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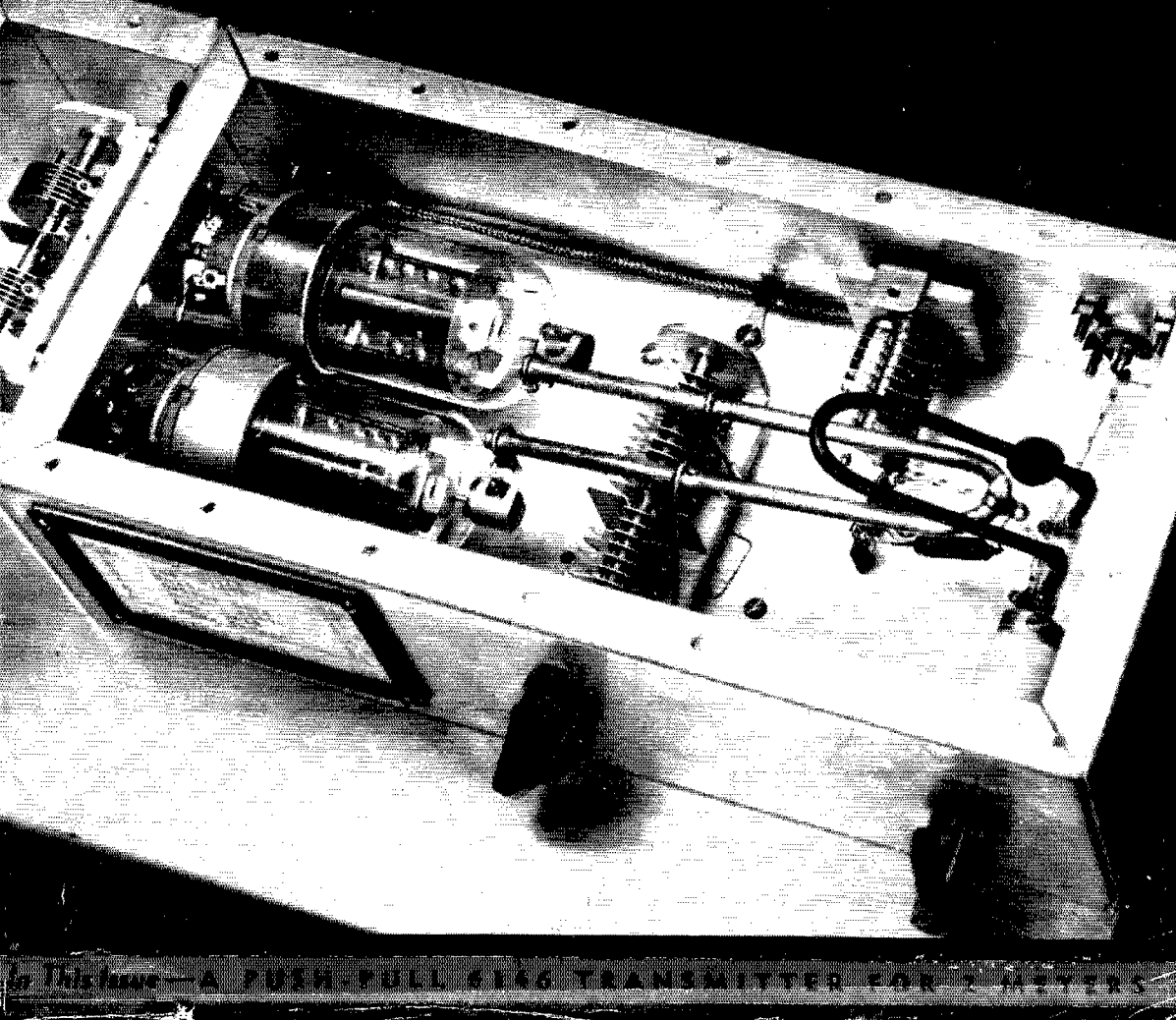


In This Issue—A PUSH-PULL 4-1000 TRANSMITTER FOR 2 METERS

Buy power output at 3 cents a watt . . .

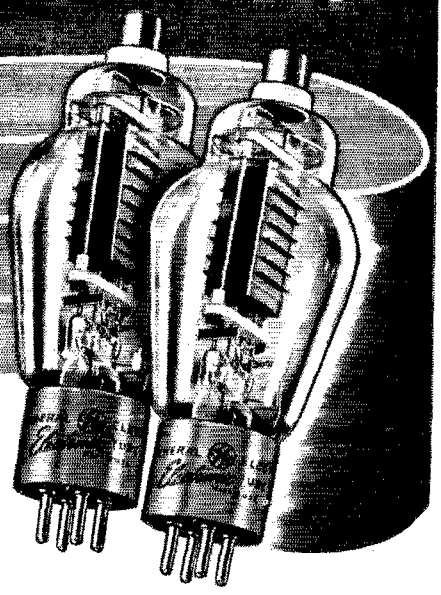
FOR FOUR TUBE SERVICES!

B—MODULATOR

B—R-F LINEAR

C—CW

C—PHONE



GL-811-A
Power Triode

GET substantial output at a bargain tube price... with G.E.'s economy GL-811-A! Then pile value on value by giving the triode a chance to prove its versatility!

Class B Modulator: a pair will put out 340 w of audio, enough for the average ham rig, and you can modulate a kilowatt final by installing four GL-811-A's in p-p parallel.

Class B R-f Linear: here one tube gives you a peak power output up to 200 w in single-sideband speech transmission. Sept.-Oct. Ham News described in detail an efficient SSB final using a single GL-811-A.

Class C Phone and CW: with 175 w and 260 w respectively the max input per tube, you can increase the power of your signal to a high level by using economy GL-811-A's.

Throughout, real tube efficiency! The GL-811-A is a high-perveance, low-drive triode, with superior design features such as (1) a radiating-fin plate structure that dissipates heat, (2) heavy internal leads with low r-f losses. Your G-E tube distributor will be glad to quote you the dollar-saving price. See him today! *Tube Department, General Electric Company, Schenectady 5, N. Y.*

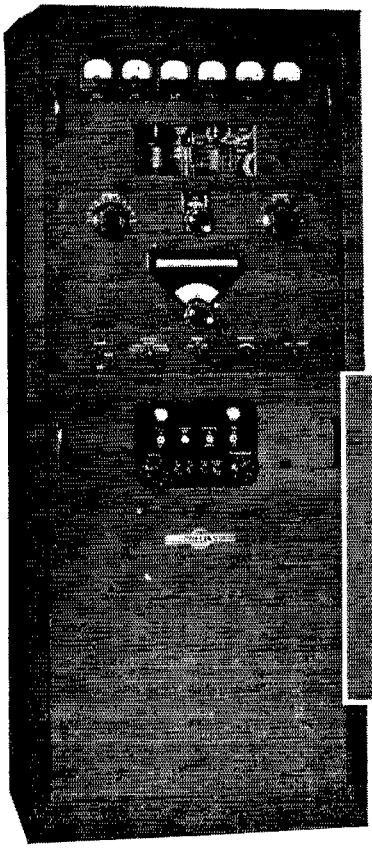
HAVE YOU NOMINATED YOUR CANDIDATE FOR THE 1952 EDISON AWARD?

● *A month ago, this page announced* the Edison Amateur Radio award for 1952, and told in detail how you can enter your candidate. Nov.-Dec. Ham News also will carry the facts. If your nominating letter hasn't been written and mailed, it would be well to get your candidate's name, address and call letters, and a description of his meritorious public service, on record with the Award Committee. Letters must be postmarked not later than December 31, 1952. Presentation of the Edison Award to the winner will be an important event, receiving national recognition.

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC

166-1B10



TVI HITS A NEW LOW

with the Collins KW-1

THE KW-1 represents Collins' whole-hearted attempt to minimize higher order harmonics which tend to interfere with TV reception. All precautions possible were built into the transmitter by keeping the harmonic content of the various transmitter circuits at a low value, then filtering and shielding of all leads were added to minimize leakage of these harmonic voltages.

The exciter portion of the Collins KW-1 uses approximately twice the average number of tuned circuits used in ordinary transmitters, thus contributing to low harmonic output from the exciter with the added advantage of reduced subharmonic radiation from the antenna. In addition, another premium feature — a variable vacuum capacitor is used in the Class C amplifier with very short low inductance leads connecting from the plates of the amplifier tubes to the variable capacitor — thus providing a low impedance path to ground for harmonic currents. A pi-L network — developed by Collins — provides increased harmonic attenuation without adding operating difficulties or additional controls.

- The r-f section is completely shielded with closely spaced screws to insure good bonding between the portions of the shield.
- All leads carrying power and control functions into the r-f unit are adequately filtered to minimize radiation of undesirable harmonic energy.
- A low pass filter at the output provides additional attenuation of harmonics, virtually eliminating the appearance of power at television frequencies at the antenna.

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NOVEMBER 1952

VOLUME XXXVI • NUMBER 11

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OFFICES

38 La Salle Road
West Hartford 7, Connecticut

TEL.: 3-6268 TWX: HF 88

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INDEXED BY
INDUSTRIAL ARTS INDEX

—CONTENTS—

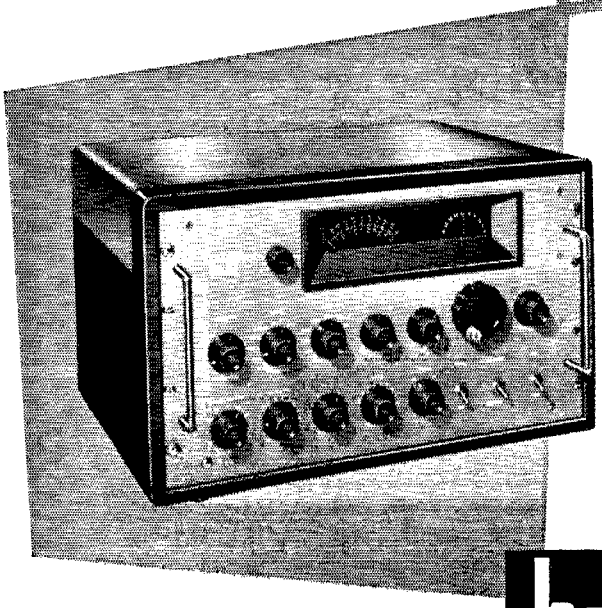
Finally! No More TV Harmonic Problems!

The New Hallicrafters HT-20 is T.V.I. proofed!*

Here's the news you've been waiting for—a medium power transmitter (100 watts) that solves the problem of harmonic radiation in the television channels. The Hallicrafters HT-20 is the answer. Completely tested in the lab and in the field, here is a transmitter that is truly T. V. I. Proofed.*

This is not simply a revamped design, but completely new circuitry to meet this problem. Physically, too, the entire transmitter is new from the massive, two-piece, completely rigid chassis to the electrical air cooling system of the final amplifier tube.

See this newest Hallicrafters—get the complete story of the finest transmitter, dollar for dollar, on the market today. Or write Hallicrafters direct for full details.



Check these features!

- 100 watts carrier power with high level (Class AB2) modulation on any band.
- Continuous coverage, with overlapping bands, from 1.7 to 30 mc.
- Compact, efficient design. Amazing for its power. The HT-20 is 20½" long, 11¾" high and 16¾" deep.
- Weight of transmitter, in cabinet, 105 pounds.
- All transformers and chokes operate "cool"—maximum temperature rise of 40 degrees. This means fewer replacements, long operating life.
- Operates equally well from relay rack or in cabinet on table top.
- Uses 117 volts, 60 cycle AC.
- Moderate cost.

* T. V. I. PROOFED—means that this transmitter has circuitry specifically designed to eliminate spurious and harmonic energies that result in television interference.

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40 Contest Winners Share Hallicrafters 1951-1952 Merit Awards—Win Prizes

The following people were the first 40 to work all states and obtain a General or Conditional Class Amateur license during the Hallicrafters 1951-1952 Novice Class Radio Amateur Contest. Our heartiest congratulations!

Additional winners received after publication date will be notified by mail.

MERIT AWARD
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1951 • 1952
NOVICE CLASS
RADIO AMATEUR

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Norma Jean Guile, W1UBM
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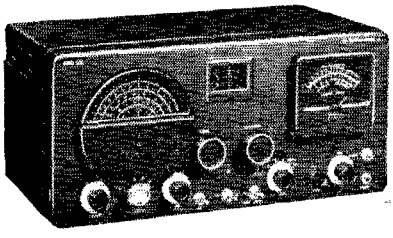

Precise Selectivity—The S-76—Double conversion with 50 kc 2nd i-f. 4-in. "S" meter. 540-1580 kc, 1.72-32 mc in 4 bands. 1 r-f, 2 converters, 2 i-f stages. 5-position selectivity. Phono input jack, 3 watt output. 115 V. AC, 9 tubes, regulator, rectifier . . **$169.50**

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Section Communications Managers of the ARRL Communications Department

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

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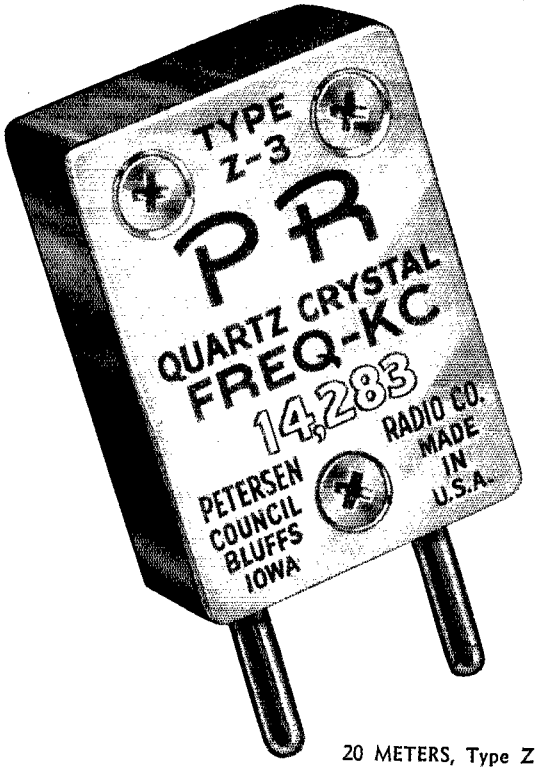

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THE AMERICAN RADIO RELAY LEAGUE, *INC.*,

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

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

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

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

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

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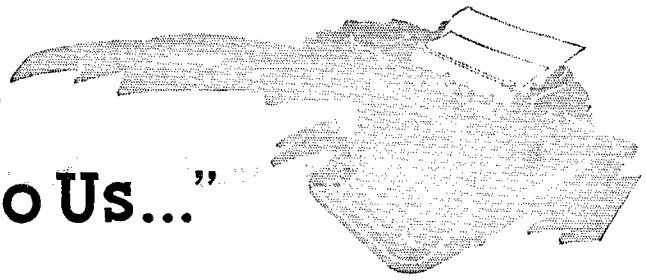


"It Seems to Us..."

HISTORY IN THE MAKING

Did you ever have the chance to sit in on history in the making? You probably have but didn't realize it at the time, because it takes a mighty good man to recognize the complete worth of an idea when it is first generated. If you were a reader of *QST* just 20 years ago, you were in on history. Drag out the files, and we'll show you.

The first article in the June issue was by James J. Lamb, W1AL, and was titled "What's Wrong With Our C.W. Receivers?" It looked technical and had a few graphs and block diagrams, but if you read it through you found that it proposed the principle of eliminating the audio image by using a superheterodyne with high i.f. selectivity and an off-set beat oscillator. This probably sent you scurrying to the "Calls Heard" list, because you didn't want anything to do with a superheterodyne — they were for a few 'phone men who didn't care too much about sensitivity. (*Everyone* knew a detector and one audio was "tops" in sensitivity!).

Still, the editors of *QST* must have thought it had some merit, because the August issue carried the first of two constructional articles that told how to build such a monster. They even prefaced this one with a box that read: "The method of reception disclosed in this article establishes a new standard in amateur receiver performance, bringing it to par with crystal-controlled transmission. The receiver described is capable of thoroughly useful selectivity that not only greatly increases the effective width of our bands but also places the deserved high premium on the good steady signal, and watt for watt, puts the unsteady signal in the background where it belongs."

But what a receiver! It used a *low-frequency* quartz crystal in a filter circuit, and you weren't too familiar even with those transmitting crystals that were just coming into popularity.

However, in spite of the complexity (in comparison with the usual regenerative detector and one audio), enterprising hams built this receiver. We recall one fellow who said, seriously, that he had the receiver working for a week before he realized it *was* working, the thing was so sharp!

Yes, it was just 20 years ago that *QST*'s Technical Editor Jim Lamb introduced to the radio world the principle that is now standard in all good c.w. receivers, even though there are still a few operators who don't take advantage of it. We say that was history in the making, because the innovation of 1932 is still standard practice in 1952.

That was a package job, handed out through *QST* in four months. More recently, but spread over a longer period, you have been in on history in the making, in the many *QST* articles dealing with TVI prevention and reduction. We are willing to go out on a limb and predict that the transmitter precautions outlined by Technical Editor George Grammer, Technical Consultant Philip S. Rand, jr., and others, especially in the past two years, will remain the standard for years to come.

Strays

Before neighbors of W9GUX got to their psychiatrist, Jim explained to them it was his ham transmitter that was intermittently recording a strange voice on their tape recorder.

—•••—

WNØDZU worked WØKYF on 145-Mc. 'phone at 2005 CST on July 30th, 1951. Now WØDZU, he would like to hear from ex-Novices who had earlier 145-Mc. QSOs.

—•••—

W1QMJ's dad edits a firemen-hams column in the *National Fire Fan Register*, a publication devoted to followers of firefighting techniques and associated lore.

—•••—

From an Associated Press dispatch:

Army Sgt. Joseph S. Martin, operating AG2AB in Trieste, was having a pleasant chat with VP6SD in Barbados.

