHN's Zepp. FO8AC, the skywire's initial contact, agrees. . . . W7WEN's 40 watts was ample enough to grab ZD4AM (14,026), GC5OU (14,020), UA9CC (14,130), W0HWI/KS6 (14,025) and KS4AI (14,025). . . . No commonplace achievement was W7KWC's luck in collecting consecutive QSOs with AC4RF and AC4YN (14,050). Per-



* DX Editor, QST. Please mail reports of DX activity to W9BRD's home QTH: 1517 Fargo Ave., Chicago 26, Ill.

haps the new beam was responsible. . . . The tremendous signal being poured out by UAØKPD that is liable to pop through at any hour of the day or night has W801C and others talking to themselves. Must be lots of room for rhombics up there. . . . W5JUF (ex-W8PFY) returned to 20 'phone after a lapse of some years and is just getting used to the stepped-up competition of postwar DXing. He started off right with a 3-hour-plus WAC and a sample of his success includes W7LZJ/C6, FA8BG, VK4SI/VR1, KP6AA, HL1BJ, MD2AC, EK1MD, W2EJV/PK3, OQ5s BW, CF and DE, PK2SS, CN8BA, ET3AE and VS1AY. . . . W2URX adds A3 catches MF2AA, YS1MS, ZC6UN, KG4AB and OX3BF; and W6UCX notes that VP8AK is making with the a.m. on 14,150 kc. these days and hears that VP8AM shut down temporarily because of a petrol shortage.

Ten activity is at its usual summer low but something pokes through now and then to reward keepers of the patient vigil. 'Phone work at W4LZM has entered VQ5PBD, VP5AS, KG4AD, YR5AC, EA4WH and PJ5KO into the log. . . . Tulsa W5s MGK, OOC, OPQ and LPB happily found themselves in contact with PK4DA one evening and W5HBM latched onto c.w. catch PK4KS (28,025). . . . W6ZZ kept company with KR6s AC, AS and BV, JA2s AB and AN plus other neat Pacific people.

Where:

It has come to the notice of W1VG that all logs for amateur radio operation of the recent Gatti-Hallcrafters African Expedition now rest in the hands of W9TDF. Those still in need of cards may obtain same by submitting full QSO particulars to this address: C. A. Wiot, W9TDF, % Hallcrafters, Chicago 24, Illinois. Otherwise, perhaps some of the stuff below may be apropos.

CN8ZZ Box 26, Rabat, French Morocco
ex-D4AAK F. M. Allen, WØOAD, 1920 Willow St., Denver, Colo.

FA9RW Gaston Deville, Boite Postale 21, Maison-Carree, Algeria

FF8GC Box 136, Conakry, French Guinea, F. W. A.

HC5MM Box 198, Cuenca, Ecuador
HEIEC (via USKA)

HK4JB Wm. Halaby, Box 650, Medellin, Colombia

HP1JO P. O. Box 1039, Panama City, Panama
JA2BQ (via WØSJK)

KC6EA QSL to 15325 Stansbury Avenue, Detroit 27, Mich.

KG6FA Box 100, Guam
KH6VA/KG6 Box 100, Guam
KL7YD Det. AACs, APO 948, % PM, Seattle, Wash.

KL7YK P. O. Box 303, Ketchikan, Alaska
KX6DI Navy 3234, FPO, San Francisco, Calif.
ex-KZ5EL E. L. Krapcha, W5QCF, 1400 N. El Paso St., El Paso, Texas

MB9BJ (via RSGB)

MD1L K. Faux, Royal Signals, Benghazi, Cyrenaica, N. A.

OQ5VD Via UCAR, P. O. Box 271, Leopoldville, Belgian Congo

PJ5RP (via ARRL)

PK1X Box 222, Soerabaja, Java, N. E. I.

PK5HL Box 21, Sandjermasin, Borneo, N. E. I.
SV6AA (via ARRL)

VP5XX (via VP5AD)

VR2BH Nadi Airport, Fiji Islands

VS6BH 470 Hennessy Rd., Hong Kong

V89AJ E. J. Regan, RAF Stn. Aden, Khormaksar

VU2DG Neil McIntyre, 29th British Brigade, Group Signals, Deolali, India

VU2GJ P. O. Box 5588, Bombay, India
(via VU2GJ)

VU2LK Major Robt. Dexheimer, Hq. South Sector Command, Ft. Ruger, Honolulu, T. H.

W6BEB/KW6 QSL to 1278 Fairview Ave., Colton, Calif.

W7LEZ/KL7 J. G. Putnam, % Alaska Railroad, Fairbanks, Alaska

YK1UN (via K2UN)
CZ1FN John Berry, Cable and Wireless, Amman, Transjordan

ZC6SM (via IARC of Israel)

ZC6UN (via W2BSP)

ZD4AQ Ebenezer Adu, Radio Divn., Posts and Telegraph, Takoradi, Gold Coast

ZE2KH Denys Fullarton, P. O. Box 390, Salisbury, Southern Rhodesia

ZM6AL Apia, Western Samoa

ZP8BL (via RCP of Paraguay)

This assortment ably assembled by W1s IAP, IKE, RWS; W2s AKX, IYO, OKM, UWK; W4s FOY, MR; W5HBM; W6s UCX, YZP; W7KWC; W9s CPT, LZP.

Tidbits:

W4MR keeps bumping into the strangest stuff. His latest head-scratcher is OD8DU who appeared to arrive from the European direction on 20. Aside from trying his hand at a little QRP DXing, Alva also reports working the



A quorum of the Swiss DXCC membership met while attending the 1949 USA convention at Fribourg. We have, left to right: HB9s CX, J, BX and FE. Two other HB9 Club members, CE and DO, were unable to attend.

newly-constructed 50-watt at OY3IGO. He drew the pleasant task of manning W4GNF/4 on 20 c.w. during Field Day but 'phone DXer W4GG didn't fare too well; 7-Mc. c.w. was his lot! In general, things are holding steady in Carolina even despite recent windstorms and a scheduled opening of WFMV-TV on Channel 2. . . . Some intriguing words de W6UCX: Old-timer-long-no-hear FB8AB is about set to fire up W2IOP's gift rig upon attention to some minor details. For the benefit of strictly postwar boys, that's Madagascar a cookin'. MacQuarrie's VK1AJT expects to stick it out for ten more months or so and, because of hazardous mail conditions, advises no attempts to QSL direct at present. VP9CC should be signing his home call, GM3TD, by this time. AC3NC's switch to AC4NC makes it a trio of active Tibetan stations now, a long haul from the mellow days when AC4YN represented the exclusive ultimate in DX rarity. . . . Though his overseas address has been made readily available, WØMCF/C3 asserts via W5KUJ that all cards should be forwarded through ARRL. . . . WIEEC/KW6 is able to dish out so many snappy QSOs at intervals because he chances to be a PAA flight operator with an occasional 48-hour layover on the island. Jack keeps 'em short to spread 'em around but is available for rag-chews quite often at the helm of W6WUJ on 20. WIEEC/KW6 pasteboards are coming through 100% via bureaus. . . . From W7ETK we hear that old YM4AA can now be found signing DL1IB on 14-Mc. c.w. Wartime confiscation of Gerhard's total



Contacts with Dr. Radnai's Hungarian station, HA4SA, have been valued additions to a multitude of logs throughout the world. He will also be well remembered as HA4EA.

radio effects necessitates a new start from scratch G4JZ got a bang from the DXCC Round-up and reveals that feminine QRM has temporarily shoved DX matters into the back seat so far as he is concerned. Frank's last all-out effort gained him 2nd high G in the 'phone section of the '48 ARRL Test and he has some 150 countries safely logged JA2BQ states that JA2KG will head home before very long after helping to sparkplug the ham game over there in grand fashion for some time. JA2KG, incidentally, could be heard pounding away on 20 during the Round-up. We know that all continents were actively represented in the affair but as yet there are no reports of anyone snagging a DXCC WAC To nip a bunch of queries in the bud, KG4 stations are former NY4s. That switch was pulled so fast that even Jeeves was caught napping. [And they'll be absent from our log in large numbers, too, just like CM2s. — Jeeves] There seems to be some difugalty afoot concerning the addition of Israel to the country column as evident in our mail. This is probably mainly because there are both ZC6s and 4X4s active within the new nation. So far as the list is concerned, what was formerly the single country of Palestine has now become two, Israel and Palestine. Contacts with stations within the boundaries of what is now Israel which occurred prior to March 14th, 1948, qualify as credit for Palestine. For Palestine credit after that date, contacts must have been made with stations outside Israeli borders; ZC8PM, who functioned from Nablus, is one example The *FEARL News* continues its high-quality output. A peek at the DX box score shows the country parade being lead by JAs 2KG, 3AA, 2AZ and 2AS with totals of 155, 131, 105 and 104 worked respectively. JA2AS, by the way, is leaving for the Uncle Sugar side and this will establish JA2BG (formerly J2POY) as the longest-licensed occupation amateur in Japan. Bill of VP2AJ believes he has finished the job of issuing W7KPA/VP2 QSLs and wishes it known that VP2AJ confirmations will receive the same punctual attention. According to WIIKE, mail addressed to Lt. Wm. Anderson, 1940th AACs Sqdn., APO 855, 5 PM, Miami, Fla., will reach him posthaste For their exceptional work on behalf of the OE gang, W2CAA and W2NFR were presented with a citation courtesy of the OVSV. Nice going, Mr. and Mrs. Morse When not at the console of broadcaster ZQI, VP5MU pursues the states of Idaho, Nevada, Montana and Wyoming around 14,050 kc. W4KYD paid Larry a personal visit while cruising with the Naval Reserve That recent squib regarding the willingness of VP7NG to QSL all gentry still short cards referred only to the "Gon-Waki" licensees that operated during the 14th ARRL DX Contest. (The confirmation policy of the presently-active VP7NG has not been ascertained.) W3GRF is handling details concerning the PVARC effort and mail should be addressed: 6215 32nd Place NW, Washington,

D. C. Len is also in charge of chores pertaining to the wall adornments of ZP3AW, ZP2BL, HC1AW and YV4AW. You'll know W3GRF better, perhaps, as former W4KXN For the attention of former operators of ZC6 stations: 4X4BX of the IARC (Israel) QSL Bureau has over 300 QSL cards on hand for a total of 75 ZC6 calls. You could do many fellows a good turn by claiming your stacks by mail from wherever you may be and answering same. The QTH is P.O. Box 4099, Tel-Aviv, Israel The third highest 'phone DX Contest score reported on page 46 of June *QST* was credited in error to W8HRV. The 214,830 points, 434 contacts and 167 multiplier (resulting from 76 different countries worked) were actually chalked up by Phil Smith, W8HUD. We hasten to give credit where credit is due and offer our apologies for the mix-up.

It won't work for long but it may let you get in that new rare one without too much bloodshed. We mean that new expedient going the rounds in TVI circles whereby one goes on the air with the speech: "Due to circumstances beyond our control this program may be interrupted from time to time."

QSL Manager

(Continued from page 10)

hobbies: hunting, fishing and photography. "Last, but not least, please don't fail to mention that the XYL is in a very large measure responsible for the successful running of the W7 QSL bureau. Don't fail to mention this!"

Since Frank sent along these modest notes, he has found it necessary, for personal reasons, to relinquish the W7 QSL Bureau managership, a post he had held for thirteen years. His successor, Bob Donovan, W7EYS, 1530 Fairview Street, Bellingham, Washington, summed things up pretty well when he said, "W7DXZ has done a marvelous job as QSL manager these past years and I am sorry to see him give it up. I shall do my utmost to see that the W7 QSL situation runs as efficiently as W7DXZ has done." — L. T. W.

OUR COVER . . .

A close-up shot of the oscillator compartment of By Goodman's newly-completed de luxe VFO-exciter, a unit delivering 15 to 20 watts on five bands and featuring chirp-free keying plus break-in. Having survived the severest of checks in the ARRL Lab, the exciter has lost none of its magic in on-the-air tests at WIDX. We'll bring you full info in our next issue.

Also in *September QST*:

★ A high-power transmitter for 6 and 2 using p.p. 4-65A tetrodes, built and described by Vern Chambers, W1JEQ.

★ A complete report on ARRL's representation of the amateur at the Fourth Inter-American Radio Conference just concluded in Washington.

★ Highlights and official scores of the c.w. section of the 15th ARRL DX Competition.

TVI Tips

SHIELDED HOOK-UP WIRING

In April *QST*¹ it was suggested that the use of shielded hook-up wire for all d.c. and a.c. leads inside the transmitter chassis looked as though it would have possibilities in reducing the amplitude of harmonics fed to external power wires. Subsequent tests on several transmitters have shown that while shielded wiring is not a cure-all, it does definitely simplify the problem of keeping harmonics from flowing on to external leads where they can be radiated. So much so that we feel justified in recommending it without qualification in every case where lead radiation is a factor.

In one case, a transmitter unit that has served us as a TVI guinea pig over the past two years was completely rewired, insofar as the d.c. and a.c. leads were concerned, with shielded hook-up wire of the ordinary variety. With the non-shielded wiring previously used, elimination of harmonics from leads to the point where they were negligible on a receiver sitting alongside the transmitter had taken a lot of tedious work, involving exploring for hot spots inside the chassis and resulting in the installation of a considerable number of by-pass condensers and chokes. When the shielded wiring was installed, an initial test with no other filtering at all showed a marked reduction in the harmonic currents on external leads, and it was necessary to install only two v.h.f. chokes in the entire set to bring the performance back to where it had been with the rather elaborate filtering used before. Since then a number of other units have been constructed with shielded wiring, with the result that in all cases the initial lead currents were small compared with previous experience in similar transmitters, and that the currents were rather easily reduced by comparatively simple filtering.

One feature of shielded wiring is that shielded hook-up wire tends to act as a lossy transmission line at v.h.f. and so introduces considerable attenuation in addition to the plain by-passing effect. Both the by-passing and loss depend on the length of the shielded lead, so it is advantageous to make the leads fairly long. Transmission-line resonance effects should be avoided, however, since under the right conditions it is conceivable that the harmonic strength would be increased, rather than decreased, at the output terminals if a current or voltage loop occurred at those terminals. Unfortunately, we have no data on the velocity factor of hook-up wire, but since the insulation is rubber it is probably in the vicinity of 0.6. Lead lengths that would be a multiple of an electrical quarter wavelength at the harmonic

or harmonics of most interest in your locality should be avoided.

Probably of more importance than the attenuation in the wire is the fact that the shield prevents coupling between leads. Such coupling introduces a large factor of confusion in attempts at filtering unshielded leads, since a filter in one lead is not a filter for that lead alone but is an attempt to compensate for things happening in several leads at once. Multiply this by the number of leads and you have a real job in arriving at a satisfactory compromise. With shielded wiring it is fairly certain that if a filter in one lead affects the harmonic current in another one of two things is happening: the current in the affected lead is getting there because there is coupling between the leads outside the transmitter, or the harmonic is traveling over the chassis from the r.f. circuits to the leads. The latter indicates the need for simple shielding around the r.f. circuits, as pointed out previously;¹ such shielding will save wasting a lot of time trying this and that filter combination to no good purpose. If the coupling is between the external leads themselves — or through the power supply to which they are connected — the harmonic currents in all leads will drop as soon as the real offender is discovered.

Using unshielded leads external to the chassis is probably a good idea for preliminary work, because it shows where harmonic filters will pay off best inside the set. However, when the transmitter has been worked over to the point where it seems satisfactory it is highly desirable that *all* leads, external as well as internal, be of the shielded type. Shielding throughout makes assurance doubly sure. Individual shielded wires are preferable to bunching unprotected wires together and running them through a common shield, because it prevents coupling between wires.

In using shielded wiring the shield braid at the ends where connections have to be made should be pared back for the minimum length — that is, keep the shielding as complete as possible. The ends of the shielding should be connected directly to the chassis, and it is also advisable to bond the shielding to chassis at every convenient point along the length of the lead. Leads that run side by side or cross over each other should also have their shields bonded. When leads come to an outlet for external connections, the inner wires should be by-passed to the chassis with the shortest possible leads. This by-passing will help to destroy resonances in the wiring and also will help to short-circuit any harmonics that are slipping through. The by-pass condensers should not be too large, either physically or in capacitance. Postage-stamp micas of about 500 $\mu\text{mfd.}$ capacitance are good, especially if they can be

¹Grammer, "Pointers in Harmonic Reduction," page 14, April, 1949, *QST*.

(Continued on page 88)



Military Amateur Radio System



NO VACATION for us" — that's the lament of subcommittee members of the MARS Advisory Committee as they buckle down to the chore of preparing reports for the next full committee meeting, tentatively scheduled for late summer.

Sweltering in humid Washington is the four-man all-military subcommittee, working on a draft of the organization, by-laws and operating procedures of the MARS Advisory Committee. Subcommittee members are Lt. Col. S. C. Sheetz, Air Force, W4LEK, Lt. Col. Stephen S. Cerwin, Sig P&O, W4ITY, Maj. Rawleigh H. Ralls, chief, MARS-Air Force, W4RB, and Capt. E. L. Nielsen, chief, MARS-Army, W4ODI. (Civilian members of the full advisory committee specifically asked for an all-military committee because the MARS is a military program.)

Preparing an analysis of the relationship between the proposed extension of MARS and existing amateur organizations are Maj. Ralls and F. E. Handy, communications manager of ARRL.

The Advisory Committee, meeting in May, agreed upon definitions of the terms "disaster" and "emergency" for the purposes of the MARS program. "Disaster" is defined as a localized calamity such as fire, storm or flood. "Emergency" is defined as a nationwide calamity such as a war in which this nation is involved or a nationwide signal communications strike.

The committee also agreed that the terms "disaster" and "emergency" will be applicable only in the event of a signal communications emergency, as it is possible to have a disaster, calamity or catastrophe without having a signal communications emergency, and it is also possible to have a signal communications emergency without having a disaster.

MARS Certificate Presentation

MARS membership certificates were presented to 25 amateur operators in the Greater New York area in an impressive ceremony at the 7th Regiment Armory in New York City in June.

Major executives in the communications field attended the presentations which were made at the regular monthly meeting of the Armed Forces Communications Association. Top executives present included Maj. General Harry C. Ingles, former chief signal officer, now president of RCA, Brig. General Carroll Bickelhaupt, vice-president and secretary of AT&T, Brig. General A. W. Marriner, IT&T, Brig. General S. W. Sherrill, executive vice-president, AFCA, Col. Thomas H. Mitchell, executive vice-president, RCA, and George W. Bailey, president of ARRL and executive secretary of IRE.

The certificates license MARS members to operate as military amateur radio stations under Army calls assigned by the Chief Signal Officer, U. S. Army. In addition to creating interest and furthering training in military radio communications, MARS coordinates existing amateur radio practices with those of military radio communication, forming a pool of trained personnel in the event of any emergency



◆
First Army Area MARS members receiving certificates at the June AFCA meeting in New York City included (l. to r.) Capt. Wilmar Getchell, A2VWO, Sgt. George Zeppenfeldt, A2NOT, Sgt. Leslie Hindman, A2UYU, Lt. Col. David Tally, A2PE, Lt. Col. E. W. Sieder, A2ASN, 1st Lt. C. J. Osiecki, A1KNT, Capt. John F. Buzarak, A2KZZ, Charles Rosenberg, A2WJX; unidentified; and Capt. Stanley E. Hart, A2ANN. Maj. Gerald S. Morris, director MARS, First Army, stands behind Sgt. Zeppenfeldt at the left.

Single Sideband for the Average Ham

A Straightforward One-Band Exciter

BY WILLIAM M. RUST,* W2UNJ

MANY excellent articles have been published on the theory and construction of single-sideband transmitting equipment utilizing the latest in circuit refinement and flexibility. Amateurs of adventurous nature, willing to plunge deeply into this new field of amateur activity, are well supplied with information. This article will describe an exciter, built mostly of junk-box parts, that is suitable for the average

that used and described by W6DHG.¹ It is shown in block diagram in Fig. 1.

An r.f. source is fed into two phase-shifting networks. One network has an output voltage that leads the input voltage by 45 degrees, and the other has an output voltage that lags the input voltage by 45 degrees. Therefore, there is a 90-degree phase difference between the output voltages of the two networks. Each of these r.f. voltages is used to drive a pair of balanced modulators. Each pair of balanced modulators balances out the excitation frequency, so that no carrier appears in the output of either pair of balanced modulators.

The audio source is fed into a Dome-type phase-shifting network.² This network requires push-pull input voltage, and delivers two output voltages, differing in phase by 90 degrees. These two voltages are used to drive separate Class A amplifiers that serve the dual purpose of amplification and isolation of the network from the audio load (the balanced modulators). Each pair of balanced modulators, when supplied with audio from its amplifier, produces two sidebands in its output, but when the outputs of both

pairs of balanced modulators are combined, one sideband is canceled out and the resultant output is single sideband.

¹Dawley, "An S.S.S.C. Transmitting Adapter," *QST*, July, 1948.

²Dome, "Wide Band Phase Shift Networks," *Electronics*, Dec., 1946.

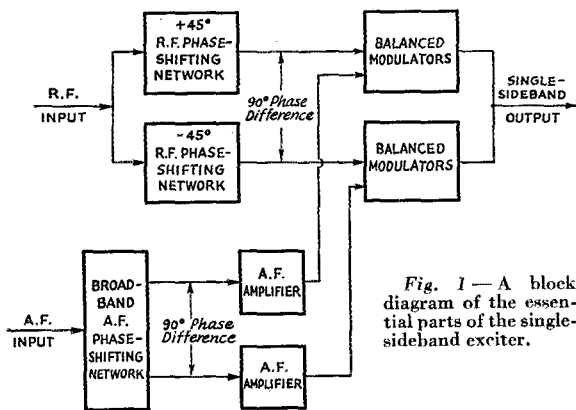


Fig. 1—A block diagram of the essential parts of the single-sideband exciter.

ham who might like to try single sideband with a minimum of cost and effort.

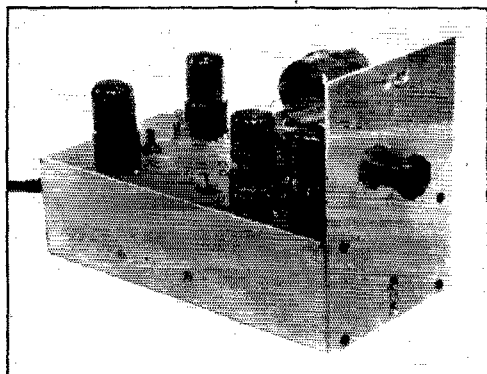
The exciter to be described is small and compact; five inches wide, ten inches deep behind the panel, and seven inches high overall. No special or close tolerance components are used, with the exception of six condensers and six resistors that are carefully chosen from a stock of standard units.

The exciter requires r.f. driving power from the present exciter, audio power from the present speech amplifier, and a power supply. It will deliver single-sideband output in the 3.9-Mc. 'phone band, either to an antenna for local work or to an r.f. amplifier that is adjusted for linear operation. The operating frequency can be varied over a wide range without seriously impairing the adjustment. Provision is made for transmitting either the upper or the lower sideband.

The Circuit

The circuit uses the phasing method of single-sideband generation and is basically the same as

* 37 Grant Street, Cortland, N. Y.



A small single-sideband exciter that can be used with practically any 75-mceter 'phone rig. Receiving tubes are used throughout.

The complete schematic of the exciter is shown in Fig. 2. Four 6V6 tubes are used as balanced modulators. The plate circuit of the balanced modulators uses a push-pull-parallel arrangement. The grids of one pair of balanced modulators are fed through a phase-shift network consisting of a 300-ohm resistor and an inductance that is adjustable to 300 ohms reactance at the operating frequency. The grids of the second pair of balanced modulators are fed through a phase-shift network consisting of a 300-ohm resistor and a condenser which is adjustable to 300 ohms reactance at the operating frequency. The input impedance of the two phase-shift networks in parallel is 300 ohms. A grid-leak resistor, suitably by-passed, provides bias for each pair of balanced modulators.

The screen of each balanced-modulator tube is by-passed to ground for r.f. Screen modulation is used, and therefore each screen-dropping resistor is by-passed for audio. Two of the resistors are variable to allow balancing of the modulators.

A tapped audio inductance is used in the output of each audio amplifier, to provide push-pull modulating voltages from the single-ended amplifiers. A voltage divider is inserted between each output of the audio phase-shift network and the corresponding amplifier grid. One of these voltage dividers is made variable to provide for balancing of the two audio channels. The network constants are compensated for the load of these voltage dividers.

The Audio Phase-Shift Network

In the construction of phasing-type single-sideband equipment, the biggest stumbling block seems to be the audio phase-shift network. Rumor has it that audio phase-shift networks are difficult to construct because they require odd values of resistance and capacitance, made to very close tolerances. However, advantage can be taken of the fact that resistors and condensers in junk boxes and in stock at local dealers do vary considerably from their nominal values.

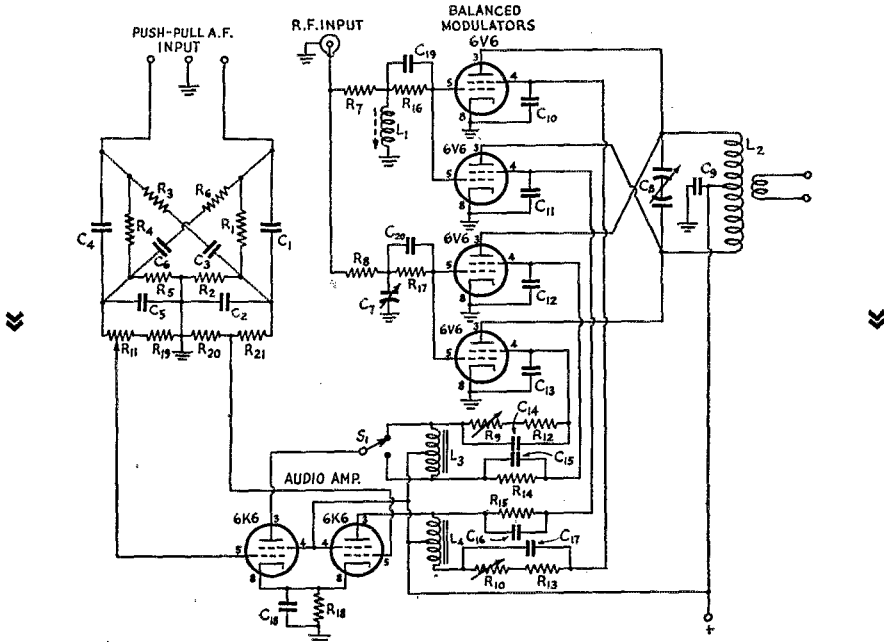


Fig. 2 — Circuit diagram of the single-sideband exciter.

- C1 - C6 — See Table I.
- C7 — 150- μ fd. air padder condenser.
- C8 — 100- μ fd. per-section dual variable.
- C9 - C13, C19, C20 — 0.001 μ fd. 500-volt mica.
- C14 - C17 — 0.01 μ fd. 500-volt ceramic or paper.
- C18 — 10- μ fd. 50-volt electrolytic.
- R1 - R6 — See Table I.
- R7, R8 — Eight or more one-watt resistors of equal value, paralleled to give 300 ohms.
- R9, R10 — 20,000-ohm potentiometers.
- R11 — 0.5-megohm potentiometer.
- R12, R13 — 22,000 ohms, 1 watt.

- R14, R15 — 33,000 ohms, 1 watt.
- R16, R17 — 10,000 ohms, 1 watt.
- R18 — 300 ohms, 2 watts.
- R19 — 0.5 megohm, 1 watt.
- R20 — 0.75 megohm, 1 watt.
- R21 — 0.25 megohm, 1 watt.
- L1 — See text.
- L2 — Low-power 80-meter coil (Bud OCL-80 with base removed).
- L3, L4 — Midget push-pull output to voice coil transformer (voice-coil winding not used).
- S1 — S.p.d.t. switch.

Table I is used in selecting the network components. The procedure is to collect as many resistors and condensers as possible with nominal values as indicated in the second column of the chart. Measure all of the condensers first, and select the six condensers whose measured values are closest to the "target values" in the third column. Enter the measured values of these condensers in the fourth column of the chart. Then calculate the "target values" for the resistors and select the six resistors whose measured values are closest to these target values.

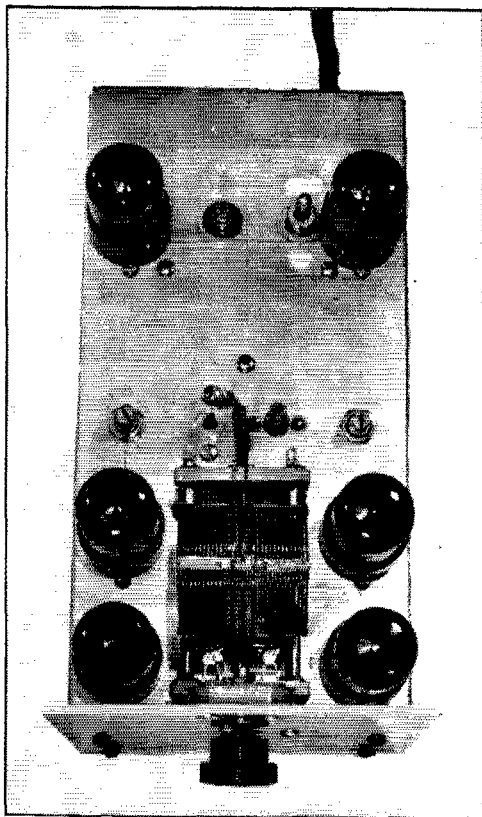
A capacity bridge, of the type used by servicemen, and a good ohmmeter should give sufficient accuracy in selecting the network components. Absolute accuracy is not important, if the components are all in correct proportion to each other. A difference in percentage error between the resistance measurements and the capacitance measurements will merely shift the operating range of the network.

The network components are mounted on a small sheet of insulating material to facilitate wiring. If the network components have been carefully chosen and assembled, no test of the network should be necessary.

Perhaps some local amateur supply houses can be persuaded to furnish the stock of resistors and condensers, and the measuring equipment, as a service to amateur customers.

The R.F. Phasing Inductance

The only other "tricky" component of the exciter is the r.f. phasing inductance, L_1 . This inductance is wound on a slug-tuned form salvaged from an i.f. transformer. The form is about three-eighths of an inch in diameter and one and



A top view of the exciter. The toggle switch at the rear selects the sideband in use.

five-eighths inches long. The winding is forty turns of No. 30 d.c.c. wire, close-wound. Since duplication of this inductance might be difficult, it is recommended that the constructor use a slug-tuned form and wire from his own junk box, and wind a coil that will resonate at 3.9 Mc. at the center of the slug-tuning range, with a variable condenser set at about 155 μfd . Resonance can be checked by using the coil and condenser as a wavetrap connected in series with the antenna on the station receiver.

Construction

The exciter is assembled on a 5 × 10 × 3-inch chassis. The plate tank tuning condenser is mounted on top of the chassis, front and center, with two of the 6V6 modulator tubes on each side. The plate tank coil is mounted on top of the condenser. Plate leads from the four 6V6s are brought directly to the tuning condenser through four $\frac{3}{8}$ -inch holes drilled through the chassis near each tube-socket plate connection. The 6V6 screen grids are by-passed to ground directly at the sockets. R_9 , L_1 , C_7 and R_{10} (all

TABLE I
Phase-Shift Network Design Data

Part	Nominal Value	Target Value	Measured Value
C_1	.001	.00105	(C_{m1})
C_2	.002	.00210	(C_{m2})
C_3	.006	.00630	(C_{m3})
C_4	.005	.00475	(C_{m4})
C_5	.01	.00950	(C_{m5})
C_6	.03	.0285	(C_{m6})
R_1	100,000	$\frac{100}{C_{m1}} =$	
R_2	50,000	$\frac{105}{C_{m2}} =$	
R_3	15,000	$\frac{100}{C_{m3}} =$	
R_4	100,000	$\frac{453}{C_{m4}} =$	
R_5	50,000	$\frac{476}{C_{m5}} =$	
R_6	15,000	$\frac{453}{C_{m6}} =$	

All condensers mica, and all resistors 1 watt.

adjustable components) are mounted in a row directly behind the 6V6s. The two 6K6 amplifiers are mounted at the rear of the chassis, one on each side, with R_{11} and S_1 between them. The audio phase-shift network is mounted inside the chassis at the rear. Crystal sockets are used for r.f. input and output connections. A cable is brought out at the rear of the chassis for audio and power connections. Layout, construction and wiring are all conventional. The 5 × 7-inch front panel is optional.

Associated Equipment

The r.f. input impedance of the exciter is 300 ohms, but a link line of lower characteristic impedance will operate satisfactorily for the short distance usually required. A means for adjusting the r.f. driving power is desirable. A surplus Command set transmitter (BC-696 or T-19/ARC-5), operating at low plate voltages, makes an ideal r.f. source, but any VFO or crystal oscillator with a few watts output will do.