"Say," he asked the VP6, "do you know any Martins there? I was born in Port of Spain, Trinidad, but a lot of my relatives are in Barbados."

VP6SD turned out to be the Sergeant's uncle, whom Joe hadn't seen for 22 years!—*W2FAD/1*

—•••—

Technical Coöperation Administration Radio Officer Dan Scherer, W4VXV (ex-W2NVH), and Dr. Guy Black, W6RLB, Director of Conference Aides for the International Conference on Agricultural and Coöperative Credit, teamed up to facilitate effective use of tape and reference recorders at all sessions of this recent University of California parley.

W6RLB is Assistant SCM, East Bay Section, and W4VXV is a former editor of the Voice of America Amateur Program series.

—•••—

U. S. military and civilian personnel temporarily overseas are reminded that they may apply for Conditional Class licenses by mail; while such license-holding would not authorize amateur operation overseas, it would provide a start on the "experience" required for higher-grade licenses should the holder be interested in applying for such upon his return to this country. Details as to procedure are in the *License Manual*, but to get application blanks and examination papers those in the Atlantic region (Europe, Africa) should write FCC, Washington 25, D. C.; those in the Caribbean, to FCC, 312 Federal Bldg., Miami, Fla.; and those in the Pacific, to FCC, 502 Federal Bldg., Honolulu, T. H.

In addition, a recently-adopted FCC action permits military personnel overseas who will have held a General Class license for at least one year by Dec. 31st, 1952, to take the Advanced Class exam by mail any time between now and Dec. 31st.

TVI LECTURES

ARRL's Technical Consultant, Phil Rand, W1DBM, is continuing to give his popular talks on TVI before various groups. If you're having TVI trouble and would like to get some more information on the subject, see if you can't make one of the following dates. Bring your TV serviceman along, too!

The Boston Chapter of the IRE Broadcast Group will have Rand as a speaker on October 28th, with the meeting to be held at Huntington Hall, Massachusetts Institute of Technology, Cambridge, 8:00 P.M.

Rand will speak before the Baltimore section of the IRE on November 12th, at 8:30 P.M., in Remsen Hall at Johns Hopkins University.

On November 20th, at 8:00 P.M., he will speak on TVI at the PEPCO (Potomac Electric Power Co.) Auditorium, 10th and E Streets, N.W., Washington, D. C., with this meeting sponsored by the Washington TVI Committee.

HAMFEST CALENDAR

WISCONSIN — Sunday, December 7th, at Petrifying Springs club house, Kenosha, Wisconsin. Annual Operation Frostbite, sponsored by the Kenosha Radio Communications Society, includes a transmitter hunt and entertainment. Plenty of hot barbecues and coffee. Follow Highway 41 to A or Highway 31 to park. All bands will be covered for mobile operation except 2 and 6. Donations will be accepted. For further information write Mrs. C. F. Dickinson, 7934 23rd Avenue, Kenosha, Wisc.

Quist Quiz

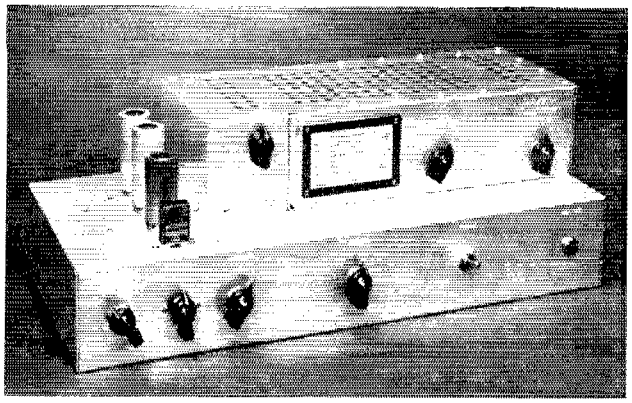
Our friend **A** has an inspiration for a simple super-selective c.w. receiver. He plans to take the output of the regular 450-kc. i.f. amplifier in his receiver and drive a doubler stage with it. Thus signals in the i.f. at 449, 450 and 451 kc. will appear at 898, 900 and 902 kc., separated by 2 instead of the original 1 kc. Passing them into another receiver, they will then be easier to separate, he reasons. Why hasn't someone thought of this simple idea before?

(Please turn to page 130 for the answer)

Silent Keys

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

ex-W2MKL, Lt. Lawrence R. Gebert, USNR, Corpus Christi, Texas
W3NVM, Thomas Matalavage, Mahanoy City, Pa.
W3WVJ, Louis J. Kozub, Pittsburgh, Pa.
W4OGR, George T. Russell, East Gadsden, Ala.
W4WLT, Coleman Puckett, Lithonia, Ga.
W5LCN, Harry K. McClune, El Reno, Okla.
W6PEW-W7IEH, Leonard A. Storm, jr., El Cajon, Calif.
W7RSO, Frank C. Parrish, Henderson, Nevada
W9LM, Harold H. Leighton, Itasca, Ill.
W9OCA, Donald L. McCaskell, Watertown, Wis.
W9YPD, Richard Sustachek, Racine, Wis.
WØAUM, Andrew M. Freimuth, St. Louis, Mo.
WØDFE, Richard O. Spry, Waterloo, Iowa
VE1BD, E. S. Wright, Summerside, P.E.I.
VE1DI, A. H. Love, St. John, N. B.
EI3T, D. J. Roche, Dublin
ZL1AJL-VR5GA, Pat Spry, Kamo, N. Z.



A complete 100-watt r.f. section for 144 Mc. built in two sections. On the lower front wall are knobs for the multiplier, oscillator, doubler and meter switching, 'phone-c.w. switch and pilot-lamp assembly. At the left of the main chassis are the 12AV7 and 5763 stages and crystal. Controls on the amplifier "doghouse" are for screen neutralization, amplifier plate tuning and antenna coupling.

Push-Pull 6146s at 144 Mc.

A 100-Watt Rig for 2 at Moderate Cost

BY C. VERNON CHAMBERS,* W1JEQ

THANKS to its availability at almost giveaway prices on the surplus market, the 829B has for some years been standard equipment for the final stages of 2-meter transmitters in the 100-watt class. This was fine — until surplus stocks ran out. Fortunately, it wasn't long before an inexpensive substitute appeared in the form of the 6146. Tests with the transmitter to be described here indicate that a pair of these new tetrodes operate fully as well on 144 Mc. as a single 829B, and they cost about half as much.

The transmitter shown was designed primarily to exploit the 6146s, and consequently it was built in a hind-end-to manner, starting with the final amplifier and working backward. Several experimental finals were built and discarded before the objective, a stable amplifier that would be easy to build and adjust, was attained. After the amplifier had been completed it was set aside and the exciter built.

The sectional construction makes possible an amplifier design that can be duplicated by anyone who already has an exciter that was formerly used to drive an 829B. It also allows the builder of a complete rig to substitute his own exciter design, in case his idea of a desirable 2-meter exciter differs from the one shown. Almost anything capable of delivering 5 watts or more of 144-Mc. r.f. will do the trick.

Circuit Details

The line-up for the transmitter as shown consists of a 12AV7 dual triode overtone oscillator and tripler, and a pair of 5763s operating as a push-pull doubler driving the 6146s in push-pull. The amplifier has a self-resonant grid circuit, practically a necessity because of the high input capacitance of the 6146s. Its plate circuit is a copper tuning line, tuned by C_{16} which is connected part way out on the line from the tube plate caps. Neutralization of the amplifier is done by series resonating the screen circuit by means of C_{14}.

A 6Y6G protective tube works in conjunction with a Type 0A3 regulator to prevent excessive plate dissipation when excitation is removed from the tubes. This permits c.w. keying in a preceding stage and avoids breaking the final cathode circuit. S_1 is connected across the 0A3, so that the latter may be shorted out when the rig is plate modulated. Output from the amplifier is fed to the coaxial output jack, J_2, through a swinging loop, L_9, that is in turn series-tuned by C_{17}.

A six-position metering circuit allows all important circuit currents, with exception of the final plate input, to be registered by an externally-connected milliammeter. The amplifier plate circuit is not included in the meter-switching system because we wished to keep this current under constant observation.

The transmitter is keyed in the cathode circuit of the 5763s for c.w. operation. For chirpless keying the 12AV7 should be run from a separate supply, or its plate voltage otherwise maintained constant at 300 volts during keying. This may be done by connecting a pair of VR-150s in series across the exciter power supply and drawing the oscillator plate current from that point.

Power supply requirements for the exciter section of the transmitter are 300 volts at ap-

• "Tailor-made for 2" is just one of the claims that have been made for the popular 6146. This transmitter uses a pair of these tubes at 144 Mc. and its performance proves that somewhere there is a competent tailor who is a v.h.f. man at heart.

*Technical Assistant, *QST*.

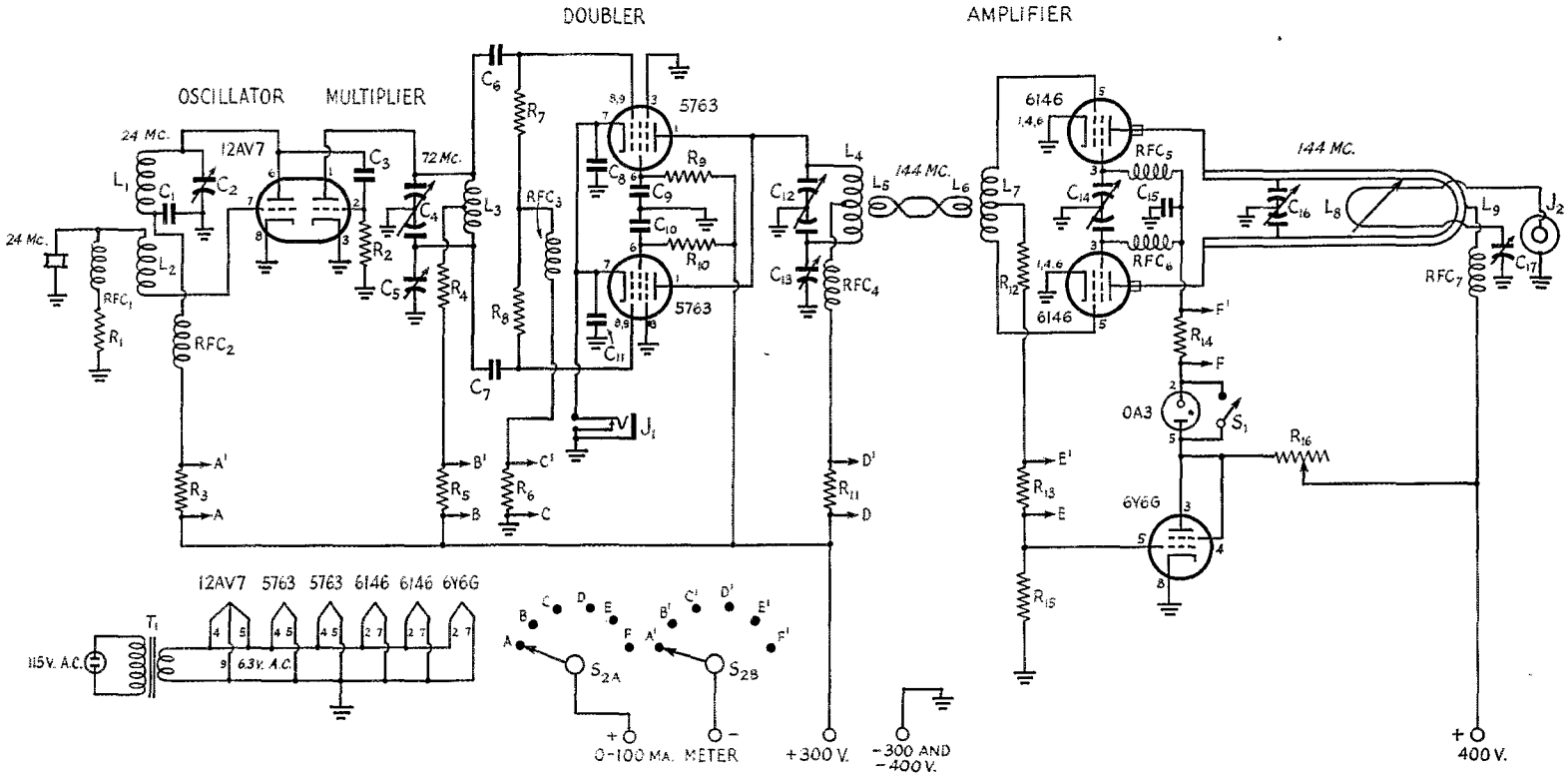


Fig. 1 — Circuit diagram of the 144-Mc. transmitter.

C_1, C_8, C_9, C_{10}, C_{11}, C_{15} — 0.001-μfd. disc ceramic.
C_2 — 50-μμfd. variable (Hammarlund HF-50).
C_3 — 22-μμfd. mica.
C_4, C_{12} — 15-μμfd.-per-sec. (Hammarlund HFD-15X).
C_5, C_{13} — 3-30-μμfd. trimmer.
C_6, C_7 — 15-μμfd. mica.
C_{14} — 50-μμfd.-per-section (Hammarlund HFD-50).
C_{16} — 30-μμfd.-per-section (Hammarlund HFD-30X).
C_{17} — 30-μμfd. variable (Hammarlund HF-30X).
R_1 — 4700 ohms, ½ watt.
R_2 — 47,000 ohms, ½ watt.
R_3, R_5, R_6, R_{12}, R_{13}, R_{14} — 100 ohms, ½ watt.
R_4 — 220 ohms, ½ watt.
R_7, R_8 — 22,000 ohms, ½ watt.
R_9, R_{10} — 10,000 ohms, ½ watt.
R_{11} — 100 ohms, 1 watt.
R_{15} — 15,000 ohms, 1 watt.
R_{16} — 10,000-ohm adjustable, 25 watts.
L_1 — 10 turns No. 20, ½-inch diam., ⅝ inch long.
L_2 — 6 turns No. 20, ½-inch diam., ⅜ inch long. (NOTE: L_1 and L_2 made from one length of B & W 3003.)
L_3 — 6 turns No. 18, ⅝-inch diam., ¾ inch long, tapped at center (B & W 3006).
L_4, L_7 — 4 turns No. 14 enam., ⅜-inch diam., ¾ inch long, tapped at center.
L_5, L_6 — 3 t. hook-up wire, ⅜-inch d., close-wound.
L_8, L_9 — See text.
J_1 — Closed-circuit jack.
J_2 — Coaxial-cable connector.
RFC_1, RFC_2 — 1-μh. r.f. choke (National R-50).
RFC_3 — 7-μh. r.f. choke (Ohmite Z-50).
RFC_4–RFC_7 — 1.8-μh. (Ohmite Z-144).
S_1 — S.p.s.t. toggle switch.
S_2 — 2-pole 6-position selector switch (Centralab 1411).
T_1 — 6.3 volts, 6 amp. (Merit P-2947).

proximately 150 ma. ICAS 'phone ratings for the 6146 at 145 Mc. suggest a d.c. input of 360 volts at 278 ma., and the maximum c.w. rating is 440 volts at 295 ma. To avoid the inconvenience of changing the supply voltage when going back and forth between 'phone and c.w. operation, we have been running the final with a 400-volt power pack. An input of 100 watts for 'phone work is obtained by loading the amplifier to 250 ma., and the current is raised to 325 ma. for a c.w. input of 130 watts. Novices desiring to use this design may reduce either the loading or the final plate voltage to stay within the 75-watt limit.

Construction

Photographs of the transmitter show an absence of crowding anywhere within the unit. Reasonable compactness in the interest of short leads should be striven for at the r.f. end of the 7 × 17 × 3-inch aluminum chassis. The layout shown places the three low-level tubes on a line 3 inches in from the left end of the chassis. There is a 1⅜-inch interval between the centers of the sockets and the two variable capacitors, C_4 and C_{12}, are centered off to the left and right by a distance of 1¾ inches, as seen from the bottom view. The aluminum brackets that support C_4 and C_{12} are high enough to place the shafts of the capacitors at the center of the chassis depth. Copper strips, approximately 3/16-inch wide, are used to connect the plate pins of the sockets to the variable capacitors.

The placement of below-deck components not associated with the r.f. circuits is not at all critical and may suit the individual taste. However, it is advisable to leave the mounting and wiring of T_1 until after the amplifier and the exciter chassis have been fastened together. The large ventilation holes punched through both chassis to provide ventilation for the 6146s cannot be easily marked or otherwise worked on if the transformer is mounted at this time.

The Amplifier

The amplifier of the transmitter uses a 5 × 7 × 3-inch aluminum chassis and an L-shaped aluminum section measuring 2½ × 5 × 3 inches. A single top plate with ¼-inch diameter ventilation holes is used to cover the two compartments. If anyone intends to construct only the amplifier part of the transmitter, it is suggested that topside combination consist of a 5 × 10 × 3-inch chassis and a 3 × 5 × 3-inch end compartment. In this case, a chassis measuring 5 × 13 × 3 inches may be used as the lower deck.

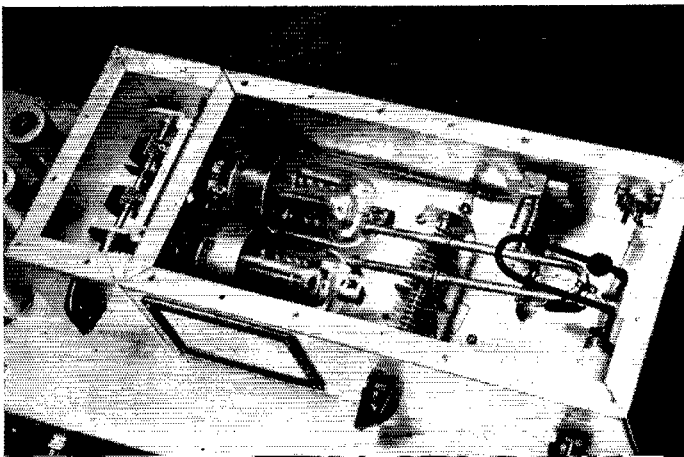
As shown by the open view of the amplifier, the tube sockets are mounted on metal pillars on the inside of the chassis. This arrangement has been used previously [1,2] to good advantage, and is one of the constructional features resorted to in the attempts to stabilize the 6146 circuit. With this arrangement, it is necessary to provide short, solid ground paths for socket pins Nos. 1, 7, 4, 6 and 8. This bonding can be accomplished most easily if performed before the sockets are bolted to the chassis. The most convenient system is to mount a pair of soldering lugs on a ½-inch metal pillar at each end of the sockets. The lugs are then twisted around, so that one pair may be soldered to Pins 4 and 6, and the other pair to Pins 1, 2 and 8. The nuts that have temporarily held the lugs in place may now be removed while the sockets are mounted over the 1⅛-inch clearance holes located in the end of the chassis.

The plate line for the amplifier is formed by bending a 9¾-inch length of ¼-inch diameter copper tubing around a ½-inch drill or dowel. At the open end of the line, the plate caps are securely held in place by wire lacing that has been freely covered with solder. Inasmuch as the line has little weight, it may be supported by means of the leads which run down to the stator terminals of C_{16}. These leads connect to the line at a distance of 2 inches in from the open end.

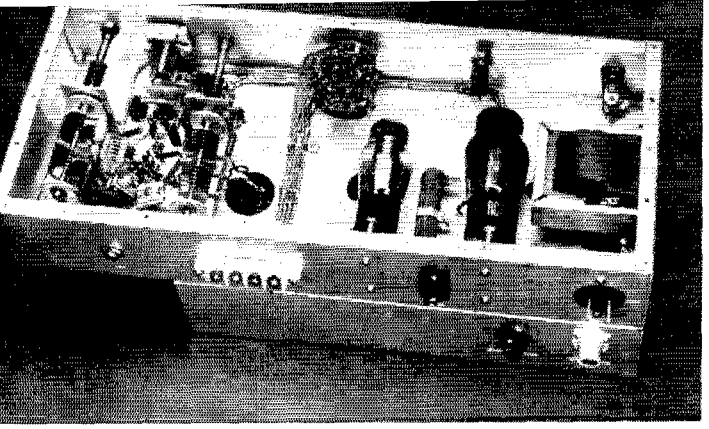
The variable output link is made from an 8-inch length of No. 12 enameled wire that has been covered with spaghetti. The loop has a ⅝-inch spacing between sides, a 2¼-inch length that couples to the plate line, and 1½-inch vertical section that permits the ends to pass down through holes that were drilled in a length of ¼-inch diameter polystyrene rod. Wire collars, soldered to the loop on either side of the rod, hold the loop in place. The rod is then mounted in a solid insulated shaft coupling that is in turn mounted on the shaft of a panel-bearing assembly.

At the grid end of the amplifier C_{14} is mounted on the outside wall of the chassis just above the tube sockets. RFC_5 and RFC_6 mount between the

[1] Grammer, "Practical Application of Pi-Network Tank Circuits for TVI Reduction," *QST*, January, 1952, p. 15.
[2] Tilton, "A Bandswitching Exciter for 50, 28 and 21 Mc.," *QST*, September, 1952, p. 22.



Looking into the amplifier compartment from the top. Screen neutralizing and amplifier grid circuits are in the small end section. Note that the 6146 sockets are inside the main compartment.



Bottom view of the 6146 transmitter with cover removed. Multiplier and doubler tuning capacitors are mounted on aluminum brackets at the left, either side of the oscillator condenser on the front panel. Output from the doubler is fed on a link through the large hole to the final grid circuit. The protective tube and regulator are mounted under the chassis on the rear wall.

tube sockets and the shield partition of C_{14}. The partition is insulated from ground and from the rest of the circuit and, as a result, it may be used as a tie-point terminal. L_7 is self-supporting and is mounted directly on the grid terminals of the sockets and C_{15} and R_{12} each have one end connected to a 2-terminal tie-point strip that is located in back of the rear tube socket.

After the aluminum doghouse has been bolted to the amplifier unit, the assembly should be positioned on the exciter chassis so that holes for mounting and ventilation may be marked and punched. The holes knocked out beneath the 6146s should be approximately 1¼ inches in diameter and the other ventilation openings, located near the right end of the chassis, may be cut with a ½-inch drill. The last operation to be performed prior to the bolting together of the two chassis is the drilling of clearance holes for the spade lugs that pull the doghouse down against the large chassis when the assembly is completed.

Testing

With 115 volts a.c. connected to the heater transformer, and with the exciter power supply turned on, the oscillator, the multiplier and the doubler are each tuned for resonance. Proper operation of these stages will be indicated by a plate current of approximately 18 ma. for each section of the 12AV7, by doubler grid and plate currents of approximately 5 and 80 ma., respectively, and by maximum amplifier grid current. In the process of tuning the exciter, it will be found that the oscillator functions most smoothly when the plate tuning capacitor is set to the low-capacitance side of resonance. Adjustment of overtone oscillator circuits has been covered in detail in *QST* and the *Handbook*. Balancing capacitors C_5 and C_{13} must also be adjusted during the alignment and correct setting for the capacitors will result in maximum output from the multiplier and the doubler circuits.

Before power is applied to the final amplifier it is advisable to experiment with the spacing between turns of the grid inductor, L_7. When this coil has been properly resonated and with L_5 and L_6 adjusted for optimum coupling, it should be possible to obtain an amplifier grid current of 6 ma. or better. It will be found that the tuning of the screen capacitor, C_{14}, has an effect on the gird current and that maximum current is obtainable with C_{14} set at almost minimum capacitance.

The amplifier is prepared for testing by connecting a 60-watt lamp bulb to the output jack, J_2, and by switching S_1 to the 'phone position. When plate power is applied, the amplifier should be resonated by means of C_{16} and then loaded to the desired level by adjustment of the variable link and the series capacitor, C_{17}. As the loading adjustments are being carried on, it is necessary to make repeated checks of the amplifier screen voltage. With a 400-volt supply in use, the tap on R_{16} should be adjusted to deliver 150 volts to the screen circuit when the amplifier is fully loaded. The 144-Mc. doubler should now be retuned for maximum output inasmuch as the preliminary adjustment of this circuit is usually thrown off when power is applied to the 6146s. Grid current for the final should measure 4 ma. when the transmitter is completely aligned and fully loaded. Under these same conditions, the screen current should be approximately 22 ma.

Proper adjustment of the screen capacitor, C_{14}, is usually indicated by the simultaneous occurrence of maximum grid current and minimum plate current when C_{16} is tuned to resonance, and by lack of oscillation when excitation is removed. To make a more comprehensive test of amplifier stability, remove the 6Y6 protective tube and operate the final with excitation removed. Under these conditions, it is advisable to lower the power supply output to approximately 200 volts and, even at this reduced input, to make the test of the shortest possible duration. Naturally, the screen capacitor should be adjusted so as to prevent self-oscillation of the amplifier.

Both the voltage and the current for the screen circuit will drop slightly when the 0A3 is activated for c.w. operation of the transmitter. When excitation is removed from the final by keying, the plate current for the stage should fall to less than 75 ma.

In conclusion, we should like to add that the 6146 really does seem to be *tailor-made for 2*. The amplifier leaves little to be desired from the standpoint of efficiency at 144 Mc. and it handles just as well at v.h.f. as the 807 does at lower frequencies.

Where Is Your Mobile Signal Going?

A Simple Method for Checking Antenna Patterns

BY HOWARD J. HANSON,* W7MRX, EX-KR6EK, EX-J2UUU

It didn't take long after I installed the "Pacific Northwest's Best Mobile" to discover that the radiation was far from uniform in all directions. For 10 meters, it uses an 8-foot-plus whip mounted on the left rear bumper of my 1948 Hudson sedan, and the whip leans back about 15 degrees from the vertical, in the hope that this will reduce absorption of the radiated energy by the car body. But received signals would suddenly rise or drop when I turned corners, and I soon became curious as to which direction or directions were my strongest, and which my weakest. Local experts informed me that an antenna mounted like mine, on the left rear bumper, threw its main and strongest lobe forward — some said over the right front fender. This did not seem logical to me, since it was my opinion that the metal back of the car would act as a plane reflector, throwing the main lobe to the rear in a rather broad pattern. Finally, with the help of Everett "Bud" Young, W7HMQ, of Puyallup, I checked the actual radiation pattern, and discovered that the local experts and I were both partly right. The pattern has two main lobes — one to the front, and another slightly larger one, to the rear.

Measuring the Pattern

Not having access to a conventional field-strength meter, Bud and I used the S-meter on his HRO-7 with the following technique: About half a mile from his house, and on the same side of the street is a large open baseball field. The street between Bud's house and the field is perfectly straight, thus furnishing a direction reference. I selected a spot on the field about as far from the road as I knew Bud's antenna to be, and proceeded to mark out directions on the ground. The base line ran parallel to the road, the second line at an angle of 30 degrees, the third line at an angle of 60 degrees, and on around a complete circle in 30-degree steps.

I then maneuvered the car so that the left side was parallel to the base line pointing toward Bud's house, and the antenna itself directly over the intersection of the various lines. I gave Bud a call, told him I was ready, and he set the r.f. gain on his HRO to give me an exact S9 reading on the S-meter. This provided a signal-strength reference. I next re-parked the car on the 30-degree line, gave Bud a call, and recorded that S-meter reading. In a similar fashion I got a signal-strength report for each orientation of the car. In order to minimize effects of relay-contact resistance, momentary generator surges, etc., we actually took three readings in each position, and used the average for our chart. After all readings were taken, I held the transmitter on and turned slowly in a complete circle while Bud watched his meter carefully for any sharp variations in signal strength between the 30-degree points. There was none, so the final plot may be accepted as a fairly accurate representation of the pattern. The readings are shown in Table I.

TABLE I

Tabulated Results of Antenna Test

Azimuth	*S Reading*	*Db.*	*Db. over Lowest*	*Power Ratio*
0°	9.0	27.0	6.6	4.6
30	8.7	26.1	5.7	3.7
60	7.8	23.4	3.0	2.0
90	7.0	21.0	0.6	1.15
120	8.8	26.4	6.0	4.0
150	8.8	26.4	6.0	4.0
180	9.3	27.9	7.5	5.6
210	8.8	26.4	6.0	4.0
240	8.4	25.2	4.8	3.0
270	6.8	20.4	0.0	1.0
300	7.8	21.9	1.5	1.4
330	8.2	24.6	4.2	2.6
360	9.0	27.0	6.6	4.6

Plotting the Results

To draw the diagram, we converted the S-meter readings to db., at the rate of 3 db. per S unit (third column). Next, we subtracted the lowest db. figure from all readings to get the fourth column — db. over lowest reading. Last of all,

(Continued on page 104)

* 3702 South J St., Tacoma 8, Wash.

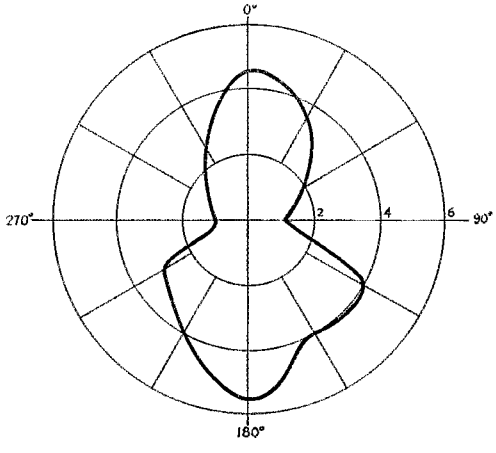
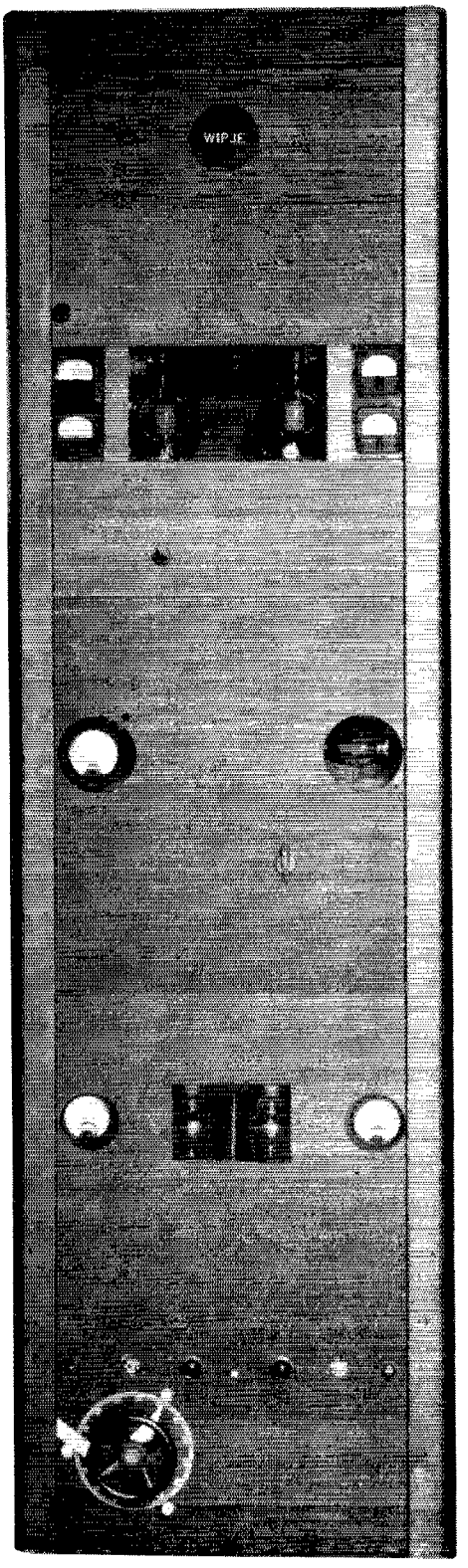


Fig. 1 — The antenna pattern, plotted from the data in Table I. The car is headed toward 0°.



A Cool Kilowatt

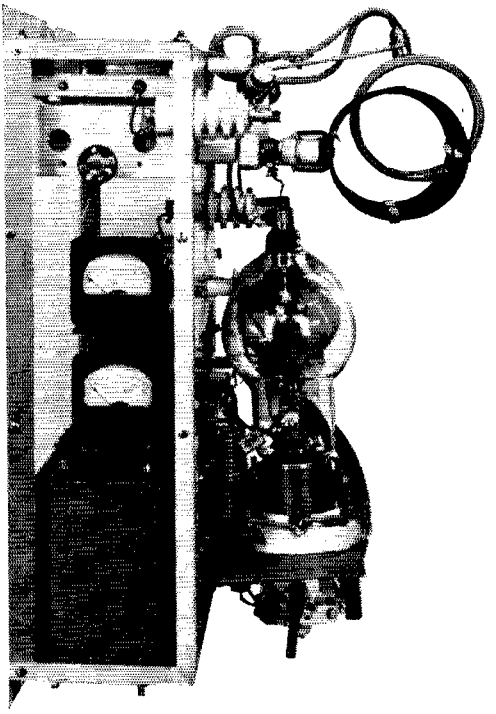
Putting the Cabinet To Work

BY J. ERNEST SMITH,* WIPJE

HAVING collected some husky transformers from war surplus, I wanted a pair of tubes to match, and finally wound up with RK-65s in the final, with another pair as Class B modulators. (The RK-65 makes an excellent zero-bias high-μ tube by tying the grids together.)

A type of construction used in many b.c. transmitters allows maximum air flow for cooling purposes, and this rig was built in much the same way, with some chassis simplification. A blower bought for the rig has never been used — it isn't necessary.

The accompanying photographs illustrate several features of the construction.



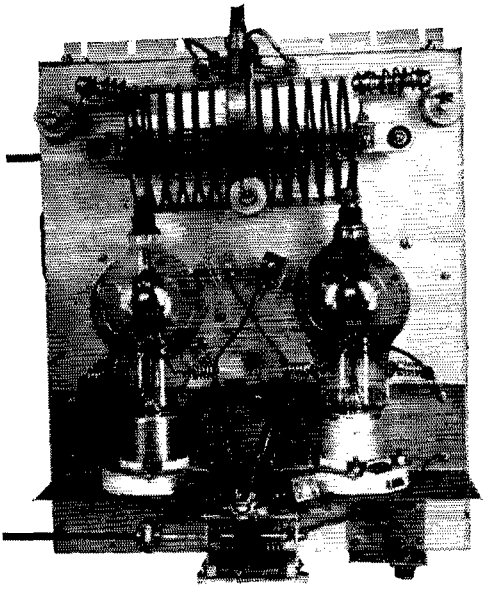
(*Above*): The basic idea of this construction is the use of the side walls of the cabinet for chassis support. This side view of the final amplifier shows how the arrangement permits short grid and plate leads in an r.f. amplifier.

♦

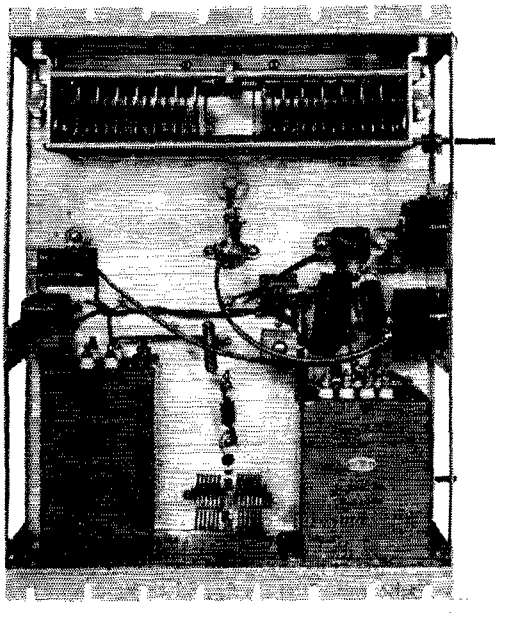
(*Left*): The tubes and meters are clearly visible through holes in the panel that are covered with wire mesh for better shielding against TVI. U-channels on each side of the cabinet at the rear (not visible here) carry all inter-chassis wiring.