In most stations, the handiest source of push-pull audio for the exciter will be the secondary of the modulator driver transformer. A single triode-connected 6F6 output tube in the speech amplifier will provide sufficient audio. The modulator tubes should be removed from their sockets, and the center tap of the driver-transformer secondary should be grounded, after removing the bias connection. An alternative method is to use blocking condensers in the audio leads to the single-sideband exciter to isolate the modulator bias from the audio phase-shift network in the exciter. If some other source of push-pull audio is used, it should have low internal impedance (Class A triodes, or beam tubes with negative voltage feed-back).

The exciter may be coupled directly to an antenna for use as a low-power transmitter, but most amateurs will wish to use it to drive a buffer or final amplifier. All stages following the exciter must be operated under Class A, AB, or B conditions. In general, the correct operating conditions for stages following the exciter may be found by referring to the audio operating condi-

tions for the tube under consideration.³ Grid-bias and screen voltages should have very good regulation. For amateur voice operation, tubes may be operated considerably beyond the ratings given in the tube manuals, but such operation is beyond the scope of this article. When the r.f. amplifier is operated Class AB₂ or Class B, the grid tank circuit should be shunted by a resistor in order to provide better regulation of the exciting voltage. The value of this resistor is not critical and may be determined by experiment.

Operating Conditions

The operating conditions for the exciter are determined by the required output. If the required output is low, it is better to run the exciter with low plate voltages. This will reduce the amount of residual carrier present in the output in relation to the sideband output. Also, the exciter will be more stable and maintain adjustment longer with lower plate voltages.

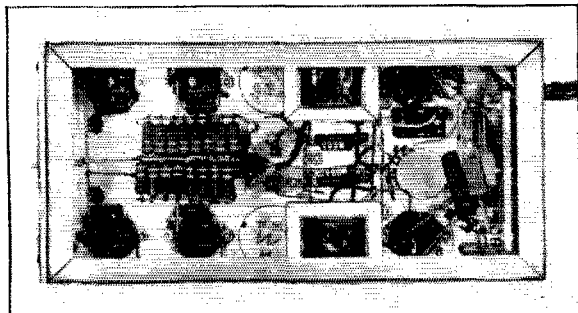
A pair of 807s operating Class AB₂ can be driven by the exciter with only 60 ma. (at 120 volts) input to the balanced modulators, and with the exciter amplifiers also operating at 120 volts. Part of the output of the exciter is, of course, dissipated in the load resistor across the grid tank circuit of the 807s. The balanced modulators require sufficient r.f. drive to develop 12 volts of grid bias under these operating conditions.

Lack of well-regulated adjustable plate-voltage supplies prevented a complete test of the capabilities of the exciter. However, one set of data was taken with the plate supplies available: modulator plate input, 285 volts at 80 ma.; amplifier input, 185 volts at 50 ma.; modulator grid bias, 30 volts; audio input, 19 volts from each input terminal to ground; power output, approximately 7.5 watts.

The power input to the modulator plates should not exceed 30 watts with no audio input. The input to the modulators may be varied by adjusting the voltage used on the amplifiers and modulator screens.

(Continued on page 88)

³ Also, Reque, "Linear R.F. Amplifiers," *QST*, May, 1949.



A bottom view of the exciter. The phase-shift network is mounted on a panel at the right-hand side. The double string of resistors at the left is the load for the r.f. excitation.



Hints and Kinks

For the Experimenter



BEAMS CAN BE STRONG

WHEN the average ham constructs a rotary beam he is confronted by problems of mechanical strength not usually found in his other equipment. A beam is an extended, self-supporting structure. For electrical reasons it is placed in as open an area as possible where it is exposed to the same wind stresses as the rigging of a ship.

If the beam is to withstand these stresses it must have good mechanical design — a property not always apparent to an inexperienced eye. The following paragraphs deal with two points of weakness found in many beams and — as a solution — show well-designed components which any ham can make with hand tools.

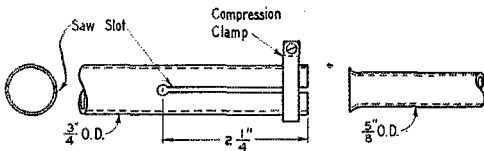


Fig. 1—Details of a rugged sliding joint for beam elements.

One of the most common and best materials for the elements is 24ST dural tubing. For 28-Mc. beams, two sizes are needed — $\frac{3}{4}$ inch and $\frac{5}{8}$ inch o.d. While these sizes are used in the illustrations, the methods shown are adaptable to any sizes.

The first point of weakness is the sliding joint. At two points on each element the $\frac{5}{8}$ -inch tubing telescopes into the $\frac{3}{4}$ -inch. With average tubing considerable play will be found. This play must be entirely eliminated.

A tapered object (e.g., the ferrule of a small wood chisel) is driven into the end of the $\frac{5}{8}$ -inch tubing. The end is thus flared as shown in Fig. 1, until it is just too large to enter the $\frac{3}{4}$ -inch size. It is then carefully dressed with a fine file until a smooth sliding fit is obtained. This is a nice velvety "feel" that can be found on any trombone.

The next step is to prepare the ends of the larger tubing. Small holes, about $\frac{1}{8}$ inch, should be drilled on either side of the tubing $2\frac{1}{4}$ inches from the end. Saw cuts, as shown in Fig. 1, can then be made with a hack saw to permit compression. Each cut should be gone over a second time with two blades in the saw. This gives a slot sufficiently wide for adequate compression. The smaller tubing with its flared end is now slid into place within the $\frac{3}{4}$ -inch piece. A good grade of

hose clamp is tightened on. This compresses the outer tubing from all sides so that it grips the entire circumference of the $\frac{5}{8}$ -inch tubing. The combined effects of the flared and fitted inner end of the $\frac{5}{8}$ -inch tubing, plus the properly-compressed end of the $\frac{3}{4}$ -inch tubing, yield a truly rigid joint. In fact, in a test, only three inches of the smaller tubing was inserted and clamped; yet it supported a full 12-foot length without a trace of play.

The second point of weakness is the mounting clamp for attaching elements to insulators. These are of course not used on a "plumber's delight" beam, but when dural tubing is used, crosspieces with insulators are usually necessary. The mounting clamps look so simple that little attention is given to them. Unless well designed and carefully made, however, these little accessory items will loosen. Once this happens, and the elements slip about a bit in a 40-mile wind, literally anything can happen.

Fig. 2 illustrates an efficient clamp. Heavy-gauge dural sheet is a suitable material. It should be cut into $4 \times \frac{3}{4}$ -inch strips. Half an inch at the end of each strip is turned up at right angles, and is drilled for the mounting screw. This end (S) of the strip should be clamped in the vise with a backing plate of rigid steel as shown in Fig. 3A.

The secret of metal forming is the use of the proper die. The "die" in this case is a piece of pipe whose diameter is about $\frac{1}{16}$ inch less than that of the material to be clamped. Since this clamp is to be used on $\frac{3}{4}$ -inch o.d. beam elements, the forming "die" should be about $1\frac{1}{16}$ inch in diameter. A short piece of $\frac{1}{2}$ -inch thin-wall conduit is just right. Place it atop the work and

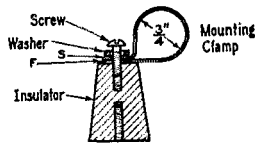


Fig. 2—A sturdy mounting clamp like this will hold the elements to the frame in all kinds of weather.

against the backing plate as shown in Fig. 3A. End P of the strip is bent up as shown by the dotted lines. Judicious hammering at the points indicated by arrows will give the right contour to the work. When the strip has been bent round as far as possible, the vise should be opened and the forming pipe clamped in a horizontal position with an end projecting to the side of the vise, as shown in Fig. 3B. Upon this end of the forming pipe the bending is completed with a pair of slip-

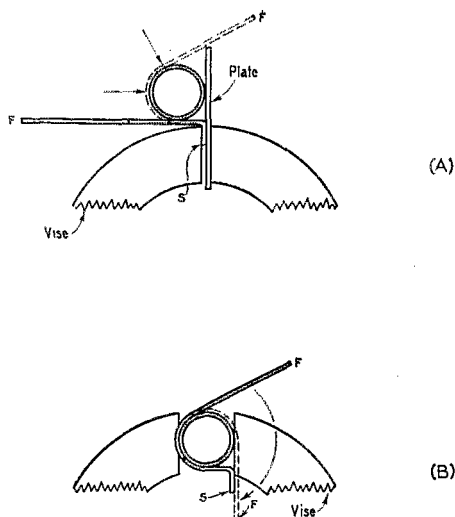


Fig. 3—Method used to form the clamps.

joint pliers. When the two ends meet, the edges should be made to coincide to correct any skew, and the excess on end *F* should be trimmed off.

The clamp is now completely formed. Slide it off the "die," pry open slightly, and insert a short piece of $\frac{3}{4}$ -inch o.d. tubing. The extreme corners of ends *S* and *F* are caught in the vise. The hole previously drilled in end *S* is continued through end *F*. The clamp is now finished.

When used to mount an element, the mounting screw will bring end *S* down to a perfect seat upon end *F* without deforming the clamp; moreover, the element will be held in a vise-like grip. — *T. H. Mackintosh, W4MGG*

ANTENNA SWITCH FROM THE BC-375-E

ANYONE who is working on construction of the A Surplus-Parts Bandswitching Transmitter¹ will be interested in another BC-375 component that can be put to use. This part — a 2-pole 5-circuit switch — has sufficient spacing between wafers and between individual contacts to be ideal for switching open-wire feed lines. At W1JEQ we use the switch to transfer the feed line to any one of five different antenna tuners.

The switch was taken from a BC-306-A tuning unit. It is listed in the BC-375 instruction book as part No. 1501 and the drawing is No. ML-7463975-G1. — *C. Vernon Chambers, W1JEQ*

SIMPLE NEGATIVE-PEAK OVERMODULATION INDICATOR

HERE is a negative-peak overmodulation indicator suited to the needs of the laziest 'phone man. This little gimmick is so easy to install on

¹Chambers, "A Surplus-Parts Bandswitching Transmitter," *QST*, Sept.-Oct., 1948.

the average 'phone rig that it is well worth the effort just to know that you are not filling the band with buckshot and monkey-chatter caused by overmodulation.

As shown in Fig. 4, the basic components required are a 1B3-GT/8016 half-wave high-vacuum rectifier and a NE-51 neon bulb. The rectifier has a filament that can be heated from almost any source, provided that about 200 ma. is available. In this unit it is heated by placing it in series with the high-voltage lead to the Class C stage, shunted by a small resistance. The value of *R*, somewhere in the neighborhood of 50 ohms, may be selected by measuring the voltage across the rectifier filament *ab* with the transmitter operating at normal load. Careful! The filament is at the full plate voltage used in the transmitter! Assuming that you run at least 180 ma. plate current to your final, the value of *R* should be adjusted until the drop across the rectifier filament is about 1.2 volts d.c.

The filament of the 1B3-GT/8016 has an appreciable thermal lag, so it will not be damaged by momentary overloads, but a good, fast-acting overload relay should be used to take power off

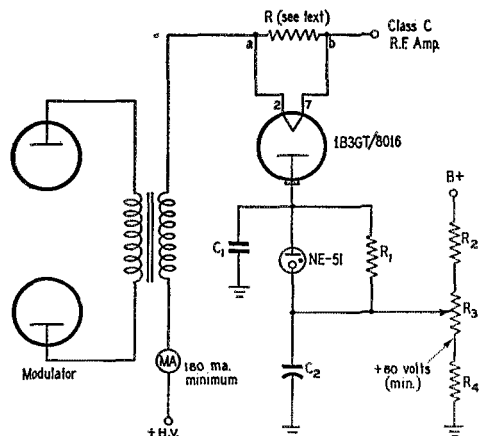


Fig. 4—A simple neon-flasher modulation indicator. The circuit may be adjusted by *R*₃ to flash at any desired level of modulation.

- C*₁ — 100- μ fd. mica.
- C*₂ — 0.01- μ fd. paper.
- R*₁ — 0.22 megohm, $\frac{1}{2}$ watt.
- R*₂, *R*₃, *R*₄ — Bleeder for positive biasing NE-51. See text.

the rig in the event of a flash-over or short in the Class C stage. Resistor *R* also serves to insure a continuous load for the modulator stage even if the rectifier filament does burn out. The wattage rating of the resistor used should be large enough to handle a considerable overload. If you don't have at least 180 ma. available, the gadget won't work, because you won't be able to heat the filament.

A small positive bias is placed on the neon tube
(Continued on page 90)



Correspondence From Members-

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

APPRECIATION

Port Lockroy, Grahamland, Antarctica

Editor, *QST*:

During my sojourn in the Antarctic it was with great pleasure that I was able to work amateur stations in the U.S.A. That, in itself, is not a very extraordinary accomplishment. What made it so pleasing was the courtesy, keenness and assistance given by your fellow countrymen to me "way down south."

Unfortunately I cannot give much detail of results because of the Secrecy Act (The Tower of London looms ahead). What I do want to record is the way in which these contacts have been made. The "rig" available was capable of 30 watts maximum output, with crystal control. But I had no suitable crystal and utilized an m.o. circuit that left much to be desired. The output seldom exceeded 20 watts. The note was terrible; as one wit remarked, "like keyed QRN," and the frequency drift was anything up to 20 kc. Of course, to be strictly correct, I should not have operated under these circumstances. But when you are alone in these icy wastes (my three companions were away at the time for three weeks' sledging) and the gear is available. . . .

On the 14th of October, 1948, at 10:00 P.M. local time, I tuned up and started, very dubiously, to call "CQ," hoping to be able to contact perhaps someone in South America. At 10:10 P.M. I heard a strong signal answering and was quite excited to read "W3GHD." This started something. By 11:16 P.M. I had worked 11 stations in the U.S.A., all giving me an RST of approx 566. Most of their signals were trumping through here. How they managed to read my drifting signals through other QRM is to their credit.

During the remainder of the time available, before I commenced packing up for the return home, it was a constant source of pleasure to open up on the 14-Mc. band, give a short call, then wait for the deluge of replies. My regret was that due to time and conditions it was not possible to work all those who tried so hard to contact me. In all I made 200 actual station contacts, U.S.A., from October to December. From East and West, North and South, I feel that the seed of friendship for me has been planted in the U.S.A. The offers of all sorts of assistance, from supply of crystals to complete rigs, were overwhelming and I wish it were possible for me to thank each of these generous folks personally. When you receive this I shall be well on my way home to England to rejoin my wife and our infant son, who was born after my departure. To them I shall never tire of telling of the warm, generous and sincere friends I met "over the aether" in the Antarctic.

— George Barry, VP8AJ

MOBILE HAZARDS

1914 West Capitol St., Jackson, Miss.

Editor, *QST*:

Some time ago, my attention was drawn to flames pouring out of the rear of a small automobile, accompanied by large amounts of black smoke which obscured the details. In due time the local fire department extinguished the flames by the use of chemical fire extinguishers, which were played on the inside of the car through the rear windows.

The car was apparently a new Ford 1949 model tudor with transmitting-type aerial on the rear. When the rear door to the trunk compartment was opened and the contents

inspected, it was apparent that the cause of the fire was ignition and burning of the contents of a 1-gallon can of paint, although the local firemen stated that they could not figure out what started the fire. Inasmuch as the can of paint was removed from a position between a small commercial mobile transmitter and the wall of the compartment, and the can had been resting against a large exposed terminal for the 6-volt supply line, which appeared to be about 1/2-in. diameter copper, and further that there was a hole about 1-in. diameter burned in the side of the paint can at the point where it rested on this terminal, it was obvious to me that the heavy current obtainable from this 6-volt line had burned through the tin can and ignited the paint. Perhaps heating before actual puncture of the can had vaporized volatile contents and formed an explosive gas inside.

I judged from literature inside the car that it was a commercial vehicle operated by some oil-prospecting company or similar outfit. The rear of the car was badly burned and the back seat was burned out completely. The chemical streams had streaked the remainder of the car, and it was obviously in for an expensive body-repair job, although being in a town the fire department had saved the car from total loss.

These comments are passed on, for what they are worth, to those hams who install mobile transmitters with exposed terminals capable of furnishing currents of 300 amperes or so when shorted to the frame of the car.

— A. D. Mayo, W5DF

ADVERTISING POLICY

Neenah, Wis

Editor, *QST*:

I have occasionally read and heard gripes about *QST* advertising policy. May I say that I too have wondered about the absence of certain advertisers in *QST*? However, I now wonder whether your policies may not be directed to greater protection of the ham than he realizes.

To date, I have never had any difficulties whatsoever in dealing with your advertisers. This is more than I can say about my experiences with orders to companies that have ads in all the usual ham journals excepting yours. The fact that I have never been "taken" by a *QST* ad may be pure coincidence, but I should like to think that it is the result of your advertising standards and policies.

My last escapade has been with the ——— Radio Company of ———. The only results I have to show for an initial prepaid order, two follow-ups, and a registered letter, are my check (which was cashed immediately) and a return receipt establishing that my registered letter requesting refund had been delivered into their hands on April 13, 1949.

It might be well to inform other ARRL members and *QST* readers of this situation, particularly if your policies have been working to their benefit without their being aware of it.

— Dr. E. G. Minarik, W9GJY

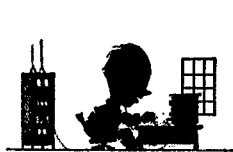
PHILATELY & HAM RADIO

329 Cascade No., Fergus Falls, Minn.

Editor, *QST*:

For some thirteen years now I have been an active ham. For about an equal number of years I've been a stamp collector of sorts. The philately slumped for several years

(Continued on page 32)



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
J. A. MOSKEY, WIJMY, Asst. Comm. Mgr.
ALBERT HAYES, WHIN, Natl. Emerg. Coördinator

GEORGE HART, WINJM, Communications Asst.
JOHN E. CANN, WIRWS, Communications Asst.
LILLIAN M. SALTER, Communications Asst.

Wanted . . . an Asst. Communications Manager-Phone. Since the inauguration by ARRL in 1933 of the field-organization appointments of Official 'Phone Station, and 'Phone Activities Manager with functional responsibilities of organizing activities for OPS and voice operators at section level, there has been a steady growth in interest in these appointments. Our recent annual report, for example, indicated an 8.9% growth in the number of OPSs over the past year. Voice work has assumed increasing popularity in the amateur ranks. The Board of Directors in annual session has now authorized the special recognition to be accorded by appointment of a new Assistant Communications Manager-'Phone Activities on the Headquarters staff.

The new ACM-'Phone will have among other duties the function of reviewing all operating and communications programs of the League in order to promote the interests and activities of those stations using voice. He will study and recommend appropriate procedures to assist voice work, and will welcome your ideas on special objectives and activities to be implemented by radiotelephone operators. It is hoped that under his influence the number of PAMs and OPSs may grow apace. Experience in administrative and field work and typing and writing ability should be indicated by applicants for the position. U. S. amateurs who have a good record of communications accomplishment by their operation in the 75-, 20-, 11-, and 10-meter 'phone bands are invited to ask for the CD personnel form to file in application for this post.

CD Policy. This month seems appropriate to restate a long-standing policy of your ARRL Communications Department. It is simply that we attempt to represent and serve *every* amateur and member along the lines of his natural interest in amateur radio. Inviting as large a general-membership participation as possible, we have a wide range of activities. These take in everything from frequency measuring to CD Parties for all CD appointees, and range from v.h.f. contests on the one hand to DX contests on the other. Awards cover numerous fields. All kinds of station and leadership appointments, with the bulletins conveying unity to group efforts, are available to qualified and interested members

through the elected SCMs (see address of your SCM on page 6). Details of all awards and appointments and Emergency Corps information appear in the booklet *Operating an Amateur Radio Station*, sent free on request of any member.

Station and Leadership Appointments

OPS	Official 'Phone Station. Voice operating, example in setting operating standards, activities on voice.
ORS	Official Relay Station. Traffic service, operates nets and trunk lines.
OBS	Official Bulletin Station. Transmits ARRL and FCC bulletin information to amateurs.
OES	Official Experimental Station. Experimental operating, collects reports v.h.f.-u.h.f.-s.h.f. propagation data, may engage in facsimile, TT, TV, etc., experiments.
OO	Official Observer. Sends coöperative notices to amateurs to assist in frequency observance, insures high-quality signals, and prevents FCC-trouble.
PAM	'Phone Activities Manager. Organizes activities for OPSs and voice operators in his section.
RM	Route Manager. Coördinates traffic activities.
SEC	Section Emergency Coördinator. Promotes and administers section emergency-radio organization.
EC	Emergency Coördinator. Organizes amateurs of a community or other area for emergency radio service; liaison with officials and agencies served; also with other local communication facilities.

Saying It with Words. STAND-BY is one syllable shorter than Q-R-X. WAIT is still shorter. STATIC is faster to say than Q-R-N, and has the advantage that it escapes confusion with the phonetically-similar QRM.

Code-Practice Volunteers Wanted. Amateur operators who are willing this September to establish a voluntary schedule of transmitting code-practice information to assist beginners are requested to drop a line to Headquarters setting forth their proposed schedules and effective date in September or October. There is always a keen demand for information on stations sending alternately on code and voice at different code speeds. We would like to present in *QST* in an early issue, as customary, a full list of such CP stations. Information helpful to the conduct of such programs will be sent on request. FCC (Sec. 12.106) authorizes such transmissions addressed (*QST*) to amateurs or persons learning. Can you help by taking on a 28-29.7 Mc. schedule, please? This band is preferable to permit CP to go forward with minimum interference to general amateur operation of other types on other bands.

Coöperative Effort. The following was received from an ARRL emergency coördinator:

Brother, ARRL just *can't* do too much talking about coöperative effort! Many postwar hams don't seem to pay attention to ham radio except for the part that gives them selfish amusement. I tried to get several local 10-meter operators to sign up with our EC some months ago. They asked, "What have we got to do if we sign up?" Answer: "Only drill once a month." They *look* the blanks but I never received them back. They apparently felt that they should or would be called on in emergency whether they were lined up with AEC or not even if not part of community plans.

After being on the air 7½ hours in our recent flood difficulty, one of these men called me on the telephone. He wanted to know if our city should not be on the air. . . . When I related the work practically completed he said, "I didn't know we were needed. . . . I expected you would call me." Now, would I? After he had had his chance to join up and refused? Untrained hams or those who have not been fitted into the emergency plan are likely to be just so many stations causing QRM.

I'm not so sure but what it would be a good regulation to make every ham have battery-operated equipment and use it at least once per month in order to hold his ham ticket. Might it not also be advisable to add to the license examination some questions covering the history and traditions of amateur radio, emergency procedure including tie-in between nets, and stressing the fact that amateur radio is only allowed because it is in the public interest and necessity? Each amateur must pull his weight for the institution of amateur radio for it to be fully respected and a properly-effective communications medium whenever called upon.

May we add a word? Aligning oneself with the Emergency Corps *adds* to the fun and profit in pursuit of amateur radio rather than otherwise! It is *not* drudgery to become one of the respected group of people with communications know-how who are ready, through advance preparedness, to conduct effective communications when some emergency comes along. Join the AEC as a full or supporting member to get lined up to do a job when emergency-opportunity suddenly appears. Join the AEC so the amateur service and your *coöperative effort* work together for good in all communications emergencies.

On Message Handling. There is a peculiar satisfaction that comes to the amateur who handles a message and sees it on its way with accuracy and speed! Messages are the life blood of

communications circuits. They bring surprise and pleasure to the recipient. They bring satisfaction to the sender. They require the ultimate in coöperation and fraternalism to see the job through. Messages also are identified with responsibility instead of casual irresponsibility in amateur operating. Not every person interested in amateur radio, we're sorry to admit, has the happy faculty of taking down and passing on a real communication even though the ability to do this identifies an operator as one who knows the ropes! Message handling is a subject of paramount importance when emergency organization and public-service abilities are considered. The organization of section nets, regional connections and ARRL trunk lines is furthered as the systematic means for channeling our traffic east, west, north or south as required for expeditious handling. The training afforded in pushing messages through night after night under ham-band operating conditions creates amateurs with traffic know-how and operating ability second-to-none. The unselfish work of our traffic men represents public service and makes many a warm friend for the amateur when our messages constitute a third-party delivery as permitted and encouraged in our domestic amateur communications. To any and all amateurs, new to the game, postwar comers or others, we commend the idea of regularly handling some messages. Know the form, know the section frequencies and relay methods, and the people. Give yourself the pleasure of learning by getting in the swim as well as by review of data in the new operating booklet, or the *Handbook*, or our latest Net Directory. Report in and participate by keeping some schedules or by taking part in net operations and you will become part of a top operating and fraternal group, making contacts that you will value increasingly as the years roll along.

— F. E. H.

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This smiling countenance belongs to Alex Reid, VE2BE, ARRL Canadian General Manager. Alex has been the CGM for many years and is the VE's representative on the ARRL Board of Directors. Under the League's By-Laws, he is also the Communications Manager for Canada and has authority over CD affairs in that part of the ARRL field organization. Much of VE2BE's recent activity has been on 14-Mc. phone, where he has had excellent success in putting a good signal "down under" to the Aussies. The photo was taken during a visit to the shack of W. W. Butchart, VE6LQ, Edmonton, Alberta, who will be remembered for the very important part he played in the Pacific Northwest emergency described in April QST.

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MEET THE SCMs

Everett W. Mayer, KP4KD, started in radio in Illinois in 1912 with his cousin, who is now W5GC. Since then he has held the calls 9BG, 4KD, K4KD, W9CCB, and KP4KD.

For many years Ev has been active in ARRL field-organization work. Before his election as SCM of the West Indies Section, he held the posts of assistant SCM and acting SCM of that section and in 1929-1930 was SCM of the old Puerto Rico-Virgin Islands Section. He formerly was OBS and currently holds ORS, OPS and OO appointments. He is a past-director and past-president of the Puerto Rico Amateur Radio Club.

An ardent ARRL-contest participant, SCM Mayer has been winner for Puerto Rico in many operating competi-



tions. In addition he possesses WAC, DXCC, WAVE, WBE, BERTA, WPR-175 and WAS Certificates and is a member of the A-1 Operators, Rag Chewers, and Old Timers Clubs.

Present equipment in the KP4KD shack consists of a VFO-42-6L6 exciter driving p.p. 813s at 500 watts input on c.w.; VFO-42-6L6-35T, 125 watts input, modulated by p.p. 6L6s Class AB₂. Transmitters cover all 'phone and c.w. bands from 3.5 through 28 Mc. Ev's favorite bands are 7- and 14-Mc. c.w. Receivers are an HRO, 5TA1 and a BC-342M. Antennas include a 1/2-wave horizontal dipole for 14 Mc., a 1/2-wave vertical and a folded dipole for 27/28 Mc., and a 66-foot Zepp for 3.5 and 7 Mc. A 40-watt c.w. portable and a 350-watt gas-engine generator are on hand for emergency use.

The little spare time SCM Mayer finds available is spent in studying and reading technical literature and in swimming and horseshoe pitching.

The Civil Aeronautics Administration employs him as radio-maintenance technician in charge at San Juan. He is the father of KP4BJ, ex-K4HEB, and has a three-year-old grandson with the initials K.W. who, he hopes, will some day be a ham running a kw. (after a low-power breaking-in period, of course).

BRIEFS

The Southern Nevada Amateur Radio Club will hold its first "Nevada Weekend" party August 5th-6th in an effort to assist amateurs in all parts of the world to work this hard-to-get state. Club members will monitor all bands, 2-160 meters, starting at 12:01 A.M. August 5th and will try to contact as many stations as possible during the two-day period.

W8HB was listed in April QST as the winner of the clock prize awarded to the best non-OO participant in the January Frequency Measuring Test. Non-OO W2WOQ's rating of 1.5 parts per million was inadvertently listed as that of an OO; his measurements were better by 2 p/m than W8HB's and, should therefore be credited as the best in the non-OO class. Our apologies for the error.

In Memoriam: The call of Paul E. Hope, W1KOO, who was lost in action during World War II, has been assigned to the Burlington Amateur Radio Club of Vermont.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH	219	W8HGW	206	W3GAU	198
W6VFR	213	W3BES	205	W4BPD	197
G2PL	208	W2BXA	203	W2AQW	194
		W6SAI	198		

RADIOTELEPHONE

W1FH	178	W4CYU	153	W2AFQ	147
W6DI	157	W8HGW	151	VQ4ERR	146
XE1AC	155	W1JCX	150	W2BXA	145
		G2PL	148		

From May 15 to June 15, 1949, DXCC certificates and endorsements based on postwar contacts with 100 or more countries have been issued to the amateurs listed below.

NEW MEMBERS

F8BS	162	W4COC	105	VE1OK	101
W8DMD	112	G6IC	105	ZS8CT	101
DL4TL	109	W6LRU	104	W6VOE	100
W4RBQ	107	W6CTL	102		

RADIOTELEPHONE

W4ESP	110	VE3AIU	101	W8TJM	100
W2ONV	105	W2GX	100		

ENDORSEMENTS

G6ZO	192	W6DZZ	153	OZ7EU	130
W2QKS	191	W2TQC	151	W6PZ	130
W3CPV	184	W3OP	150	W9CYU	128
W0YXO	183	G3DO	149	W8BWC	127
W6TT	183	W8WZ	149	W5ADZ	127
W6QJU	182	W6RW	145	W4LZF	127
W1ME	181	W9AEH	143	G3BI	126
W8NBK	181	W2HMJ	142	W4ITR	123
PY1AJ	180	W3KJO	142	W8KPL	123
W6MX	180	KH6IJ	142	G6LX	121
W2GUM	177	W6TI	142	11LT	121
PA9UN	173	W5TUC	142	W8BRA	121
W2NSZ	171	VK5JS	141	W9YNB	121
PY1DH	170	W3OCU	141	ZS6EU	120
W6AM	170	W4OM	140	G5YV	120
W6NNV	166	W5GEL	140	W4HA	120
W1BIH	163	G2VD	140	HB9FE	120
W2PWP	161	W6IBD	140	OK1VW	120
W4PN	161	W2OMS	140	W3WU	120
W1JYH	161	W6SYG	140	11OJ	116
W6RBQ	160	W3KDP	139	W2ADP	114
W3EPV	160	W9LNM	133	W6DUB	113
ZL2GX	160	W6EAK	132	W3HRD	112
W2QHH	160	W2GUR	132	OK1WX	112
W0UOX	155	ZL3BJ	132	W8TJM	111
G4CP	153	G2FSR	131	G6GH	110
W6BPD	153	W1KFB	130	W8WWU	110
W7DL	153	W6CIS	130	W1DQH	110

RADIOTELEPHONE

XE1AC	155	W1NWO	141	W4HA	113
W8HGW	151	W8REU	140	W8NXF	112
W1JCX	150	G3DO	128	W2EOH	111
		ZL2GX	114		

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for May traffic:

Call	Orig.	Del.	Rel.	Extra Del. Credit	Total
W4PL	4	76	1700	64	1844
W6CE	23	20	1667	15	1725
W7CZY	32	55	1044	31	1162
W6DDE	420	125	233	116	894
W7CKT	1	5	764	3	773
W5GZU	8	21	674	17	720
W9QIL	58	151	351	147	707
W7LFA	26	6	608	0	640
W6REB	47	24	486	14	571
W7UJM *	4	29	466	26	527
W9EBX	10	16	464	16	506
W6IOX	2	5	496	1	504

The following made the BPL for deliveries:

W6FDR	252	VEIBK	127
W1LIN	152	WAANK	112
W9QXO	151	W8GZ	110
W8NOH	139		

A message total of 500 or more or 100 "deliveries plus extra delivery credits" will put you in line for a place in the BPL. The Brass Pounders League is open to all operators who qualify for this monthly listing.

* March traffic.

BPL HONOR ROLL

Points for BPL Honor Roll are accumulated at the rate of four points for every BPL appearance plus one point for every 100 points in your BPL traffic total. The Honor Roll listing below gives the point totals and shows only the high ten traffic-handlers for 1949 and postwar:

1949	Postwar		
W4PL	106	W4PL	281
W7CZY	91	W7CKT	248
W6CE	87	W6REB	243
W7CKT	68	W6HMM	165
W9EBX	61	W7CZY	138
W6REB	54	W6FDR	137
W6DDE	45	W2TYU	128
W5GZU	44	W7FST	127
W6HMM	44	W6TQD	105
W9QIL	41	W6CE	102

TRAFFIC TOPICS

A couple of months ago we had occasion in this column to honor W7CKT, W6REB and W6HMM for their 1948 traffic performances. Since then we have done some research among 1946, 1947 and 1949 BPLers and we find that W7FST was high man in 1946 and W4PL in 1947. The 1949 leaders so far are recognized in the "BPL Honor Roll."

The BPL Honor Roll deserves a word of explanation. Making BPL entitles you to four "BPL points," regardless of your traffic total. In addition, one point is added for each 100 points of your BPL traffic. For example, W4XYZ makes

This is the shack of Lionel Simon, W1NXX, with "Si" himself at the operating position. W1NXX is RM, ORS and OPS, and holds a 35-w.p.m. Code Proficiency Certificate. Traffic-wise, he is manager of the Maine Pine Tree Net and active on several other traffic nets. The rig is a homemade VFO driving an 807 to about 75 watts input on 80, 40 and 20. An SCR-522 does the emitting on 2 meters. Antennas include a half-wave Zepp for 80 and 40 and stacked beams for 20, 10, 6 and 2. Receiver is a BC-348-P and a VHF-152. Altogether, a good practical layout.

BPL with 250 "deliveries plus extra delivery credits." He gets four points for making BPL and two points for his traffic total: total, six points. If he had made BPL with a total of 550 he would get four plus five, or nine points.

On this basis, we have added up points for all BPLers since the war. The above listings show the ten highest stations in 1949 (through May), and for the entire post-war period. The BPL Honor Roll is intended to recognize consistent high performance in traffic handling.

Two other brief announcements: (1) A new system of counting traffic will go into effect with September traffic, which means that the new traffic categories will be reflected for the first time in the BPL appearing in December, 1949, QST. The basic count remains unchanged, but the categories have been rearranged to show traffic originated, received, relayed and delivered. Full details in September QST. (2) We are going to have a crack at organizing an ARRL National Traffic System this fall. Plans have been drawn up and correspondence on details is already being conducted. If you are interested, drop us a line for complete mimeographed details of the plan. More on this later, too.

Fairs, hobby shows and expositions are keeping our traffic lanes busy during the spring and summer months. We are indebted to W4ZC for a complete and detailed report of activities of the Broward Amateur Radio Club's booth at the Fort Lauderdale Fair held last March. The report indicates not that an unheard-of volume of traffic was handled, but rather that advance planning, hard work and efficient operation enabled them to handle 331 messages in nine hours and fifteen minutes of operating time, an average of one message every minute-and-a-half. Principal outlets were Swing Shift Net, Trunk Line C and Palmetto Net, with particular mention given to W1DTS, W1GMR, W2VNJ, W3CIL, W3UF, W4BIZ, W4CFL, W2RTZ/4 and W8ZWM. The call used was W4ZC/4 with W4ZC himself and W4LHZ doing the bulk of the operating.

Much of that traffic coming from the West Coast in late May and early June came from the Los Angeles Hobby Show. The Southern California Net, Southern Border Net and Pioneer Net handled the brunt of the traffic with W6DDE, W6CMN and W6CE doing the operating at W6AMT/6, the call used at the Hobby Show. East Coast traffic was sent via W1AW, W2BO, W4PL, W6CE, W6IOX, W6JQB and W7CZY. W7FRU and Trunk Line A, and W7UTM, handled much of the traffic for northern U. S. and the Rocky Mountain area.

W3DZ points out that "QNU QRX" might be copied as "QRU QNX" in heavy QRN, thus leaving the NCS of a net "holding the bag" with traffic on the net. It is suggested that NCSs refrain from using the former combination. In the first place, QRX no longer means "stand by" (see Feb., 1949, QST, p. 62); secondly, the use of "QNU AS" or just "QNU" alone will avoid the possibility of this misunderstanding and accomplish the same objective.

We are very happy to welcome the new Canal Zone Section into the active traffic-handling gang. SCM KZ5AW, RM KZ5MB and PAM KZ5CG are all in there pitching to make outlets for Canal Zone traffic. In the fall, the C. Z. hopes to work into Trunk Line C; until then, a C. Z. station will be on 28,990 kc. at 1215 and 1700 EST Monday through Friday calling "CQ, traffic for Canal Zone."



WITH THE A.E.C.

Assistant EC W6YXE brings an important point to our attention in his San Diego AEC bulletin: "LOOK AT THAT RIG OF YOURS!— Are the switches labeled? Are the controls identified? Can anyone operate your station besides yourself without a full course of instruction? If not, its value as an emergency station is 'way down'— several operators may have to operate it during period of emergency. Invest a buck and a little time; you can have it labeled in an evening. Might do well to rearrange a switch or two also; get them in a left-to-right sequence, have all 'on' positions either up, right, or forward. You'll probably find it to have been a good investment one of these days."

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The Portland, Oregon, AEC group has installed and tested what is believed to be a unique "first" in amateur emergency communication. Ten-meter mobile units can now travel in the Portland area and maintain contact with the 144-Mc.-equipped control headquarters through the use of an automatic relaying system. This automatic "robot" receives signals on 144 Mc. and retransmits them on 28 Mc. and, at the same time, receives signals on 28 Mc. and retransmits them on 144 Mc. Almost two months of concentrated work on the part of W7EYW resulted in a 100%-successful test in which 28-Mc. mobiles moved throughout the city in response to a control station on 144 Mc. located in a position from which it would have been impossible even to hear a near-by mobile due to heavy noise and low elevation. Operators at the experimental relay point stood by excitedly as the automatic equipment took over completely without needing to be touched for the test of over one hour's duration, during which the net was assembled, test messages were handled, and general emergency operations were conducted.

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W9BA of Belleville, Ill., has been cited by the CAP for "unselfish service" in connection with a tornado disaster at Wood River, Ill., on May 21st.

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The Santa Clara County Amateur Radio Association has set up its club station in the San Jose (Calif.) Red Cross Headquarters building, operating regularly on 3.5 and 28 Mc. Although the power is only 15 watts at present, the fellows plan to QRO shortly.

— —

The Chattanooga, Tenn., AEC group used the boat races of the Chattanooga Boat Club as an opportunity to test their emergency gear. W4s LWK, ETN, LNN, CZL, FTN, PL, NXR, QT and DIJ operated from points where the various craft would be visible, and relayed reports on the progress of the races to the race officials. The entire operation was on 3700 kc.

— —

EC W1BB is sporting what is believed to be the first all-band mobile station. Boasting both c.w. and 'phone on 160, 80, 40, 20, 11, 10, 6, and 2, Stu's Ford makes a neat communications center for his Winthrop (Mass.) AEC group. Does anybody have a similar layout with radioteletype thrown in to boot?

— —

The Philadelphia chapter of the Red Cross held a simulated emergency test on May 17th, and the AEC was in there pitching. The drill was started by sending a

message to the Red Cross Disaster Director in Alexandria, Va. The message was routed by W3GYB to W3DQE on 146 Mc., and W3DQE relayed it to K3NRW on 3550 kc. K3NRW delivered the message by landline. The reply was sent by Bell System circuits. In addition, twelve messages were sent from drill headquarters to Red Cross units dispersed throughout the Philadelphia area. The points covered by amateur radio, operating on the National Emergency Frequency of 3550 kc., included: Central City Red Cross Headquarters— W3BES; Drexel Hill Red Cross Center— W3DZ; and Jenkington Red Cross Center— W3EM. In addition, the Ardmore Red Cross Center was covered by W3HMP, mobile on 146 Mc. This demonstration of the ability of amateur radio received the full cooperation of the Philadelphia hams, including the Frankford Radio Club, Delco Radio Club, York Road Radio Club, and the Havertown Emergency Net.

MISSOURI TORNADO EMERGENCY

On Saturday evening, May 21st, at 6:58 p.m. CST, a tornado struck Cape Girardeau, Missouri. A path 350 yards wide was demolished in the northwest corner of the city. The first ham on the scene was W0PLJ, of Jackson, Mo., who drove 40 miles to lend communications assistance. The Cape Girardeau hams reported to Red Cross Headquarters, and radio communications circuits were operative by early Sunday morning. At 8:30 a.m. Sunday third-party inquiry traffic started pouring in by amateur radio. Emergency Coordinator Johnson, W0PMI, took things in hand, setting up W0QMF and W0PLJ as relay stations. W0MZQ, of Jackson, arrived on the scene to share the operating burden at W0PMI while EC Johnson devoted his entire time to administrative matters. At 4:50 p.m. W0ZS, the assistant EC, got busy on 3660-kc. c.w., when conditions washed out the 3905-kc. 'phone circuit. The balance of the traffic was handled on the 3600-kc. channel. By 11:00 p.m. the hook was clear of delayed traffic, but the operation was continued, to accommodate overload traffic from the wire circuits, until Tuesday when normal communications facilities were restored.

Traffic between the Kansas City Red Cross Headquarters and Cape Girardeau Red Cross was ably handled by SEC W0VRF. Twenty messages of a priority nature were handled for RC by W0VRF with the Cape Girardeau hams.

Although it has been impossible to compile a list of all those amateurs who contributed to the success of this operation, the following are among those known to have been of assistance: W0s BQL, BYL, BYW, CKR, CKS, CKY, CZI, DSO, DWK, EBE, ECE, EYU, GCT, IIDK, HUI, ICD, ICP, ICV, JKB, JJJ, LEJ, LPY, MUI, OMG, OZK, PCY, QMF, RMF, ROB, TGG, TZX, UHR, UID, VHK, ZLN, W9s BJE, ENI and OJM.

— Ben H. Wendt, W0ICD,
SCM, Missouri

BRIEFS

The MacMillan Expedition Schooner *Bowdoin* left Boothbay Harbor, Me., in late June for its annual cruise in northern waters. Using the call KLPO, it will seek contacts with amateurs on the following schedule: at 4:00 p.m. EST transmits on 12,480 kc., listens for replies on 14 Mc.;

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Tops on our AEC Honor Roll this month is Calvin D. Johnson, emergency coordinator of Cape Girardeau, Missouri. Johnson, shown at left at the operating position of his station, W0PMI, was one of the principal contributors to the amateur communications effort which brought relief to his community after it was struck by a tornado during May. (Details above.)

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QST for



6:00 P.M. transmits on 8320 kc., listens on 7 Mc. The expedition radio operator, Tom Hutchinson, will also operate W2OXE/MM on 80, 40 and 20 meters under special FCC authorization. Look for W2OXE/MM on 3505, 3900, 7010, 14,020 and 14,210 kc. All contacts with the *Bowdoin* will be confirmed by card after the expedition's return in September.

CODE-PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code-Proiciency Certificate. The next qualifying run from W1AW/WØTQD will be made on August 18th at 2130 EST. Identical tests will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7215, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 7068 kc. The next qualifying run from W6OWP only will be transmitted on August 1st at 2100 PST on 3590 and 7248 kc. These W6OWP-only runs will have different text from the runs sent by W1AW and WØTQD. For additional qualifying run dates, see the ARRL Activities Calendar elsewhere in these pages.

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 five speeds transmitted, 15 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, Monday through Friday, at 2130 EST. References to texts used on several of the transmissions are given below. These make it possible to check your copy. To get sending practice hook up your own key and buzzer and attempt to send in step with W1AW.

- Date* Subject of Practice Text from June QST
- Aug. 1st: Qualifying Run, 2100 PST, from W6OWP only
 - Aug. 3rd: *VFOs for 'Phone or C.W.*, p. 11
 - Aug. 5th: *What! No Antenna?*, p. 15
 - Aug. 9th: *Multiple-Circuit Tuners from Grid to Feeder*, p. 25
 - Aug. 11th: *A Filter Design for the Single-Sideband Transmitter*, p. 29
 - Aug. 15th: *The V.H.F. Sandwich*, p. 36
 - Aug. 17th: *The World Above 50 Mc.*, p. 38
 - Aug. 18th: Qualifying Run, 2130 EST, W1AW/WØTQD
 - Aug. 23rd: *TVI Tips*, p. 44
 - Aug. 26th: *An Experimental All-Band Nondirectional Transmitting Antenna*, p. 54
 - Aug. 29th: *A Two-Bit Tower with Million-Dollar Performance*, p. 56
 - Aug. 31st: *"Still More on the Super-Selective C.W. Receiver,"* p. 58

A.R.R.L. ACTIVITIES CALENDAR

- Aug. 1st: CP Qualifying Run — W6OWP
- Aug. 18th: CP Qualifying Run — W1AW, WØTQD
- Sept. 6th: CP Qualifying Run — W6OWP
- Sept. 16th: Frequency-Measuring Test
- Sept. 19th: CP Qualifying Run — W1AW, WØTQD
- Sept. 24th-25th: V.H.F. Contest
- Oct. 7th: CP Qualifying Run — W6OWP
- Oct. 14th: CP Qualifying Run — W1AW, WØTQD
- Oct. 15th-16th: Simulated-Emergency Test
- Oct. 22nd-23rd: CD QSO Party
- Nov. 2nd: CP Qualifying Run — W6OWP
- Nov. 16th: CP Qualifying Run — W1AW, WØTQD
- Nov. 19th-20th, 26th-27th: Sweepstakes Contest
- Dec. 4th: CP Qualifying Run — W6OWP
- Dec. 13th: CP Qualifying Run — W1AW, WØTQD

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 Sections. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested:

Communications Manager, ARRL, [Place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the
..... ARRL Section of the
Division, hereby nominate
as candidate for Section Communications Manager for this
Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
East Bay	Aug. 1, 1949	Horace R. Greer	Aug. 16, 1949
Nebraska	Sept. 1, 1949	William T. Gemmer	June 16, 1949
Kentucky	Sept. 1, 1949	W. C. Alcock	Oct. 15, 1949
New Mexico	Sept. 1, 1949	Lawrence R. Walsh	Oct. 15, 1949
Quebec *	Sept. 1, 1949	Gordon Lynn	Oct. 15, 1949
Alabama	Sept. 1, 1949	Arthur W. Woods	Oct. 15, 1949
New Hampshire	Sept. 1, 1949	Gilman K. Crowell	Resigned
So. Carolina	Sept. 1, 1949	Ted Ferguson	Resigned
Western			
New York	Oct. 3, 1949	Harding A. Clark	Nov. 21, 1949
Eastern			
Pennsylvania	Oct. 3, 1949	Jerry Mathis	Nov. 24, 1949

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian General Manager Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid such petitions must be filed with him on or before the closing dates named.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed in a number of Sections, as provided in our Constitution and By-Laws, electing the following officials, the term of office starting on the date given.

Wisconsin	Reno W. Goetsch, W9RQM	May 12, 1949
Iowa	William G. Davis, WØPP	June 16, 1949

In the Southern Texas Section of the West Gulf Division, Mr. Armon O. Young, W5BD1, and Mr. Gerald Morgan, W5ABQ, were nominated. Mr. Young received 175 votes and Mr. Morgan received 152 votes. Mr. Young's term of office began April 29, 1949.

1949 V.H.F. Sweepstakes Results

V.H.F. activity was probably more widespread around the United States and Canada during the Second Annual ARRL V.H.F. Sweepstakes than at any previous time in amateur history. Favored by good conditions on 6 and 2 meters, this SS provided its participants with a real workout of equipment and operating skill. The score and stations-worked records of the First V.H.F. SS were surpassed by tremendous margins, partly as a result of the break in propagation conditions and partly because of the enthusiasm of those operators who took part. Reports were received from 317 participants in 43 ARRL sections (the greatest number of sections that has ever reported in a v.h.f. contest). The number of entries from some sections was so large as to compare favorably with the November all-band Sweepstakes!

Winners — Highlights

Like its predecessor, this V.H.F. SS was governed by rules similar to those of the regular Sweepstakes and a scoring system similar except for the absence of a power multiplier. Competition for the awards offered was among participants in each League section. The top scorer in each section from which entries were received is being awarded a certificate in recognition of his standing.

In all v.h.f. contests the highest scores are usually made by operators located near centers of heavy activity. We wish to point out that the accomplishments of those participants

scores are therefore presented: W2PAU of Westmont, N. J., topped all other v.h.f. SS-ers with a total of 3296 points, scored from 207 contacts with 8 sections on 50 and 144 Mc. His station and antenna layout: 829 final on 144 Mc., 6-element beam 65 feet in the air; p.p. 826s final doubling to 50 Mc., folded dipole polarized at 45 degrees and mounted 40 feet above ground; receiving gear consisted of homebrewed converters working into a Howard 490. Next in line was W3BES — 2864 points, 179 contacts, 8 sections on 6 and 2 meters. W2SAI, of DX Contest fame, made the third highest score, 2646 points, from 189 contacts with 7 sections. Other participants who scored 1000 or more points: W2QNZ 1908, W8ZFJ/2 1827, W2DFV 1778, W2ZBO 1764, W2DAJ 1744, W3KKN 1743, W2NGA 1720, W2QED/2 1666, W1ATP 1632, W3FXG 1584, W1CTW 1560, W1JKC 1476, W2REB 1470, W1HIL 1404, W1QXE 1330, W2PWP 1320, W1OOP 1296, K1FAA 1208, W2MCG 1200, W3LVF 1188, W1OIQ 1161, W2TZU 1080, W2LVQ 1068, W8UKS 1056, W2COT 1032, W3KT 1000.

In addition to having the highest score, W2PAU made the highest contact total, 207. Second in number of QSOs was W2SAI with 189 and the 179 contacts of W3BES rated third. Each of the following made 100 or more contacts: W3FXG 132, W8ZFJ/2 131, W1CTW 130, W2DFV 127, W2ZBO 126, W3KKN 125, W2QED/2 119, W1HIL 117, W2PWP 110, W2DAJ 109, W1OOP 108, W2QNZ W2REB 106, W1ATP 102, W2MCG W3KT 100.

Best sections-worked total, 10, was chalked up by W2NGA, W1JKC, W1OIQ, W2MEU, W2PCQ and W2QNZ each worked 9 sections. The following each snagged 8: K1FAA, W1ATP, W2AMJ, W2DAJ, W2PAU, W2SYR, W3BES, W8UKS. Nineteen other contestants worked 7 sections, 35 had contacts with 6 sections and 26 managed QSOs with 5 sections.

The standings of clubs competing for the award offered to the group that submitted the highest aggregate score of members are listed in an accompanying tabulation. The Frankford Radio Club, top group in the first V.H.F. SS, is again the winner of a gavel award. Calls of individual winners of certificates within each club are also listed.

Another V.H.F. Sweepstakes is scheduled for 1950. The dates will be announced in September QST. See "The World Above 50 Mc." in this issue for a preliminary report of the June V.H.F. Contest. Another of these periodic v.h.f. tests will be held September 24th-25th. Take advantage of the September affair to get warmed up for the Third Annual V.H.F. Sweepstakes.

CLUB SCORES

Club	Score	Winner
Frankford Radio Club (Phila.)	15,760	W3BES
Amateur V.H.F. Institute of New York	15,236	W8ZFJ/2
South Jersey Radio Assn.	12,120	W2PAU
Eastern Massachusetts Amateur Radio Assn.	7744	W1ATP
York Road Radio Club (Penna.)	4243	W3KKN
Quannapowitt Radio Assn. (Mass.)	2878	W1HIL
El-Ray Amateur Radio Club (Mass.)	1762	W1AQE
The 56-Mc. Minute Men Club (Mass.)	1416	W1LSN
San Mateo County Amateur Radio Club	1260	W6TFZ
Mercer County Radio Assn. (Penna.)	1098	W8SFG
Philadelphia High-Frequency Radio Club	854	W3DOD
Midwest V.H.F. Club (Illinois)	726	W9OBW
West Side Radio Club (Ontario)	716	VE3AIB
Hampden County Radio Club	426	W1QWJ
Hamilton Amateur Radio Club (Ontario)	400	VE3AQQ

in this SS who were not located in close proximity to large numbers of v.h.f. stations are just as laudable in many instances as those of operators who can raise several stations on one call. Space limitations do not permit us to break down the score listings into numerous possible tabulations in order to give special mention to amateurs who might be leading scorers based on the particular degree of activity in their areas. We therefore urge all those interested in these results, especially those hams who took part in the SS, to look over the accompanying score listings, which are tabulated by ARRL divisions and sections. Examination and comparisons will reveal the outstanding stations in each subdivision and give some indication of v.h.f. activity in each. It will be noted, for example, that W9PK was the outstanding contestant in the Illinois Section, W9JMS in the Central Division, and that both are obviously located in areas that do not have the high concentration of v.h.f. stations noted in the Eastern states.

There is, of course, always much interest on the part of most participants in knowing which stations, regardless of location, made the top over-all scores. Some of the highest

SCORES

A.R.R.L. V.H.F. SWEEPSTAKES

(Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is winner for that Section. . . . Asterisks denote stations not entered in contest, reporting for checking purposes only. . . . The number of contacts and sections worked by each participant are given following the score. . . . Letters indicate band or bands used: A for 50, B for 144, and C for 235 Mc.)

(Continued on page 94)

SWITCH TO SAFETY!



SCM AEC ORS CP SEG OBS TLS OG
Station Activities
 OBS A1OPR EC DXCG CLUBS RM OPS RC

• 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, Jerry Mathis, W3BES — The York Road Radio Club furnished communication for the Boy Scout Camporee at Camp Wonderland in Roslyn, Pa., May 21st-22nd. It was very cold and wet the whole period. York Road also won the pre-Field Day Contest with the Northeast Radio Club by one contact. Northeast operated one-half hour longer than YRRC but the score was 51 to 52 in favor of York. KKN racked up more than a hundred contacts and 18 sections on 50 and 144 Mc. in the V.H.F. QSO Party. MQU contacted 20 sections. KKN worked VE1 on 144 Mc. Our condolences to one of our faithful OOs, CAU, on the death of his YF. PNL received his ticket two weeks after the exam and is on 7 Mc. in Souderton. OCU has worked 168 countries with 142 confirmed and has had his license only 15 months. NNV received his W.P.R. certificate. AQN is on emergency call for the Red Cross at any hour to furnish communication and lighting. SONK, a well-known ORS, now is PMG of Jermyn, Pa. We regret to record the passing of CUU, who was active on the Eastern Pennsylvania Net. The Delco Radio Club, Havertown Net, York Road Radio Club, and the Frankford Radio Club participated in the Red Cross mock evacuation of Philadelphia. ED has 3.5-Mc. c.w. mobile rig. UKI uses 3.85 Mc. for his mobile station. Traffic: W3NHI 178, CUL 107, QEW 51, WTS 47, ANK 25, ADE 20, PMG 17, DQE/3 6, AQN 5, BES/3 5, DZ/3 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Eppa W. Darné, W3BWT — The Baltimore Amateur Radio Communications Society will begin publication of a monthly club bulletin in May. IBX will be editor-in-chief and Bill Standish will be assistant editor. Tentative plans for the annual hamfest have set the date as August 14th at Triton Beach. The club has eight mobile units on 28 Mc. and held a drill in May with EQK as NCS and has appointed CAQ as nominating committee chairman for election of officers to be held on June 6th. The Washington Radio Club members, at their first May meeting, conducted an auction of spare gear brought in by the membership. At the second May meeting the following new officers were elected: HHN, pres.; 4IPS, vice-pres.; LFG, rec. secy.; CDQ, corr. secy.; LSX, treas. The proposed changes in the club constitution were voted on and adopted. An August picnic was discussed, and it also was voted by the membership to have summer meetings. The Severn River Amateur Radio Club has been organized at Annapolis, Md., with a membership of twelve and with OPG as president. The Chesapeake Amateur Radio Club at its May 17th meeting enjoyed a talk on "Iron Corps Components" by Dr. William A. Laning, LMC and PFF were in charge of the club's Field Day activity. The club was affiliated with ARRL and is contemplating larger quarters. Eleven members of the Washington Mobile Radio Club made a trip to West Virginia on May 23rd. Results were poor, the band dead on 28 Mc. GBB has a mobile rig. NNX is successfully using a harmonic suppressor for T.V.I. UF is operating on the high end of 7 Mc. for the summer. KRJ has been busy completing a chemical engineering course at Johns Hopkins. CDQ was visited by 6JZ and 6RVC, who used CDQ's rig to contact their home town. WU is on 7- and 14-Mc. c.w., and has worked 140 countries. LFF is building a non-polarized helix antenna for 144 Mc. FLG has a transmitter on 480 and 1200 Mc. and is constructing helical antenna for 450 Mc. MZA is completing his 60-foot steel tower. MTE is getting out on 28 Mc. with his new beam match. MIB is now on 28 Mc. EYX was visited by 6JZ, and now schedules him on 14 Mc. He also is increasing power on his mobile

rig. FWP works with Swing Shift Net and Eastern Shuttle Net on 7 Mc. and has increased power to 500 watts. EQK now has 76 countries and 30 zones postwar on 14-Mc. 'phone. IKX has a mobile rig. MQF is installing a mobile rig. BDY is sending code practice transmissions daily at 7:30 and 11:00 p.m. for the Baltimore area. IZ has resumed 28-Mc. operation. Traffic: W3ECP 146, MJQ 120, FWP 55, EQK 16, WU 10, CDQ 9, AKB 3, BWT 1.

SOUTHERN NEW JERSEY — SCM, G. W. (Bill) Tunnell, W2OXX — The Hamilton Township Radio Association is now the proud possessor of the call 2AVZ, which was given a good workout on Field Day. Speaking of Field Day, the South Jersey Radio Assn. boys took over the Collingswood Stadium again this year. How's this for calls? W2TAM is A2TAM for Army C.W. Net and K2XCG for the citizens' band. Traffic honors go to RFF this month. RPH, RM in charge of the SNJ ORS Net, says they will officially open again in September. ZI received old time wireless keys from IZE and 3QL at the recent Old Timers Nite — more for that famous collection. ORS's landlord made him take down his antennas. Look for BAY on 50-Mc. 'phone, 11:00 to 11:30 p.m. RXL is building a new V.F.O. for the fall traffic season. WJE and BLR are on 160 meters and UKS will be there soon. 3QV made a nice pre-Board Meeting speech at the May meeting of SJRA. SVO reported personally and is busy experimenting. OXX has taken down antennas preparatory to moving. Our section has finally located a volunteer for the job of FAM, and it's ZI. Traffic: W2RFF 22, ZI 12, ORS 8, RPH 8.

WESTERN NEW YORK — SCM, Harding A. Clark, W2PGT — SEC: SJV, RM: FCG, QWS, UBU, UHI, and ZYQ are new EC appointees. QHH has renewed ORS appointment and is found on 160 meters with low power after making WAC on all other bands with 18 watts. WZQ is trying his hand at low power on 14 Mc. with triplex beam. ATC is a new ham in Buffalo and is operating on 7 and 144 Mc. The Amsterdam Radio Club has become affiliated with ARRL. ZLL has a new harmonic. YRF has been off the air because of illness but now has new 500-watt final going. The Utica Amateur Radio Club is building new band-switching transmitter. New calls in Utica are ZZB, ZYT, ZYQ, and ACO. SSL is publishing an FB bulletin for the Utica gang. Traffic: W2QHH 89, PGT 33, WZQ 31, WOE 28, YRF 5, ZSK 4.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — MPO, as SEC, with the aid of NUG, is using the Upper Ohio Valley Emergency 'Phone Net and C.W. Nets to carry on his reorganization plans. OMA is new Pittsburgh EC. Congrats go to your Division Alternate Director, KWA, who has attempted to visit all radio clubs. KWA, MPO, NUG, and KSR visited the WESCO Club, Allegheny-Kiski Club, and Mercer County Radio Assn. It is with regret we record the passing of RAS. Division Director QV recently was entertained at a luncheon in Pittsburgh headed by KWA and NUG. Hats off to OD and his dad, who are loaning T.V. sets to bed-ridden folks in New Kensington. PY received a QSL for a QSO made 20 years ago. OMA treats his Collins 32V with respect. BGT is heard on 50 Mc. with 600 watts. KSP has beam trouble. AER reports 14-Mc. DX is poor at his place. From Steel Cities *Kilowatt Harmonics* we read that LOR is a new member of the Club. UAK does a lot of operating at the club transmitter. NRQ says his new 1500-volt transformer will give him more "Oomph." MPO finds that one way to get DX is to visit the place. NBP scooped everyone by going on 28 Mc. PAS is experimenting with a 28-Mc. halo antenna. The club station has worked 29 countries in one month's operation. In Altoona, OJX is heard on 144 Mc. LJQ is using 522 as driver on 50 Mc. LJQ's and LJS's edition of *Hamateur News* is a real treat. PGV reports lots of activity since he was licensed Mar. 23rd. Up Erie way NCJ reports that PLX has p.p. 807 on 23-Mc. 'phone. PIW bought a new HQ-129 receiver. PIU is converting old 5-meter rig to 28-Mc. 'phone. NGB has 814 final on 7- and 14-Mc. c.w. NLU uses p.p. 811s for his 14-Mc. c.w. DX. OMY has 140 watts on 144 Mc. 21YR/3, on 3.5-, 14-, and 28-Mc. 'phone and c.w., expects W3 call soon. In Mercer County, PCK made the local newspapers with his picture of rig in conjunction with an excellent write-up on the Mercer County Radio Assn. PMB, ex-8DZR, is getting back into the swing after years off the air. The South Hills Brass Pounders and Modulator Club of Pittsburgh will hold its annual hamfest Sunday, Aug. 14th, at The Spreading

Oakes Ground at South Park. Traffic: (May) W3NUG 64, NCJ 11, AER 8, KWL 5, LSS 2. (Apr.) W3NUG 85.

CENTRAL DIVISION

ILLINOIS — SCM, Lloyd E. Hopkins, W9EVJ — ILN, our section c.w. net, has closed down until fall after a most successful season. EJX made WAS and has forsaken 10 for 160 meters. GZD is a new ham in Geneva. HON picked up and went to the East Coast on business for two months. ODT has new three-element wide-spaced 28-Mc. beam. QIE and the local power company feuded over antenna location. He lost! HDK got his ticket in April and is building 1/2-kw. rig while operating on 420 Mc. KOK has worked 202 countries, with 182 confirmed. GYM is new call in Elgin. UPW is in ill health and is reading 1921 QST's and taking a piano course. APK is giving 7 Mc. 2 whirl. SXL is moving the shack and rebuilding the rig. FKI hates to see ILN closed for the summer. QIL rates as one of our best traffic men. LIN is having his share of local QRN. BRX reports he has been slowed down by illness the past month. Wheaton Community Radio Amateurs' new officers are BRX, pres.; CZZ, vice-pres.; MYK, secy.; and FRE, treas. YTV, NOW, GXM, and OUR all work for T.W.A. at Chicago Municipal Airport. BPU says MRH had a nice trip to Florida and worked lots of Ws and DX from mobile. PRV is QRL with mobile rig. MRT is battling with B.C.I. UQT has new Buick to cruise to hamfests this summer. OOH has new 32V-1. ZST and AJJ have 25 members in their code and theory class. JVC quit high frequencies for some brasspounding on lower frequency bands. IQC is building 160-meter rig. IZY is busy on 28-Mc. 'phone. HCP is a new ham in the La Salle area. PBY is building grid dip oscillator. LIG is looking around for surplus gear. ACJ faithfully reports the doings of the IVRA gang. OEV had the fatal knot tied. WTF is sporting new final. PNV gave a swell talk on antennas at Kishwaukee Radio Club in De Kalb. EEK has new 100-watt rig on 7 Mc. New officers of Midwest VHF Club are CZR, pres.; MIV, vice-pres.; and VX, secy. The Club is preparing to help at model airplane meet at Glenview Airport in mid-July. EBX is forming a net on 7150 kc. HKA reports a swell turnout for Iroquois County AEC Field Test on May 26th. DUA sent traffic report via IEN and through WZO, who was operating portable mobile, and he handed it to EVJ when he stepped into his car on the way to a hamfest. All applications for AEC which were sent to your SCM have been forwarded to the EC of your area. If you have not heard from yours please contact EVJ at once. Traffic: W9QIL 707, EBX 506, BUK 54, CMC 36, DUA 25, SXL 23, FKI 17, LIN 15, APK 6, EVJ 5, HON 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — Northern Wisconsin Radio Club elected the following new officers: MEO, pres.; ALG, vice-pres.; LQX, secy.; WDK, act. mgr.; L. Springmire, treas. Their Annual Banquet will be held in Chippewa Falls Sept. 27th. Retiring President ARJ reports this information. DXV has been appointed to Disaster Committee of local Red Cross. VHA is reorganizing Wausau AEC group. LZU is NCS for MARS Net. Net membership includes BEW, DQE, HTV, EUE, ABD, OGY, and PMS. SZJ is working at WAII. Milwaukee Red Cross is furnishing local AEC group with mobile units. The latest DX at KKK includes ZP5BA and ZP8FL. RSR completed 2300-volt Bridge rectifier supply. HBLV is new call at Wisconsin Rapids. NJT now has about 400 watts to a 75-TL on 50 Mc. with WAS as a goal on "6." WEN rebuilt the rig using BC-221 frequency meter as V.F.O. ESJ is new PAM. YMY, who is ex-J7AAA, is back at Ashland. IQW will resume schedules after Labor Day. FCF is building new band-switched exciter for all bands. EIZ acts as NCS on WIN Wednesdays. Milwaukee School of Engineering received the call HIX. AFT received Class A license. New calls at Wausau include HHS, HHE, and HFV. LVR made DXCC and moved into new QTH. JBF worked 18 stations on May 15th band opening of 50 Mc. If CGO missed a 50-Mc. band opening it's because he was fishing. LED added many contacts to his mobile log on a trip to Minnesota. HBE uses a Collins 32V-1 and HQ-129X. CPT put up a new three-element rotary for 28 Mc. EWM has added a.m. to his Millen final. Traffic: (May) W9ESJ 322, IQW 37, DND 29, FCF 27, EIZ 21, CWZ 18, YCV 17, CBE 14, PM 11, SYT 8, TOA 7, LVR 4. (Apr.) W9LVR 2.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Paul M. Bossoletti, W0GZD — OEL is proud of Junior's new call, UZC. Grand Fork's latest ham is TRS. Congrats to new EC member, FNZ at Carbury. CGM got 3.85-Mc. gear in his plane. KOY schemes to get on 160 meters. Dakota Hamboree Picnic was a very FB event. SKI put up new dipole for 7 Mc. Portland has AAU on 3.85-Mc. 'phone now. The Forx Club poured kw. to FVT on Field Day. Field Day saw a big

turnout in North Dakota. EXO, in Hope, is another of the old 160-meter gang back on the band. UNU got up a "V" beam. North Dakota nets will resume activity after summer QRT. IKD is kicking up the power to his mobile rig. ZXT put up new long-wave antenna. RGT talked VAZ out of his all-steel tower. ELX built 50-Mc. beam. GWU operated out of Camp Grafton during National Guard encampment. BJG is NCS for area MARS Net. NVK is building rig for 160 meters. JWY stopped in Grand Forks to visit the gang. Traffic: W0ZXT 4, GZD 2.