*36 Howland Road, West Newton, Mass.

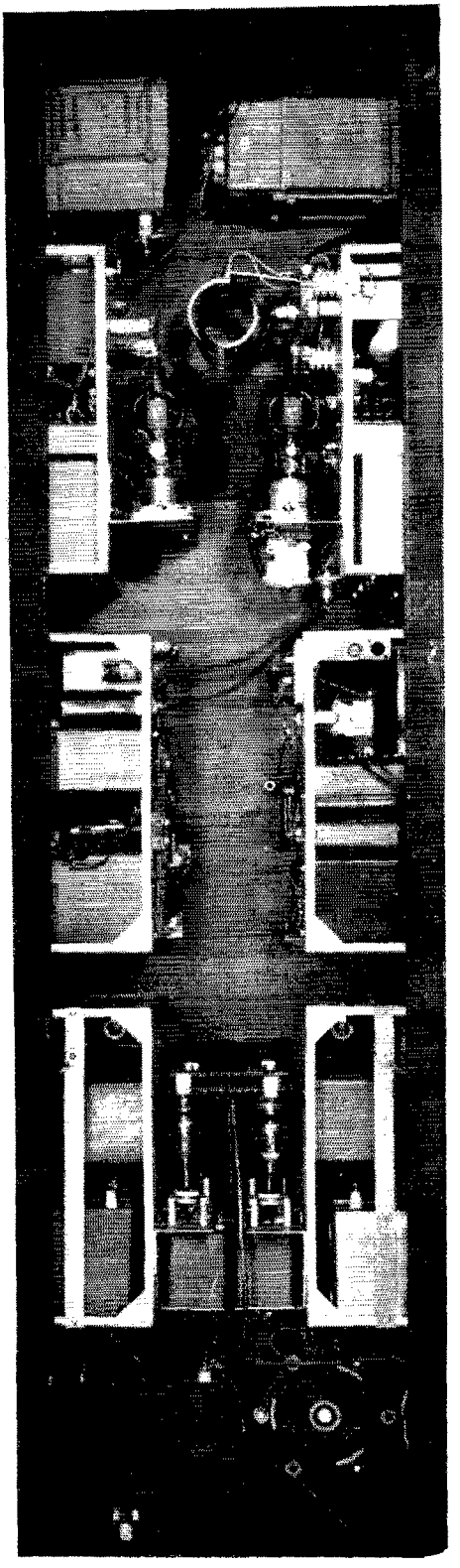
(Below): This arrangement affords convenient shielding between the r.f. components and the d.c. leads on the other side of the wall. The parasitic suppressors and neutralizing condensers were not needed, but they were easier to leave in than to remove.



(Below): The screen audio choke and the filament transformer are mounted on the other side of the dish. Short leads from filaments to transformer minimize the voltage drop. The primary voltage of 220 is selenium-rectified for protective grid bias.



(Right): Rear view of the cabinet shows all of the units mounted on the side walls. Class B modulator is mounted opposite final amplifier — power supply at bottom uses separate rectifier and filter systems to distribute weight of heavy filter components.



More Effective Utilization of the Small Power Transformer

An Economical Dual Power Supply for the Novice-Type Transmitter

BY GEORGE GRAMMER,* W1DF

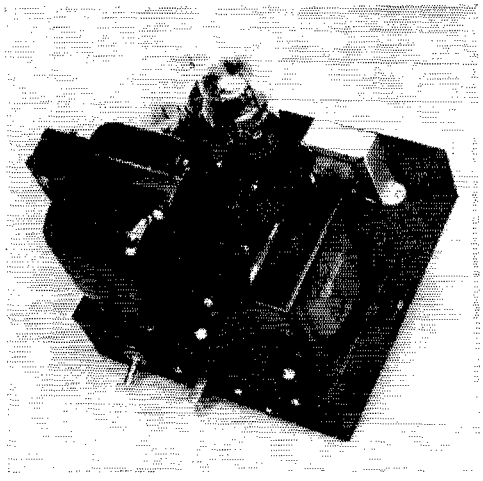
IT IS perhaps not generally appreciated that there are some factors entering into the design and use of replacement-type power transformers that can be employed to advantage, although in somewhat unconventional fashion, in powering small transmitters. The resultant saving in weight, space, and money is worth considering when laying out a power supply circuit for, for example, a Novice, portable, or just plain low-power rag-chewing transmitter consisting of an oscillator, a buffer (possibly), and an 807 or comparable tube as the final amplifier. The accompanying photographs show a supply that delivers two voltages — one, approximately 240 at a load of 30 ma. or so; the second, 600 volts at a load of 90 to 100 ma. The transformer is a replacement type made by several manufacturers, and has a high-voltage secondary rated at 360 volts each side of the center tap and a d.c. output current of 110 ma. Yet it is not overloaded when delivering the outputs mentioned above; if anything, it runs considerably cooler than it would at its "normal" ratings.

There is nothing resembling magic in it. It is simply a question of utilizing to best advantage the power capacity built into the transformer. There are three reasons why the ratings seemingly can be increased, assuming that a transformer of the receiver or replacement type is properly designed: first, it is built for continuous operation at full load; second, it is designed for working into a condenser-input filter; third, it has filament windings designed to handle a good-sized receiver or amplifier.

Continuous vs. Intermittent Duty

The amount of power that a transformer can handle safely is determined by the temperature at which it can operate without danger of damaging the insulation. The temperature in turn is determined by the rate at which heat is generated — i.e., the power loss in the transformer — and the rate at which the generated heat is radiated. The final temperature is reached when these two rates just balance each other.

There are two sources of power loss in a transformer, loss in the iron core — in a given transformer, this loss is practically constant regardless of the power being handled — and loss in the windings because of the current flowing through the resistance of the wire. The latter, generally called "I^2R" or "copper" loss, is very small (occurring only in the primary) when there is no output, but increases rapidly as more power is drawn from the secondary. Most transformers are designed with the object of making the core losses and copper losses just about equal each other when the transformer is delivering its full rated load, because the over-all efficiency of the transformer is highest under such conditions.



This power supply is a compact and economical unit capable of furnishing all the power requirements of a low-power transmitter of the "Novice type" — oscillator, possibly a buffer, and 807 or equivalent amplifier. The chassis is 7 by 7 by 2 inches. The on-off switch, 115-volt socket, and output socket are mounted on the front wall. The filter choke, L_1, is mounted on the near corner of the chassis, with the small 6.3-volt filament transformer to its rear.

Now let us assume that the secondary load is a keyed c.w. transmitter, with the key down approximately half the time. Then the average power loss in the copper is only one-half what it would be where the key held down continuously. Hence we can double the key-down power loss and still not have the average loss exceed the value for which the windings were designed. Since the loss varies as the square of the current, the current taken by the transmitter can be increased in the ratio of $\sqrt{2}$, or 1.4 times the output current for which the transformer is nominally rated.

This example is somewhat oversimplified, since a transformer of the type we are discussing probably would not be entirely without load with the key up. At least some of the filament windings no doubt would be used, and there would probably be a bleeder across the high-voltage output consuming some power. These would reduce the ratio somewhat. However, the main point applies — if the transformer is designed for continuous

* Technical Editor, *QST*.

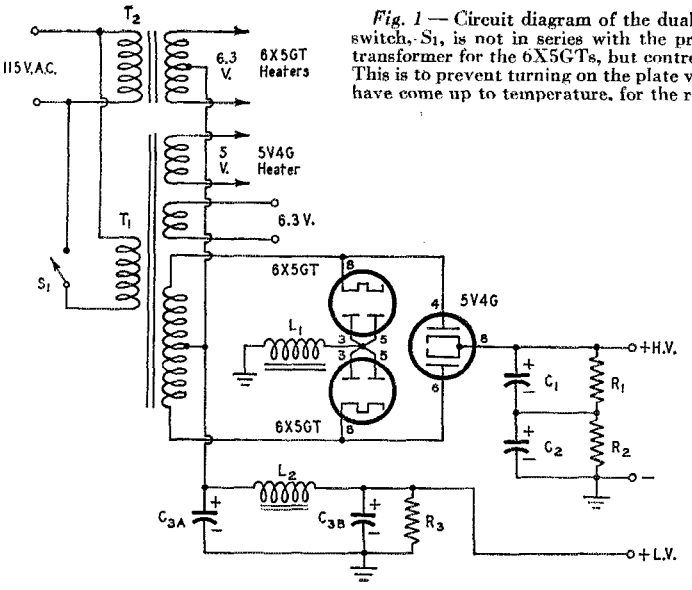


Fig. 1 — Circuit diagram of the dual power supply. Note that the line switch, S_1, is not in series with the primary of T_2, the filament-heating transformer for the 6X5GTs, but controls only the larger transformer, T_1. This is to prevent turning on the plate voltage before the 6X5GT cathodes have come up to temperature, for the reason described elsewhere.

C_1, C_2 — 16-μfd. electrolytic, 450 volts.
C_3 — Dual electrolytic, 8 and 16 μfd., 450 volts.
R_1, R_2 — 20,000 ohms, 10 watts, wire-wound.
R_3 — 0.1 megohm, 1 watt.
L_1 — Filter choke, 10.5 henrys, 110 ma., 225 ohms, approx.
L_2 — "A.c.-d.c." filter choke, ratings not critical. Any small choke rated for approximately 40 ma. and having a resistance of 350 ohms or less will be satisfactory.
S_1 — S.p.s.t. toggle.
T_1 — Replacement-type power transformer, approx. ratings 360 v. each side c.t. at 110 ma., 5 v. at 3 amp., 6.3 volts at 4.5 amp.
T_2 — Filament transformer, 6.3 volts at 1.2 amp.

operation, more power can be taken from it when a substantial part of the load is intermittent. (By intermittent is meant here that the load is on for relatively short periods — up to several minutes, possibly — and off for at least equal intervals.) But it does *not* apply to transformers *rated* for intermittent operation, such as the higher-power equipment sold under ICAS ratings.

Condenser- vs. Choke-Input Filters

The copper loss in the high-voltage secondary of a transformer working into a condenser-input filter is appreciably higher than it is when the same secondary delivers the same d.c. output current through a properly-designed choke-input filter. This is because the current waveform is highly distorted with condenser input and the current flows in pulses rather than in a continuous stream. There is no fixed ratio between the secondary losses with the two types of filters; it depends on the filter constants, the transformer characteristics, and the kind of rectifier tube or tubes used.

Measurements made with typical filters of both types, used with the transformer in the photograph, showed that for the same d.c. load current the secondary power loss was between 2 and 2.5 times as great with a condenser-input filter, using a high-vacuum rectifier.[1] Consequently, about 50 per cent more current could be taken from the transformer with choke input than with condenser input, for the same secondary heating. Unfortunately, with choke input the

[1] Although this is a single measurement, it is probably safe to assume that the same ratio will hold in any comparable supply — that is, one using a high-vacuum rectifier and an input condenser of about 8 μfd. The ratio will increase if a mercury-vapor rectifier is used, and also to some extent if the capacitance of the input condenser is increased.

• Until you sit down with the catalogs and try to do it, it is hard to appreciate the obstacles that lie in the way of designing a compact and economical power supply for the simple rig — one having one or two receiving type tubes driving an 807 or similar amplifier. This article describes one solution, based on taking about twice the rated amount of plate power from a low-cost replacement-type transformer — yet with the transformer running cooler than it would in "normal" service!

The supply is a dual unit furnishing both low-voltage and high-voltage outputs which, depending on line voltage and the particular components used, are approximately 600 to 650 volts at 100 to 130 ma. and 220 to 240 volts at 25 to 50 ma. It supplies all filament and plate power for the small transmitter and, when wired as shown in Fig. 1, is intended to be used with a break-in set — that is, the plate and filament voltages are always "on." The heaters of the 6X5GT rectifiers go on immediately when the line cord is attached, but a primary switch is provided for the combination filament-and-plate transformer. This is to make sure the 6X5GTs are hot before the 5V4G rectifier goes into operation, because if the latter tube conducts first a negative voltage appears across the low-voltage tap until the time when the 6X5GTs begin conducting.

If you aren't interested in why this seeming overload on a small transformer is possible, the information above, plus the captions on the photographs and diagram, is about all you need to build and use a similar unit. The information is principally for those who might want to apply similar principles using components having different ratings.

d.c. output voltage is considerably lower than with condenser input so there is no marked power advantage — it is simply a matter of swapping current for voltage. However, a check of the primary current showed that for the same d.c. *power* output the primary current with the choke-input filter was only about 0.7 of the value with condenser input. Hence the primary is better utilized with choke input. This is an important consideration, since all the power eventually realized has to pass through the primary.

The question is how to cash in on the advantage that results from choke input, since using it reduces the voltage to a value that would not be much good for an 807. There is an "out" in the bridge rectifier.

Bridge vs. Center-Tap Rectifier

The bridge rectifier is not much used in amateur circuits, although its characteristics are generally known. Principally, it requires four rectifier elements but does not require a center-tapped transformer. Thus by using the whole secondary the d.c. output voltage is twice what could be secured with a center-tap rectifier.

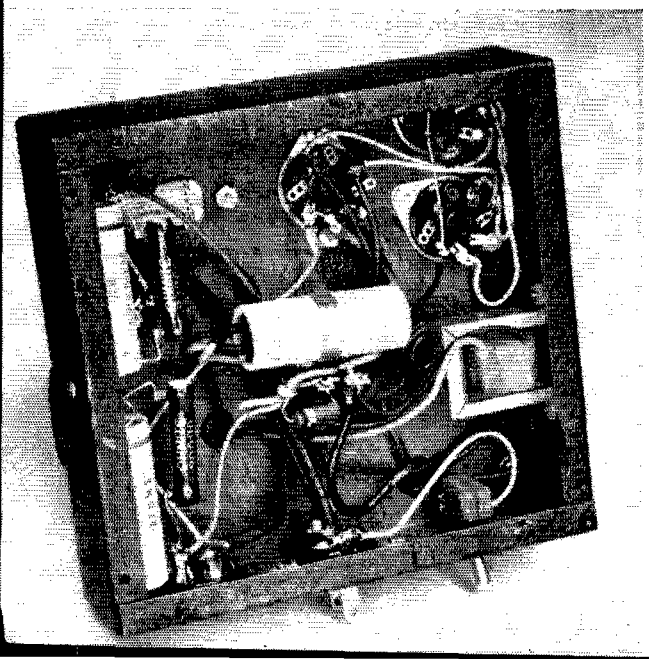
It does not automatically follow that the same d.c. output current can be taken in both cases. Twice the voltage at the same current means that the power output is doubled, and that in turn means that the transformer losses are at least doubled in the ordinary case. For example, in a transformer designed for transmitting plate supplies using choke-input filters, the bridge rectifier seldom offers any advantage because if the output voltage is doubled the current must be halved in order to stay within the transformer capabilities. But with a small replacement-type transformer we have seen that the secondary loss can at least be cut in half, for the same output current, by changing from condenser to choke input in the filter. In this case, then, the bridge rectifier does offer the possibility of getting twice the voltage at the same current, provided a choke-input filter is used.

Of course this means that the primary must be capable of handling the additional power, and in the type of transformer we have been discussing this is quite possible. First, as described above, there is a reduction in primary current in changing from condenser to choke input. This is worth, in this specific case, about 25 more watts of high-voltage output. Second, in powering a small transmitter we do not usually have to make full use of the filament secondaries. Transformers of the general type used here all have a 5-volt 3-amp. winding for the rectifier tube and a 6.3-volt winding with a current rating varying slightly from make to make. This particular one is rated at 4.5 amp., which will do well enough for discussion. If a rectifier tube having a 2-amp. filament is used we release 5 watts to the high-voltage end. If the transmitting tube filaments do not take more than 1.5 amp., a reasonable value, we release an additional 19 watts to the high-voltage supply, a total of 24. Added to the 25 saved by using a choke-input filter, we have close to 50 watts of primary capacity to spare for the extra load we expect to take from the secondary. It is ample.

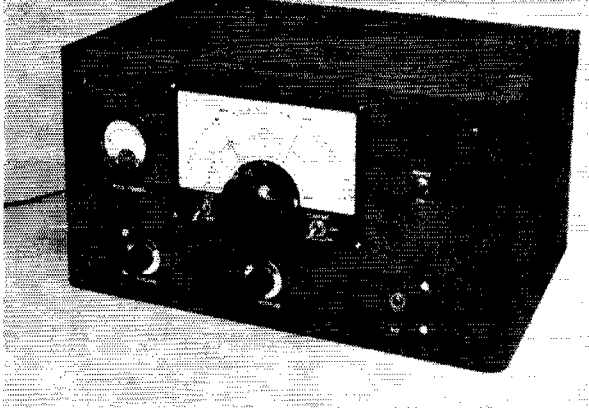
Rectifier Considerations

A bridge rectifier offers some practical difficulties, if the cost is to be kept to a minimum. There would be no problem at all if there were available a double rectifier having separate, indirectly heated cathodes and a cathode-to-heater breakdown rating of 1000 volts or so. The best we could find in the tube manuals was the 6X5GT, which is a full-wave rectifier that does *not* have separate cathodes, and has a heater-cathode rating of only 450 volts peak. Two tubes were required, both to get the needed separate cathodes and also to get sufficient current-carrying capacity, by paralleling the elements in each tube. It was considered out of the question to light the filaments from the 6.3-volt winding on the transformer, since that winding would be connected to nega-

(Continued on page 106)



The bleeder (R_1R_2) and filter condensers (C_1C_2) for the high-voltage circuit are mounted along the left edge in this view under the chassis. They are supported by their pigtails from insulated tie points mounted on the chassis. The dual electrolytic (C_3) and bleeder (R_3) for the low-voltage section are at the center. The low-voltage filter choke (L_2) is mounted on the chassis wall at the right.