SOUTH DAKOTA — SCM, J. S. Fosberg, W0NGM — GCP announces that the c.w. net will be inactive except for emergencies until fall because of the lack of stations reporting in on schedule. It is hoped that there will be a lot of the gang on next fall. BJV now is the proud holder of award No. 2 WAS on 50 Mc. All of us are very proud of you, Stan. Most of the activity during the past month was in the form of club meetings going over the new proposals and composing letters to the Director. My copies of the letters sent show a lot of activity along these lines and a great deal of thought on the subject. Of the meetings attended Field Day had a place well up on the list. It shows that in spite of all the ham spirit prevails. DBE is a new ORS and also was on the c.w. net most of the time. RRN promoted another AP story for statewide distribution on Field Day. Traffic: W0DBE 8.

MINNESOTA — SCM, John B. Morgan, W0RA — Asst. SCM, Jean E. Walter, KYE. SEC: BOL, RM; RJF. The section mourns the loss of a fellow ham, VJH, of Browns Valley, who died at Mayo Clinic May 22nd following a brain operation. Ash was an active member of the c.w. net and will be missed by all of us. Our ten emergency districts are approaching quota enrollments, and tests are under way which should make the October Simulated Emergency a real event. Sign up now with BOL if you have not already done so. Of the 38 known mobile units, nearly half turn out for the Minneapolis and St. Paul Radio Clubs hidden transmitter hunts. Until resumption of regular net operation in October, the c.w. frequency, 3795 kc., will find someone on hand nightly for any traffic coming into the State. The 'phone nets will continue as usual 3960 kc., 1205 (noon) daily except Sundays; 1800 daily except Sundays, and 0900 Sundays. Stations with or without traffic are always welcome. 3HXW, formerly 6CGN, is back at his old home in Cromwell, where he, BGY, and ILX represent 1/2 per cent of the population. Anybody know of any higher "density"? HNS/mobile is making strides toward WAS with 26 states confirmed. BOL is getting out well with his new 62-foot rainspout vertical on 3.5 Mc. Traffic: W0NOD 50, BGY 39, UCY 31, EHO 23, FID 21, RXL 15, EPJ 12, RA 9, BOL 5, MXC 2.

DELTA DIVISION

LOUISIANA — SCM, W. J. Wilkinson, jr., W5VT — LCBW and KTE are PAM and SEC respectively. QH has knocked off a total of 106 countries on 14-Mc. 'phone. AD is getting plenty of QSLs but Frank has been inactive since the war. New officers of the Lake Charles Club are NHH, director, and NKM, an alternate. IYG, JHR, and NHH are planning to work 160 meters. JET has taken unto himself an XYL. Congrats, Jack. PVE is a new 3.5- and 7-Mc. ham in Monroe. PUF will be on 28-Mc. 'phone. MNI is on 50 and 144 Mc. PLY is on 50 Mc. NGN is new Class IV OO. 40HJ/5 is operating portable in Port Allen. 6CHA/5 should have a new W5 call soon. VT has been on 14 Mc. quite a lot but finds time for a ragchew on 7 Mc. Guess that's about all for this month. Hope to have more next time. Traffic: W6CHA/5 111, 5VT 6.

MISSISSIPPI — SCM, J. C. Wallis, W5DLA — KYC, Hattiesburg, and AMR, Indianola, are new ECs. KZM, Brookhaven, runs 500 watts to 250TH and works 3.85- and 28-Mc. 'phone. KP4HX, ex-W4BV, now is a W5 and his new QTH is 4700 W. Railroad, Gulfport. MJL is a 28-Mc. DX hound. NYV has plenty of T.V.I. troubles. When not working 3.85-Mc. 'phone ANP is usually brasspounding on 7 Mc. JHS and LPL have Monday through Friday schedule at 9:30 p.m. CST on 3790 kc. Traffic is welcomed. ZVO has been reappointed OPS and OBS and reports new QTH at 663 Kuhn St., Biloxi. He is building a new shack in the back yard and will include a darkroom and workshop, a 28-Mc. beam on the roof, and a 14-Mc. folded dipole supported on two poles. He is remodeling the rig by enclosing it in a new rack. He reports this will suppress the harmonics, one being one year old and the other five years. I invite all amateurs in Mississippi to send in an activity report. Traffic: W5JHS 43, LPL 28, ANP 14, DLA 7.

TENNESSEE — SCM, Ward Buhman, W4QT — NNJ is new Route Manager. He reports that the c.w. net is active on a summer schedule, with meetings Monday and Friday on 8737 kc. at 7:30 p.m. CST. PFD comes up with a report that FQI and gang conducted another successful 144-Mc. test from Frozenhead Mountain. The Chattanooga

EC members combined business with pleasure and served the boat club by reporting progress of a race by means of four emergency-powered 4-Mc. stations. This operation provided an EC drill and gave the boat enthusiasts something new in the way of fast reporting of progress and position of the entrants during the contest. The course was several miles long. Two stations were on cruisers and two were located on shore. Several Tennessee fellows attended the Jackson, Miss., Hamfest. CZL took portable gear on a fishing trip and maintained contact with home for several days. PHY is ex-KM6DG. NHH has been picking off some hot ones on 14-Mc. c.w. AEB is engineering a mobile rig, ATE has n.f.m. on 14 Mc. EAL moved to Knoxville. HHQ will be back on 3.85 Mc. as soon as he gets a pole erected at new QTH. Traffic: W4PL 1844, ETN 40, ONX 22, BAQ 12, NNJ 4.

GREAT LAKES DIVISION

KENTUCKY—SCM, W. C. Alock, W4CDA—Some of us still are sending monthly reports to the SCM too late to make this column. Let me know if you need station activity report forms. The KYN Net is on 7200 kc. for the summer. TXC is keeping the KYP Net going on 3955 kc. MWX got on 7 Mc. by using a matching stub on 3.5-Mc. antenna. JQY says the KYB Net will carry on during the summer. MQ sold his interest in electronics supply business and started a new firm. His new QTH is R. 1, Jeffersontown. FBJ's work is heavy with little time to ham! He reports that the KYX Net's summer schedule (145.8 Mc.) is every Wednesday, 8 p.m. (CST). KLP removed too many plates from tuning condenser and lost the band! NJD, Greensburg, has a nice signal on 50 and 144 Mc., FBJ says. OXO is on 144 Mc. KKG switches not to Calverts but to 144 Mc. for a pleasant summer, and Jeffersontown is 800 ft. above sea level, too! VP made out third in MARS Army Day QSO Party, beaten only by multi-operator stations. ALR says he went loco and acquired a Collins 32V-2. 6ZZW/4 is at Owensboro permanently now and his new call is 4PDW. PFQ is new at Owensboro. VP and KKG renewed Official Experimental Station appointments. EDV stays active on 'phone and meets the "89 gang" daily. Why, says CDA, do we have to have three different ham groups with three sets of ideas plus FCC's own ideas on ham regulations? Let's work together. We have the organization to do it! Traffic: W4BAZ 105, JQY 42, MWX 27, TXC 24, CDA 13, VP 9, KJO 8, JCN 7, EDV 4, KKG 2.

MICHIGAN—SCM, Robert B. Cooper, W8AQA—SEC: GJH. RMs: GSJ, NOH, and UKV. PAM: YNG. New appointment as ORS goes to CRH. NOH continues as high traffic man making BPL on delivery credits. The QMN Net has suspended operation for the summer months and UKV advises TLS also will join the inactive list while reconstruction work takes over in the major outlets. MGQ reports progress on a p.p. 3D23 final, and George did a fine job in arranging for the printing and also editing the minutes of the Joint Council of Clubs in Lansing. SCW is working on a mobile rig and we wonder how it will seem to hear Joe on the microphone. RJC is getting his rig ready to accommodate a pair of 812s in the final. YMO is renovating his shack and is ready to assume regular schedules. ZCI reports for the Michigan State College station. SH, Congratulations to the Central Michigan Amateur Radio Club on its action to affiliate with the ARRL. EGI reports the new officers are BNS, pres.; WDA, vice-pres.; GSP, secy. The Motor City Radio Club has elected PYW, pres.; FJL, vice-pres.; UAS, secy.; CHJ, treas. We hope the ensuing year will be a very successful one for all the new officers. GJX wants all the gang to know she will be back in the traffic nets as soon as the conditions permit, as the recent loss of her father, ZKR, has hampered schedules. NKK is in his new QTH and has finished the major rebuilding on his rig but has a few antenna problems to solve. FX remarks concerning the DARA Club call, ZZ, and the splendid precedence set by the former owner, Clyde Darr. His record of good and courteous operation has no immediate peer and is worthy of the club's emulation. BXU is in a new QTH and is meeting the very fine Muskegon gang in person. GQZ is giving n.f.m. a work-out on 14 Mc. using a pair of 100THs, between the times the home-grown trout flies do not command his attention. ZBT reports traffic from the Indiana and Illinois storm area. KOS is making DX his business through the Bureau of Standards CPRL series. SWF will spend the summer trying to locate and move that 50-ft. tower to his back yard. A new call in the Alpena area is EIR, who is the XYL of UGD. This makes three XYLs sporting calls in the BR. Net. Traffic: (May) W8NOH 446, TRN 127, SCW 90, UKV 72, AGA 70, GSJ 48, ZBT 40, WVL 29, CRH 27, RJC 27, UGD 18, YMO 16, YNG 16, ZWM 11, TRB 10, SH 5, EGI 4, ZZ 2. (Apr.) W8MGQ 20, INF 6, BXU 4.

OHIO—SCM, Dr. Harold E. Stricker, W8WZ—Asst. SCMs, Charles Lohner, 8RN, and C. D. Hall, 8PUN. SEC: UPB. RM: PMJ. PAM: PUN. We have at this issue 73 ac-

tive appointees and 25 ECs in our sect on. New appointments are GXI as OO 3; BZX as OPS, PBZ and 4COW/8 as ECs. We welcome the University of Toledo Amateur Radio Assn. as an ARRL affiliated club. BN was closed May 27th, but station activity reports for the month were very gratifying. The *Carascope* reports a very fine stag party held on May 20th with ZYU as the genial host. The CARA picnic will be held on Aug. 28th with the following hams in charge: CPA, as chairman, assisted by KVV, RVK, WEQ, VHO, ZYU, WZK, QMN, AOP, DWP, ZCK, WXM, PSE, ZCQ, YEW, DCX, and MEG. WRN worked his best 144-Mc. DX in 9JJD and 9BMI; then he lost his antenna. The 144-Mc. net still meets Mon., Wed., and Fri. at 8:30 p.m. on 148.4 Mc. Proper credit has not been given GZ for BPL. He has made BPL almost every month since I have been SCM, and the error was my mistake. From the minutes of the Cleveland Area Council: QV reported interest in an amateur radio promotional display in one of the downtown show windows. TQ/8 and BWA/8 were in there plenty during Field Day. Received bulletin from *Arc Oper*, but the envelope was lost and don't know where it came from. Please let's have another one. Stations mentioned in the bulletin were DGI, CJK, ZAU, ZOF, ZXX, ZNR, EBC, DTR, and DLK. From *The Mike and Key*: HB will speak on precision frequency measuring and demonstrate with his own equipment. Congratulations to the GCARA on its 144-Mc. contest which started on June 1st and will end Aug. 31st. Scoring will be 3 points for each GCARA member worked, 2 points for each nonmember, multiplied by the number of states worked. That makes three fine contests in the section; Cincinnati's 2 meter, Columbus' WAS, and Cleveland's 10-meter ground wave. From the *Voice-Call* of Youngstown and vicinity: Twenty or more Mahoning County hams took part in the first all-group Red Cross Disaster Drill on May 24th. The alert was given at 7 p.m. by PRY on a special frequency on 28 Mc. and mobiles IOO, PWH, PWI, and DKF were dispatched to the scene of the simulated disaster; a tornado. These mobiles were covered by WEN, CQL, RIO, and DGE. DXO, ZEV, FUY, AUA, and TNL stood by to pass out-of-town messages on 7 Mc. but were not needed. They were assisted by the Naval Reserve, Civil Air Patrol, and the Boy Scouts. This was a very good operation and they were heard by BXA, ADX, and KGD in Trumbull County, who drove over to observe the proceedings. If interested further, drop a line to W8FRY, 255 E. Avondale Ave., Youngstown, for full information. From the Q-5 of Springfield: OKB received his DXCC certificate. EHW is a new ham. OG/8 was in there during Field Day. OVL spoke to the club on T.V.I. and brought over equipment to explain his point. HOX has 400 watts on 144 Mc. UW visited 9NN in Chicago. DAE is active in the Eastern Shuttle Net. FQ and UDR sent in long OO reports. WXA now is 2AWY at Red Bank, N. J., and says BN sure helped him to keep in contact with his family. ROX says EBL is a new Cleveland ham. SRF has new mobile rig. LBH has built square-corner reflector and has worked 2 new states and W7 for 28 states on 50 Mc. BFB is working mobile only. AQ still is fighting T.V.I. PNJ says the Greater Cincy Hamfest will be held on Sept. 11th. WE was on a split team for Field Day. Luser put on the party. JFC says EIB is a new ham in Cincy. Quite a few messages were received at WZ/8 during Field Day but more by mail. Traffic: W8GZ 161, SJF 153, DAE 90, HOX 84, RN 74, QIE 17, ROX 15, DZO 11, YFJ 11, EFW 10, WXA/2 10, TH 8, WAB 8, PUN 6, ZAU 5, UW 4, LOT 2, TRX 2, BUM 1, BZX 1, CBI 1, OUR 1.

HUDSON DIVISION

EASTERN NEW YORK—SCM, F. J. Skinner, W2EQD—The summer season is casting its shadow with lower traffic totals. NYS Net, both regular and slow-speed sections, closed down May 31st. Opening date next fall will be about October 1st. The net frequency will be a good meeting place for regeshaws during the summer so try to operate there when on 3.5 Mc. Other sections still will have traffic during the summer and will try to find us on 3720 kc. Upper New York MARS Net, LRW as NCS, will operate during the summer. Any assigned stations should report at 1901 EST on 6997.5 kc. ZDE is Rockland County Emergency Coördinator. ITX is resigning as NYS Net Manager after a very fine job since our return to the air in 1946. Here's hoping he will find time to push some traffic next season. PHO has been doing good work running slow speed section of NYS. WIK is almost ready to try break-in. SUL has been telling CLL and WIK to get weights for their bugs. WIK wants to know whether SUL pushes the key with his nose. Why don't you fellows use 'phone and stop the argument? GTC sends code practice at 0930 Sundays on 3640 kc. BKW is building s.s.a.c. rig for 3.85- and 14.2-Mc. 'phone. RMA gets a reliable range of 150 miles on 144 Mc. with a kw. and sixteen-element beam. SFK is on 144 Mc. in Glens Falls using a sixteen-element beam. GYV is building an eight-element 144-Mc. beam. UKA just finished a new low-noise

144-Mc. converter. KLM lays down a very strong local field with a 3.85-Mc. quarter-wave vertical. JZK is sending lots of news for the Schenectady gang. How about the other clubs in the section? Any bulletins from local clubs would be appreciated by the SCM. A reminder to all CD appointees, your appointments are only for one year and require endorsement by the SCM. Look at yours now. Traffic: W2GLL 150, LRW 101, EQB 68, PHO 50, TYC 33, WIK 20.

NEW YORK CITY AND LONG ISLAND — SCM, Charles Ham, Jr., W2KDC — Some of the gang still were able to squeeze in a report in spite of mad Field Day activities. Your SCM was in the same boat. OHE blames the jr. operator for no report last month; he says he left it in his pocket. Thought only the OMs do that. Anyway, he notes that the resignation of BPV as EC is deeply felt. AUF may take over. The gang still operates Monday evenings and favors 144 Mc. with 3.5 Mc. next. From Nassau, FI reports weekly activity averaging 14 stations. The mobiles are leaving 144 Mc. with only BTA, FI, and JXP left. The latter is on his second new car this year. Some mobilizing! GG has reported consecutively for almost two years. WVN improved his signal from Manhasset. ZUC is welcomed to the Net. ANN still is starting a "local" net. The idea of going back to one EC for Nassau is being given serious thought by OHE, FI, and KDC. The Nassau Radio Club is coaching thirty new hams for their licenses. Looks like those who make it will go on 144 Mc. JYR is doing a good job as OBS. CSO is going to town with a new rig. He has 118 countries confirmed — 151 worked. PF is quite busy with MARS schedules, certificates for which were recently distributed. WHB is NCS for group I AEC on 3600 kc. Wednesdays at 2000. SJC is active with N.L.I. and went to Peekskill with the Empire City Radio Club for Field Day. TUK is glad school is out. Harry now is active using a Milen exciter driving 150-watt. RTZ/4 still is slant 4 and Hope misses the gang very much. Come on back — all is forgiven. TYU put up a folded dipole and the signal increased mucho. Pop says, "Look out Jeeves." OBU says N.L.I. closed June 30th and will reopen Sept. 6th. Traffic: W2TYU 310, UNJ 213, BO 150, OTD 35, OBU 27, PF 26, SJC 11, TUK 6.

NORTHERN NEW JERSEY — SCM, Thomas J. Lydon, W2ANW — SEC: IIN. RMs: CGG, LFR, and NKD. PAM: DRA. The N.N.J. C.W. Net meets daily except Sunday on 3630 kc. at 7 p.m. The 75-Meter Phone Net meets each Sunday at 9 a.m. on 3900 kc. All stations are always welcome to report into these nets. NCY and NKD have received their MARS calls. ZEP, recently appointed ORS, has received his 25-v.p.m. certificate. New officers of the Newark College of Engineering Radio Club are NWA, pres.; Alan Kirsch, vice-pres.; RVR, trustee of JPK, club station. NCY is on 144 Mc. for the summer. VYB is trying 14 Mc. for DX. HHH worked KH8BA, with whom he served in the Navy. AXJ received his ticket. COT was visited by DL4ADT. Please send in reports of your activity so that they can be printed in this, your column. Traffic: W2CGG 154, NCY 84, NKD 73, HHH 53, EWW 38, LFR 34, MTV 22, ZEP 22, VJN 14, NWA 12, CWK 4, CJX 2, COT 1, LOP 1.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, W0PP — On May 15th the Milwaukee Railroad gave a banquet of appreciation to those hams who helped in the blizzard emergencies. IFI has a new ham shack about ready to go at Twin Lakes. EFL, HUY, and HMM have been appointed assistants to Director Collett. DEA, DEA met with the Sioux City Club June 3rd and with the Des Moines Club the 5th. HMM narrowly missed Silent Keys when his helper inadvertently closed a switch on a 440-volt circuit on which he was working. He says it knocked him out of the BPL for the first time in over a year. QVA is new RM and Net Control of the TLON. TLON had a get-together June 4th. PP and DEA spent a fine evening with TLON. OLY reports 33 states and 2 Canadian provinces on 50 Mc. LKK is new ORS. LAC journeyed to U. of West Va. for the graduation of his son. FUV and EFH are sporting new Class A tickets. Hope QVA got help in erecting his new 28-Mc. beam. QHO now is a proud "pappy." New officers of CBROC are CJD, pres.; QFZ, vice-pres.; SEE, secy. and treas. ASO underwent a serious operation. CZK now is at Ft. Monmouth. QVA and HMM renewed ORS appointments. NYX is new ORS. LKK is new EC. PP met with the Sioux City Club May 16th. Fellows, looks like you're keeping me as your SCM for another two years. I consider this a vote of confidence, and with your cooperation I'll do my best to deserve your confidence and promote the organized effort to the best of my ability. But remember, I MUST have your cooperation. Thanks for your past cooperation. Traffic: W0HMM 360, SCA 222, QVA 62, SRR 16, NYX 12, SCW 12.

KANSAS — SCM, Earl N. Johnston, W0ICV — IYR

and MVG assisted the Red Cross in Salina after the tornado. ICV handled some Missouri tornado traffic. Red Cross station SOB, at Wichita, handled important traffic on Amarillo tornado. Its radio contact into Amarillo prevented unnecessary shipment of blood plasma by plane which was worth far more than the original cost of the station. WARC meets in the Red Cross Building each month and has an attendance of over fifty each time. About fifty, mostly out-of-town hams, attended the picnic in Wichita May 15th. JFE worked South Dakota, North Dakota, Nebraska, Iowa, and Kansas on 144 Mc. during May. New calls are TSR, Salina; SQG, Solomon; and VPD, Abilene. Central Kansas Radio Club now has twenty-three active members. AHW is QRT for the summer but GOV will be active from KCK. LIX is getting on 144 Mc. HEC is rebuilding. BPL is very active on 50 Mc. as is KRZ, of Topeka. KXL, of KCK, advises of 7-Mc. outlet — Traffic Exchange Net (TXN) on 7150 kc. at 7 p.m. Monday through Friday. Most stations are in Missouri and Illinois but have outlets for most places. NCV, our RM, urges the QKS gang to get on 7220 kc. during the summer. Andy holds schedule with 1DSR, of South Hadley, Mass., formerly CGW. BNU moved to new location in Chanute and is getting Collins 32-V modified while putting up new antennas. NXJ sent his 32-V to the factory for modification. WGM has new NC-183. HBL has installed 28-Mc. mobile in car. Traffic: W0NYI 18, ICV 8, NCV 7, BNU 5, AHW 4, LIX 2.

MISSOURI — SCM, Ben H. Wendt, W0ICD — Tornado warnings are spreading throughout the section. Thanks, OMs and YLs, for the fine manner in which you are handling the traffic. OMG has been appointed PAM and has renewed OPS appointment. ICP is OPS and OBS. QXO again made BPL with 151 deliveries. In the process of maneuvering his car in reverse gear, NNH ran over his 28-Mc. beam. The beam was grounded undergoing repairs. The Missouri Emergency Net was called on for emergency service in the recent tornado disaster at Cape Girardeau. Among the stations actively engaged in emergency traffic were PIJ, ICP, HUI, PMI, GCT, UID, VRF, OZC, MZQ, QMF, ZLN, ICD, PCY, and LPY. The Show Me Net has 12 active members with YSS as temporary Net Control. M.O.N. reports that net operations on 3755 kc. have been suspended for the summer months. AXL is the first Poplar Bluff amateur to receive an Old Timers Club certificate. A kw. rig with 813s and Class B modulators is being completed. With an eye open for a good antenna location, MTB found his new QTH in the suburbs of Poplar Bluff. OMG's Field Day gear included a BC-654A 6-volt battery operated. The South Missouri Amateur Radio Club staged a successful Boy Scout Demonstration. The Missouri Emergency Net Picnic was an overwhelming success. The banks of the Lake of the Ozarks was a fine setting for this gala event. Thanks to NIP. GCL is finding diversion during the summer months in aviation. The magnet wire antenna fever has spread to KIE. YIH is building a new rig around a pair of 813s. RMX is going to 200 watts with a pair of 809s. ZZE is experimenting and building on 440 Mc. PTG is building for 2½ meters. CGZ is overhauling gear. OUD is overhauling gear preparatory to the reopening of M.O.N. YSS is increasing power on c.w. to 800 watts and SOC is building for 7 Mc. Traffic: W0QXO 309, PMI 117, VRF 60, QMF 48, ICD 19, CGZ 15, OMG 14, GNX 9, OUD 2.

NEBRASKA — SCM, William T. Gemmer, W0RQK — The NPARC played host to 63 hams and their families from five states at its third annual hamfest June 5th. ANZ gave an FB 144-Mc. beam demonstration and plotted the field patterns of one, two, and three elements. HAF won the grand prize, a Simpson Van Volt Ohmmeter. OEH auctioned off the surplus gear and ERM kept the XYLs and YLs happy by running the Bingo Table. FAM is tying blue ribbons on his 852s and hanging them on the wall after more than twenty years of service and is replacing the FB7 with an SX-24. SAI installed 812Hs and is building a Monitone and vacuum tube keyer. BDQ rebuilt to 812Hs. KJP installed negative peak clipper and spatter choke in his 3.85-Mc rig. CBH is cutting sidebands with electro-voice speech clipper. RQK bandspread an R26/ARC5 3-6 Mc. receiver to cover 3.5 Mc. and converted an extra set of coils to 7 Mc. for same. FMW built 30-watt portable-mobile phone and c.w. rig in BC-457A case and also a fixed 65-watt rig for 160 meters. VEC says, "VQO, YOD, VEC, WBE, and GDB are new officers of the QRM Club at Milford. ZVX is proud of his new harmonic. JPI's beam came down in the heavy winds. URN, UUP, and UWS are new hams. WVE has new TBS-50. YOD and VEC keep daily 9 p.m. schedule on 144 Mc." GMZ copied TQD with pencil and made his 35-v.p.m. sticker. BBS has 97 out of 105 confirmed towards DXCC. QX has new HT-19. HSO joined MARS Net. FHA reports that EYE has joined Silent Keys. Traffic: W0KJP 28, SAI 23, KON 8, FMW 1, GMZ 1. (Apr.) W0GMZ 42, GFZ 25.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Walter L. Glover, W1VB — Many of the gang seem to be off the air for the summer, rebuilding or working on T.V.I. Let's hope we all get set to start off with a bang in the fall. The 'phone and c.w. nets, the AEC, etc., will be looking for new members, so get in touch with your section officials for information. RMU reports for the first time, and is rebuilding for a 100-watt. AH is awaiting delivery of a 32V-2. RWS is working for DXCC. RUP has closed down for the summer. AW reports a new coat of paint on the shack, and a little trouble with lightning. BVB is off because of T.V.I. IKE has 124 countries worked to date. BDI reports the First Air Force holding MARS drills. LKF visited the Meriden Club, giving a talk on emergency matters. CTTI has been appointed EC for Norwalk, and with DBM is promoting considerable enthusiasm in the Emergency Corps there. IIN is back to 50 watts. RXL has applied for ORS and OES appointments. RVE, an instructor at Yale, expects to spend several weeks this summer at camp near West Point. AOS, an old-time c.w. man, is trying 'phone on 28 Mc. and is getting a kick out of it. CARA is dickering with the Red Cross for accommodations, and possibly equipment. VB will be on the air very irregularly during the summer, but will be glad to hear from the gang by mail. Traffic: W11IN 247, AW 159, KV 126, RWS 103, LKF 78, BHI 59, BDI 21, HYF 19, ORP 19, BVB 16, RMU 13, RUP 6, LKE 4.

MAINE — SCM, Manley W. Haskell, W1VV — A number of amateurs from Maine, New Hampshire, and Massachusetts attended the hamfest in Portland, June 25th. GKJ states that 2PRW and 2ZRH are back at Pine Point for the summer; operating on 28, 50, and 144 Mc. NGV reports the complete rebuilding of transmitter and a new V.F.O. Our RM, NXX, has an emergency 20-watt rig for 3.5 and 7 Mc. using a 6C5 crystal oscillator and 807 final. Receivers are a BC-454 and 455. QUA, SEC for Maine, reports that EC drills are held every Thursday night on 3580 kc. He expects to cover the entire state net by next year. Message handling and net procedure are stressed toward the end of fast, accurate communications. Stations active are QUA, LZL, RPT, RCD, NGV, LRG, and RCE. ITC says that amateurs in the vicinity of Old Orchard can contact GKJ on 144 Mc. as Norm has a 522 right at the filling station. SDE is Maurice Wildes and SDA is Doc Hazerby, both new amateurs and both on 144 Mc. with 522s. Traffic: WINGV 42, VV 22, QIQ 8, QUA 5, GKJ 2.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — OLN is the new EC for Haverhill. The following have had their appointments endorsed for another year: QJB, LML, NBS, and OBN as ORS; BB and RBK as OOs; BB as EC; and LMB as P.M. and OPS. We are sorry to have to announce the death of KB of Haverhill. LTC is moving to Brazil. Good luck. OM. SEA is a new ham in Roxbury.

VERMONT — SCM, Al P. SEA is a new ham in Roxbury. RON visited ALP and attended the banquet of the South Shore Amateur Radio Club, which was held at the Fore River Club in Quincy with more than 100 present. The following are active on 144 Mc.: DDM, Doc Crosby, down on the Cape, SAR, NXX, MBS, QA, PZA, QW, and REZ. CED has a 522 on the air in Quincy on 144 Mc. NPU is on 14 Mc. MNF, IO, and PZA on 220 Mc. worked VE1QY crossband on 144 Mc. KIM worked 3AWN in Pennsylvania. OOK worked Pennysylvania, Connecticut, and New Jersey on 144 Mc. 1HUUV/7 W1UAS from Colorado Springs, where he has gone to escape the heat. The T-9 Radio Club held a meeting at CVM's QTH. The Brockton Radio Club had a talk on curing T.V.I. AKY gave a talk at the South Shore Club on curing T.V.I. ALP attended a meeting of the Quannapowitt Radio Assn. at the new Malden Telephone Bldg. under the guidance of GAG which was very interesting. The Eastern Mass. Club had a talk by Jerry Shere on transformers. QXX has a new five-element beam for 28 Mc. FWK has a new jr. operator. PU is on the Down East Deep Sea Dragnet Mon. to Fri. on 3961 kc. at 11:45 A.M.—12:15 P.M. LML has been off the air all winter because of T.V.I. RFW has Class A license and is a member of MARS. RS is ex-1ACD, 3RS, 2YA, in Needham, and is on SSN. VE1JD visited RBK. QJB kept 24 schedules on E.S.N. BB has ultra-sensitive field-strength meter. We hear that MAD, a member of the Southeastern Mass. Radio Club, passed away. WU visited South Shore Club meeting. TY has V.F.O. on 3.5 and 7 Mc. The Eastern Mass. net on 3745 kc. will operate on Mon., Wed., and Thurs. nights. The active members are EMG, JCK, LM, PYM, QMJ, and TY. OJM made 406,000 points in the April CD Party and three-element beam for 7 Mc. NWQ is back on the air after a trip around the world. ELL has W.A.C., all with 15 watts to 7C5 crystal oscillator. GF is giving flea power 14-Mc. 'phone a try. CTW had over 90 contacts in June V.H.F. Party. Newton Net drill had the following reporting in: HLX, OMU, KVF, LMU, RM, PWV, JOW, NPA, NPA/1 (port. mobile with 522), EK, OIW. LMU has low-power rig on 3.5-Mc. c.w. RM has new a.c. power unit. K1FAD is on

144 Mc. BIO is back on 144 Mc. after getting a T.V. receiver going. BJN also is on 144 Mc. Traffic: W1LM 132, TY 62, DMS 61, JCK 41, EMG 23, RS 22, WU 19, RBK 15, BB 14, QJB 6, OJM 4, LMU 1.

WESTERN MASSACHUSETTS — SCM, Prentiss M. Bailey, W1AZW — SEC: UD, RM: BVR. The younger members of our section are really giving us old fellows the run-around on traffic totals. If you don't believe it just take a look at the bottom of this column. BVR spoke to the Hampden County Radio Club and attended the ARRL Board Meeting. LLN is new ORS. RDB leads in traffic handled this month with RHU in second place. JE is writing for the local Sunday paper and has started a weekly column devoted to Amateur Radio Activities in Worcester County. ATK has moved to an "antenna farm" in Holden. MUN emphatically discounts the dope in QST relative to him being "altar bound." RDB schedules PVF and by-passed homework a little to roll up the high traffic total. RHU is NCS for SSN on Monday and Tuesday and hits many of the traffic nets. PZG is QRT radio for the summer. He will be at camp without power. IBZ has moved to Shirley, Mass. IBZ and EAX have both taken the fatal step. The Wachusett Radio Club gave them a stag party. Look for BDV/1 from York Beach, Me. SDT is a new ham in Worcester. GZ received a nice write-up in his company's paper. Nes schedules NT daily and holds up his end on SSN and ESN Nets. PYR took a stroll up the aisle and came back "hitched." The Pittsfield Radio Club took an active part in CAP air show. A six-way hook-up on 144 Mc. was broadcast by WBEC. BKG, IZN, DDW, SDO, LUD, AZW, JGY, and DPY took part in the demonstration. Plane-to-ground contacts were successful and interesting. SDO, SDS, and RZZ are new hams in Pittsfield. QFB directs Northampton High School band. QCC and QWJ are battling for honors in states worked on 50 Mc. RZG and RED are new members of Hampden County Radio Club. KK and UD head up T.V.I. complaint committee in the Springfield area. Traffic: W1RDB 114, RHU 80, JE 33, BVR 29, AZW 16, RZG 5.

NEW HAMPSHIRE — SCM, Gilman K. Crowell, W1AOQ — It is with regret that I announce my resignation as SCM. This is necessary inasmuch as I expect to leave the State for employment elsewhere. CRW is now Acting SCM and it is sincerely requested that you give him your cooperation. PVF/1 reports school QRM but has managed to get a 3.85-Mc. mobile rig on the air. POK is having trouble with his new 815 transmitter. ORN, QGF, and PVF operated from Mt. Washington on Field Day. JNE is now on 28 Mc. with a mobile rig. Don't forget September 17th as all of you are expected in Manchester for the twelfth annual hamfest, 73 and thanks for your cooperation over the past two years. Traffic: (May) W1CRW 128, PVF/1 112, BWR 65, QJX 19, EPU 13. (Apr.) W1PVP/1 2.

VERMONT — SCM, Bart W. Dean, W1NLO — The Burlington Amateur Radio Club has been conducting code and theory classes every Wednesday evening at the Club's headquarters with JEN as chief instructor. SEL, of Spaulding's Bay, Colchester, is the first graduate. Classes will continue through the summer by popular request. SCE is Organ Priest of Belmont. SEO, of Burlington, is ex-2TDG. EMQ and PXZ visited AVP. OAK is taking her turn as NCS on the VTN, 3740 kc., Mon., Wed., and Fri. at 9:30 p.m. RPR is running 450 watts to a Millen Final. OKH is using n.f.m. SEL is on 29-Mc. 'phone with Meck T-60. NWW is rebuilding rig for high power. OHD has BC-474 installed on his cruiser. FYL is farming it. MEP's OES appointment has been renewed. CUN has worked Schenectady, N. Y., on 144 Mc. NLO visited LVO, RCZ, and TJ. Your SCM has a 1939 Ford station wagon and will be dropping in on you fellows for a rag chew. Traffic: W1AVP 14, NLO 8.

NORTHWESTERN DIVISION

IDAHO — Alan K. Ross, W1IWU — Pocatello: KEA is sold on his BC-654A for portable and vacation use. BDL also is vacationing at this time. Downey: LQU and I had a QSO on Morse wire while I was passing through Ogden. Boise: The "Gypsy Net," mobile on 3980 kc., is functioning nicely. Nice response to my query regarding the 7-Mc. net. We have chosen 7155 kc. for our Idaho frequency. Let's have an Idaho 7-Mc. party Friday, Aug. 12th, between 8 and 11 p.m. MST on 7155 kc., and tentatively set each Friday thereafter as "Net" night starting at 8 p.m. MST. Further organization will depend upon the Friday participations. Slow speeders welcome — in fact, we should set aside a time for a slow speed net using the same frequency so let's hear from some of you on that. So it's the Idaho Net on 7155 kc. Traffic: W1IWU 37, MVA 35, EMT 21, GHT 20, BDL 9, MHR 9.

MONTANA — SCM, Fred B. Tintinger, W7EGN — The Hellgate Radio Club and the Glacier Radio Club are planning another inter-club hamfest this fall at Polson, about halfway between the two clubs. Ex-FW now is FX at Missoula. Ex-9PDC has received his old call, EUA, again

and will be on the air with a Harvey-Wells job at Martin City. A new call in KallsPELL is N3Z. KOG has purchased the ham gear of the late Dr. Lamb. Billings and KallsPELL held pre-Field Day try-outs to test equipment and locations for the regular Field Day. EWR has taken up stamp collecting and welcomes contributions taken from DX cards. CT coming times "Trunk Line 'A'" schedules through the summer months but is handicapped on deliveries because both the Montana c.w. and 'phone nets are on summer vacation until September. BHP moved to Washington and is back on 3.85-Mc. 'phone. EGN is Acting SEC until a new appointment can be made. New AEG appointments are IKV, BIS, and EWR. Traffic: W7CT 59, EGN 27, EWR 6.

OREGON — SCM, Joe E. Roden, W7MQ — Albany: SO is active on 144 Mc. and is doing a good job on QEN. Ashland: GLK is hot on 160 meters. MTR is the club's top DXer. Astoria: COZ reports EBD is an expert on installing storm resistant antennas. Baker: The club is reorganizing with AMI, pres.; Bill Johnson, vice-pres.; Oscar Nygard, secy-treas. Bend: JHF is on 3.85-Mc. mobile. JIP is moving to Vancouver. New YL operator is NJS. Eugene: HLB wants to work 28 Mc. and fish too. Result — mobile in car to fishing hole. AHZ auctioned off his excess gear. FBO is active in Naval Reserve Net. BEK is back at Brownsville after several years in Cleveland, Ohio. Grants Pass: MGO has weekly schedule with VS2BX, and is new OO-3, 4. NFZ is new call for Dick Booth. KEN is new mobile on 28 Mc. MIC is new OO-3, 4. Klamath Falls: GLF is president of the club; MJM is secretary. HVD now is 3.85-Mc. mobile. DRG is 28-Mc. mobile. LaGrande: KVG is converting CHN to 'phone. MPY is a new ham. Medford: LNG's low-power DX still is rolling. RE is on his tail with the same idea. Oswego: WEN is building half-kw. Pendleton: LXR has kw. on 3.85-Mc. 'phone. AZK and FSP are new-comers. KR is 3.85-Mc. mobile. Portland: GM has kw. on 3.85-Mc. 'phone. The Portland gang already is making plans for OARA Convention. Tillamook: IDP is getting out on 3.85-Mc. mobile. LEX is with the Power Company. Salem: AWE is working on s.s.s.c. Traffic: W7SEJ 332, HVD 141, KEG 111, II 96, LT 75, HDN 67, GXO 62, AXJ 60, FY 59, DIS 51, SO 49, DZT 44, FKS 43, HV 26, GNJ 24, KL 24, BDN 20, MGO 16, MQ 12, AZK 10, JRU 10.

WASHINGTON — SCM, Clifford Cavanaugh, W7ACF — SEC: GP, RM: CZY, PAM: CKT. JFB is trying to clean up clicks in her Meissner Shifter. CWN finally got up that new pole. HGC joined the AEC. KAA reports an FB YL arrived via the stork May 4th. KCU is feeding WSNET plenty of traffic. We never knew Colfax was such a message center until Martha put it on the map. ZU had his ORS endorsed for another year. DRA expects B.C.L. trouble when they see the nice new steel pole he is putting up. LFA is on low power — 200 watts — but promises a kw. soon. JZR says everything is trying up over there — even his signal. KTL had an FB time on his vacation using his mobile 'phone. JDC, an old-time brasspounder, has an automatic key on steering column and he actually works stations at 40 w.p.m. while doing 40 m.p.h. GEU has applied for ORS appointment. ETO is going down to W6 Land to look over some new 'phone gear. FET and GVC were active in getting the Walla Walla gang ready for Field Day. CKT is busy getting nets and schedules reorganized for summer traffic. DGN is moving back across the Sound again for the summer. FRU is having trouble getting the gang on TLA down to 7 Mc. for the summer. They won't even answer his letters! CZY keeps more schedules than anyone we know. We understand the fir trees around his place all have their tops burned off. APS says things around Seattle are getting too warm for radio. JJK, Puyallup outlet for WSNET, reports lots of interest there on 420 Mc. FWD is doing on FB job as OBS. WY says he is not going to check in on WSNET until he gets a little power as nobody can hear him now. MCW is back on WSN after a nice trip to Oklahoma. LVB says his schedule on 144 Mc. with FXD still is holding up. FLX, manager of WSNET, says he is hunting for a good OPS who can take over the job of NCS a couple of times a month. BG has been visiting hams all over this side of the state. A number of members of the Puyallup Radio Club have sent in applications for OES appointment. Traffic: (May) W7CZY 1162, CKT 773, LFA 640, KCU 282, JJK 237, FRU 150, ZU 150, FIX 143, KAA 73, JZR 60, AMZ 56, BX 49, FWD 47, ETO 32, ACF 30, WY 26, MCW 24, HGC 21, LVB 15, DRA 12, DGN 11, GEU 11, BBK 8, JFB 3, CWN 2. (April) W7BX 31.

PACIFIC DIVISION

HAWAII — SCM, Dr. Robert Katsuki, KH6HJ — AEC line-up: AS is SEC for T.H., CM is EC for Oahu, and EU has been appointed EC for Kauai. We have no ECs for Maui or Hawaii. Interested members notify AS. BI would like to withdraw as OBS, but will continue to make OB transmissions every Friday at 5 p.m. on 3990 kc. until a substitute can be found. BW has agreed to remain as EM and is organizing inter-island net with PX on Maui and PL and IJ on Kauai. No traffic reports have been received. BW is going on 28-Mc. 'phone mobile to please his XYL. PY is the only qualified OO in the entire section.

SANTA CLARA VALLEY — SCM, Roy E. Pinkham, W6BPT — Asst. SCM, Geoffrey Almy, 6TBK. RM: CIS. EC: TFZ. The SCCARA now has station UW in operation

located in the Red Cross Headquarters at San Jose. The station will be manned each night of the week by members of SCCARA. The Valley Net has been organized as a Section Net. The frequencies are 29.28 Mc. for the 'phone net and 3.928 Mc. for the c.w. net. YQN is heading the 'phone net and ZRJ is Net Control of the c.w. net. Anyone wishing to become active in either net should listen to the above frequencies on Monday, Wednesday, and Friday nights. The 'phone net meets at 8 p.m. and the c.w. net meets at 8:30 p.m. LZL checks into the Valley and the Palo Alto Net. Roy will handle traffic for both nets. SYW is going to work 160 meters as soon as he can get the rig working on that band. ISQ is moving his QTH to Whittier and should be heard from the new location very soon. GFJ is checking into the SCN for a Santa Clara outlet. NX and BPT were interviewed over KEEN, giving information on the amateurs' connection with the Red Cross emergency communication committee. WJM is back in traffic work checking in several nets. Art will be Salinas outlet for the Valley Net. ZRJ is doing a fine job getting the locals on c.w. trying to build up this section's traffic total. SCCARA was out in force Field Day. Traffic: W6ZRJ 112, LZL 27, SYW 2.

EAST BAY — SCM, Horace R. Greer, W6TI — Asst. SCM, Charles P. Henry, 6EJA. SEC: OBJ, ECs, AKB, EHS, NNS, IT, IDY, QDE, WGM, Asst. EC u.h.f.: OJU. RM: FDR, ZM. The SARO had eight complete stations on Field Day. The following were the team captains and crew: 160 meters — NZJ, QVI, RCE, and Allen. 80 meters — DDO, KKR, AVX, and ZA. 75 meters — BEZ, KQQ, NZG, NZY, and LFW. 40 meters — EHS, EY, FZC, JWG, and CVL. 20-meter 'phone — KPO, US, QVQ, CMZ, and WTI. 20-meter c.w. — CBX, DSV, BS, WQU, AAU, and SQ. 10 meters — LCG, FAQ, MPJ, CBF, QUC, and EE. 2 meters — IPK, VBJ, and RBQ. The Oakland Radio Club had MFZ as captain and had a full crew on all bands. The North Bay Amateur Radio Assn. held special captain meetings and the results were F.B. CJI, EEL, RLB, KEK, DNX, NJO, JZ, and CTL tested out good for the East Bay Radio Club in advance. The Richmond, Mt. Diablo, San Leandro, and Hayward Clubs also were in there pitching. BIL is running 450 watts to p.p. 812As using two full-wave long wires with 110 countries and 98 confirmed. IBJ moved to Ukiah. BIJ moved to Sacramento. IT is very emergency-minded. DMA is on 7-Mc. c.w. and 28-Mc. 'phone. TCU is QRL schedules. Bad WX turned the Mt. Diablo Radio Club picnic into a visit to DYP and I understand the pantry was bare at the end of the night. OBJ lost a battery, tire, and other gear just by giving them too much use on a recent week-end outing. HSY is getting into television. JUW has new p.p. 813 final. GUG has new put-put for emergency power for his ART-13. HD is active on 85 Mc. During May, OT had 23 official ARRL broadcasts. FDR has just completed remodeling the shack. EJA reports the Richmond gang used IFZ on Field Day. YDI took a 9-watt rig along on his summer vacation. QXN reports Pioneer Net traffic rather light with the approach of summer. BF had a good time at the Fresno Hamfest. WII has new VFO. SAN has new two-element beam on 14 Mc. and is returning to the high seas after a three-months stay at home. TT is going fishing late in August. DUB's ranch is starting to look like an antenna farm. BUY is on the air at last. IKJ left on a two-months European trip on June 16th. YI has new 14- and 28-Mc. beams up which were built by RM. PB spends one week away each month on the road, and worries if it will be a good DX week he will miss. TI really is enjoying a new 14-Mc. beam. ELW is outstanding secretary for ORC. EY enjoyed ARRL Board Meeting trip. SSN now is FB. UPV moved to Palo Alto. Traffic: W6FDR 491, OT 80, QXN 44, YDI 37, BF 23, TI 5, EJA 2.

SACRAMENTO VALLEY — SCM, Ronald G. Martin, W6ZF — Asst. SCMs: Northern Area, Ray Jensen, 6REB; Central Area, Willie Van deKamp, 6CKV. SEC: KME, ECs: Met. Sacramento Area, BVK; Walnut Grove, AYZ; Dunsmuir, JDN. RM: REB. OES: PIV. Northern Area: REB again makes BPL! Mt. Shasta Amateur Radio Club had a discussion on Collins transmitter at its May 18th meeting. OMR knocks over DX on 14 Mc. OOP is getting on 7 Mc. ARR has new antenna system nestled in high pines. DON'T FORGET THE BIG HAMFEST AT MT. SHASTA IN SEPTEMBER! Central Area: LYQ, Corning EC, has new SX-53 in his car for emergency work. KUI reports that 144 Mc. opened up on May 15th to the San Francisco Bay Area. OJB is on 144 Mc. PJV has 24-element beam on 144 Mc. AF has gone back to 14 Mc. SLY, WCC, and CKV are on 160 meters. Southern Area: AYZ has worked 146 countries, NRZ has 117, LGD hit 125, and GDJ leads with 167! GDO has new Collins 75A. NTY is Acting NCS for Sac. Valley 28-Mc. Emerg. Net. UM is on 28 Mc. AK is building new kw. amplifier to go on his 32V-1. LBJ is mobiling on 23 and 3.85-Mc. 'phone with a KI7 to his credit. WIG made Class A. MIW is building preselector 616 for 144-Mc. receiver. WTL received WBE award from RSGB with 28-Mc. 'phone endorsement. GDE is on 7 Mc. QYQ returned from Fresno Hamfest with a new National MB-150. PIV is converting 522 to f.m. operation. QDT is building new control desk for the shack. While on active duty with Air Force at McClellan Field for fifteen days ZF met the PN schedule nightly. Traffic: (May) W6REB 571, ZF 47, PIV 25, WTL 15. (Apr.) W6PIV 53, JDN 19

(Continued on page 68)

This

Page ON THE OCCASION of our Fifteenth Anniversary of monopolizing this page, we appended a footnote to Cal Hadlock's story, asking if our readers considered the stuff we had presented here worth reading. The response was overwhelming!

At the risk of appearing unduly sentimental, we are rather fond of this thing called radio, for it has not only provided us with both an absorbing hobby and a means of livelihood, but it has enabled us to make a host of friends, many of whom we have never seen. It was a real pleasure to hear from so many of you and we particularly enjoyed the letters from fellows we knew "way back when" but had lost track of in intervening years.

A few of the letters received were so flattering that we might have had to buy a larger hat had not others contained constructive criticism which brought the head-size back to normal. We promise to heed the suggestions so generously given, and hope that the subjects to be discussed here in the future will reflect our effort. Next month, we will get back into our stride with renewed vigor under the stimulus of the "shot in the arm" you fellows gave us. There are new things to come — better things; the "good old days" of amateur radio have gone, but the best, and greatest days lie before us.

— *W. A. Ready*



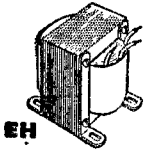
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NEWS

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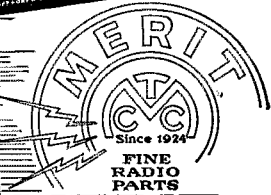
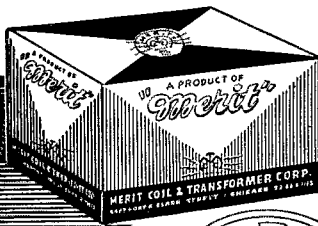


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Volts Insulation		DIMENSIONS		
10,000		H 2 3/4	W 3 3/4	D 2 1/4

Type No.	Net Price	Sec. Volts	Sec. Amp.	Mfg. Type
P-4049	\$6.45	2.5 Ct.	10	H
Volts Insulation		DIMENSIONS		
10,000		H 3 3/4	W 4 1/2	D 3

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PHILIPPINES — SCM, M/Sgt. Stanley J. Gier, KA1AI — In November 1948 the Philippine Government adopted amateur radio regulations which were essentially a copy of FCC Amateur Service Regulations. This provided that no non-citizen of the Philippines could hold amateur licenses. However, all existing licenses were to remain valid until the date of expiration. Philippine amateur licenses were issued for a six-months period and all non-citizen licenses expired April 30, 1949. At present the *only* station licensed in the Philippines to an American citizen is KA1AI, which is licensed by the Armed Services to the Clark Field Amateur Radio Club. It is hoped that the situation will improve and that Far East Command in Tokyo will license additional American amateur stations in the Philippines.

SAN JOAQUIN VALLEY — SCM, Ted R. Souza, W6FKL — Asst. SCM, James F. Wakefield, 6PSQ. SEC: JPS. ECs: VTZ, PHL, WBZ, VTZ has negotiated a room in a city building for an emergency operational headquarters. The SJVRC now owns a TBS-50. KUT is chairman of the Red Cross Emergency Communications Committee and has set up plans for operation in this area. OHT is building a new home. INP does the building while the XYL, PJF, does the operating. BCL is selling T.V. sets but has time for 3.5-, 7-, and 28-Mc. c.w. EXH is sticking close to 144 Mc. GQZ also is on 144 Mc. but keeps an ear on 50 Mc. just in case. EKP can be found on 144 Mc. CUE is active on 3.5, 3.85, 7, and 144 Mc. QER is another 144-Mc. man. DVS is a newcomer to 144 Mc. PJF reports the San Joaquin Valley Emergency Net is going great guns with weekly drills. A new call in Stockton is FZW. CPT is mobile now. VPV has moved to Merced and is on mobile. HIP is converting garage into shack. YGZ is working on emergency rig. DXL has moved to Linden. UWY is active on 3.85 Mc. YGZ, BHI, RWI, and AFL helped KCVN and KWG cover the regatta with mobile rigs. JPS has an FB new shack and a rig on every band. KUT and SRU still are gunning for those elusive countries. ZYR is thinking about 'phone. PCS now works for the City of Fresno as a radio technician. PHL is building a neat half-gallon rig.

ROANOKE DIVISION

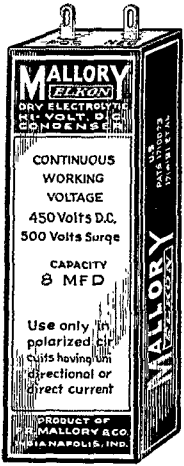
NORTH CAROLINA — SCM, W. J. Wortman, W4CYB — MOC has received his old call, 6NRF, and is moving back to California. MZP/4 is operating with 60 watts from N. C. State Dormitory and is getting a bit of DX. GDF is operating ATC on 3.85-Mc. 'phone for Engineer's Exposition. ILM raised his 28-Mc. beam. MSI is slightly active on 7 Mc. but is working on flea power for 28-Mc. 'phone. LOZ has new beam on 80-ft. windmill tower. GDF, OSF, and 30YH graduated from State College. JQO is handling some traffic and is active at ATC. NAP is experimenting with beams, working some DX, and needs Utah for WAS. HEH, GG, and MP are leaders in Greensboro Field Day work. All the boys in and around Greensboro are building low-power rigs, and rebuilding for T.V. A new club has been organized in Hickory known as the Catawba Valley Amateur Radio Club. Members are composed of amateurs from Catawba, Lincoln, Burke, Caldwell, and Alexander Counties. EBR is the guiding light. Officers are ENH, pres.; OXG, vice-pres.; ENQ, secy.; EBR, treas. The Club meets the 1st and 3rd Fridays of each month at an announced central location at 7:45 p.m. EST. PHZ, PIA, and PIE are new hams. DSL, EQJ, IAG, and FUS are known as the "Terrible Quartet." LTW is busy with 7-Mc. c.w. LSI is kicking up the breeze on 28 Mc. OXG has new rig with 24s on 28 Mc. DSO and MDE are busy in Morganton on the "right side of the tracks." JPF in North Wilkesboro is sporting a new ticket. HGC is new NCS of the Tar Heel 'Phone Net and KKG is secretary. The Net meets Monday through Friday at 7:30 p.m. on 3865 kc. Traffic: W4JQO 9.

SOUTH CAROLINA — SCM, Ted Ferguson, W4BQE/ANG — A new ham in Columbia is PILL. Welcome, James. BEN and KYW are active on 50 Mc.; BEN has 9 states and KYW 15 states to their credit. ANK turned in another good traffic score and again makes BPL. The SEC reports that all members of the 3.85-Mc. 'phone net have become Assistant Emergency Coordinators. Nice work, ANK, and thanks, fellows. The Charleston gang had three transmitters on Field Day. The boys at Easley took a shot at Field Day, so reports HAZ. BSS reports good success on 50 Mc. and the following stations taking part: CPZ, KMK, BEN, KYW, and BSS. We are glad to welcome NLP to the section from W1 Land. He operates 7-Mc. c.w. from Hemingway. NLA now is a W2. Look for him on 28 Mc., boys. Thanks to the boys down in Orangeburg for a nice picnic and gabfest. We always enjoy the gatherings there. Traffic: W4ANK 284.

VIRGINIA — SCM, Victor C. Clark, W4KFC — New officers of Falls Church Club are IOV, pres.; DWF, vice-pres.; OVK, rec. secy.; LVA, corr. secy.; NBJ, treas. The Virginia 'Phone Net gang held a highly successful picnic in Richmond June 5th. CLD, IWA, KAO, KIL, and NAD managed the affair. The Falls Church Club and PVRC went "all out" for Field Day, operating 4PAY/4 at Pender and 4KFC/3 in the Penna. mountains, respectively. NQV celebrated his first anniversary as a ham by acquiring Class A and joining AEC. IA reported to PVRC on the ARRL Board Meeting. Active on 7 Mc. are MIZ, QWM, SN, and ZB. ZB's first QSO was in 1903! LAP is off to

(Continued on page 70)

MALLORY HAM BULLETIN



1931

**8MFD—450V
5½ Cu. In.**

MALLORY "BONE DRY" ELECTROLYTIC CAPACITORS —1931 TO 1949

In many respects the technical developments of the year 1931 marked the transition of Amateur Radio from swaddling clothes to long pants. 1931 marked the beginning of the "golden era" of Ham Radio when the number of licensed Amateurs practically doubled overnight.

That was the year when the screen-grid tube and the superheterodyne circuit first enjoyed serious consideration by Mr. Average Amateur. More and more pure DC signals from crystal-controlled, multi-stage transmitters were being heard on the Hambands. Class "B" modulation was introduced for the first time making more efficient telephone transmission. And QST was stressing the importance of frequency stability, clean signals and good operating practice to reduce QRM which even then was beginning to be a serious problem.

We, at Mallory, like to believe that we contributed in some small measure to the Amateur's technical development during this transition. For it was in 1931 that the Mallory-Elkon high voltage "bone dry" electrolytic capacitors first made their appearance on the shelves of the radio supply houses.

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Florida again. J1W worked 100 stations in the VE Contest, in all VE sections. IGO is active on 3.5, 14, and 28 Mc. A new jr. operator at GKY has Daddy warming other than the bottles in his PA. LRL is new EC for Arlington County. VE joined the exclusive CWA (Crete Workers of America) by nailing SV6AA. IOV busies himself with experimenting and ground wave DX on 28 Mc. OVK works out on 28-Mc. phone with 25 watts and indoor beer-can ground-plane. JHI is erecting antennas at new QTH and is alert for openings on two. Is OLL the first W4 using s.s.s.c.? He is on 3995 kc. at 6 p.m. daily. DWF opens the garage door by radio! LVA, with 17 states on 50 Mc. and nine states on 144 Mc., is building 100-watt 50-Mc. rig and putting the beam higher. EMJ and JFE are about to resume activity from new QTHs. QWMM visited W9 Land during vacation. FF is contemplating portable operation from the beach this summer. SU opened up on 1.75-Mc. c.w. KVM took in VFN picnic and states that KYD, KDV, and IOQ, among others, were present. JUY applied for WAC. Traffic: (May) W4KFC 11, J1W 6, IOV 2, MID 1, MIZ 1, (Apr.) W4MIZ 1.

WEST VIRGINIA — SCMI, Donald B. Morris, W8JM — The Sharon Radio Club of Pennsylvania visited MARA during the V.H.F. Contest and worked several stations from a high mountain near Elkins. BWK is on 3.5 Mc. again from Wheeling after a long absence. VCA and AUJ have new Meissner Signal Shifters. BHA worked into Pittsburgh on 144 Mc. Harry Mills, 4UR, now with FCC in Atlanta, visited West Virginia hams while on vacation. BOK, with five 813s, hopes to have the 80-meter rig ready by fall. WSL, with new three-element wide-spaced beams on 23 Mc., gets better results than he did with the bedroom antenna. DRU, at Hinton, has worked 18 states on 7 Mc. with low power. BWD and JKN schedule TDJ and EP on 50 and 144 Mc. PZT and GBF are remodeling the rigs for fall operation on c.w. nets. NTV visited amateurs in California while on vacation. MIS reports 211s are easy to obtain now, thus the rig can be maintained on the air. YBQ is QRT because of moving. YDQ claims to have the longest feedline to the aerial of any ham — only 2000 feet. FMU reports AEC progress good over the entire State. Ex-SSGO now is operating portable on Guam on 14 and 28 Mc. Traffic: W8OXO 281, DFC 43, AUJ 38, GBF 29, BWK 18.

ROCKY MOUNTAIN DIVISION

COLORADO — SCML, M. W. Mitchell, W0IQZ — SEC: KHQ, RM: IC. 5HRZ said "hello" and "goodbye" to KHQ on his way to the mountains. The Greeley Radio Club now is organized and working FB, according to OWP. The joint meeting with the Cheyenne Club on the 11th was well attended. The Colorado Slow Speed Net is on summer schedule Tuesdays and Fridays at 6:30 p.m. on 7225 kc. IC made BPL last month. Congrats! IQZ has 7-Mc. schedule with SRX in Yankton, S. Dak., on Thursdays at 6:30 p.m. IQZ also has a new RME LF 10-20 converter. KHQ plans a top-notch emergency set-up this coming fall and winter and will appreciate very much your answers to his questions. Traffic: W0LZY 35, IC 24, FPL 22.

UTAH-WYOMING — SCML, Alvin M. Phillips, W7NPU — New officers of UARC are JVA, pres.; and ONH, vice-pres. NMK reports seeing lots of new gear while on a business trip to Chicago. JYI is pounding brass on 7 Mc. LXX is building for 160 meters and has received his Class A ticket. Because of an emergency shift change, UTM has little time for his heavy traffic work. KFZ works out OK with his 14-Mc. portable. Wyoming: 7NMZ, ex-8DKS, and 8PKA/7 are CAA men at Rock Springs. QRN on 160 meters forced MWS back on 28 Mc. GGG is very active on 14-Mc. c.w. SQT works on 7 and 14 Mc. when tricks at CAA permit. Meadows, Wyo., was Field Day headquarters for HDQ. OWZ schedules 6PHK and is always looking for 144-Mc. contacts. KUB is working 7-, 14-, and 28-Mc. c.w. with a 5514, likewise PGS with two 4E27s. The Laramie Club met with Shy-Wy for the June 1st meeting. GZG is on 14-Mc. c.w. and State Net on 3.5 Mc. Mondays. JDB also checks in with new c.c.o. and 813. The new motto at KFV is "Every Day is Field Day" — with Onan plant on ranch. MYK is heading for 144 Mc. Thanks to HDS for submitting the above Wyoming news. I wish to thank all of you for the cooperation, friendship, and goodwill extended me during the past two years. Traffic: W7UTM 33.

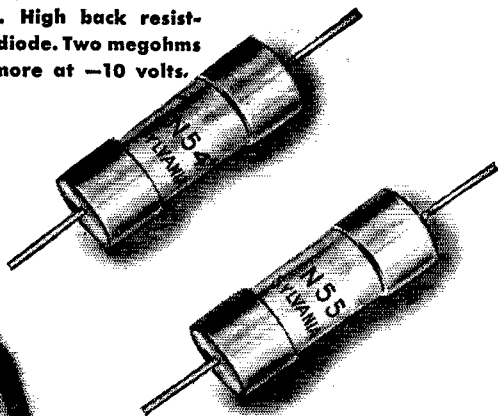
SOUTHEASTERN DIVISION

ALABAMA — SCM, Dr. Arthur W. Woods, W4GJW — AUS is back on the air after being completely wiped out by a fire in his shack. BFM has converted a Navy MCG for the 3.5-Mc. band, also has a separate 500-watter. JYB is rebuilding his station and working on a mobile rig for all bands. KIX continues to be a reliable traffic man despite the summertime QRN. MXU meets the Hit and Bounce, Gator, and AENB Nets, and holds down a new job of making regular air trips to Germany and return. CYL airs his OBS regularly and now is working on a new 304TH rig. The presence of many Alabama hams at the Atlanta Hamfest attests to the need for such an event in this section. GYJ expects a second jr. operator. GXC has established a Record Bar in Birmingham. Anniston and

(Continued on page 72)

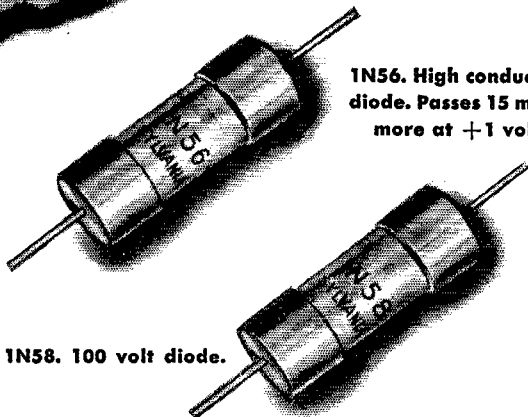
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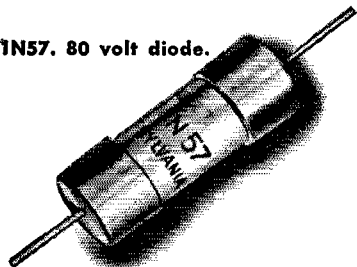


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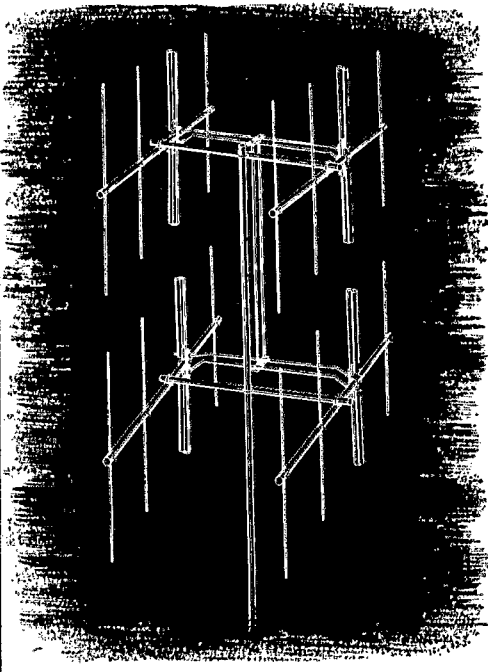
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Birmingham established 144-Mc. contact via FSW and BCU. Traffic: W4MKU 118, K1X 20, CYL 16.

EASTERN FLORIDA—SCM, John W. Hollister, W4FWZ—Congratulations to KJ and the Reverend Floyd H. Andrus for a most inspiring program on the Knights of the Kilocycle memorializing Silent Key members GYZ and LJS. Congratulations also to ASR for his good work at the ARRL Board Meeting and his report to K. of Kc. The 7290-kc. Net now is on at 1930 instead of 1900 each night. The 3675-kc. Net closed for the summer, but RP, our RM, says there are plenty of plans for next season. Now is the time to "sign up" for the c.w. nets. Contact FWZ, RP, or MNT. Clubs: Have you written the SEC, DQW, about AEC plans and EC appointments? MNT reports that MVJ will be ANCS on the 7290-kc. Net. 144 Mc.: AYX has worked WNER, Clearwater to Orlando, on 144.45 Mc. IQV, Lake City, works RU and ELD in Jacksonville and had two QSOs with Orlando. A 144-Mc. net surely is shaping up. Jacksonville: QTH for IPL, now is Atlanta. It's higher learning for EHU at Fla. New confirmations for LZM include MB9AD, MB9BN, MIBSC, MT2FU, PJ5KO, KG4AD, ZC6XY, TA3GVU, OQ5LL, V89AH, and FQ8SN. JCK has more than 100 confirmed. The Navair Club includes FS, MXG, OQZ, NKH, NTP, MYC, OAQ, BVX, NFC, PX, NAO, LZM, NUT, GE, OZX, PAE, and OMH, now in Whidby Island, Wash. Miami: GHP asks "what's fer T.V.I.?" (See QST, Bill) FFF, now ORS, is in the Gater Net when not on 14 Mc. c.w. BYF is doing an outstanding OO job. Tampa: NRT reports new slow speed net will start in the fall. Write him if interested. He is working in South Georgia Slow Speed Net this summer. The new 'phone traffic net on 3950 kc. at 7:30 A.M. is steered by AVQ and LGM with excellent coverage. 28-Mc. short skip: HWA worked Gainesville, Key West, and Cuba. Farewell to 2RTZ/4, a great traffic operator, 'til next season and thanks for the kind words. Traffic: W4IQV 72, MNT 39, DES 8, KJ 8, NRT 7, FFF 4, AYX 4. (April) W4NRT 8.