Complete and ready to go, a 35-watt "package" for the 3.5- and 7-Mc. bands is housed within this 9½ × 17 × 11-inch cabinet. All of the operating controls are grouped about the National ACN vernier dial, which is calibrated for both bands.

"Packaging" 35 Watts for 80 and 40

A High-Performance VFO Rig for Fixed and Portable Use

BY RICHARD M. SMITH,* W1FTX

• Going away on an extended visit? Need a good VFO rig for participation in that traffic net this winter? Want to build an eye-catching "stand-by" rig for the shack? The low-power packaged transmitter described in this article may give you some ideas.

A "PACKAGED" transmitter, meaning one that is complete in itself, is always an attractive proposition. The whole thing can be picked up and carried off on short notice to serve as emergency gear, as a Field Day rig, to fill in while a neighboring ham's rig is out of commission, or it can be installed permanently in the home shack as an auxiliary transmitter-exciter. Just such a rig is described here. It provides over 20 watts output in the 3.5- and 7-Mc. amateur bands, has a stable variable-frequency oscillator, and an inexpensive built-in power supply. Provisions are included for break-in operation, and for "silent" zero-beating to eliminate "swishing" while the frequency is being changed.

The Design

Many portable or auxiliary rigs are built without much thought being given to the quality of the signal they put out. They over-simplify to such an extent that the resulting signal mimics a wandering whippoorwill. Not so in this rig. We wanted something good enough to rate inclusion as a permanent part of our station, even though it might only be used occasionally. Fortunately, this was possible without adding materially to either the cost or the complexity of the circuit.

Past experience with keyed-VFO rigs told us that chirp-free operation can be obtained only with plenty of isolation between the oscillator and the output stage, regardless of the type of oscillator used. The most effective way to achieve this is by operating the oscillator at least one band lower in frequency than any following stage. Adequate shielding of the oscillator grid circuit and voltage regulation are also required.

As shown in Fig. 1, the 6AG7 oscillator uses the "old fashioned" high-*C* Hartley circuit, cathode-keyed, and with regulated voltages applied to both screen-grid and plate. The grid circuit tunes from about 1.7 Mc. to just over 2 Mc. An untuned plate circuit using a 100-μh. choke as the inductance is then capacity-coupled to the 6SK7 doubler which follows. This is a slight departure from earlier arrangements in which the untuned plate circuit utilized an ordinary 2.5-mh. choke as the load impedance. It provides much better output in the 3.5- and 7-Mc. ranges from the doubler stage.

The 6SK7 plate circuit can be tuned all the way from 3.5 Mc. to about 7.4 Mc., thus eliminating both plug-in coil and bandswitch requirements. Cathode bias and low regulated screen voltage combine to hold the operating conditions of this stage to the desired level. Actually, it operates just a bit beyond Class A conditions. Adequate excitation for c.w. operation of the 807 amplifier stage is obtained with this arrangement, and the frequency of the oscillator remains unchanged when the doubler is tuned through resonance, indicating that the isolation is excellent.

The amplifier stage operates with 45 volts of battery bias to limit plate current to a safe value when the key in the oscillator circuit is opened. We weighed the cost of a built-in bias supply against that of the battery, and found that the battery was considerably cheaper. With the meager grid current requirements of the 807, shelf life can be expected of the battery, so that it should last for at least a year under even heavy use.

A shunt-fed plate circuit is used in the 807

* Formerly Technical Assistant, *QST*.

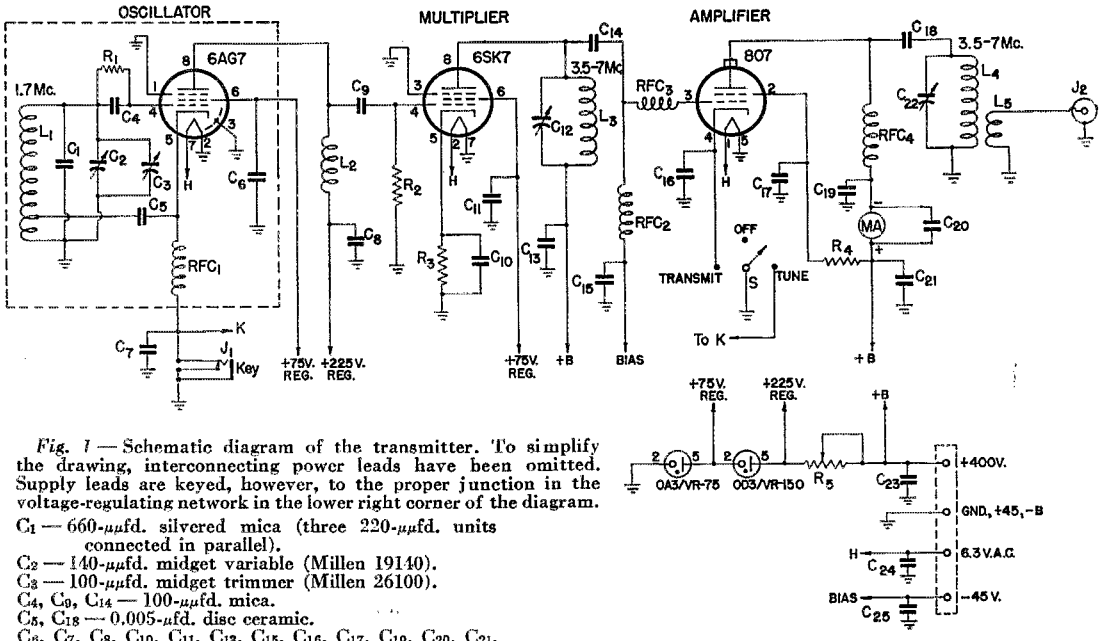


Fig. 1 — Schematic diagram of the transmitter. To simplify the drawing, interconnecting power leads have been omitted. Supply leads are keyed, however, to the proper junction in the voltage-regulating network in the lower right corner of the diagram.

C_1 — 660-$\mu\mu$fd. silvered mica (three 220-$\mu\mu$fd. units connected in parallel).
C_2 — 140-$\mu\mu$fd. midget variable (Millen 19140).
C_3 — 100-$\mu\mu$fd. midget trimmer (Millen 26100).
C_4, C_9, C_{14} — 100-$\mu\mu$fd. mica.
C_5, C_{18} — 0.005-μfd. disc ceramic.
C_6, C_7, C_8, C_{10}, C_{11}, C_{13}, C_{15}, C_{16}, C_{17}, C_{19}, C_{20}, C_{21}, C_{23}, C_{24}, C_{25} — 0.001-μfd. disc ceramic.
C_{12} — 225-$\mu\mu$fd. variable (National ST-225).
C_{22} — 300-$\mu\mu$fd. variable (National TMS-300).
R_1, R_2 — 47,000 ohms, ½ watt.
R_3 — 470 ohms, ½ watt.
R_4 — 15,000 ohms, 10 watts, wire-wound.
R_5 — 10,000 ohms, 25 watts, with slider.
L_1 — 10 μh., 27 turns No. 22 d.s.c., 1-inch diam., 1⅛ inches long. Tap 9 turns up from ground end.
L_2 — 100 μh. r.f. choke (National R-33; see text).
L_3 — 11 μh., 32 turns, ¾-inch diam., 1 inch long (B & W Miniductor No. 3012).
L_4 — 7.3 μh., 24 turns, 1-inch diam., 1½ inches long (B & W Miniductor No. 3015).
L_5 — 2.5 μh., 14 turns, ¾-inch diam., ⅞ inch long (B & W Miniductor No. 3011).
J_1 — Closed-circuit 'phone jack.
J_2 — Coaxial output connector.
RFC1, RFC4 — 2.5-mh. r.f. choke (National R-100S).
RFC2 — 5-mh. r.f. choke (National R-100S).
RFC3 — 1-μh. r.f. choke (National R-33).
S — D.p.d.t. toggle switch with center "off" position (second pole used in power supply diagram, Fig. 2).

stage merely to simplify construction, as it permits plate tuning condenser C_{22} to be mounted right on the chassis. The *LC* circuit used here also covers the full range from 3.5 to 7.4 Mc.

A toggle switch is wired into the cathode circuit of the 807 so that the output stage can be made inoperative while frequency is being changed. The switch used is a double-pole double-throw unit with a center "off" position. One pole is wired as shown in Fig. 1 to open the cathode of the 807 circuit and short-circuit the key for zero-beating. When in the "transmit" position, the switch grounds the cathode of the 807 and removes the short on the key. The other pole of the switch serves as the transmit-stand-by switch in the plate supply circuit, as shown in Fig. 2.

A voltage-regulating network, shown at the lower right in Fig. 1, is included on the transmitter chassis so that the rig may be used with an alternate power supply in the event of emergency or breakdown. Any supply capable of delivering 350 to 450 volts under a load of 150 ma. can be used. Connection between the transmitter and the power supply is through terminal strips (rather than a plug and socket combination), to make it a more universal arrangement. Each terminal in the transmitter is by-passed so that TVI-producing harmonics will not be radiated by the leads that leave the chassis,[1] and all wiring except the r.f. leads uses shielded wire.[2]

Construction

The panel layout is shown in the front view of the transmitter. The a.c. line switch is mounted just to the left of the main tuning knob. The transmit-tune switch is at the right of this knob where it can be reached easily by the thumb of the same hand that sets the oscillator frequency. The smaller dial in the lower left corner of the panel controls C_{22}, the amplifier plate condenser, while the one just below the main dial controls doubler tuning condenser C_{12}. The key jack is in the lower right-hand corner of the panel.

Arrangement of the parts within the cabinet and on the transmitter chassis is shown in the top view. The 5 × 13 × 3-inch transmitter chassis is spaced ¼ inch behind the panel, and rests on four small rubber feet bolted to the bottom cover. The power supply chassis, which is the same size as that of the transmitter, is bolted to the bottom of the cabinet at the rear. There is enough space on either side of the two chassis to hold the bias battery, and for passage of the necessary interconnecting cables.

[1] Grammer, "By-Passing for Harmonic Reduction," *QST*, April, 1951.
[2] Goodman, "How To Wire a Transmitter," *QST*, Feb., 1952.

The oscillator grid circuit is entirely enclosed in a 2 × 4 × 4-inch aluminum utility box, and is placed so that the shaft of C_2, the bandspread condenser, is centered behind the main tuning dial. The entire shield box is shock-mounted, as shown in the close-up photograph. This is accomplished by slipping rubber grommets underneath the box, then passing long screws through grommet-lined ⅜-inch holes in the chassis and then through another set of grommets. Washers large enough to hold the bottom grommets in place are slipped on next, and the assembly is fastened together *loosely* with lock washers and machine nuts. The lower half of this mounting can be seen in the bottom view of the transmitter.

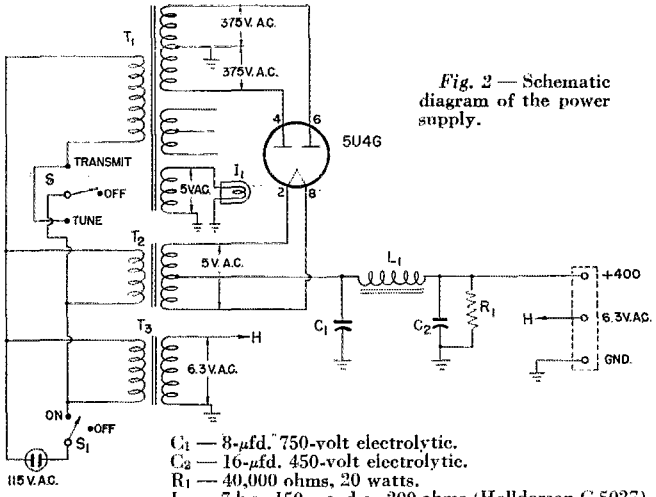


Fig. 2 — Schematic diagram of the power supply.

C_1 — 8-μfd. 750-volt electrolytic.
C_2 — 16-μfd. 450-volt electrolytic.
R_1 — 40,000 ohms, 20 watts.
L_1 — 7 hy., 150 ma. d.c., 200 ohms (Halldorson C 5027).
T_1 — 375–0–375 v. a.c., 150 ma. (Halldorson P 9317).
T_2 — 5 v. a.c., 3 amp. (Halldorson F 5505).
T_3 — 6.3 v. a.c., 3 amp. (Halldorson F 5512).
I_1 — 6.3-volt 250-ma. pilot lamp.
S — D.p.d.t. toggle switch, center position off (part used in transmitter; see Fig. 1).
S_1 — S.p.s.t. toggle switch.

In addition to the oscillator tube socket, grid coil L_1, bandsetting condenser C_3, cathode choke RFC_1, and all of the small parts of the oscillator grid and screen circuits are mounted inside the box. All of the wiring within the box is done before assembly, and the shielded d.c. leads are then cabled to come through one grommet-lined hole in the bottom of the box, while the unshielded (but insulated) r.f. lead from the plate of the tube passes through another. Corresponding holes for these leads are drilled through both the bottom cover of the box and the top of the chassis.

The remaining circuits can be seen in the bottom view of the transmitter chassis. In this view, all of the components associated with the amplifier circuit are grouped in a 5¼ × 5-inch shield compartment at the left. The doubler circuit and the voltage-regulating network are in the larger compartment at the right. It is necessary to insulate doubler tuning condenser C_{12} from the chassis. This is done by mounting it on a small sheet of Millen Quartz Q supported by aluminum angle brackets. An insulated coupling passes the tuning shaft through the panel to the dial.

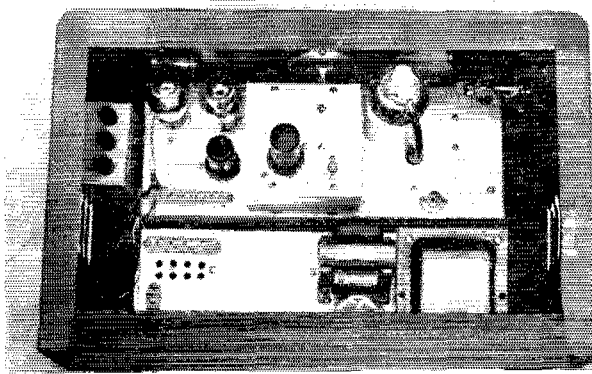
In the amplifier compartment, plate tuning condenser C_{22} is mounted right on the chassis, with L_4 and L_5 on ¾-inch ceramic stand-offs adjacent to it. Grid choke RFC_3, which is needed to eliminate v.h.f. parasitics, is mounted right at the tube socket. Bias choke RFC_2, and plate choke RFC_4, are mounted so that they are at right angles to one another to minimize feedback. The lead from the plate of the 6SK7 to the 807 grid passes through the shield partition in a small ceramic bushing. Coupling condenser C_{14} is on the amplifier side of the partition, with one end passing through the bushing to C_{12}, the other supported by an insulated tie point that serves to hold the junction of the leads from RFC_2 and RFC_3.

The lead from the plate cap of the 807 to RFC_4 is made of a length of RG-59/U coax, with the shield braid grounded right at the cathode pin of the tube socket. This serves as both a shield and a v.h.f. by-pass condenser to reduce the amplitude of high-order harmonics flowing above the chassis.

Output link L_5 is made of smaller-diameter coil stock than the plate coil so that it will slide inside of L_4 to provide adjustable output coupling. Fairly long leads on L_5 are necessary, and the one which passes through a part of the length of L_4 is insulated from it by spaghetti tubing.

Power Supply

The power supply circuit is shown in Fig. 2. Separate transformers for the filaments of the rectifier and the transmitter are used, and the otherwise-unused 5-volt winding on plate trans-



The separate chassis used for the transmitter and its power supply are visible here, along with the bias battery and interconnecting cables. On the transmitter chassis, the two VR tubes are in the front left corner, with the 6SK7 doubler close by. The 6AG7 oscillator sits on a shock-mounted box in the center, with the 807 amplifier at the right.

TABLE I

Typical Operating Data

Conditions:	Output at 7100 kc., load adjusted for 80-ma. plate current in the 807 stage.
Supply voltage:	Key up, 460 volts
	Key down, 410 volts
6SK7 cathode:	Key up, 3 volts
	Key down, 3.5 volts
807 grid current:	C_{12} tuned to 3.5 Mc. — over 3 ma.
	C_{12} tuned to 7 Mc. — 1.5 ma.
807 screen voltage:	Key up (supply voltage)
	Key down 300 volts

former T_1 is used to power an indicator light on the panel whenever the plate supply is turned on. The general layout of the power supply can be seen partially in the top view of the equipment in the cabinet. The plate transformer and the 5-volt filament transformer are mounted on top of the chassis, while the 6.3-volt transformer T_2 and filter choke L_1 are mounted below decks with the bleeder resistor R_1 and the filter condensers. A few ventilating holes are drilled through the chassis just above the bleeder resistor to allow the heat dissipated there to escape.

Adjustment

The first adjustment needed is to set the slider on the limiting resistor R_5 to the correct point. To do this, first connect a milliammeter in series with the VR tubes, turn the transmit-tune switch to transmit, and with the key open, adjust the slider on R_5 until the VR tubes draw between 35 and 40 milliamperes. (Remember to turn the plate voltage off before you touch R_5!)

Next, adjust the tuning range of the oscillator by setting C_2 and C_3 to bring 3500 kc. to the maximum capacity end of the range of the main tuning condenser. The bandspread dial will now tune from 3500 kc. to 3800 kc. in the 80-meter range, and the 40-meter band will cover about half of the dial travel. If operation in the upper half of the 3.5-Mc. band is desired, bandset condenser C_3 can be adjusted to bring 3800 kc. to the bottom of the dial.