WESTERN FLORIDA—SCM, Luther M. Holt, W4DAO—HJA bought a new receiver. NJB went mobile. CNK moved to 4 Mc. MS worked 31 states on 50 Mc. NGS was transferred. JNP visited Chicago. OCX is building 28-Mc. rig. OOW erected a new beam. MTN got a new receiver. ACB visited Pensacola. QU moved to 7 Mc. EZT built a new home. MUN works mobile exclusively. BCC and DAO moved to 14 Mc. HIZ bought a new car. DZX got radiotelephone 1st-class license. Traffic: W4AXP 6.

GEORGIA—SCM, Clay Griffin, W4DXI—On June 5th, the Atlanta Club held its hamfest with over 300 present. The Cracker Net elected BOL as NCS and EFS as alternate. The Georgia Tech. Radio Club elected the following new officers: JIW, pres.; LJC, vice-pres.; HXO, secy.; NKT, treas.; SOIC, act. mgr. LNG originated a message which was relayed to ARRL exclusively on 144 Mc. Ruddy says that is the longest 144-Mc. relay yet. HBE now is on 50 Mc. Marietta: MCM received WAC and has 40 countries, 20 of them on 7 Mc. LOR and OFT have been active on 'phone. NWF has been on 7 Mc. Savannah: ESE made DXCC with 110 countries. DEJ demonstrated his emergency rig at a Lions' Club meeting and explained how the AEC functions. PGF is a new ham in Columbus, and is on 7 Mc. KGI reports the following from Valdosta: ORR is working 7 Mc. late at night. MMP is on 3.5 and 7 Mc. BVK has been making changes. KGI is EC for Valdosta. The following stations are active on the South Georgia Slow Speed Net: ABP, ACH, CL, IPV, KGI, KGP, LDF, OIL, OMN, OTM, and PER. Traffic: (May) W4BVK 12, MMQ 12, MCM 11, GGD 8, LNG 3. (Apr.) W4GGD 40.

WEST INDIES—SCM, Everett Mayer, KP4KD—Not a single report was received for the month of May. PRARC prepared a mimeo of the proposed FCC regs and circularized all KPs. The picnic sponsored by KP4USA at Boca Cangrejo was a big success and all present had a swell time. DB, our R. I., transferred back to the Continent. CK and CL took a trip to the Continent. AU and IG made a business trip to Miami and N. Y. C, while CM and KD made a business trip to Miami. KD spent some time with W4OLC and family and returned on the same plane with CK and CL, who also made a short visit to W4OLC and family. PRARC Field Day activity took place at El Yunque Forest Ranger Station. JA is keeping many schedules with S. A. stations. BC returned to the Continent to investigate possibilities of overseas position. DN joined CAA as maintenance technician. AK and HU are trying 420 Mc. AM/BE and HR are transferring to the Continent. Let's have some reports, gang.

CANAL ZONE—SCM, Everett R. Kimmel, KZ5AW—FL is Acting SEC during GD's Stateside leave. EL and the EC, NM, really put the gang through tough problems each Monday night at the AEC drills. Monday through Friday at 1215 and 1700 EST a KZ5 station is always on guard on 28,900-kc. 'phone to take traffic for the Zone. Helper stations stand by to jump in if traffic is heavy. Messages in ARRL standard form are desired, but are counted as traffic, but informal messages can be accepted although not counted in traffic totals. IF needs only a few confirmiz cards to join the ranks of the elite. DXCC: AU has WAC but is prouder of his WAS. Gregg, slick fist behind the bug at KZ5AA, is MARS Officer for the area. CM, after a

(Continued on page 74)

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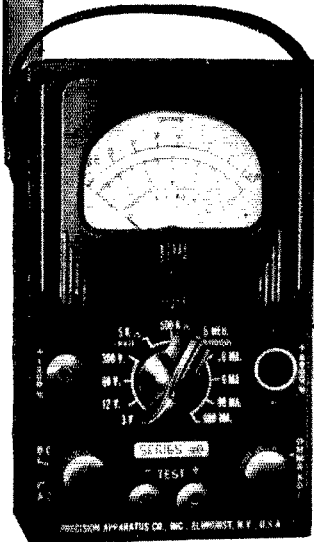
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tough 24-hour session at his BC-610, broke through to Bolivia to establish much-needed communications. WD, Albrook AFB, wants traffic to handle. GT made his debut on the 7-Mc. round table acquitting himself nicely with the key. Traffic: KZ5WJ 31, FL 13, MZ 12, GT 9, CG 8, RM 7, GD 4.

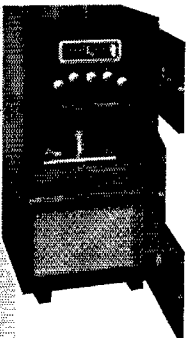
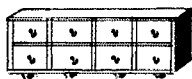
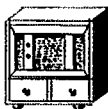
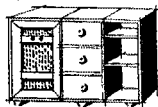
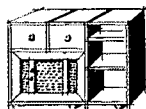
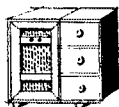
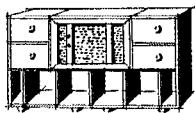
SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Vincent J. Haggerty, W6IOX — The Metro Club of Los Angeles sponsored the radio booth at the California Hobby Show in Shrine Auditorium where the club station, AMT/6, was operated. CMN, DDE, GTE, and ESR were known to have been active at the show. CMN and DDE pounded out a large volume of show traffic. ESR was in charge of the AEC section. By virtue of ten nightly schedules, topnotch operating and application, CB leads the section in traffic. DDE makes the BPL for his ninth consecutive month. Traffic reports by radio came from CZE, JDE, JQB, QAE, RXT, ZMZ, ZQV, and IQMI/6. IQMI/6 had his old call, 6JQB, reissued and is located at Leavening where he constitutes 50 per cent of Mono County's ham population. In addition to traffic work and OO activity, Al recently completed a new superhet receiver. YLZ went east on vacation. BHG continues with Official Bulletins and code practice transmissions. KSSX, Crescent Bay Area EC, converted surplus rigs when not busy with traffic or AEC work. DGA is a new ORS but an old-timer in traffic. KEI continues activity with the Golden State Net. FMG has a portable/mobile on 3.5 and 7 Mc. and says he can handle traffic on the run. YVJ has been experimenting and working DX. AAE spent two weeks on military duty at Fort MacArthur. FYW is back from vacation. HFY went on a fishing trip. ASW rebuilt for T.V.I. elimination. MU rebuilt his shack and had a visit from 0JWY. BUK built a grid dip oscillator. YSK is doing special work at KLAC. AOE and VBM visited RFX who, incidentally, comprises the other half of Mono County's ham population. On a trip to Oregon and Washington AM visited 7VY, 7DL, and 7MBX. NUF reports the Pasadena Short Wave Club meets at 736 Rosemead Blvd. on the 2nd and 4th Fridays at 7:30 p.m. AEC Notes: SEC ESR spent 6 days at the radio booth of the Los Angeles Hobby Show, promoting goodwill for the AEC and amateur radio. Two AEC nets ran drill demonstrations with net controls located at the Hobby Show in Shrine Auditorium. The V.H.F. Net conducted its regular drill from there under the direction of WKO. The Centinella Valley Net, with ZWS as control at the ham booth, staged a realistic simulated emergency drill. Mobile units were in operation in Los Angeles for the drill and it went off with precision. Loud speakers carried the proceedings throughout the Shrine Convention Hall. Quoting from ESR's report on this drill, "A near riot ensued when one of the mobile units reported that several burlesque queens from the L. A. Burlesque Theatres had requested transportation to their suburban abodes. This radio dispatch precipitated an exodus of cars from the show parking lots. Many YLs and XYLs were stranded temporarily. A traffic jam de luxe resulted and before the emergency subsided the SEC had collected a traffic ticket for ramming a police prowler car." TNB, Pasadena Area EC, has ambitious plans for AEC development. KEI is retiring as San Fernando Valley EC after years of constructive effort. Thanks for a swell job, Rudy. The SEC reminds ECs who have been lax with their monthly reports to please get them to him promptly at the month's end. All amateurs in the section are invited to send activity reports to the SCM prior to the 7th of each month. Traffic: W6CE 1725, DDE 894, IOX 504, YLZ 116, CZF 73, RXT 57, ZMZ 33, BHG 32, CMN 24, KSSX 16, ZQV 14, QAE 12, DCA 11, JQB 10, QMI/6 8, KEI 6, FMG 3, AAE 2, YVJ 2, AM 1.

ARIZONA — SCM, Gladden C. Elliott, W7MLL — All Arizona hams join together in giving thanks to QNC, UFX, UAF, SBN, and JZG and their XYLs for a swell picnic at Mt. Graham on May 29th. Nearly all of the OMs took home a prize. LHI is handling Boy Scout traffic from Mt. Lemon. MJO has his old call of PG back. New calls: NLU, Mallas, on 28 Mc.; NMX, Browne, on 28 Mc.; NMU, Reed, on 7 Mc.; NMD, Byrne, on 28 Mc.; and NFS on 28 Mc. The Sunshine Club at Casa Grande has a club station, NLN, on all bands with 300 watts input. The Ajo gang reports the following activity: KUJ on 7 Mc., LHS on all bands, and DFE mainly on 14-Mc. phone. KWO and MIW are on 144 Mc. in Phoenix. KWO reports that six to ten fellows are regularly on 420 Mc. and that he has just logged his 300th QSO on 420 Mc. 160-meter activity is growing with JQP, MOW, and JMQ now on. 6AM gave both the Phoenix and Tucson gangs a nice picture show on antennas and high-power rigs. Arizona hams regret the passing of IO, Charles Middleton, one of our pioneers. MES has a kw. using a pair of 813s on at Fry. LIZ reports that she won 5th place in the YL-XYL Contest. LLO reports 50-Mc. contacts on frequent occasions during the latter part of the month. MAT reports frequent intervals of television reception. Traffic: W7RIN 106, KRW 6.

SAN DIEGO — SCM, Dale S. Bose, W6BWO — Aast. SCMs, Shelley E. Trotter, 6BAM, and Gordon W. Brown, 6APG. SEC: DUP. RM: BGF. LRU is running 100 watts in

(Continued on page 76)

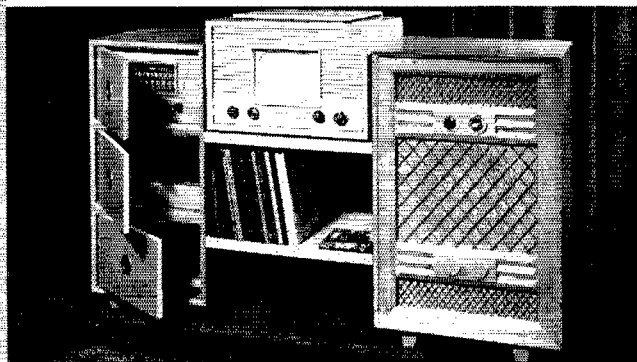


Jensen Customode

CUSTOMODE is the answer to the ever expanding requirements of audio-video equipment. Today you may install a tuner, an amplifier and a record changer with your loudspeaker. Tomorrow you can add a TV receiver, a pick-up for micro-groove records and a record cabinet. The illustrations show a few of the hundreds of possible arrangements for Home Entertainment Centers.

Designed by leading furniture stylists and acoustic engineers around a JENSEN 15-inch loudspeaker in a Bass Reflex Cabinet—the very ultimate in high-fidelity sound reproduction—CUSTOMODE is as functional as it is beautiful. Its "building block" versatility enables you to create your own layouts as you wish, when you wish.

Write today for literature and scale cut-outs. Jensen Manufacturing Company, Division of the Muter Company, 6611 South Laramie Avenue, Chicago 38, Illinois. In Canada: Copper Wire Products, Ltd., 351 Carlaw Ave., Toronto.



Shown above is Shelf which provides for inclusion of TV receiver or record albums in a CUSTOMODE ensemble.

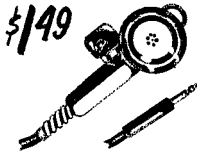
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PHONE HANDSET
ONLY \$2.95**



A Brand new high-impedance phone, low resistance mike, complete with 6-ft. cord and PL-55 and PL-68 plugs. Ideal for portable work.

**BRAND NEW
AAF HAND MIKE**



Type T-17 mike with push to talk switch, cord, and plug. "Ideal carbon mike for mobile installations."

**SAVE 37% ON NEW
BRANDES HEADPHONES
only \$1.49 per pair**

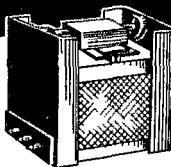


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Variable transformer, excellent for filament regulation and many other purposes. 250 watts; input 115 volts, 60 cycles; 103-126 volt commutator range. Wt. 15 lbs.

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\$4.95**



**G.E. 1 MFD PYRANOL CONDENSER
ONLY \$14.50**



15,000 working volts D.C. and BRAND NEW, this pyranol-filled 1 mfd condenser has a list price value of over 17 times our sensationally low price. Weight 35 lbs.

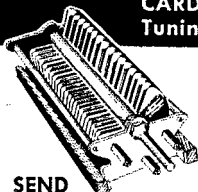
REPEATING A SELLOUT HI-FIDELITY 12" CO-AXIAL SPEAKER

Famous-make 12" speaker with 3" co-axial tweeter give you full range coverage from 50 to 15,000 c.p.s. Brand new 1949 model with a list price of \$27.50, excitingly low priced at \$11.95

\$11.95



**CARDWELL 180 MMF Split-Stator
Tuning Condenser ONLY \$2.98**



Brand new! Cardwell #MO-180-BD, breakdown voltage 1500 volts, micaless insulation. A giant value! Overall: 7" L, 3 1/4" W, 2" H (open).

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San Diego. He has snagged 145 countries and hopes to make it 150 soon in his spare time from teaching radio and electricity in San Diego schools. FMZ still is showing some activity in spite of spring fever and night school. BGF reports the Southern Border Net now meets nightly at 2030 PST on 3550 kc. AWW reports that the San Diego YLs had to postpone their annual picnic because of the weather. Also, the YLs are sponsoring two foreign YLs so that they may receive the YL's paper, *Harmonics*. ZYD is secretary of San Diego County Council of Amateur Clubs and president of San Diego YLs. The Imperial Valley Club has suspended meetings for the summer months. LDJ hopes to get a teaching job in Santa Ana, which will put him back on home ground. BYX is new Official Phone Station at Escondido. 5PKF, ex-6LVB, paid a very nice visit to the old home town and reports excellent results on 3.85-Mc. mobile while driving across country from New Orleans. A picnic of the 3.85-Mc. gang was had by all. KW gave a very complete report of the Directors' meeting. DZC is very busy with his chickens so doesn't have much time to spare for ham radio but does manage to listen in some. BVQ has a new kw. power supply that puts out from 0 to 4000 volts by just turning the knob. Traffic: W6BAM 34, BGF 21, LDJ 15, DBZ 9, FMZ 5.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Joe G. Buch, W5CDU — Activity of Dallas Club members is being concentrated on convention details. Better plan your vacation accordingly and get ready for the big West Gulf Convention Aug. 27th and 28th. There will be a get-acquainted party for early arrivals on the 26th. Remember the dates and be sure to tell your friends. Much credit is due KZA for his good work following the Amarillo tornado disaster. BTU complains of too much work and not enough time on the air. HZB is getting ready for his final round at A. & M. Glad to hear FQG back on 3.5, 3.85, and 7 Mc. ISM debugged his 32V of the 160-meter signal by using a link-coupled antenna coupler and cleared lots of T.V.I. with a quarter-wave stub across transmitter output terminals. OFN works 3.85-Mc. 'phone most of the time. BFA does not have much time to spend the air but turns in a nice traffic total. PZH runs the Commerce ham total up to five. QAN is the latest in McKinney and is active with NTX Traffic Net. MAW's DX record on 50 Mc. is 125 miles. OIS is now Class A. GZU again makes BPL. The Red Cross, City Government, and Texas Electric Co. have given the Big Spring Club space and equipment in appreciation for communication assistance rendered during the ice storm. AW is EC for Big Spring and reports the following list of active amateurs: AW, AWT, HCB, IGU, ISD, KIO, MTK, NUJ, PCC, PSI, PXD, PXR, LAP, and ZZF. See you Aug. 25th and 26th in Dallas. Traffic: W5GUZ 720, BFA 98, ASA 59, BKH 52, ARK 47, CDU 43, ISD 35.

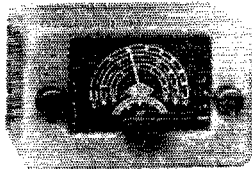
SOUTHERN TEXAS — SCM, Ammon O. Young, W5BD1 — KSW is working 50 Mc. and also is keeping schedule with ZS6KX. MN has schedule with 4PL and hits the Bounce Net in the mornings. The Coastal Emergency Net is doing a very nice job in this area. GLS is on 3.85-Mc. mobile and, by operating in both the above-mentioned net and the South Texas Emergency Net, manages to tie the two together. ON is building a 150-watt 144-Mc. rig. HSX is Zone 2 Net Control of S.T.E.N. KFY is building a shack. FEB is going to move to North Carolina permanently. JWM is trying to get his dual 10-20 beam going in spite of school taking a lot of time. FH is rebuilding in enclosed metal rack. Goodby, breadboard. FQI has new 62-foot tower with 14- and 28-Mc. beams on top. IYR is building a kw. rig and hopes to be on 14 Mc. soon with a four-element beam. OCB took his 50 Mc. rig to the S.T.E.N. Convention and was able to work seven states. That's all for this time, gang. However, remember that the more reports I get, the more I have to put in here. Thanks for the new job. Traffic. W5MN 112.

NEW MEXICO — SCM, Lawrence R. Walsh, W5SMA — SEC: ZU, PAM; FAG, RM; NXE. The following clubs participated in Field Day: Las Cruces, Sandia, Los Alamos, Albuquerque, Belen, Hobbs, Hot Springs, Carlsbad, Santa Fe, and Four Corners. The SCM recently visited the gang in the southern portion of the State. The distance between Albuquerque and Los Alamos was covered by 144 Mc. for the first time by 10IN/5, at Los Alamos, and FAG/5, at Sandia Crest, Albuquerque. MYI is on 3.85- and 14-Mc. 'phone. The Belen and Sandia Clubs now are affiliated with ARRL. JYW has completed a calibration chart for his BC-221. JXH is using an ART-13 and has his own putt-putt to supply the 28VDC. BYX is using a pair of 813s with 500 watts input. MMX and his XYL, PUZ, have an 813 using n.f.m. OCE is on 7 Mc. with 300 watts. PXA is getting results on 7 Mc. with 10 watts. JXO is new Albuquerque EC. PGR has a cubical quad about 6 feet off the ground. OCK is NCS for Southern N. M. MARS Net. CTP is on all bands with an HT-9. NQG is active in MARS. BHF is back on the air. MJI is active on 3.5- and 7-Mc. c.w. PAG has a super mobile rig in his new Ford. LWL is active on 144 Mc. BIW and his XYL, DRA, are active on 3.85-, 14-, and 28-Mc. 'phone. 1HBR/5 has an FB mobile rig. Traffic: A5ZU 18, W5ZU 16, JYW 1.

(Continued on page 78)

HARVEY for variety for bargains

VARIETY-BARGAINS

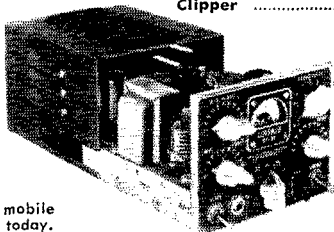


GONSET'S LATEST

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Gonset Noise Clipper.....\$8.25

THE NEW SUBRACO MT 15X

The finest in mobile rigs available today. 30 watts power, class B 100% modulation, with push-to-talk and built-in coaxial type antenna relay. Xmtrr complete with tubes, coaxial antenna connector, mounting brackets, etc.....\$87.50
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ALSO NEW—MT15X for 75 meters.....\$87.50 (MT15X for 20 and 75 have same features as MT15X for 10-11) Speech input. Any of the MT15X can be ordered with high-gain speech input for either xtal or dynamic mikes at an additional cost of.....\$9.95



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Dynamotor supply. 6 V. DC input, 400 V. at 175 ma. output. Complete with built-in control relays, filter, etc.....\$59.95
AC Supply for operation of any of above Subraco xmtrrs indoors. Complete with rectifier and built-in control relay.....\$39.50

STANCOR'S NEW ST-203-A

Mobile xmtrr kit. Uses 2E26 in final, PP 6V6 modulator. Weighs 9 1/4 lbs. with tubes and xtal. Built-in push-to-talk relay. Complete kit of parts, less tubes and accessories.....\$44.70
Completely assembled, wired and tested, less tubes and accessories \$58.90

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Auto receiving type, collapsible, 96".....\$3.60
Premax Model AS196, solid stainless steel, 96" whip.....\$3.40
Type NA bumper mount for antenna.....\$3.40
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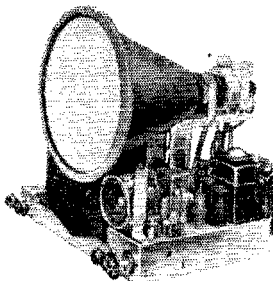
LYSCO'S NEW MOBILE XMTRR

Dimensions 4 x 5 x 5 1/2". Uses 6AG7 osc; 6AG7 amp; 6AG7 modulator for A3 emission. Available in either 10-11 or 80 meter models. Built-in antenna changeover relay. Power requirements 6 V. 2 A., 350 V. 110 ma. Either unit completely wired and tested, less tubes and accessories.....\$23.95

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Lysco grid dip meter, 3-150 mc range, calibrated dial, no plug-in coils, complete with power supply and tubes.....\$33.50

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31-tube kit with components for use with up to 20-inch tube. Don't confuse with cheaper kits. Pre-wired and aligned RCA front end, all major components are RCA and are mounted. Adjustable kine mounting brackets. Complete RCA Manual with service notes, plus ultra-simplified instructions.

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10".....\$205
15".....215
12".....\$215
16".....225

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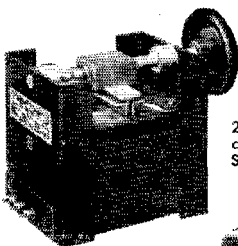
5TP4.....\$59.40
7JP4.....20.60
10BP4.....31.13
10FP4.....33.25
12KP4.....50.60
12LP4.....\$ 48.50
12JP4.....41.25
15AP4.....66.75
16AP4.....63.50
20BP4.....222.75

24 VOLT POWER SUPPLY

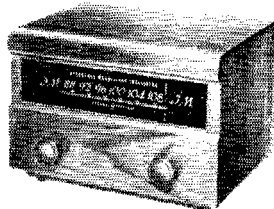
Filtered DC supply has hundreds of uses. All parts conservatively rated. Transformer, 36 V. 10 amp; 2400 mfd, 50 V condenser; filter choke; 5 amp full-wave rectifier. Ample capacity for practically all surplus 24 V. devices. Output may be increased to 10 amps by adding a rectifier in parallel.
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Additional 5 amp rectifier for increasing output..... 8.95
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250 watts. Input 115 volts, 60 cy; commutator range 103-126 volts. Shpg. Wt. 15 lbs.....\$5.95



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SPECIAL PRICE.....\$49.50

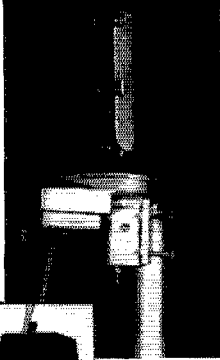
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LOOK

NICHOLAS ROTATOR



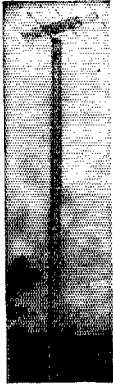
- Built-in thrust bearing will support and operate antennas up to 250 pounds.
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- Pilot circuit keeps motor warm to resist ice and snow.
- ¾ RPM, instantly reversible.
- ¼" shaft protrudes from bottom for coupling selsyn indicator (not furnished).



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OAK TOWER



- Triangular 12-inch type, weathered oak, finished in aluminum paint, sturdy—can be climbed.
- Quickly assembled—screwdriver is only tool needed. Holes have been drilled thru bracing members and into uprights, all screws furnished.
- Each 10 ft. section has metal plates to join additional sections, up to 60 ft. properly guyed.
- Shipping weight only 19 lbs.

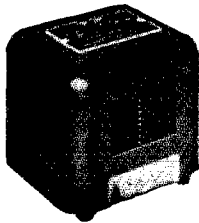
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10 ft. section.....

Triangular blocks for top or pipe bearings, pair.....

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The original E-L Model 2606 "HAMPAK", delivers full 30 watts output (300 volts at 100 ma.) complete hum filtering and RF noise suppression, 6 volt DC 8 amp. input, 4 1/4" x 5 1/2" x 5", weight 6 1/2 lbs. Regular amateur net \$15.00, special buy.

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CANADA

MARITIME DIVISION

MARITIME—SCM, A. M. Crowell, VE1DQ—SEC: M. FQ, RM; GL. Final preparations have been made for the Maritime Division Convention at the Nova Scotian Hotel, Halifax, on Sept. 3rd, 4th, and 5th. *HARC Bulletin* and Official Bulletins from RR continue to furnish details. High traffic man this month is BK. EA is receiving congrats on making the DXCC. MK joined the Bluenose Traffic Net on 7 Mc. and also had an RF time in the W/VE Test. WC rebuilt and now is active on 3.5 Mc. c.w. ES has been doing some hi-fi phono work. FQ, ET, RR, and other HARC members are very busy with Convention preparations. A nice photo of LCARC executives and one of LZ and his shack with information on both appeared in the *Bulletin* last month. QK was in charge of Field Day operations of the Truro Club. HJ has been testing out the HARC plants and reports everything "all set." The AVARY purchased a 1-kw. power plant for emergency and Field Day work and reports a good attendance at meetings. FG is the club president. The LCARC is considering the purchase of a printing press for the printing of its *Bulletin*. Please let's have the news, fellows! Don't let the summer WX get you down. Traffic: VE1BK 178, MK 46, PZ 27, EK 4, DB 3.

ONTARIO DIVISION

ONTARIO—SCM, Thomas Hunter, jr., VE3CP—Asst. SCM, M. J. McMonagle, 3AWJ. SEC: KM. RMs: ATR, AWE, BUR, DU, GI, TM, WX. PAMs: FQ, DD, RG. JO edits *Dah-Dit-Dah* for the Scarborough Club. AJQ, AMB, and AZC are interested in 144 Mc. AJV has a complete new rig. BOJ is back on with new rig. DCU and DCY are new in Toronto. RU is reporting very fine results with his new converter. DBU is on 28-Mc. 'phone. The Nortown Club operates under BRR. BGK and AKH, father and son, have new QTH. PA has his portable in operation. EAA is having converter trouble. BHY has 5 watts feeding into a new Zepp. BNI has a new jr. operator. ATB, AJJ, and ARV operate 50 Mc. regularly from Toronto. BQF has new beam working. KM, BFF, and BKR are interested in T.V. BNQ needs only two states for WAS, BVE, FT, BPE, and QE stick on 7 Mc. BBM baby-sits for LH and works DX. EAW is on 28-Mc. 'phone. AWP has been bitten by the bug again and is active after a long lay-off. The Ontario 'Phone Club meets each Tuesday at 7:00 p.m. on 3815 kc. and the executives meet on Fridays at 11:00 p.m. on the same frequency. BUE is on with a Bendix. BJE no sooner obtained an automobile when he installed a mobile rig in it. ALZ, ex-80E, is on 3.5 and 7 Mc. from Earlton Range Station. Any of the above League officials will be only too pleased to give out any information on the various nets in operation in Ontario. Your SEC, KM, certainly will welcome applications for the AEC. The London Amateur Radio Club had VE2DE, chief engineer of radio station CFPL in London, as its guest speaker at the May meeting. Glen told the boys how to get better efficiency from their mobile antennas. The Club held a picnic June 5th. Traffic: VE3ATR 95, BUR 66, SM 52, WK 50, BBM 47, DU 31, NI 23, VD 26, WY 24, ASL 14, BMG 12, BVR 11, RG 9, KM 7, CP 5, HK 3.

QUEBEC DIVISION

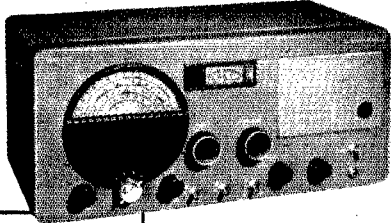
QUEBEC—SCM, Gordon A. Lynn, VE2GL—High-light of the month was the cooperation of the Quebec Emergency Net with the Army Air Force demonstration on May 14th and 15th at Quebec. A total of 260 messages was handled on two 'phone and one c.w. net. Participating on c.w. were AEH, GF, FZ/AFI, LO, HD, XR, ZL, and GM as NCS. On 'phone (3802 kc.) were ACD, ADB, AHN, ADF, OE, OD, YM, HO, GU, JAM, PF, HB, RA, DL, AFO, LZ, CC, and RM as NCS. On 28 Mc. were WH, QN, AFO, AFC, ON, and YD as NCS. JN, at St. Johns, and QN, at Quebec City, have been appointed as ECs. GN has new preselector ahead of his 522 receiver and an 829B on the tail end of the transmitter end of it into a six-element array on 144 Mc. BB continues to handle traffic on 7 Mc. despite summer drop-off. EC reports Quebec 'Phone Net still going strong with OD, RM, JAM, JZ, ACD, AGK, AT, AIM, AHK, ABJ, and ABB taking part. DD sticks closely to 14 Mc. OD is active again from Champlain. TR makes more holes on the golf course than in the ether at present. LP has 250 watts on 50 Mc. in his car and maintains contact with his XYL, ADL, while travelling over the country. AGU is gradually getting the bugs out of his VFO and is heard on 3.5 Mc. occasionally. NM has new VFO but still has bugs in it which he finds difficult to eliminate. RW is building rig with 815 in final. WW, in St. Johns, has well over the century but still awaits those elusive DX cards. MARC held a "hamfest" on May 19th which turned out to be a gabfest. Many on-the-air acquaintances were made in person. Traffic: VE2EC 77, BB 38.

VANALTA DIVISION

ALBERTA—SCM, Sydney T. Jones, VE6MJ—We regret to report the passing of SN, James Smalley. Our deepest sympathy to GD and family. HM has returned from (Continued on page 80)

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Popular S-40A & S-52 All-Wave Receivers

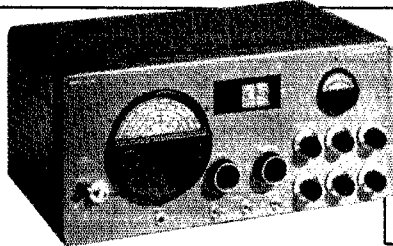
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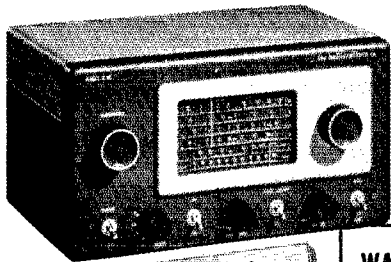
SX-43 — Short-Wave, AM and FM

You save \$30 on this great receiver preferred by Amateurs, DX fans and AM-FM listeners! Delivers professional performance over the entire range of 540 kc to 55 mc—plus the 88-108 mc FM range. Features: accurately calibrated main tuning and electrical bandspread dials; accurate carrier-level meter; 4-position control for broad or sharp tuning; variable-pitch BFO; tone control; automatic noise limiter; dual IF system; RF gain control; crystal phasing control; selectivity control; standby-receive switch; 500 and 5,000 ohms output impedances. Complete with tubes. In rich satin-gray steel cabinet; 18 1/2 x 8 7/8 x 13". For 105-125 v., 50-60 cy. AC. Shpg. wt., 45 lbs.

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97-785. Matching R-44 speaker in steel cabinet. NET. \$24.50

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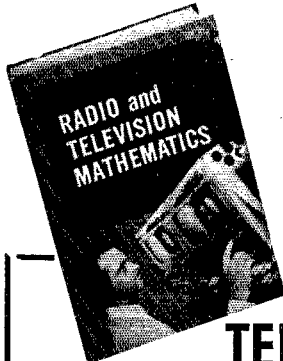
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a trip to England and reports many FB personal contacts. While in London he was the guest of honor at an old timers banquet. IY is the latest addition to the Alberta Phone Net. BC has been transferred to Blairmore. UH has acquired two fifty-foot poles for antenna. BX announces the arrival of a new bass harmonic. TR is active on 14-Mc. c.w. YQ has taken over the duties of secretary of the NARC. CE is active again after power plant overhaul. MA and family had a swell time on vacation in Vancouver. KS has moved QTH to Edmonton. TK now has 36 members in AEC in Calgary. WS is all set to operate mobile on 3.8 Mc. IQ still maintains schedule with 80X. JF says 28 Mc. is the only band and proves it by getting daily contacts even when the band appears to be dead to the other locals. BW made a trip to Eastern U. S. and saw T.V. for the first time. ARRL reports only 82 members in Alberta. Let's make an effort to increase this. Remember, gang, ARRL is our organization. Applications may be sent through your SCM. Traffic: VE6NA 151, MJ 10.

BRITISH COLUMBIA—Acting SCM, Ralph O. Norman, VE7ID—Amateur radio generally and emergency operations particularly continue to get publicity from US and TG. US gave stirring lectures, reported in the press, to the Rotary and Kiwanis Clubs. TG held another "Disaster Day" with headquarters station in Red Cross Headquarters. TG now is O.C. of his regiment and got his radar and anti-aircraft gear out to stop ID's jets when they "raided" his city in May. ALE has 35-w.p.m. certificate and, with EP, is active in Army Reserve. AC is the busiest man in the section as chairman of the Division Convention to be held in August. Visitors are to be quartered at University at \$1.50 a night. Reg shot a cougar while on holiday in the wilds of B.C. (Reg was on holiday; not the cougar!) The Langley District Radio Club has 60 per cent of its members emergency-powered. Can any other B.C. club top that? ACS has got broad-band all-band exciter and is excited about it. He also is excited at the prospect of playing host to 8th Vanuata Division Convention August 5th, 6th, and 7th. FY, at Royal City R.A., is instructing 9 students, two of whom are crippled in wheel chairs. VO has recovered from a car accident (the car had a longer convalescent period) and has new QTH on top of hill. VJ and ZAY both got high DX records. Five O'Clock Net (BJ as NCS) continues as section general information outlet with large non-ham listening audience. Traffic: VE7US 18, AEU 7, ID 3.

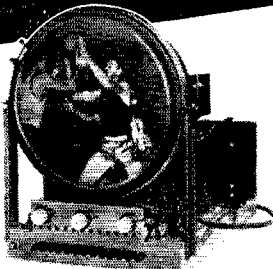
PRAIRIE DIVISION

MANITOBA—SCM, A. W. Morley, VE4AM—FU is using Bliley CQO to a pair of 807's on 50 Mc, and made a few nice contacts. The big rig is on 7-Mc. c.w. DJ is heard on 3.5 Mc. with a total of 7 watts. IW is fully recovered from his recent operation and is now in new QTH. CS is moving to Port Arthur. ZK is a welcome voice on 3.8-Mc. phone. SFS is now located in Winnipeg and signing JL, IR, a new ham, is using an 807 final and a converted 1155 and is very active on 7 Mc. DS is active in The Pas. W5ZV upset the AFARS Phone Net on 3.8 Mc. when she paid a visit to LF. No roll was called as everyone was too interested in Margaret. Call again. JZ is active on 7 Mc. AW, at Dauphin, had the boys over, with XP, PA, HX, and WW all attending. It is reported that in between they managed one contact on 14 Mc. Don't ask me what in between is. HX is on 7 Mc. and uses a BC-348 for receiver. PA got his ticket OKed for phone, tried it, but went back to c.w. He says he would rather putter around at 10 w.p.m. than battle the phone QRM. Thanks for the dope, Lyall. Ek-5MW now is EP. 3FK/4 reported in to AFARS Net one night. Would GQ know anything about this? No traffic reports this month so guess there was none handled. Let's hear from YOU.

SASKATCHEWAN—SCM, J. H. Goodridge, VE5DW—We regret to announce the passing of BF and SC. AS visited PA, AJ is busy turning new Hammond 10-over-20 beam and is heard on 3.8 Mc. occasionally. FD visited W. Land. JF CQS on 50 Mc., QSOs nil. OB works 14-Mc. phone using 250 feet of snow fence. RC is working portable in Winnipeg for the summer. RJ is experimenting with antennas. UC is mobile. DR tries 3.8-Mc. n.f.m. CE won the stork derby—a daughter 16 hours before DW was presented with a son. The XYLS visited the hospital at the same time, 3 a.m.! NSARC hopes to display station and equipment at the Prince Albert Exhibition. FG moved to the VE4 district. VB hooked his first PA. BU needs technical advice. GC passed through PA on a fishing trip. BJ returns to La Ronge. The Regina Club now is affiliated with the ARRL. IC duplicates new Gon-Set. AW and IC hope to visit Banff during August with mobile equipment. We understand CJ, KQ, and MQ are to be found on 14-Mc. c.w. Who are you working, fellows? UZ has moved to Edmonton. GG is raising some rare DX. DR hooked a KZ5. CE has accepted OO appointment. IC has no luck fishing because the fish have sore mouths, he says. Can you imagine a Hammond 28-Mc. beam mobile? FY returned home with one recently. On May 24th the Assinaboine Valley Radio Club held its first annual Field Day. HR acted as master of ceremonies, ably assisted by 5RD. Among those attending were 4AX, TN, WN, HB, HR, NJ, DK, MF, CH, 5JL, DT, RB, LU, UO, LY, FO, HS, MG, BW, RP, RD, HL, MA, CC, GI, and AE.

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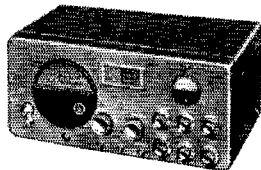
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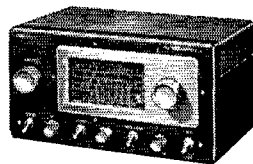
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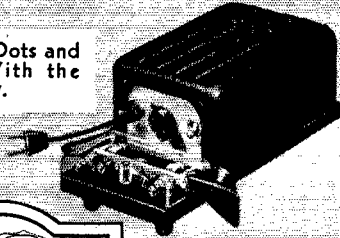
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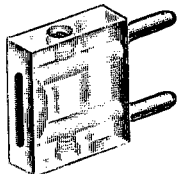
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(Continued from page 87)

numerous sources of interference and, of course, any improvements will likely be mutually beneficial.

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Ho hum. . . .

Happenings

(Continued from page 89)

similar news of interest to the radio amateurs of all countries. The broadcasts, the first of which was aired on June 25th, are scheduled twice weekly: each Saturday at 4:45 P.M., EDST, beamed to Europe and the near East; and each Sunday at 9 A.M., EDST, beamed to the Far East and Latin America. Transmissions are made simultaneously on several of the h.f. broadcast bands from 9 Mc. up. Relay stations at strategic points add to the coverage of both hemispheres.

REGS CHANGE

As of August 1st FCC has made a slight modification in our rules which, although having no practical effect on amateur operation, we wish to record here. In Sec. 12.111, amateur frequency allocations, the phrase "1800 to 2050 kc." is changed to "1800 to 2000 and 2006 to 2050 kc." and a later reference to "2000 to 2050 kc." is changed to "2006 to 2050 kc." The band 2006 to 2050 kc. remains unavailable for amateur use, as before.

EXECUTIVE COMMITTEE MEETINGS

The following is an abstract of the minutes of the Executive Committee of the League during the past year between Board meetings, as ratified by the Board at its recent meeting, here published for your information by order of the Board:

Meeting No. 201, June 14, 1948. Appropriated \$203.73 to cover director expenses at the 1948 annual meeting in excess of the appropriation made by the Board. Ratified previous informal actions in approving the holding of ARRL conventions.

Meeting No. 202, Sept. 6, 1948 (in Milwaukee, Wis.). Designated A. L. Budlong as acting secretary of the League to act until the next meeting of the Board of Directors.

Meeting No. 203, Oct. 4, 1948. Examined nominations in regular autumn elections, determined eligibility of candidates; in cases where there was only one eligible candidate, declared him elected without balloting; ordered ballots sent on others.

Meeting No. 204, Nov. 22, 1948. Opened and counted ballots in regular autumn elections, certifying winning candidates. Ratified affiliation of 55 clubs, and affiliated 5 additional clubs. Appropriated \$327.35 from surplus to cover past expenses of SCMs and QSL managers to conventions and organization meetings in excess of the Board appropriation already made for that purpose. Appropriated \$500 from surplus to continue reimbursement to SCMs for future organization meetings only, and at a rate of 5¢ per mile. Adopted policy on availability of affiliated club lists parallel to Board directive on availability of membership lists.



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RME HR-10-20	77.00
RME VHF-152A	86.60
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Hammarlund HQ-129X	177.30
Signal Shifter EX kit	49.75
Telvar T60-2	150.00
Harvey-Wells TBS-50	99.50
Harvey-Wells TBS-50A	121.25
Hunter 20A Cyclomaster	169.50
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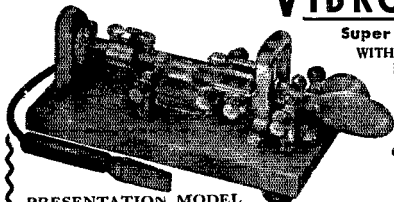
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	W7COH.....	1160-18- 30
	W7GBL.....	275-11- 13
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W1BIH.....	50,895-65-350	
W1NJM.....	30,609-67-251	
W1JTD.....	29,627-53-238	
W1DX.....	18,370-51-170	
W1LHE.....	18,720-48-180	
W1LVQ.....	16,023-49-148	
W3IEM/1.....	8602-34-109	
W1PEK.....	7735-35-103	
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W1JSM.....	25,422-67-223	
W1QMJ.....	23,200-50-217	
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<i>W. Massachusetts</i>		
W1JYH.....	42,573-61-309	
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W1JGY.....	7200-36-130	
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W1CRW.....	27,108-54-251	
<i>Rhode Island</i>		
W1CJH.....	33,072-53-279	
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W1KRV.....	34,100-62-250	
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<i>Idaho</i>		
W7EMT.....	9331-43- 96	
<i>Montana</i>		
W7BSU.....	30,012-61-211	
W7KGJ.....	15,657-51-129	
W7EWR.....	11,844-47-126	
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W7BOH.....	13,776-48-106	
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<i>Washington</i>		
W7UTV.....	31,964-61-262	
W7KWC.....	23,760-55-191	
W7CZY.....	13,680-45-110	
W7GP.....	13,113-47-100	
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<i>Santa Clara Valley</i>		
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W6KMM.....	20,060-59-153	
<i>East Bay</i>		
W6IPH.....	20,460-55-186	
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W6WLL.....	2774-19- 33	
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W6RBQ.....	22,302-59-164	
W6NL.....	9888-48-103	
<i>Sacramento Valley</i>		
W6MYT.....	4590-34- 55	
<i>San Joaquin Valley</i>		
W6SRU.....	26,564-58-229	
W6BHL.....	7854-42- 76	
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<i>North Carolina</i>		
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W4KFC.....	73,360-70-482	
W4LA.....	35,340-62-268	
W4BZE.....	34,200-60-248	
W4LAP.....	25,308-57-222	
W4KVM.....	23,128-56-195	
W4FF.....	15,640-46-130	
W4NCR.....	9828-34-102	
W4IPC.....	9120-38-105	
W4RL.....	8740-38- 90	
W4QWM.....	3724-28- 49	
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<i>West Virginia</i>		
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ROCKY MOUNTAIN DIVISION		
<i>Utah-Wyoming</i>		
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W7UTM.....	8588-38- 73	
W7FYR.....	1050-21- 25	
<i>Colorado</i>		
W6IC.....	33,020-65-212	
W6CDP.....	30,149-59-218	

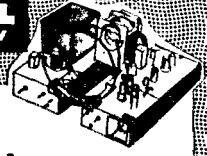
(Continued on page 86)

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	6.3VCT @ 3.6	Amps.			

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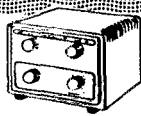
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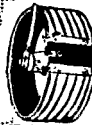
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VE5QZ.....	20,398-54-151
VE5PK.....	6916-38-92

TVI Tips

(Continued from page 46)

placed so that the actual connections to ground and to the lead being by-passed are right at the bakelite case and not at the ends of the leads furnished with the condensers. A similar "lead-less" technique also can be practiced with the physically-larger high-voltage units.

The small shielded wire available has a rather surprising breakdown-voltage rating—several thousand volts—but to be on the safe side a wire with fairly husky insulation should be used for circuits of 1000 volts or over. Although shielded wire is more expensive than ordinary hook-up wire, the actual cost is small because only a relatively small quantity is used in the average transmitting unit. Considering the time, trouble, and filter components it saves it is well worth the small additional cost. We have so far had no trouble with inadvertent short-circuits caused by soldering to the shield braid. Such troubles are unlikely if reasonable care is used—"care," in this case, meaning to have the shield braid bright and clean before soldering, to use a good rosin-core soft solder, and to apply the heat just long enough to make the solder run freely. The quicker a joint can be made the less danger of softening or burning the insulation. — G. G.

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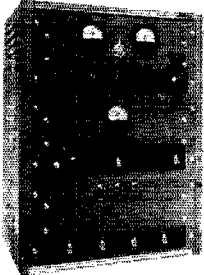


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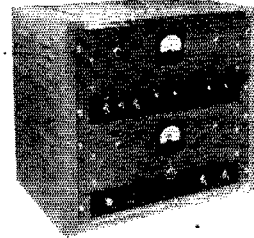
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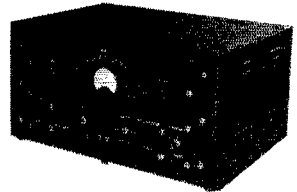
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S.S. for the Average Ham

(Continued from page 50)

Adjustment

Adjustment of the exciter is best made under actual operating conditions. Connect the exciter to the transmitter, load the transmitter into a dummy load, apply r.f. excitation to the exciter, feed a source of sine-wave audio into the speech amplifier, and tune the transmitter in the conventional way for maximum output.

Reduce the audio input to zero, and adjust potentiometers R_9 and R_{10} for minimum carrier output. Minimum carrier output may be determined by any sensitive r.f. indicator coupled to the final-amplifier plate circuit. A 0-1 milliammeter, in series with a crystal detector and a two-turn coupling loop, will make a satisfactory indicator. The meter should be by-passed with a 0.005- μ fd. condenser. If a null indication cannot be obtained within the range of the potentiometers, the 6V6 tubes are not evenly matched. Exchanging the positions of the 6V6s may aid in obtaining the balance, or other tubes may have to be used.

After the carrier balance is obtained, tune in the r.f. source on the station receiver, and with the antenna terminals shorted, and the crystal selectivity in sharp position, adjust the crystal phasing to the point where only one sharply-peaked response is obtained as the receiver is tuned through the signal. Now apply sine-wave audio of about 1500-cycle frequency to the speech amplifier, and find the two sidebands on the receiver. Three distinct peak indications will be observed on the S-meter as the receiver is tuned. Set the receiver on the weaker of the two sidebands and adjust L_1 , C_7 and R_{11} for minimum sideband strength. If suppression of the other sideband is desired, throw S_1 to its other position. A dip obtained with one set of adjustments is not necessarily the minimum. Other combinations should be tried. The final adjustment should give S-meter readings for the two sidebands which differ by at least 30 db. The bias voltages on the two pairs of balanced modulators will be equal.

After the adjustments have been completed, the r.f. drive to the exciter should be adjusted to the point where a decrease in drive will cause a decrease in output, but an increase in drive will not cause an increase in output. The complete adjustment procedure should then be rechecked. The rig is then ready for a microphone, an antenna, and an on-the-air test.

If an oscilloscope is available, a simpler and more reliable adjustment procedure may be used. Either linear or sine-wave horizontal sweep may be used on the oscilloscope. The vertical input should be coupled to the output of the transmitter in the same manner as is used for observing amplitude modulation. The sine-wave audio-frequency input to the speech amplifier should be any convenient multiple of the oscilloscope sweep frequency. A 60-cycle sweep frequency and

(Continued on page 90)

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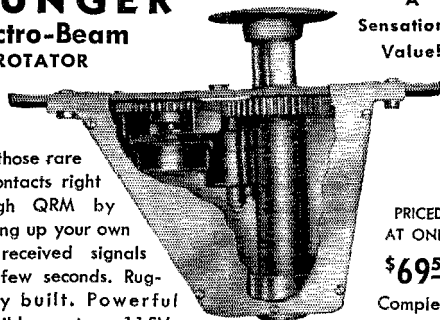
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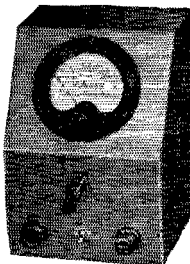
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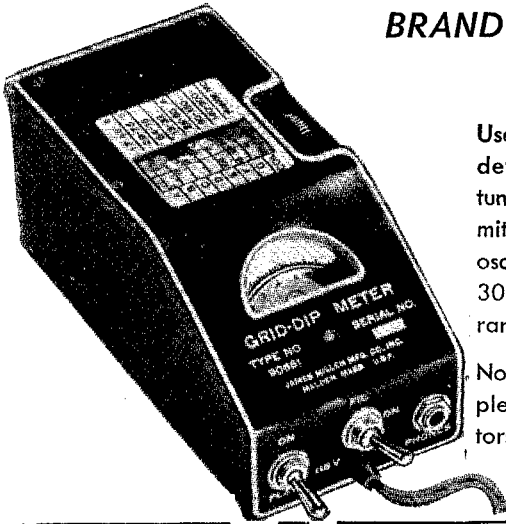
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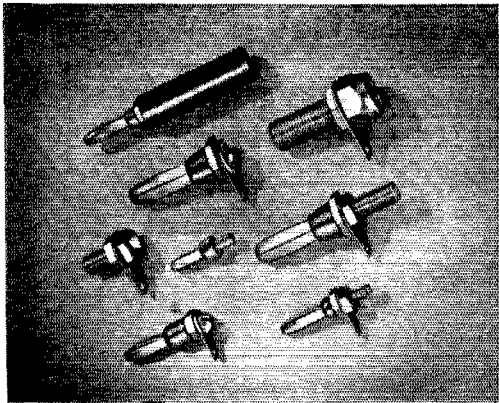
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a 600-cycle audio frequency are commonly used.

When the exciter is modulated with a single sine-wave audio frequency, the output should be a single radio frequency. Therefore, the oscilloscope should show a straight-edged band across the screen, the same indication as is given by an unmodulated carrier. If carrier output, or unwanted sideband output, is present, it will be indicated by "ripple" on the top and bottom edges of the oscilloscope picture. A small amount of ripple can be tolerated, but if the exciter is badly out of adjustment, the output will appear to be heavily modulated. Adjustment with the 'scope is accomplished by adjusting all controls to obtain the smallest possible amount of ripple. The oscilloscope may also be used for continuous monitoring during transmissions to avoid overloading of any stage of the transmitter. Overloading is indicated by a flattening of the modulation-peak patterns at the top and bottom.

Hints & Kirks

(Continued from page 58)

from almost any source that is available. The value of resistors R_2 and R_4 , and of potentiometer R_3 , should be adjusted so that about 60 volts positive appears at the point indicated in the diagram. The potentiometer may then be used to set the flashing level to any desired percentage of modulation using an oscilloscope or other modulation indicator. Since the current drain on the bias source is low, even batteries may be used.

In operation, once the desired flashing level has been set by R_3 , the neon tube will flash every time you exceed that level. To be on the safe side, it should be set to flash before the 100-per-cent level is reached. — R. Page Burr, W2KQP

Noise-Generator Technique

(Continued from page 21)

mercial attention. To be sure, many of the manufactured products are beautiful to look at, and some do a rather good job, but the noise generator shows plainly that it is no trick at all to beat them out with a home built converter. One highly-priced commercial receiver for the v.h.f. range was shown to have a noise figure of 11 db.! No bandswitching commercial receiver yet checked has come even close to the performance that any amateur can obtain with a little care, know-how, and a noise generator.

Well, maybe you still feel that you want the mechanical qualities which the manufactured receiver or converter provides. Then how about a preamplifier ahead of it? We have yet to see the commercial v.h.f. job whose performance cannot be mightily improved by the addition of a cascade³ amplifier, or even a simple neutralized 6J6 ahead of it.

The way to improved v.h.f. coverage lies along the road of improved receiver performance. In the years since the war we've learned to work on

(Continued on page 28)

³ "Using the Cascade on 50 Mc.," QST, March, 1949, page 29.

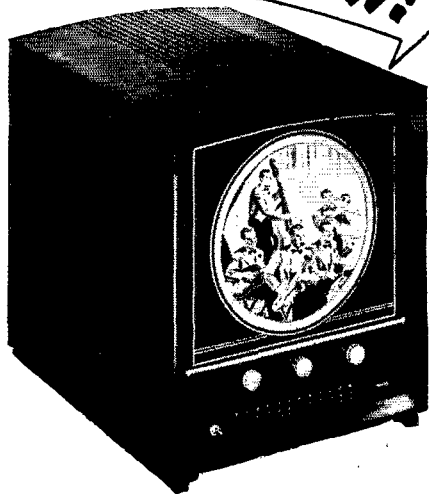
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SENSATIONAL "SURPRISE" TRADE-IN ALLOWANCES ON YOUR USED, FACTORY-BUILT COMMUNICATION EQUIPMENT, MAKE IT POSSIBLE FOR YOU TO OWN HALLICRAFTERS TV FOR FAR LESS MONEY! Here's all you have to do: Simply tell us what you have to trade. Indicate your preference for any one of the Hallicrafters TV sets or Chassis featured. We'll respond with an extra-liberal allowance that's sure to please you. Start right now to enjoy your new Hallicrafters TV set . . . the equipment that steals the show for its brightness, clarity and advanced engineering features. Wire, write, phone or use the handy coupon. Do it today!



HALLICRAFTERS TV Model 509

Push button tuning on all 12 channels. Dual Focus for larger round pictures with 56 sq. in. rectangular picture or 64 sq. in. full circle picture for dramatic close ups—all at a flick of a front panel switch. Mahogany veneer cabinet. Transparent safety shield. 19 tubes plus 3 rectifiers.

ONLY

\$269⁵⁰

Complete with ALL TUBES. Shpg. Wt. 105 lbs.



HALLICRAFTERS TV Model T-506

Here's Television at a price, with all the big set features. 12 channel push button tuning. Static free FM sound reception and 23 sq. in. screen. 18 tubes plus 4 rectifiers. Shpg. Wt. 50 lbs. Now ONLY

\$149⁵⁰

Formerly sold for \$199.50

ALL PRICES F.O.B. ST. LOUIS

Time Payments Available

Phone: Chestnut 1125

Walter Ashe
RADIO CO.

THE HOUSE OF "SURPRISE" TRADE-INS
1125 PINE ST. • ST. LOUIS 1, MO.

TELEVISION CUSTOM CHASSIS

Model T-69 15" TV CUSTOM CHASSIS

Now! Big picture television at a price. 130 sq. in. direct view picture. All 12 channel push button tuning. 8" PM speaker. Mounted on reinforced wood frame ready to be slipped into cabinet or opening in wall, etc. Dimensions 19 1/2" high x 23" wide x 2 1/4" deep. Factory wired and tested. Shpg. wt. 30 lbs. Complete with 15AP4 Picture Tube.....

\$259⁵⁰

Model T-64

Chassis unit only, of Model T-509.

Plan your own TV installation and save money! 95 sq. in. picture with 12" tube; 64 sq. in. picture with 10" tube. Push button tuning on all 12 TV Channels. New DUAL FOCUS Switch for larger, round picture. Factory-wired and tested. Complete with 19 tubes plus 3 rectifiers.

NOW! NEW LOW PRICES ON

T-64 Chassis Complete With 10" Picture Tube.... **\$179.50** Shpg. Wt. 63 lbs.
T-64 Chassis Complete With 12" Picture Tube.... **\$199.50** Shpg. Wt. 66 lbs.

Walter Ashe Radio Co. Q-49-8
Bill DuBord, W3QDF, Mgr., TV and Amateur Div.
1125 Pine St., St. Louis 1, Missouri

Rush bigger-than-ever "Surprise" trade-in allowance on my

(describe used equipment)

for Hallicrafters TV

Mail me my copy of latest Hallicrafters Catalog. (show model of new equipment desired)

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Now Ready!

PREMAX

Mobile "75" ANTENNA

BASE-LOADED

The Premax Mobile "75" Base-Loaded Antenna vastly improves the radiation characteristics of this Antenna over those of ordinary "whip" types. Its 6-decibel gain is immediately apparent as it is equivalent to quadrupling transmitter power and greatly increases effectiveness and range, both on transmission and reception.

It consists of an unusually long, space-wound, base-loaded inductor, topped by a vertical whip. With this Antenna many of the usual difficulties in the 75-meter band have been overcome, permitting wider operations.

Write for special Bulletin and prices

PREMAX PRODUCTS

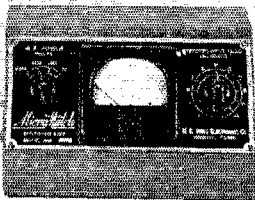
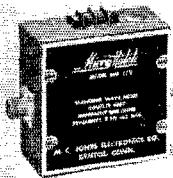
DIVISION CHISHOLM-RYDER CO., INC.

4904 Highland Ave.

Niagara Falls, N. Y.

NOW! RF POWER MONITOR

MicroMatch



New Direct Reading Wattmeter.

Micro-Match MM-252 or MM-272 continuously monitors RF power and SWR up to 500 watts. \$60.00.

Other Micro-Match models available for operation at 500 KCS to 500 MCS and power levels of 2 to 50,000 watts.

M. G. JONES ELECTRONICS CO.

P. O. Box 1519

BRISTOL, CONNECTICUT

50 and 144 Mc. with signal levels which would have been unthinkable before Intelligent and widespread employment of noise-generator technique should speed us farther along that road, at the end of which lies the theoretically "perfect" receiver.

Correspondence

(Continued from page 65)

but has been reawakened during a few ten-meter DX contacts. I've run into many hams in many countries who are collectors of these stupid chunks of paper.

It seems to me that both hobbies have terrific potentialities in furthering international good will and brotherhood. Why can't they be combined, with an occasional on-the-air get together? If we could get the ball rolling, a really good organization could be fostered. Possibly there is such a group. If so, I'd like the dope on it. If not, let's start one.

— P. H. Rockwood, WØVIP

CQ HOUNDS

Kincardine, Ontario, Canada

Editor, QST:

To ARRL I would suggest that you add to your many fine certificates and awards a "CQ HOUND CERTIFICATE." This to be awarded to oprs who clutter up the bands with seemingly endless strings of CQs and other undesirable operating practices. I have heard 60 and more CQs without a station signature and think that a certificate as ugly in appearance as some of these ugly procedures are themselves might help to clear up some of our QRM problems.

— R. Lautenslager, VE5ATR

TWO-METER C.W.

10110 Pierce Drive, Silver Spring, Md.

Editor, QST:

. . . I deplore the complete ignorance of the advantages of A1 exhibited by most 2-meter stations to the northwest. Apparently all except 2 or 3 have no b.f.o. or don't know the code. I wish we had an exclusive band of 100 kc. or so for A1 only on 144 Mc., as it would save much time spent in tuning a 4000-ke. band with a receiver 100 cycles wide. The boys to the south and west are much more alive to c.w. — they respond well to A1 calls and shift to A1 without request when the condx or QRM get bad. . . .

— William L. Smith, W3GKP

40-METER QRM

1727 Van Hise Ave., Madison 5, Wis.

Editor, QST:

Just because certain portions of the 40-meter band ring with the sound of foreign 'phone stations is no reason these frequencies cannot be used successfully by American amateurs. By operating the transmitter within two kilocycles of a strong foreign carrier, your signal can be heard rather easily by anyone whose b.f.o. is turned off. The foreign station acts like a b.f.o., producing an audible tone at the receiver. I heard W9DMK's 40 watts RST 589 while he was beating with a Russian 'phone on 7280 kc. This technique is not as successful when the 'phone station is transmitting music as when voice is being broadcast, but with a good crystal filter results can still be obtained.

— Thomas J. Maresca, W9FQX

SWITCH TO SAFETY!



SUN RADIO'S

ANNUAL CLEARANCE!

CRYSTALS!

All crystals have Army MC harmonic ratings but Sun encloses directions for deriving the correct fundamental frequency in kilocycles.

JUST ARRIVED! NEW FREQUENCY CRYSTALS FOR HAM AND GENERAL USE

—FT-243 Holders, 1/2" pin spacing

(Fractions Omitted)

HAM USE—2, 6, 10, 11, 20, 40 METERS

5305	5825	6273	6606	7240	7506	7673	8073
5475	5840	6340	6640	7305	7540	7705	8100
5677	5850	6373	6673	7340	7573	8000	8173
5700	5873	6406	6706	7373	7606	8040	8175
5706	5875	6425	6740	7406	7640	8050	8340
5725	5900	6440	6806	7440			
5740	5906	6450	7040	7473			
5750	5925	6473	7073				
5760	5940	6475	7106				
5773	5973	6506	7140				
5775	5975	6540	7173				
5806	6000	6573	7206				

99¢ EACH
10 for \$9.00

GENERAL USE

6006	6106	6773	7740	7925	7950	7975	8273
6025	6140	6840	7773	7940	7973	8240	8306
6040	6150	6873	7806				
6075	6173	6906	7840				
6075	6206	6940	7873				
6100	6208	6973	7906				

49¢ EACH
10 for \$4.50

CRYSTALS WITH A MILLION USES

Fractions Omitted

kc	kc	kc	kc	kc	kc	kc	kc	kc	kc
412	422	434	442	462	477	490	498	504	508
413	423	434	443	466	479	491	501	505	509
414	424	435	444	468	481	492	502	506	511
415	425	436	445	470	483	493	503	507	512
416	426	437	446	472	484	494			
418	427	438	447	473	485	495			
419	429	440	448	474	487	496			
420	431	441	451	475	488	497			

49¢ each

Xtal Freq. Stan.
3-prong holder
98.356Kc

Easily altered for 100kc
Standard. Mounted in
low loss 3 prong holder.

\$3.89 each

For Crystal Controlled
Signal Generators
Ft. 241-525Kc

526,388	533,333	537,500
527,777	534,722	538,888
528,166	536,111	
530,555		
531,944		

99¢ each

I.F. Frequency
Standards

kc	kc	99¢ each
450	461,111	
451,388	464,815	
452,777	465,277	

200 KC CRYSTALS

Without Holders
2 1/2" x 2 1/2", Each **69¢**
3 for \$2.00

Assorted Miscellaneous
Crystals

370kc	377kc	384kc	387kc
372	379	386	388
374	380		
375	381		
376	383		

priced at a fraction of the
cost of their holders alone.

For Ham and
General Use

390kc	396kc	403kc	408kc
391	397	404	409
392	398	405	411
393	400	407	
394	401		
395	402		

79¢ each

CRYSTALS
FOR
SCR 522

5910kc	7480
6370	7580
6450	7810
6610	7930
7350	

\$1.29 each

Crystals from BC 610
Spacing—2 Bananas,
Plugs

2045	2305	3202	3550
2105	2320	3215	3570
2125	2350	3231	3580
2145	2390	3250	3945
2155	2415	3322	3955
2220	2435	3510	3995
2258	2442	3520	
2260	2532		
2282	2545		
2300	2557		

\$1.29 Each

• Payments must accompany order. Enclose 20c for postage and handling. Minimum order — \$2.00 plus postage. Crystals are shipped packed in cloth bags inasmuch as they are shock mounted. All shipments guaranteed.

MONITOR SCOPE UNIT — TS — 121/CPN 8 — Ideal for building a high quality, precision, laboratory 5" oscilloscope, contains 115V-60CV power supply, high voltage power supply, C.R. tube shield, condensers, resistors, controls, and almost everything else needed to make this conversion, with conversion diagrams, less tubes. \$39.95

AN/GPN-8 AUTOMATIC TRANSPONDER BEACON — contains the following units — Monitor scope unit, receiver coder unit, transmitter monitor, for 115V-60CV operation, units are mounted in 46" x 27" x 23" enclosed heavy steel cabinet, complete except less voltage control unit and less tubes. . . \$149.95

SPERRY AMPLIFIER — with 4 tubes and many parts, with diagram. New. \$3.95

VHF — NAVY CW TRANSMITTER, 80-105 mc, battery operated, with 2-1G4 tubes and instruction manual. \$6.95

BENDIX — 100 watt transmitter, 4 ECO's, 4-12SK7's and 3-807's, with complete conversion instructions for operation on 10, 20, 40, 80 meters. LIKE NEW \$39.95. Used \$29.95.