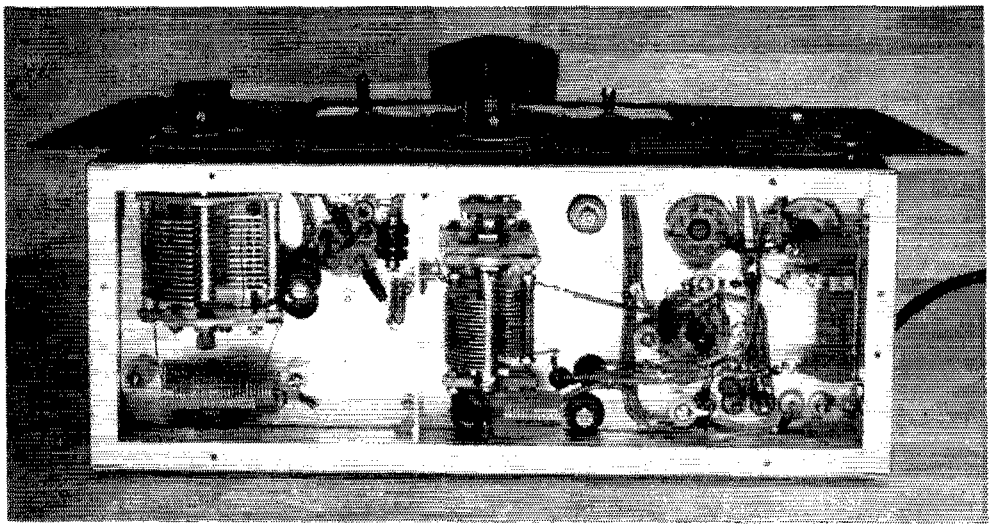
If you are unable to cover all of the desired range, it may be because the capacitance tolerances of the condensers used to make C_1 have added up in the wrong direction.[3] This difficulty can be corrected by substitution of different individual condensers, or by the addition or subtraction of capacitance to the circuit, depending upon whether the total works out to be too low or too high.

Operation

Once the preliminary adjustments have been made, the rig can be tuned up for operation. Only the plate current of the 807 stage is metered. More elaborate metering is not necessary, because all tuning can be done by observing this one circuit. Plate current in the 807 stage will be about 20 ma. when the key is open. This is a safe level, and produces cleaner keying than if cut-off bias had been used, because it adds to the over-all power supply regulation. When the doubler stage is tuned to resonance, plate current in the 807 stage will be driven up to a value as high as 125 ma., depending upon the setting of C_{22}. If it happens to be set near resonance,

(*Continued on page 110*)

[3] Of numerous ordinary 220-$\mu\mu$fd. silvered-mica units tested, only one was within 5 $\mu\mu$fd. of rated value. The highest value encountered was 245 $\mu\mu$fd., the lowest 185 $\mu\mu$fd. This, of course, will vary because most condensers are manufactured to a tolerance of ± 20 per cent. The only way to be certain is to pay the higher price for closer-tolerance condensers, but if a fair supply is on hand, the "right" value can usually be obtained with ordinary units.



Bottom view of the transmitter chassis, showing the method of mounting the panel and the general interior layout. The components of the 807 circuit are in the small compartment at the left, the doubler tuning condenser C_{12} in the center, the sockets for the VR tubes in the upper right corner, and the doubler just below them. The small by-pass condensers used to filter the supply leads are mounted right on the terminal strip in the lower right corner. Also visible between C_{12} and the VR tube socket is one of the shock mounts for the oscillator box.

The Reception of Single-Sideband Signals

Practical Pointers on Two Methods of Operation

BY PAUL N. WRIGHT,* W9OHM

ACCORDING to many remarks heard on the amateur bands, single sideband (s.s.b.) is a mysterious bunch of gibberish that defies clear reception and causes an unwarranted amount of QRM. It is human nature to dislike anything not clearly understood. A problem not readily understood sometimes may be prepared for easy mental digestion by comparison. It is the purpose of this article to present a comparison of a s.s.b. 'phone signal and an a.m. double-sideband-with-carrier 'phone signal, and to describe two methods of s.s.b. reception.

Let us first consider the conventional a.m. signal, consisting of a carrier wave and two sidebands, one on either side of the carrier frequency. We will choose a carrier frequency of 1 Mc. and a conventional plate-modulated amplifier for our consideration. We connect a 1-kc. sine wave audio voltage to the input of our speech amplifier. At the output terminals of the modulated stage, there will appear three r.f. frequencies: 1000 kc., which is the carrier frequency; 999 kc., the lower sideband; and 1001 kc., the upper sideband. This is shown in Fig. 1.

In the reception of such a signal, it is necessary to provide a device that is able to detect the frequency difference between the sidebands and the carrier wave. This device is the amplitude-modulation detector. The amplitude detector transforms the frequency difference between the sidebands and the carrier wave into pulsating d.c. corresponding to the frequency difference, enabling us to recover at the receiving end the intelligence-bearing frequencies with which we started at the transmitter end (in this case, 1000 cycles). The frequency-mixing action of the modulated amplifier provides means for transforming the audio frequencies from the modulator into radio frequencies approximating the frequency of the carrier. Not only does the carrier

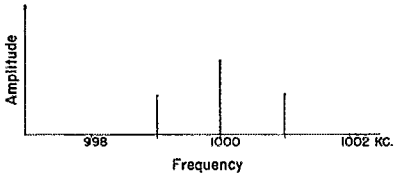


Fig. 1 — The spectrum of a 1-Mc. carrier modulated by a 1000-cycle signal.

wave provide means for transforming the audio frequencies to radio frequencies in the form of sidebands; the carrier is also required at the receiving end to produce the audio beat in the detector. If we were to remove the carrier at the transmitter and transmit only the two sidebands, the detector in the receiver would detect the beat between the sidebands instead of the beat between the sidebands and the carrier. The sidebands being separated from each other by twice the audio frequency will produce a beat twice the frequency of the original audio tone. This beat coming out of the detector would then appear as 2000 cycles instead of the original 1000 cycles. (See Fig. 2.)

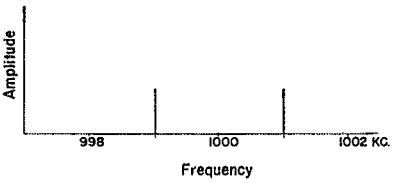


Fig. 2 — The spectrum of a 1-Mc. carrier modulated by a 1000-cycle signal, with the carrier removed.

Since the only part of an a.m. signal that does not vary in frequency is the carrier, it becomes readily apparent that the carrier could be replaced at the receiving end. Only a small fraction of a watt of carrier is required at the receiver, even on the strongest signal; whereas, to transmit the carrier sometimes requires as much as 1.5 kw. transformer primary power in an amateur transmitter. Only one sideband need be transmitted to produce the original audio frequencies at the detector output, so we can eliminate one or the other of the sidebands. The transmitted signal (or sideband) will then become simply a carrier (single tone sine wave audio input) that differs from the original carrier frequency by the frequency of the audio tone. (See Fig. 3.) A panoramic picture of a double-sideband signal with carrier and transmitting voice might appear as in Fig. 4A at some instant. An s.s.b. signal would appear as in Fig. 4B.

The pips or "grass" appearing on the base line of the panoramic pictures in Fig. 4 correspond to the individual frequencies comprising a rather complex voice wave, with components at 500, 1250 and 2500 cycles.

Bandwidths

All intentional transmission of radio frequency energy is done for the purpose of conveying thoughts from one place to another. C.w. has enjoyed the No. 1 spot down through the years as the most efficient method of transmission. This efficiency is obtainable at the receiving end because the unmodulated c.w. signal has no width; consequently, the selectivity of receivers can be increased many times beyond the bandwidth required for 'phone transmissions.

* R.F.D. 4, Wabash, Ind.

The increased selectivity provides a much higher signal-to-noise ratio at the receiver. The number of c.w. signals that may appear in a given frequency spectrum without mutual interference is limited only by receiver selectivity, stability, and effects of keying. Unfortunately, this is not the case with 'phone signals. In the case of 'phone,

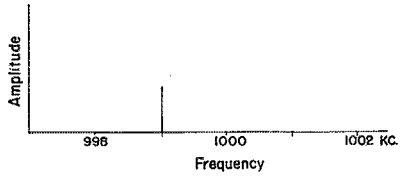


Fig. 3 — The spectrum of a 1-Mc. carrier modulated by a 1000-cycle signal, with the carrier and one sideband removed.

the limiting factor is the width of the sidebands produced by modulation.

It is generally agreed that an audio bandwidth of 3000 cycles will allow sufficient fidelity of reproduction for transmission of the human voice. Any reduction below this figure will tend to reduce the intelligibility of the voice reproduction through removal of the overtones and sibilant sounds. It would seem, then, that the minimum bandwidth obtainable with d.s.b. transmission is 6 kc. Referring to Fig. 4B, we find that only one sideband is required to reproduce the original audio at the detector terminals in the receiver; so actually the additional sideband may be termed as excess baggage. It is not needed to reproduce the original modulation at the receiver. Further, comparing Figs. 4A and 4B, we find that by removing the unwanted sideband we cut the bandwidth in half. It appears rather obvious that this one stroke will permit twice as many stations to occupy a given spectrum. It will effectively double the width of our 'phone band!

The Carrier

Upon further study of the chart, it would appear that we can improve the over-all efficiency of our transmitters by eliminating the carrier wave. Since the only intelligence-bearing energy transmitted is in the sidebands, the carrier does not contribute one bit at the transmitter end so far as intelligence is concerned. It has served its purpose of converting the voice modulating frequencies to radio frequencies; there its usefulness ends. From there on the carrier is excess baggage.

So far as the detector in the receiver is concerned, it isn't particular as to the source of the carrier. It can just as well be furnished from an oscillator at the receiving end. If we have succeeded in presenting the thoughts clearly to the reader up to this point, it will have become apparent that essentially, the s.s.b. signal is the same as the conventional a.m. signal, with the carrier and one sideband removed. Therefore, the only thing that needs to be done in order to restore the original intelligence is to replace the carrier on the signal before it reaches the audio detector in the receiver.

Reinserting the Carrier

In a superheterodyne receiver, the carrier may be replaced by injecting the carrier from an oscillator at the i.f. frequency into the i.f. section of the receiver, or by injecting the carrier from an oscillator at the signal frequency at the antenna terminals of the receiver.

If carrier injection from the b.f.o. in the receiver is used, the receiver should be adjusted as follows: First, with the receiver set up in the regular a.m. position, tune the bandspread dial for maximum deflection of the S-meter from the s.s.b. signal. Do not touch the bandspread dial after this. Next, reduce the r.f. gain to zero and increase the audio gain to maximum. Bring up the r.f. gain until the signal is heard at a comfortable level; then turn on the b.f.o. and carefully adjust the frequency of the b.f.o. until the voice sounds natural. If this procedure is followed closely, little difficulty should be experienced tuning the signal, regardless of which sideband is being transmitted.

In using the b.f.o. method of carrier insertion, it should be pointed out that practical reception of s.s.b. signals depends upon the stability of the h.f. oscillator in the front end of the receiver, as

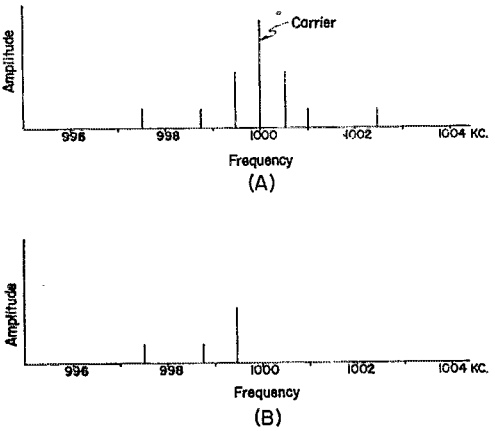


Fig. 4 — A comparison of (A) a 1-Mc. signal modulated by a complex wave, and (B) the same signal with carrier and one sideband removed.

well as the stability of the beat oscillator that supplies the carrier. Any frequency change in the h.f. oscillator produces the same effect as changing the frequency of the transmitter on the other end. The h.f. oscillator in most receivers is fairly stable on the lower frequencies. However, at frequencies above 5 Mc. the stability of many h.f. oscillators leaves much to be desired, when thinking in terms of the stability required from these oscillators when using i.f. carrier insertion.

In using carrier insertion at the signal frequency from an external oscillator, the procedure is as follows: With the receiver set up in regular a.m. position, first tune the bandspread dial for maximum indication of the S-meter from the signal. Then adjust the frequency of the external oscillator to the approximate frequency of the

(*Continued on page 112*)

BY ELEANOR WILSON,* W1QON

YLRL 13th Anniversary Party

YLs everywhere, it's time again to keep two week ends free and to notify the OM that he'll be chief cook and bottle washer while you join in the fun of the YLRL Thirteenth Anniversary Party. Contacts should be easier to make this year for the good reason that there are more girls on the air now. Here are the rules — from here on it's up to you!

Dates: 'Phone — Nov. 29th–30th; C.W. — Dec. 6th–7th.

Hours: Starts Nov. 29th & Dec. 6th 7 A.M. local standard time; ends Nov. 30th & Dec. 7th 7 P.M., local standard time.

Frequencies: All bands may be used. Net frequencies are 3610, 3900, 7040, 14,240 kc. It is suggested 14,150 kc. and 3740–3750 kc. be used, calling on the hour, for WN contacts.

Eligibility: Only YLRL members are eligible to compete. However, all YLs are invited to participate and submit logs.

Exchange: RS or RST report and name of state, U. S. possession, VE district, or country.

Operating: Call "CQ YLRL." Skeds and crossband operation permitted. However, 'phone to 'phone or c.w. to c.w. only.

Scoring: (1) 10 points for each YLRL member station worked, multiplied by the number of different states (Md. and D.C. one state), U. S. possessions, VE districts, and countries (except W and VE). Each station, state, possession, etc., will count once only, regardless of frequency band worked. (2) Count 1 point for each non-member worked during the party period. These points to be added to total after multiplying. Exchange report and state, etc., but these states. etc., will not count as multipliers.

Awards: Highest 'phone score — cup donated by W1MCW and now held by W3UUG for two years; highest c.w. score — cup donated by W4HWR and now held by W1FTJ for two years. These cups are awarded on a yearly basis. A member winning the same cup three times gains permanent possession. Second- and third-place awards for both 'phone and c.w. to be donated. Certificate for high score in each U. S. district and country.

Logs: All participants are requested to submit logs, whether competing or not, to be postmarked not later than Dec. 13, 1952, and mailed to Dorothy K. Wickenhiser, W3JSH, 1112 State Avenue, Coraopolis, Penn.

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

NEW Y.L.R.L. NET SCHEDULE

75-Meter 'Phone		
New England	3900 kc. Wed.	7 A.M. EST
Mid-Atlantic	3900 kc. Wed.	8 A.M. EST
Midwest	3900 kc. Wed.	9 A.M. EST
Northwest	3900 kc. Mon.	3 P.M. PST
California	(not known)	1 P.M. PST
80-Meter C.W.		
All	3610 kc. Wed.	9 P.M. EST
40-Meter C.W.		
All	7040 kc. Fri.	7 P.M. PST
20-Meter 'Phone		
All	14,240 kc. Thurs.	2 P.M. EST

Net Controls will be announced next month.

Keeping Up with the Girls

W1ZR, Edith, is doing fine work in training c.w. operators for MARS nets. . . . W1TKW teaches a group of youngsters code and theory daily. Doris hopes to have a number of them ready for exams soon. . . . An S-40A and a 10-watt 10-meter rig have made W5TTU a happy YL. While convalescing at Memorial Hospital, San Angelo, Texas, Pat finds QSOs better than medicine. . . . W4SOA is a noncommissioned officer in the radio section, Donaldson AFB, S. C. Evelyn has been busy building a mobile rig for 10. . . . Winters are long in Alberta, but VE6YW finds that they afford lots of time for working 80 and 40. Elsie enjoys leisurely contacts with VE6YG, Nancy, and VE6ZO, Frances. . . . Some new YLs are WN2KYF, Marie, Albany, N. Y.; KN2AYL, Joyce, Schenectady, N. Y.; WN8KLZ, Betty, Flint, Mich.; WN8IES, Pauline, Weston, W. Va. . . . A few 88s via ham radio resulted in the marriage of KN2AIC, Helen, and W2FHS. . . . W1UZR, Rita, finds it convenient to have her transmitter in the kitchen. She thinks hamming and cooking a well-matched pair. . . . W6VWR, Louise, would enjoy hearing from friends while she recuperates from an illness. . . . OM W2CGY reports with pleasure that Sigrid Toppen removed the "N" from her call and is now W2MVC, as a result of interest, persistence, and W1AW. A junior at Cornell University, Sigrid is faced with a "no transmitters" rule in the dorms, but she'll be on from W2CXM, the Cornell club station. . . . W1NAD, Ina, and OM, W1NDI, are teaching code and theory classes for c.d. operators in Bedford, Mass. . . . As president of the Windy Net, W1TYR, Gloria, of Weymouth, Mass., offers a certificate to anyone who works ten net members. . . . *Time* magazine disclosed that

(Continued on page 116)

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There aren't many YLs who take their amateur radio exams on their wedding day. Lenore, W9MGT, can claim that distinction, for on October 14, 1950, she married Martin Zadvonik, W9BPR, and took her Class B exam, too. Lenore now holds her Advanced Class license and is active on all bands from her Milwaukee QTH. And she's a popular teacher at the Browning School in Granville, Wisconsin, where she organized the school's Radio Amateur's Club and is president and trustee of the school station, W9TBT. As a result of her code and theory instruction, six YLs, six OMs (all age 9 to 13), the fifth-grade teacher, and two interested parents are now Novices. Many trips to the school kitchen for butter for burned fingers have been necessary, but the youngsters are really learning how to use a soldering iron! — *Photo courtesy W9MOT*

Bandswitching the Antenna Tuner

A Five-Band Cabinet Unit for Powers Up to 500 Watts

BY J. F. WOHLFORD,* W4CA

• Although a glance at the rigs in most ham stations might lead you to believe otherwise, it is not necessary that the antenna tuner look like a rat's nest. W4CA has a cabinet unit that not only harmonizes with the rest of the station equipment but also is as convenient to operate.