WALKIE-TALKIES, 52-65 mc with spare parts for portable or mobile use. NEW, per pair. . \$139.90

AM/26 INTERCOM AMPLIFIER — with 28V dynamotor, 2-12A6, 2-12J5 Tubes and instructions for conversion to HI-FI amplifier. New \$4.95

ANTENNAS: 420-450 mc ant. for BC 645. \$99
4 section telescopic, opens to 3 feet. \$99
22' tapered for 150-300 mc with coax connector. 2.69
less coax connector. 1.95

PORTABLE AMPLIFYING MEGAPHONE, complete with carrying case, tripod, extra mike. \$29.95

TUNING UNITS — from BC 375, TU 9B, TU 10B \$1.95

TRANSMITTER — RADAR — BC-1072A, 150-210 mc, was originally used with BC-1068A Rec. and BC 1073A Wavemeter, complete with tubes and 115v-60cy power supply. \$19.95

PB 2-6 MC RECEIVER, 6 tubes, 4 PB pre-set to any frequency. Conversion instructions. BC band supplied. Speaker supplied. Used but A-1. \$9.95

MAGNETRONS — 2J38 . . . \$18.95

CATHODE RAY TUBE — 5BP4 \$3.99

CATHODE RAY TUBE — 12GP7, ELECTROSTATIC. each \$12.95

3E 29/8 29 B TRANSMITTING TUBE SOCKET FOR ABOVE. . . . \$3.89

ANTENNA RELAY UNIT — BC442A with R. F. Ammeter and Vacuum cond. \$2.89

BC-746 TUNING UNIT — Contains antenna and tank coils tuning cond. Ideal foundation for miniature transmitter. . . with 2 xtals. \$9.99
with 2 xtals, 1 in 80 meter band \$1.29
less xtals. \$3.99

HEADPHONES:
HB 4 — High-impedance with PL 55 plug. \$2.49
P-20 High-impedance with phone tips. \$2.39

ALUMINUM RODS — 36" by 1/8" Diam. for constructing antennas, 10 for. \$1.99

METERS

WESTON 2" r, 500 micro-amp, with scale for 0-15/600v	\$2.97
J.B.T. REED FREQ. METER — 56 to 64 cy.	9.95
TRIPLETT — 2" sq. 0-40 v DC METER.	2.97
SUN 2" r, 0-300 V DC.	2.97
WESTINGHOUSE 3" sq. 0-150 V AC.	3.49
SIMPSON-FOUNDATION METER for 1-177 Mutual Con- ductance Tube Tester — Calibrated in Microhmhos, with diagram.	3.49
WESTON — 2 range ohmmeter, new with case, 0-10/1000 ohms. 1.47	

BC-1073A — Wavemeter — 150-210 mc, contains cavity wavemeter, 115v-60cy. Power supply, less tubes. \$12.95

BC-1298 — INTERCONNECTOR UNIT — same as above less cavity with 115v-60cy Power supply, less tubes. \$7.95

.005-2500 W.V. MICA CONDENSERS. 49c ea. . . 3 for \$1.25

G. I. PORTABLE WINDUP PHONOGRAPH, heavy duty case Adj. speed, heavy duty motor, NEW, Orig. Gov't cost \$67.90. \$9.95

HANDSET TS-13, New. . . . \$3.95

JACKS for handset plugs, PL-68, \$3.30; PL-55, \$3.30

MICROPHONE T-17, New. . . \$1.29

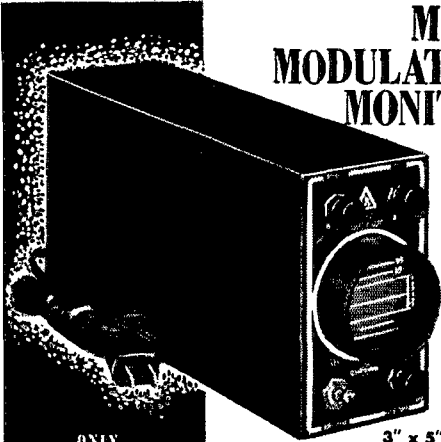
SUN RADIO

OF WASHINGTON, D. C.

938 F STREET, N. W. WASH. 4. D. C.

TERMS All items F.O.B. Washington, D. C. All orders \$30.00 or less, cash with order. Above \$30.00, 25 per cent with order balance C.O.D. Foreign orders cash with orders, plus exchange rate.

MM-2 MODULATION MONITOR



3" x 5" x 10"

ONLY
\$24.95

COMPLETE WITH TUBES
REVERSIBLE PANEL CALIBRATED
SPACE INTENSIFIER WINDOW
INSULATION ROOM

ADD SIGHT TO YOUR SOUND . . .

with this basic oscilloscope featuring calibrated modulation percentage scale, linear 60 cy sweep with return trace blanking, trace intensifier window, complete controls, reversible panel, rack mounting provisions and many other outstanding features. See the MM-2 at your dealer or write Dept. 8-9.



LAMBDA ELECTRONICS CORP.

BOX No. 55

CORONA, N.Y.

Strays

We may well be proud of the achievement of a fellow-amateur, Eugene G. Rochow, WIRAK, winner of the American Chemical Society's Leo Hendrik Baekeland Award "for outstanding achievement in creative chemistry." One of the highest honors that can be bestowed on a professional chemist, the Baekeland medal carries with it a cash payment of \$1000. The award to WIRAK is in recognition of his discoveries in the field of silicone chemistry while associated with the GE Research Laboratories. Having subcumbded to a long-felt desire to teach, Mr. Rochow is now an associate professor at Harvard University.

V.H.F. Sweepstakes Results

(Continued from page 60)

ATLANTIC DIVISION

<i>E. Pennsylvania</i>		<i>So. New Jersey</i>	
W3BES	2884-179-8-A-B	W2PAU	3296-207-8-A-B
W3EKN	1743-125-7-A-B	W2SAI	2646-189-7-A-B
W3FXG	1584-132-6-A-B	W2DAJ	1744-109-8-B
W3LVF	1188-99-6-A-B	W2QED/2	1666-119-7-B
W3KT	1000-100-5-A-B	W2REB	1470-106-7-A-B-C
W3FUF	850-85-5-A-B	W2PWP	1320-110-6-A-B
W3EQA	830-83-5-A-B	W2ADA	924-77-6-A-B
W3MQU	720-60-6-A-B	W2MEU	783-44-9-A-B
W3NZZ	560-70-4-B	W2FXN	580-73-4-A-B
W3DOD	544-68-4-B	W2VX	516-64-4-B
W3OWW	516-43-6-B	W2UCV	480-60-4-B
W3GHM	486-81-3-A-B	W2EH	434-31-7-B
W3KIW	480-60-4-B	W2PFT	390-65-3-B
W3DGM	450-75-3-A-B	W2SYR	384-25-8-A
W3DEM	414-69-3-A-B	W2VWL	370-37-5-B
W3IND	400-50-4-B	W2YSK	350-35-5-B
W3EVW	318-53-3-A-B	W2ASG	280-70-2-B
W3ISE	288-72-2-A-B	W2APB	204-34-3-B
W3CPV	224-56-2-A-B	W2QKE	204-34-3-A-B
W3GYV	208-52-2-A-B	W2PEN	200-25-4-B
W3NSI	184-41-2-B	W2PIN	198-33-3-A
W3HDB	146-37-2-B	W2AXA/2	180-23-4-B
W3FLH	144-24-3-A	W2RDK	168-28-3-A
W3IXN	128-32-2-A-B	W2PML	164-41-2-B
W3HRD	120-30-2-A	W2OSV	160-40-2-B
W3BXE	112-29-2-A-B	W2PFQ	160-16-5-B
W3UKI	112-28-2-B	W2BDI	144-12-6-B
W3KEW	100-25-2-B	W2APD	132-33-9-B
W3KDH	96-24-2-B	W2HEH	132-33-2-A
W3EBW	84-14-3-B	W2BAY	120-20-3-A
W3GED	76-19-2-A-B	W2YZC	112-28-2-B
W3JBC	60-15-2-A	W2QOQ	80-20-2-B-C
W3JPP	52-13-2-B	W2CEE	78-13-3-B
W3FRY	44-11-2-A	W2RUA	72-7-3-A
W3KMS	32-8-2-A-B	W2RGT	68-17-2-B
		W2DMU	40-10-2-A-B
		W2UKV	40-10-2-B
		W2HRN/2	8-4-1-B
		W2SDO	6-3-1-B

Md.-Del.-D.C.

W3CGV	744-62-6-A-B
W3GKP	396-33-6-B
W3EZZ	324-41-4-A-B
W3EUQ	224-28-2-B
W3LMC	196-26-4-B
W3OWE	192-24-4-B
W3AHQ	150-25-3-B
W3NZR	102-17-3-A-B
W3IZE	96-16-3-B
W3FPQ	72-18-2-B
W3PNQ	66-11-3-B
W3NQC	18-9-1-B
W3KOU	6-3-1-B
W3NH	4-2-1-B

W. New York

W2QNA	360-45-4-A-B
W2JLW	200-25-4-B
W2OSK	150-25-3-B
W2ORI	126-21-3-B
W2VLL	64-16-2-B
W2SJV	56-14-2-B
W2LUB	20-10-1-B

W. Pennsylvania

W3RUE	714-51-7-B
W3EWL	272-34-4-A-B

(Continued on page 98)

ATTENTION MOBILE HAMS

Complete mobile package — nothing else to buy. Outstanding mobile signals use motorola equipment — backed by years of communication equipment experience — World's largest producer of 2-way mobile equipment.

- A mobile transmitter with a double feature FM or AM at flip of the switch, the MOTOROLA FMT-30-DMS (27-30 MC.). **\$130.00**
- MOTOROLA P-69-13-ARS receiver with special noise limiter for use with any converter having 1500-3000 KC. **\$60.00**
- P-7253 spring base rear —mount antenna. **\$22.50**
- 3-30 famous Gon-set converter complete to connect to the P-69-13-ARS receiver... **\$39.95**
- P-327-E Fire wall loud speaker.... **\$5.00**

The above comes complete with all necessary accessories and mounting hardware. Order direct or through the Motorola National Service Organization member in your area.

MOTOROLA INC.

Amateur Sales Dept. QST-AUG.
1327 W. Washington Blvd. Chicago 7, Illinois
Attention: Harry Harrison W9LLX
Telephone — Taylor 9-2200 Ext. 161

SUBRACO MT-15X



Mobile Transmitter

Here's your best mobile transmitter! Compact size (only 4 1/2" x 5 1/2" x 6 1/2" deep) for finger-tip glove compartment or under dash - for finger-tip drive, metering, and QSY'ing - while you drive. Built-in relay for complete PUSH-TO-TALK control. Stable, crystal controlled oscillator. 2E26 RF amplifier (not a doubler!) can be loaded to 30 watts and plifier (high output efficiency. Covers 10 and 11 meter bands. Class B Audio for 100% modulation in 11 meter bands. Ultra-modern - in- and out appearance. too! Chrome embossed panel - in- and direct meter illumination - dark green, slide-in cabinet.

Complete \$87.50
(Less tubes and connectors - \$79.95)
Subraco DS-400 Dynamator Pack for MT-15X \$59.95

HARRISON

RADIO CORPORATION
12 WEST BROADWAY, NEW YORK 7

SWELTERING?
SHOP FOR COOL COMFORT!
AIR CONDITIONED

COMPLETE 30 WATT AM PHONE RIG

With an AC power supply, the MT-15X makes a complete home or portable rig for 10-11 meter AM phone! Plenty of power to consistently work AM to coast and "across the pond" - ideal for amateur-skip local QSO's. Just the thing for beginners and OT's who want to work 10 or 11 meters. Later on, put it in the family car for mobile work.

AC POWER SUPPLY KIT
This supply is designed to operate the Subraco MT-15X at full power input from 115 V AC. Brandy, conservatively rated components, HV relay for rapid break-in, complete plug on power supply, amplifier cabinet and full instructions. Streamlined beside MT-15X on operating table!

Complete AC Power Supply Kit PS-1 \$29.95
COMPLETE 30-WATT 10-11 METER PHONE TRANSMITTER - comprises Subraco MT-15X, Biley Xtal, etc. Ready to operate!
\$119.95

COMING TO NYC ON YOUR VACATION? Make our air conditioned place your headquarters. You'll have a Coke meet your friend! You'll get information! You'll get a fresh up! The rag is always welcome!

DX BAIT - A PHONE PATCH!

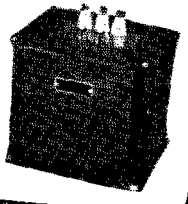
Just let 'em know you have a phone patch and those elusive ones will wait in line for you! Here are two, well engineered, two-way balanced phone patches which in extensive field tests have given excellent results and no trouble! Automatic in operation - no changeover switch.

DE LUXE MODEL Complete kit of parts, cabinet, Simpson 4 1/2" VU meter and full instructions. Item MX-5 \$49.95
UTILITY MODEL - Complete kit of parts and instructions. (Uses no meter) Item MX-5 \$18.95

DON'T MISS THESE TREMENDOUS BUYS!

TWO unbeatable plate transformed bargains! Brand new stock in factory case. AC. All ratings are clearly marked. Both of these transformers are conservatively rated to deliver 400 MA in CONTINUOUS COMMERCIAL SERVICE (CCS). Handsome, shielded and potted, porcelain, completely terminal! Mounts upright or inverted.

2600-0-2600 V AC AT 550 MA ICAS! - 50 lbs!
7 1/2" x 7 1/2" x 8 1/2" high - TP-18 \$28.95
1750-0-1750 V AC AT 550 MA ICAS! - 37 lbs.
6 1/2" x 8" x 7 1/2" high - TP-17 \$19.95
(Add 85¢ each for crating, if shipped!)



HARRISON HAM-A-LOG
Did you get the BIG OUTDOOR ISSUE of our HAM-A-LOG? Mobile rigs - everything for the antenna - a real good phone patch - hundreds of FB bargains, etc. etc. If not, send a card today!

NEWLY ANNOUNCED GEAR

PREMAX 96" Steel police type whip - New Low Price \$2.35
HALLICRAFTERS S-72 Portable Comm. Receiver \$79.95
DBAKE Instant heating soldering gun \$11.88
COLLINS 32V-2 De-TV-1 Deliveries started \$9.92
NATIONAL MB-20 50-Watt Multi-Band tank \$179.50
HALLICRAFTERS SX-71 New Comm. Receiver \$2.50
SYLVANIA IN34 Germanium Diode. A buy! 3 for \$2.50

HARRISON HAS IT!

I have a COMPLETE STOCK of all makes and models of amateur equipment for IMMEDIATE DELIVERY at the LOWEST PRICES! A good trade in deal and a real easy-pay plan if you wish. All material shipped in the original factory-sealed carton (never opened). Another reason why it pays to deal with me!

Collins 75A-1	\$ 375.00	Hallcrafters S-38	\$ 39.95
Collins 32V-2	575.00	Hallcrafters S-40A	79.95
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National NC-108	99.50	Hammarlund HQ-129X	177.30
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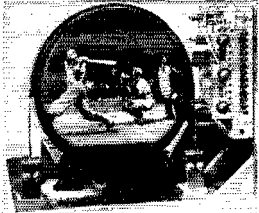
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W3CAF	64-16-2-B	W2WLS	472-33-7-B
W3NDD	36-9-2-B	W2WCR	444-37-6-B
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W9MMV	36-18-1-A-B
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W8NYZ*	44-11-2-B
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Missouri

W0IHD	34-9-2-B
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W1EIO	432-36-6-A-B
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W1CGY	329-24-7-A
W1BDI	162-27-3-A-B
W1FTX	128-21-3-A-B
W1AW	108-18-3-A-B
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W2LAL	273-20-7-A
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W2WFY	750-63-6-A-B
W2BYH	720-60-6-B
W2OHE	684-57-6-B
W2SYW	600-60-5-A-B

Midwest Division

W2WVW	288-37-4-B
W2ILB	230-35-4-B
W2HG/2	235-24-5-B
W2KU	200-25-4-B
W2PQG	80-10-4-B
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W2LGK	44-11-2-B
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W8ZFJ/2	1827-131-7-B
W2DFV	1778-127-7-B
W2ZBO	1764-126-7-B
W2COT	1032-86-6-A-B
W2CBB	840-70-6-B
W2PQB	384-32-6-B
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W2OGY	160-20-4-B
W2JCP	156-26-3-B
W2DZA	84-14-3-A-B-C
W2UWN	74-14-3-B
W2OKO	68-17-2-B
W2UWK	36-6-3-C
W2QFS	32-8-2-B
W2MWW	24-4-3-C
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Missouri

W0IHD	34-9-2-B
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W1FAA	1208-76-8-B
W1HDQ	888-82-7-A-B-C
W1REY	588-49-6-B
W1PNB	335-34-5-A
W1CGY	329-24-7-A
W1BDI	162-27-3-A-B
W1FTX	128-21-3-A-B
W1AW	108-18-3-A-B
W1KHM	66-11-3-B
W1RDF	36-6-3-B
W1FWH	14-7-1-B

MAINE

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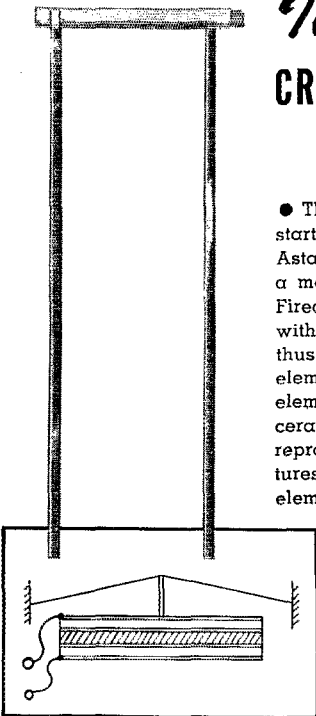
Massachusetts

W1ATP	1632-102-8-A-B
W1CTW	1560-130-6-A-B-C
W1HLL	1404-117-6-A-B
W1OOP	1296-108-6-A-B-C
W1BDF	900-75-6-B
W1JLI	900-90-5-B
W1KID	900-75-6-B
W1AQE	810-81-5-B
W1EZY	552-46-6-A-B
W1DJ	525-44-6-A
W1MX	520-52-5-A-B
W1MCR	480-60-4-B
W1JLI	430-43-5-A-B
W1FKT	400-40-5-A
W1BB	360-30-6-A-B
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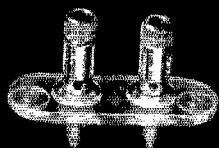
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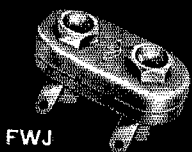


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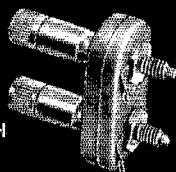
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- **D**ependable
- **Q**uality



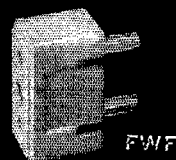
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WIPAW	148-37-2-B
WIKB*	144-24-3-B
WIIN	128-16-4-A
WIJCE	104-26-2-B
WILQA/1	96-16-3-B
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W1QQW	84-21-2-B
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W1QXE	1330-95-7-A-B
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W1NLE	60-10-3-B-C
W1QXV	48-8-3-B-C

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W1LSN	636-53-6-A
W1DGV	192-24-4-A-B

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Vermont

W1OIQ	1161-65-9-A-B
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W7FIM	16-8-1-A-B

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W6AJF	410-43-5-B
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W6VCG	340-34-5-B
W6DTV	88-11-4-B

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W6BVK	230-23-5-A-B-C
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W6IFE	44-11-2-B

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W4KYY	160-20-4-B
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W4LKZ	31-14-3-B
W4CLY	32-8-2-B
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W8TDJ	54-9-3-B

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Eastern Florida

W4EID	18-5-2-A-B
W1IID/4	8-4-1-A-B

Western Florida

W4CNK	8-4-1-A-B
W4EQR	8-4-1-A-B
W4HLZ	8-4-1-A-B

Georgia

W4LNG	24-12-1-A-B
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W6MYK	28-14-1-B
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W6WNN/6	10-5-1-B
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W5FNA	6-3-1-
W5FFM	2-1-1-A

CANADA

Maritime

VE1QZ	10-5-1-A-B
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Ontario

VE3AIB	432-54-4-A-B
VE3ANT	280-35-4-B
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VE3IZ	204-34-3-A-B
VE3QT	102-17-3-B
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VE3BYN	48-12-2-B
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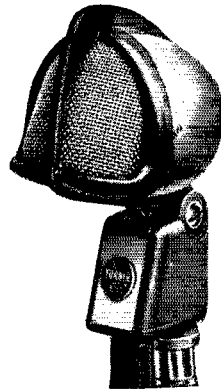
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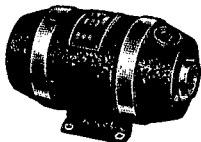
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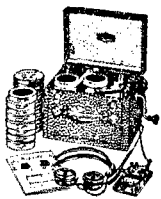
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SELLING out: NC-183, \$180.00; HT-18, \$70; Micro-Match, \$15.00. All in new condition, used very little. W8WDR, 202 E. Philadelphia, Flint 5, Mich.

LOCAL Ham! pick up: Electro-Tech television set with 12GP7, 13 channel Telekit front-end tuner, \$75.00. Needs a bit of work on vertical sweep. Complete with folded dipole antenna. Edward Bowley, W2VLIH, 31-19-43rd St., Long Island City 3, N. Y.

WANTED: Service manual for RCA model ACR-175 receiver. C. R. Laughlin, W7KWN, Ganado, Arizona.

TEMCO No. 75GA transmitter with Turner dynamic mike, \$325.00. SX-42 Hallicrafter receiver, \$200.00. VHF-152 A converter, \$65.00. All in excellent condition. W9ET, Terre Haute, Indiana.

WANTED: One pair or more surplus HK-257-B/4E27 tubes, state price in your first letter. W0IQS, "Bob" Anderson, 1915 Avalon Rd., Des Moines, Iowa.

BARGAINS, new and used transmitters-receivers-parts: Globe King, \$299.00; new 150-watt phone, \$199.00; 60-watt phone, \$99.00; Globe Trotter, \$57.50; R9'er, \$15.00; Millen exciter and VFO, \$25.00; TR-4 \$19.95; HT-9, \$295.00; MB-611, \$39.00; Howard 430, \$29.50; HRC-5TA1, \$199.00; SX-43, NC173, SX-28, \$149.00; HQ-129X, Super Pro \$139.00; RME-45, SX-25, \$99; Latest signal shifter, \$59.00; DB22A, \$49; S-38, \$29.95; S-41, \$22.50; BC610's, 32V1's and many others. Large stock trade-ins. Free Trial. Terms financed by Leo, W0GFQ. Write for catalog and best deal to World Radio Labs, 740-44 West B'way, Council Bluffs, Iowa.

QSLs, SWLs, QSLs. Order now, avoid rush later. Samples. C. Fritz, 1213 Briargate, Joliet, Ill.

MUST sell complete station; no time to operate. HT-9 complete with tubes, 3 sets coils, instruction manual; 8 good crystals, Turner LEXY mike, RME-45 with matching speaker; Micro-Match model MM1; Trans-Meter model 905. All like new; used very little; appearance perfect, no scratches; circuit and components exactly as they left factory; ready to operate. Also Premax 10-meter beam set up; Premax Rotomount; small oscilloscope, QST's since 1933. Make a cash offer for any or all. Inspection and inquiries invited. W5DUW, J. G. Baker, Box 910, Lubbock, Texas.

MOBILE antenna mounts; spring type, whip detachable for garage; 12 mount visible body holes, price, \$375, postpaid. Wayne, W1FFB, 130 Mount Vernon St., Middletown, Conn.

FOR Sale: Back issues of QST, 1925 to 1943, complete. Also some of the 1923 & 1924 period. Ed Ruth, 195 Parsons Drive, Hempstead, L. I., N. Y.

SEVERAL plate transformers 110 volt 220 volt primary, 2400 volt secondary, 1000 Ma. capacity. Francis Sutton, 145 Feeder St., Johnstown, Penna.

FOR Sale: HRC-5TA1 complete with loudspeaker and power supply. 1 1/2 years old. In excellent condition. \$200.00. W4PN, 120 Cambridge Drive, Louisville 8, Ky.

SEND for details on complete ham station, PP 35T final T240, BC348, BC221, BC654A, plus misc. Reasonable. Jack Davis, 1316 Linden Lane, Garland, Texas.

WHAT gear will you swap for a 16 mm Victor model 40 sound projector? W0CBQ.

HQ-129X receiver. Used one year. Like new. \$145.00. William C. Felton, Nevada, Iowa.

HQ129 complete station, ready to operate. Temco 75GA with relayed push-talk D-104, ribbon mike, extra final tube, Super Pro SP-400-SX, Panadaptor, DB-20, BC-221, AC operated wire recorder; 4 one-hour spools, 4 element wide Plumber delight rotator, indicator. Price: \$650.00. F.o.b. Miami Beach. W4MMT, 213 5th St., Miami Beach, Fla.

QSLs? SWLs. Distinctive? DeLuxe? Cartoons? Photographic? QSL samples, 3¢. Sakkers, W8DED, Holland, Mich. "Finest QSLs printed" (Veteran)

SWAP: New BC-348-P for RME-45. W6ZTX.

HQ-120-X receiver with speaker. In excellent working order, minus cabinet, panel and meter. \$70.00. Also Telrad 18-A frequency standard in new condition. \$20.00. W5LGS.

BARGAINS: New and reconditioned Collins, National, Hallicraeters, Hammarlund, RME, Millen, Meissner, Meck, etc. Reconditioned S-38, \$29.00; SX-43, \$129.00; NC-57, \$69.00; NC-173, \$139.00; NC-183, \$199.00; RME-45, \$99.00; HQ-129X, \$129.00; S-20R, S-40A, SX-42, SX-62, SX-25, SX-28A, DB22A, HF-10-20, VHF152A, RME-84, HRS, HRC-7, NC-101X, HT-18, Meck T-60, BC-610, Collins 75A1, Collins 32V1, etc., cheap. Shipped on approval. Terms. List free. Write Henry Radio, Butler, Missouri.

SELL: BC-342D 110 ac model, \$50.00 clean. Thordarson 6000/4800 C/T at 650 \$35.00. RCA modulation xfrm 500 watt, \$1.00. New 833A's, \$15.00. Pole xfrm 2200 3 amps C/T \$12. Want: KBW3. Above guaranteed. W0FMK, R2, Florissant, Mo.

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FOR Sale: Hallicraeters SX-42 and bass reflex speaker and/or Gardard intermixing changer with Pickering pick-up. Like new. New York and Long Island. Phone Hicksville 5-3867, Box 265, Hicksville, L. I., N. Y.

FOR Sale: Super Pro SP-400-X incl. pwr. supply, \$225.00; Millen #90700 ECO, \$25.00; #90800 exciter, \$25.00; #90501 Sec. freq. std., \$75.00; #90600 midjet wavemeter set \$6.00. All in A-1 condition. Phmac 4-125 tube (used two hours) \$10.00. All above units, #315.00. Phone evenings, Hilland 6980, H. Turner, 322 N. Negley Ave., Pittsburgh 6, Penna.

FOR Sale: BC-221-T frequency meter. Brand new, perfect condition, with wiring diagram, \$50.00. Garnet Frank, 77 1/2 Main Street, Potsdam, N. Y.

WANTED: MT-284 shock-mounting plate for ART-13; also MT-283 that fits MT-284. L. J. Smith, Box 3887, Sta. A., Baytown, Tex.

MAKE AN offer: Sonar NBFM modulator exciter, Abbott transceiver DK-2, WAISF, 1950 Deer Park Ave., Louisville, Ky.
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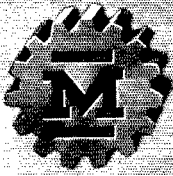
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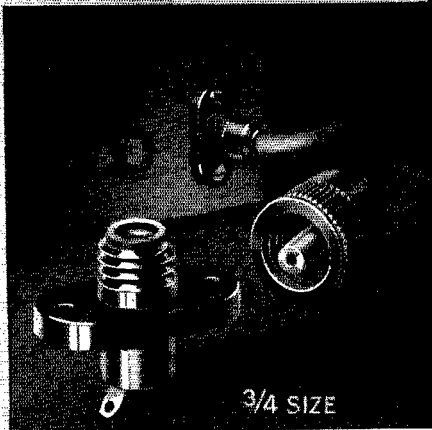
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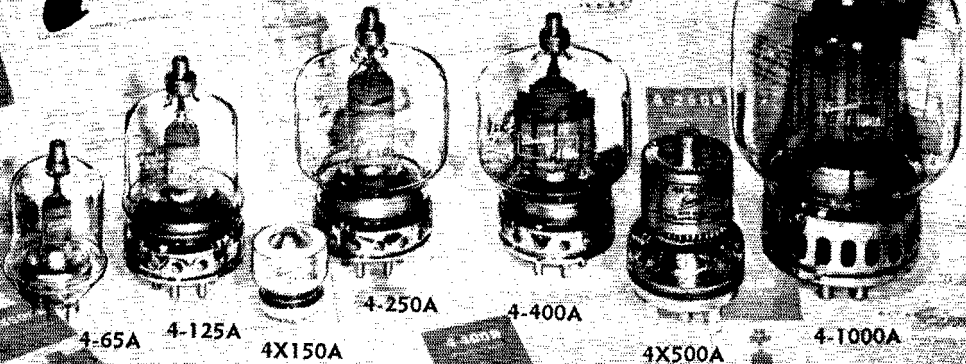
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On May 17, 1949, I was one of the unfortunates that was caught in the Fort Worth flood. My house being submerged for approximately 24 hours.

You may be interested to know that I own a National NC200 receiver. This receiver has never given me any trouble since I first purchased it. After being submerged in the flood, it appears that the only damage that was incurred was the power transformer. Even the speaker was not damaged, as were most radios. A little washing down with a hose and clear water, and a drop of oil and a little grease on the coil turret, was all that appears necessary.

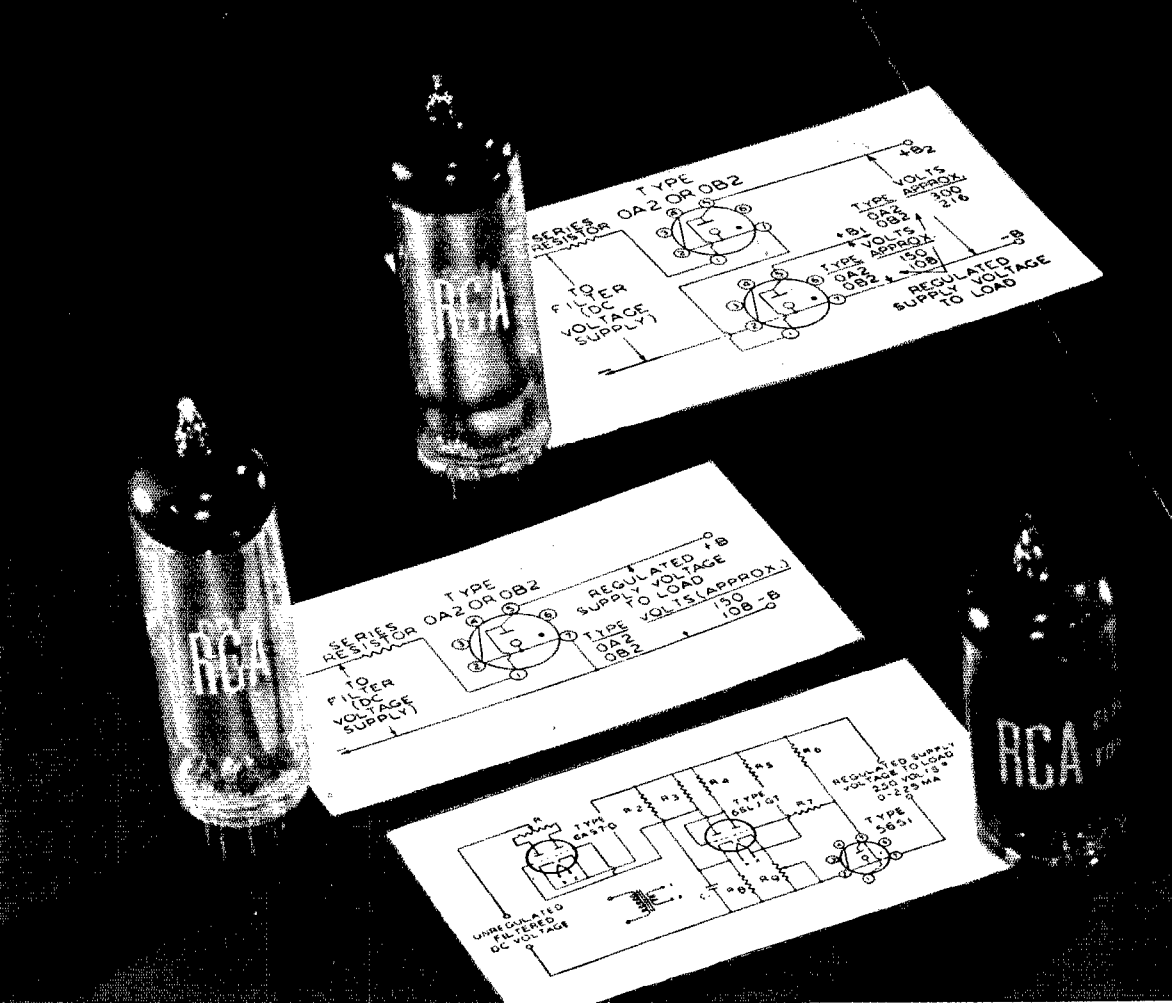
I thought you would be interested in knowing how this receiver reacted. The power transformer indicates a resistance from the primary to ground, which causes the fuse to blow after a few minutes of operation. This is apparently the only damage caused.

Yours very truly,

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