EVER since hams got away from old-style breadboard construction, I've had a pet gripe. So often you will walk into a ham's shack and see a sleek six-foot rack-cabinet rig, resplendent in its chromium-trimmed crackle finish. You take in the operating table with its late-model communications receiver, bug stuck down at just the right angle, microphone at perfect speaking level, and the clock with its sweep hand right on the dot with WWV. Even the log book is turned to a fresh page and a pair of lately-sharpened pencils stand at rigid attention alongside. Everything oozes efficiency and beauty until you raise your eyes to the top of the transmitter cabinet. If you hadn't seen it so many times, you'd be startled at the dusty rat's nest of coils, clips, condensers and wires that leaves you with a vague impression of Raggedy Ann. Yes, I'm talking about the antenna tuner!

Sometimes an apologetic attempt is made to take the curse off the scene by hanging the antenna-coupler components from the feed-through-insulator rods behind the curtains at the window on the far side of the room, but somehow few hams seem to make provision for this all-important part of the rig. It usually ends up as an outboard afterthought.

Having recently acquired a Collins 32V-2 to go along with the 75A-2 receiver on the operating table, I decided to see what could be done about the rat's nest. I, for one, cannot see the point of spending a lot of dough for the convenience and trimness of a bandswitching rig and then hooking it up to a plug-in-coil tuner 25 feet from my operating chair. The antenna tuner is just as much a part of the operating gear as the receiver or the rig itself and should be treated as such.

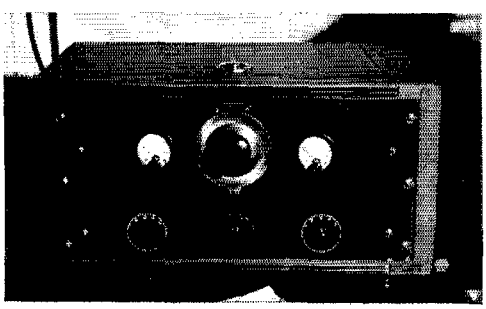
The 32V-2 covers five bands — 80 through 10. Therefore, the antenna unit should cover these bands, too. It ought to be built in an enclosure to harmonize with the other two units and be made as convenient to reach and operate. In other words, it should be a bandswitching unit in a cabinet that I could put on the operating table along with the other two.

Accordingly, I bought a cabinet that corresponded as closely as possible to the Collins job and started in. The wiring arrangement is shown in Fig. 1. Like most hams, I have room for only one antenna at a time. However, I like to try out new antennas from time to time. Therefore, the coils are fitted with clips to permit manual adjustment of the feeder taps to suit the particular antenna in use. Three pairs of switches are provided. One pair connects the transmitter output terminals to the proper antenna link, the second pair connects the antenna terminals to the appropriate coil, while the third pair switches the single tuning condenser.

Construction

The coils, condenser, and switches are assembled on a 13 × 17 × 3-inch chassis that fits into a 15¼ × 21¾ × 10½-inch cabinet with a hinged lid. The tuning condenser is mounted at the center on cone insulators and an insulating coupling is used on the shaft. The coils are grouped around the condenser, with the 80-meter coil at the rear and the others at the sides. The last four are mounted at an angle of about 45 degrees with respect to the sides of the chassis. While the coils themselves might be mounted on stand-off insulators, I have used a jack bar for each. Shielding between the coils was found unnecessary. The wires from the coils and condenser are run through grommet-lined holes down through the chassis to

*846 Campbell Ave. S.W., Roanoke, Va.



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A cabinet-mounted bandswitching antenna tuner. The switches, from left to right, are for the coax input, tuning condenser and feeders.

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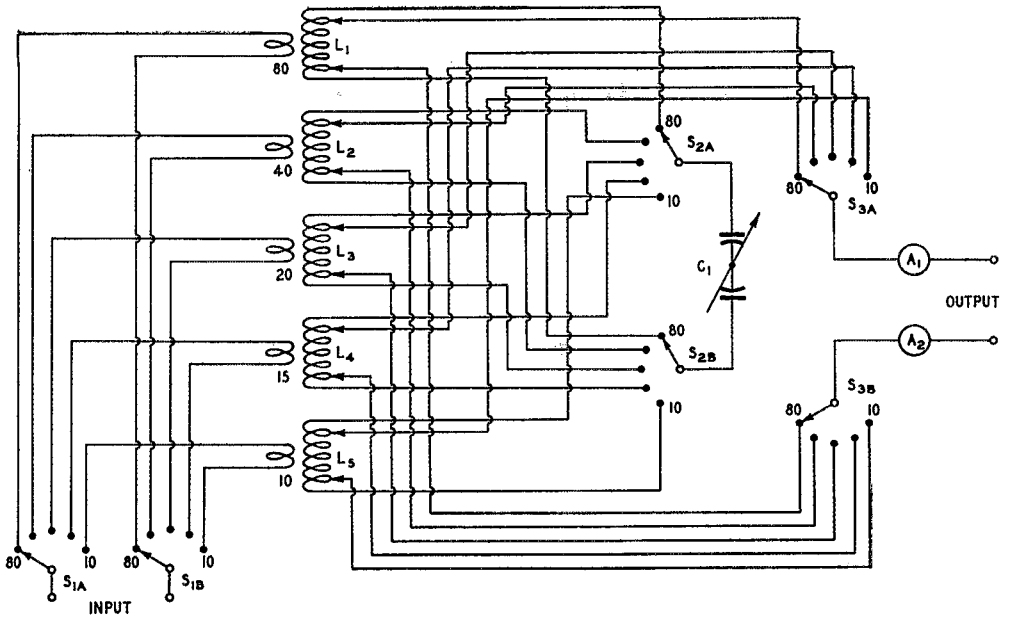


Fig. 1 — Circuit of the 500-watt bandswitching antenna tuner.

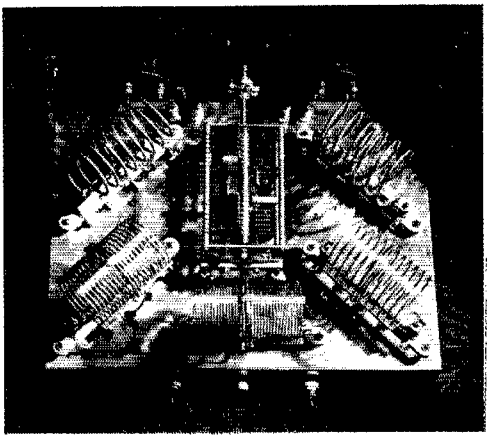
C_1 — 100 $\mu\mu$fd. per section (National TNC 100D).
L_1 — 3.5-Mc. band — 40 μh. — 35 turns No. 14, 2½-inch diam., 4½ inches long, 2-turn link (B & W 80TA).
L_2 — 7-Mc. band — 15 μh. — 20 turns No. 12, 2½-inch diam., 4 inches long. 2-turn link (B & W 40TA).
L_3 — 14-Mc. band — 5.5 μh. — 12 turns No. 12, 2½-inch diam., 4 inches long, 2-turn link (B & W 20TA).
L_4 — 21-Mc. band — 2.4 μh. — 8 turns ⅛-inch tubing, or No. 8 wire, 2½-inch diam., 4½ inches long, 2-turn link (B & W 15TA).
L_5 — 28-Mc. band — 1.6 μh. — 6 turns ⅛-inch tubing, or No. 8 wire, 2½-inch diam., 4½ inches long, 2-turn link (B & W 10TA).
M_1, M_2 — R.f. ammeter. Scale will depend on power and feeder impedance. Those shown have scales of 1.5 amp.
S_1, S_2, S_3 — Ceramic rotary switch, 2 wafers, 1 circuit per wafer, 5 contacts (Mallory 175C).

the switches underneath. All wires, with the exception of the input link lines, should be kept as well spaced from each other and from the chassis as possible. Some crowding around the switches is unavoidable, of course. I used shielded double-conductor cable for the link lines.

On the panel, the two r.f. meters are mounted above the chassis line, on either side of the dial for the tuning condenser. The switches are lined up along the bottom. Although the Mallory switches might seem to be rather light for the job, they have given no trouble whatever.

Along the rear edge of the chassis are the coaxial input connector and the two feed-through insulators that serve as the antenna terminals.

I have tried the tuner on a variety of antennas and have had no trouble at all in loading up on all bands. The taps on the coils are adjusted until proper loading is obtained with the circuit in use tuned to resonance. In other words, it works as beautifully as it looks and is a great improvement over any of the hit-and-run arrangements I've used before. Once the taps are set for your particular antenna, you just turn the switches to the band you want and resonate with the condenser for maximum reading on the r.f. ammeters.



Interior of the 500-watt bandswitching antenna tuner. The 80-meter coil is in the foreground, behind the tuning condenser. The 40- and 15-meter coils are to the left, those for 20 and 10 to the right.

Happenings of the Month

DIRECTOR ELECTIONS

In the current elections, three director posts are being filled without membership balloting by virtue of no competition. **John R. Griggs, W6KW,** continues as director of the Southwestern Division, and **Franklin K. Matejka, WØDD,** remains director of the Rocky Mountain Division, while **P. L. Anderson, jr., W4MWH,** becomes director of the Roanoke Division on January 1st.

Four vice-director posts have also been filled as the result of no competition; **Karl W. Weingarten, W7BG,** continues in the Northwestern Division; **Gus M. Browning, W4BPD,** continues in the Roanoke Division; and **Walter R. Joos, W6EKM,** continues as vice-director in the Southwestern Division. Assuming the vice-director post on January 1st will be **Claude Maer, WØIC,** in the Rocky Mountain Division.

The remaining offices are contested, and balloting is now in progress.

M.A.R.S. NAME CHANGE

Effective September 2, 1952, the Department of Defense changed the name Military Amateur Radio System to Military Affiliate Radio System. The change has no significance as concerns the activities of MARS and comes only because of difficulties encountered in overseas areas, where the "Amateur" resulted in operational difficulties with foreign governments when it came to extending MARS operations on military block channels.

STAFF NOTES

There will soon be two new W1 calls heard on the air, as the result of the addition to the Headquarters establishment of Mr. and Mrs. Robert L. White, from San Diego. Bob, W6YYN, takes over the ACM C.W. post left vacant when John Cann, W1RWS, transferred to the Secretarial Department; while Ellen, W6YYM, up until now the SCM for the San Diego section, becomes ACM 'Phone. L. G. McCoy, W1ICP, formerly the ACM 'Phone, becomes a Technical Assistant to replace Dick Smith, W1FTX, who resigned to join the new electronics branch of a local plant.

Charles Bender, W3ODU, of Pittsburgh, Pa., is the new operator at W1AW, replacing Charles Wood, W2VMX, who has transferred to 38 La Salle Road as contest log-checker.

'PHONE EXPANSION

In accordance with action taken at the Board meeting last spring, the League has requested the Commision to allot a mobile 'phone subband at 3775–3800 kc., to increase the 20-meter 'phone band to include 14,300–14,350 kc., and to increase the 10-meter 'phone band to include 28,250–28,500 kc. The text of the League's filing is quoted below:

FEDERAL COMMUNICATIONS COMMISSION

In the matter of a
proposed amendment
to § 12.111 for the
Rules and Regulations

PETITION FOR RULE MAKING

Pursuant to § 4(d) of the Administrative Procedure Act and § 1.702 of the Commission's Rules and Regulations, the American Radio Relay League requests that § 12.111 of the Commission's Rules and Regulations be amended to provide for the following additions to suballocations available for voice (A-3 or narrow band frequency or phase modulation) emission:

I) 3775–3800 kilocycles, under the usual operator license class limitation, to amateur mobile stations only.

II) 14,300–14,350 kilocycles, under the usual operator license class limitation.

III) 28,250–28,500 kilocycles, to all amateurs except Novice and Technician licensees.

* * * * *

These requests are filed pursuant to decisions of the Board of Directors of the American Radio Relay League, Inc., after lengthy deliberations at its annual meeting in May, 1952. As the Commission is aware, the ARRL Board of Directors is composed of sixteen amateurs nominated and elected by approximately 35,000 licensed amateurs to represent them in the formulation of League policy.

In support it is shown:

I.

The growth of mobile interest among amateurs is considerable. It is spurred by participation in emergency and civil-defense preparations, although not based on those aspects alone. During the initial stages of mobile interest some years ago, activity centered in the amateur 28-megacycle band. Until 1947 it was the lowest frequency band in which mobile operation was permitted; predominance of operation in this band continued with the existence of excellent propagation conditions. In recent years more and more interest has turned to other bands, with their opening to mobile operation, primarily the voice allocation 3800–4000 kilocycles. This arises from a deterioration of propagation conditions at 28 megacycles, and the gradual improvement in design and operation of whip antennas effective at lower frequencies.

The comparative interest in mobile communications by bands is shown in the following tabulation of results of an investigation conducted last year by the American Radio Relay League among a cross section of members of its Amateur Radio Emergency Corps. There were 1,859 mobile units in this sampling:

Units on 3.8-Mc. band	679
Units on 28-Mc.	1,393
Units on 144-Mc.	200
Units on other bands	102

(The sum of individual bands is larger than the total because a number of units operate multiple bands.)

An associated tabulation indicates that while the percentage growth of interest in 28-Mc. mobile activity was 60%, for 1951 vs. 1950, comparative growth in 3.8-Mc. mobile activity was at the remarkable figure of 93%.

This recent heavy increase in amateur mobile activity in the 3.8-Mc. band poses a practical interference problem. Mobile transmitting equipment has of necessity very low power and employs antennas of reduced efficiency, yet in this band it must compete with higher-power fixed stations

with effective antennas. The result is that amateur mobile stations operating in the 3.8-megacycle band do so under a considerable handicap because of interference. Fixed stations, such as control stations of emergency nets, often find considerable interference on the frequencies of the mobile stations they are attempting to reach.

In the League's view, relief should be provided by the establishment of a small suballocation wherein voice emission, A-3 or narrow-band frequency or phase modulation, might be used by amateur mobile stations. Our proposal is 3775–3800 kilocycles. This band is small enough so that it will not cause undue hardship on activity presently within its boundaries, especially with the low-power employed in mobile units. It is contiguous to the present voice suballocation and therefore facilitates work with fixed stations in the adjacent band. Without the heavy interference from high power fixed stations, amateur mobile stations will be able to conduct their operations more successfully.

The League requests that the current restrictions of Advanced Class or higher licenses should apply also to mobile operation with voice emission on any such new suballocation.

II.

Of all suballocations of the amateur bands in which voice emission is permitted, that in the 14-megacycle band, 14,200–14,300 kilocycles, is most crowded. For a number of years this band and that at 3.5 megacycles both possessed 100-kilocycle segments available for telephone operation. Since War II, as amateur telephone interest has increased, the suballocation in the 80-meter band was gradually expanded until now it contains 200 kilocycles. No expansion has been made of the 20-meter voice assignment.

If current proposals of the Commission are adopted it will result, in general, in the following percentages of total bandwidths available to voice operation by U. S. amateurs in major low-frequency bands:

3500–4000 kc.	40%
7000–7300 kc.	33⅓%
14,000–14,350 kc.	28.5%
21,000–21,450 kc.	44.4%
28,000–29,700 kc.	70.6%

Though it is a band heavily populated with voice stations, the amateur 14-megacycle allocation contains the smallest percentage of frequencies available to voice emission. The resultant condition is one of overcrowding to an extreme unusual even in amateur experience. The League believes that relief should be provided, and can be provided by opening to voice emission the top 50 kc. of the 14-megacycle band.

III.

For a number of years the amateur band at 28 megacycles has had occupancy predominantly in the voice suballocation. One of several reasons for this heavy telephone occupancy is the fact that the band is the major high-frequency location in the spectrum where amateurs are permitted voice emission without holding a class of license higher than General or Conditional Class. Whatever the contributing factors, the band has continued its tendency toward more and more voice occupancy. A check by the League of amateur activity in December, 1946, showed the division of interest in this band to be approximately 15% c.w. telegraphy, 85% voice. A sampling of interest in several League divisions conducted early in 1952 indicated that the percentage of voice interest now runs even higher, being as much as 88% and 89% in two areas. The tendency to increase becomes more of a factor when it is realized that propagation conditions in the 28-megacycle region are for the time being extremely poor. At the same time, c.w. occupancy has dropped to perhaps ⅔ of its level several years ago.

For the above reason of predominant telephone occupancy, and with the aim of obtaining even more effective use of frequencies available to the amateur service, the League requests that the additional frequencies 28,250–28,500 kilocycles be made available to voice emission, A-3 or narrow-band frequency or phase modulation.

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

A. L. BUDLONG
Its General Manager
September 3, 1952

In connection with dockets and rule-making proceedings, there is a provision in the Administrative Procedures Act which permits interested parties to request the FCC for opportunity to appear personally and argue the case before the Commission. The League, believing the issue to be important, has so requested in the case of Docket 10237, as indicated below.

FEDERAL COMMUNICATIONS COMMISSION

In the Matter of Amendment of Part 12 of The Commission's Rules and Regulations to designate specific amateur calling, answering and emergency communications frequency bands	Docket 10237

Request for Oral Argument

In viewing of the complex character of the problems presented in this proceeding and the substantial innovations in the proposed regulations,

The American Radio Relay League, Inc., requests oral argument.

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

September 5, 1952

NAVAL RESEARCH LABORATORY OPPORTUNITIES

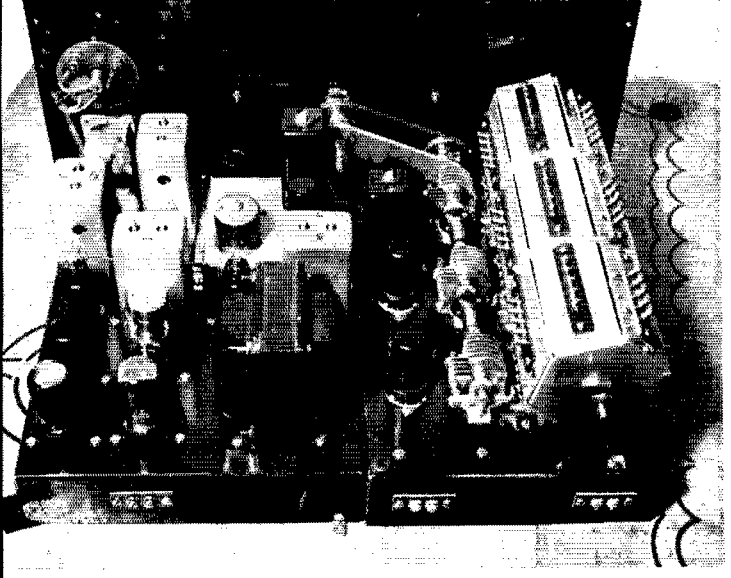
There are vacancies at NRL in grades GS-5 to GS-12 with basic entrance salaries from $3410 to $7040 per year, in research positions for electronic scientists and engineers, who have one or more degrees from accredited colleges and universities with major concentration in electronics, or a combination of electronics and electrical engineering or electronics and physics. Postgraduate research experience in electronics will be given credit toward qualifying for a higher grade, depending upon the kind and amount of experience. Persons who have these qualifications and are interested in a government career in electronics research are urged to complete an application for Federal employment, Standard Form 57, and mail it to the Personnel Officer, Naval Research Laboratory, Washington 25, D. C.

A.R.R.L. STAFF OPENING

We are looking for a young man to fill an immediate vacancy in the Secretarial Department of the Headquarters staff, someone who would like to make amateur radio his career. The work is non-technical, requires the ability to express one's self well both orally and on paper, and will involve a modest amount of travel. Any applicant should preferably be one with initiative who will be able to assume administrative responsibility readily.

If you are interested, write to Box A, ARRL Hq., West Hartford, Conn. State your age, marital status, and give a résumé of your educational and employment background and amateur experience.

Salary will be commensurate with ability and experience.



The homemade turret tuner in the receiver at W8YPG is professional-looking in every respect, although it was made with simple hand tools.

Turret Switching for the Receiver or VFO

A Homemade Unit for Efficient Multiband Operation

BY R. J. RODENBO,* W8YPG

A TURRET ASSEMBLY for bandswitching is usually considered to be beyond the scope of most amateur workshops, but the unit to be described has been so effective (and it was built with only a drill press and a pair of tin snips) that we would like to pass along some of the details. It was originally given a two-year workout in a VFO, and then became the basis for a receiver design. And, incidentally, this receiver is not the end result of years of receiver construction — it is the first one I ever built.

Before describing the turret, a brief description of the receiver is in order, and a block diagram is shown in Fig. 1. High-gain television receiver tubes are used in the front end — combined with the short leads possible through the use of the turret, they make an almost unbeatable combination. The first i.f. of 1700 kc. and the second i.f. of 100 kc. reduce images and increase the selectivity. The 100-kc. transformers were picked up in the surplus market, but standard 175-kc. transformers might be used, or the 85-kc. transformers from a BC-453 could be substituted. The noise-limiter circuit is the series circuit taken from the *Handbook* and uses one section of the 6H6. It was found to be the best of the various noise-limiter circuits that were tried, and dropping the heater voltage to the 6H6 (through a 6.9-ohm resistor) materially increased the effectiveness. Input and output leads to the noise-limiter circuit should be well shielded — if you can remove the 6H6 from the socket and have no audio whatsoever, then the limiter will be really effective! The r.f. and i.f. stages are controlled by the a.v.c. voltage for 'phone reception, but the mixer gains are held constant. The manual gain control is applied only to the r.f. and first 100-kc. i.f. stage. Although this might not give a wide enough range for some c.w. men, on 'phone it allows the manual gain to be set on the various bands to give a zero S-meter reading that depends upon gain and local QRN, since the S-meter is in the last 100-kc. i.f. stage.

Usual construction techniques were used throughout the receiver, although special attention was paid to the wiring in the oscillator portion of the 6SB7-Y to keep harmonics out of the front end. The stage, including its oscillator coil and one of the 1700-kc. transformers, was mounted on a separate subchassis, and shielded wire and good r.f. filtering were used for all d.c. leads.

The circuit of the "front end" is shown in detail in Fig. 2. Many different mixer-tube types were tried before the 6AC7 was selected for its low noise and high conductance. A high value of grid leak and of screen-dropping resistor combine to make a sensitive mixer, and the oscillator is required to furnish only a volt or two. The 1700-kc. separation between signal circuits and oscillator minimizes pulling and adds to the oscillator stability.

The tuner for this receiver is built on a separate 8 × 13 × 2-inch chassis, and the rest of the receiver on a 9 × 13 × 2-inch chassis. They were formed in the shop from 16-gauge steel, without a brake or any special tools. I used a piece of angle iron clamped to the sheet steel along the line where the bend was to be made. Then, with a cutting tool ground from a piece of high-speed tool steel to a sharp point and held in a pair of vise-grip pliers, a line was scribed along the straight edge. The scribing was re-

* Kingston, Mich.

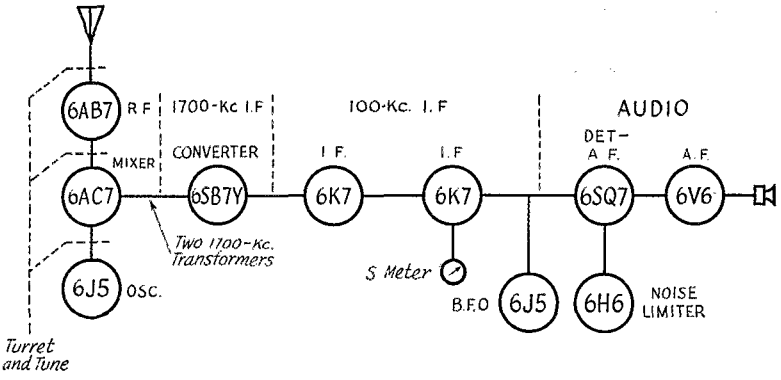


Fig. 1 — Block diagram of the homemade turret-tuned receiver. The receiver uses double conversion, with two fixed-tuned i.f. amplifiers at 1700 and 100 kc.

peated until the mark was about one-third through the metal. It was then possible to make a sharp, neat bend at the line. The corners were welded and small tapped angles riveted to the bottom of the chassis. The chassis was sanded very smooth, and all holes and cut-outs were made before the chassis was given a couple of coats of black lacquer.

The Turret Tuner

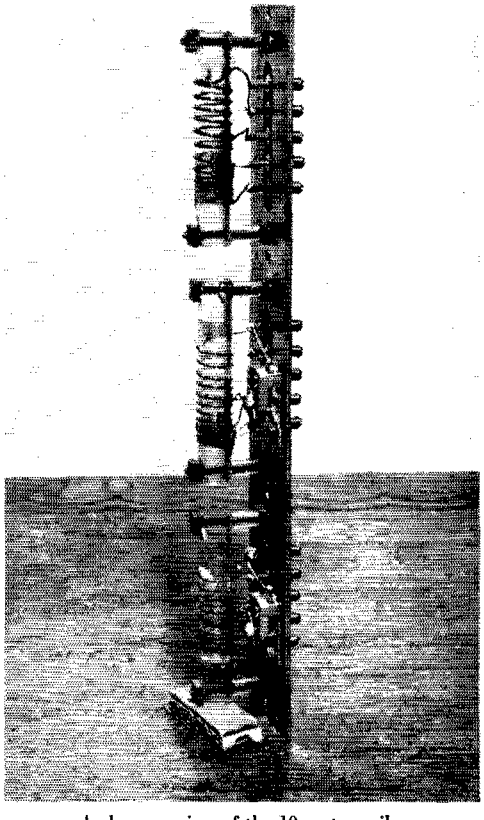
The turret type of bandswitch provides the convenience of bandswitching with an efficiency equal to or better than plug-in coils. Each lead from the coils is as short as possible, and all are of the same length. When it comes to pruning and tracking, the system is a great help, because to make a change it is only necessary to loosen a couple of screws and lift out the coil strip for the particular frequency band. This is much faster than unsoldering coils from a bandswitch in what may be an almost inaccessible location.

To make the turret, take a piece of $\frac{3}{16}$-inch steel and lay out a hexagon $1\frac{5}{8}$ inches on a side. In the exact center, drill and tap a $\frac{1}{2}$-20 hole, as shown in Fig. 3. This now is the template used to form the turret bulkheads. Cut four pieces of $\frac{1}{16}$-inch aluminum in a rough hexagon about $\frac{3}{8}$ inch larger all around than the template, and drill and tap a $\frac{1}{2}$-20 hole in the center of each. Using a small arbor of the sort used on the end of a motor shaft (and threaded $\frac{1}{2}$-20), screw on the template and one of the bulkhead blanks. Scribe a line around the blank $\frac{5}{16}$ inch from the template, mark the 60-degree cut-outs at the corners, and trim the blank to the lines. Clamp the whole assembly in a vise and bend the extensions of the blank over the sides of the template. Make four of these, and drill and tap a 6-32 hole in the exact center of each bent-over side of each bulkhead.

Six $1\frac{3}{4}$- by 11-inch strips of $\frac{1}{16}$-inch aluminum are required for the coil strips. The edges can be filed straight by using a piece of angle iron for a guide. Lay out the holes carefully, and drill them all at the same time, since it is essential that all holes have identical spacing. In all operations like this, it is a good idea to make steel drilling templates.

The turret bearings are made by drilling and reaming $\frac{5}{16}$-inch holes through $\frac{1}{2}$-inch long $\frac{1}{2}$-20 hexagonal-head bolts. They can be chucked in the drill press, center-drilled, and then drilled and reamed. Lacking a $\frac{5}{16}$-inch reamer, drill first with a $\frac{19}{64}$-inch and then a $\frac{5}{16}$-inch drill. Six of these will be required, and four should have the head tapped for 10-32 Allen setscrews.

The bearing supports are formed from $\frac{1}{16}$-inch steel, with the bearing holes tapped $\frac{1}{2}$-20 and two mounting holes drilled for 6-32 screw clearance. The two turret bearings without setscrews are screwed into the bearing supports and secured with locknuts. Brass turret bearings are preferable to steel at these points.



A close-up view of the 10-meter coils.

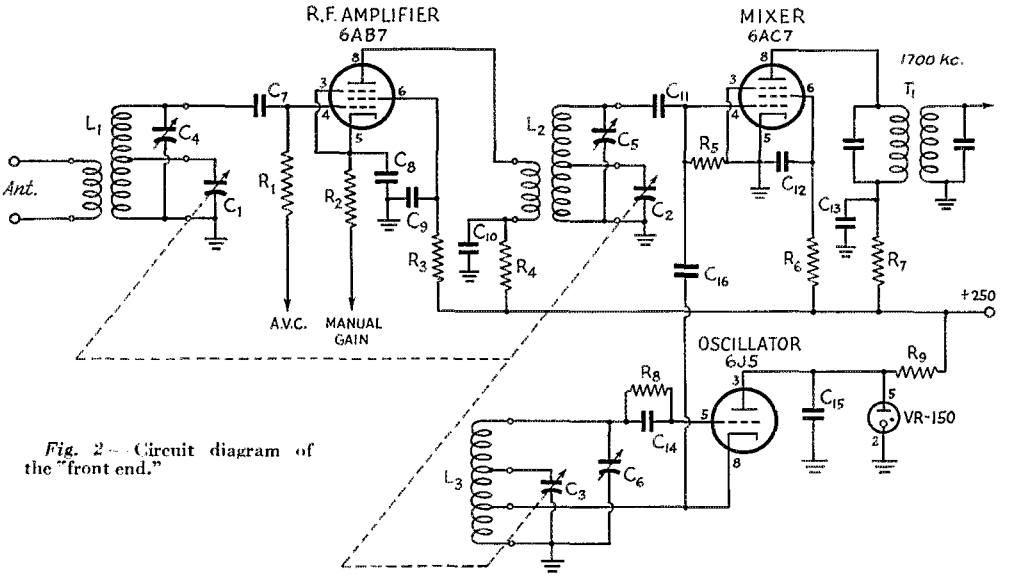


Fig. 2 — Circuit diagram of the "front end."

C_1, C_2, C_3 — 35-$\mu\mu$fd. midget variable, ganged (Bud MC-1862).
C_4, C_5 — 7–45 $\mu\mu$fd. ceramic padder.
C_6 — 50-$\mu\mu$fd. air trimmer.
C_7, C_{11}, C_{14} — 250-$\mu\mu$fd. mica.
C_8, C_9, C_{10}, C_{12}, C_{13}, C_{15} — 0.01-μfd. mica.
R_1, R_6 — 0.1 megohm.
R_2 — 300 ohms.
R_3 — 75,000 ohms.
R_4, R_7 — 3500 ohms.
R_5 — 5 megohms.
R_8 — 51,000 ohms.
R_9 — 5000-ohm 25-watt adjustable.
L_1 — 3.5 Mc.: 1⅝ inches No. 26 enam. close-wound, bandspread tap 10 turns from top. Antenna coil, 10 turns over cold end.
7 Mc.: 50 turns No. 24 enam. close-wound, bandspread tap 16 turns from ground end. Antenna coil, ⅛ inch No. 30 enam. close-wound next to cold end.
14 Mc.: 27 turns No. 24 enam. spaced to 1⅝ inches, bandspread tap 10 turns from cold end. Antenna coil, 5 turns No. 30 ⅛ inch from cold end.
28 Mc.: 9 turns No. 24 enam. spaced to 1⅛ inches bandspread tap 5 turns from cold end. Antenna coil, 3 turns No. 30 enam., 1/16 inch from cold end.
L_2 — 3.5 Mc.: Same as L_1. Primary, 18 turns No. 26 enam. close-wound over cold end.
7 Mc.: Same as L_1. Primary, 22 turns No. 30 enam. close-wound next to cold end.
14 Mc.: Same as L_1. Primary, 22 turns No. 30 enam. ⅛ inch from cold end.
28 Mc.: Same as L_1. Primary, 10 turns No. 30 enam. 1/16 inch from cold end.
L_3 — 3.5 Mc.: 64 turns No. 24 enam. close-wound, bandspread tap 35 turns from bottom, cathode tap 7 turns from bottom.
7 Mc.: 42 turns No. 24 enam. spaced to 1¾ inches, bandspread tap 14 turns from cold end, cathode tap 5 turns from cold end.
14 Mc.: 23 turns No. 24 enam. spaced to 1⅞ inches, bandspread tap 8 turns from cold end, cathode tap 4 turns from cold end.
28 Mc.: 8 turns No. 20 enam. spaced to 1½ inches, bandspread tap 4 turns from cold end, cathode tap 2 turns from cold end.
T_1 — 1700-kc. i.f. transformer (Meissner 16-8091).

Cut 15 strips of ⅛-inch bakelite for the coil contact strips, and drill them as shown in Fig. 3. A drilling template is advisable here, for the sake of uniformity.

Procure about two feet of ⅛-inch i.d. copper tubing and saw off 60 pieces slightly longer than ¼ inch, for the contact-point spacers. File one end smooth and square. Make a little jig using a ⅛-inch pin ¼ inch long, place each spacer on it, and file each spacer to the same length.

The coil spacers are made of ⅛-inch i.d. plastic (I.C.A.) cut to a length of 7/16 inch, and the coil forms are made from ½-inch o.d. polystyrene tubing or rod. Be careful in locating and drilling the holes in the coil forms, to minimize any stress by the mounting screws.

For the detent plate, cut out a 2⅜-inch diameter disk from a piece of 3/32-inch thick steel. Lay out and file six notches 60 degrees apart around the circumference, as shown in Fig. 3. Drill and tap a ½-20 hole in the center.

The detent arm is made from two ½-inch-wide strips of 1/16-inch steel 2½ inches long. The roller is a ½-inch diameter wheel of 3/32-inch-thick cold-rolled steel, and the end spacers are made of the same material ⅛-inch thick. The roller axle is made of ⅛-inch diameter rod, and the roller should turn freely on it. The assembly is held together at the ends with ⅛-inch diameter rivets through the arms and end spacers.

After assembly, the detent arm is pivoted at one end on the front turret bearing, and a spring attached to the other end of the arm is anchored at the bearing support. Some experimentation may be necessary to find the exact pivot point and the proper spring tension, so that the turret will rotate freely in either direction without binding.

The contact springs are bent over a bending jig made from a scrap of ½-inch steel, as shown in Fig. 3. Before bending, the spring is a 3/16-by-3½-inch strip of 0.015 brass shim stock. After

bending around the jig, the two free ends are rolled together. This loop can be used later for a soldering terminal. After the spring is formed, a 7/64-inch hole is drilled for fastening the spring to the coil contact strip with a 3/4-inch long 4-36 screw. To maintain the alignment of the contact springs, 3/16-inch-wide slots are filed 1/32-inch deep across the bakelite. Three of the coil contact strips are used for supporting the contact springs.

The turret is assembled by screwing three of the steel turret bearings into three of the bulkheads and fastening them with locknuts. The fourth bulkhead is held to the detent plate by its turret-bearing bolt, with a 1/16-inch-thick washer between the two for a spacer. Assemble the four bulkheads on the 5/16-inch steel shaft, using two or more of the aluminum coil strips to determine the spacing and position, and lock them on the shaft with the setscrews.

The coil contacts on the coil contact strips are 3/4-inch 4-36 brass round-head machine screws. Their heads are supported above the bakelite by the copper contact point spacers. The coil forms are held in place by the 1 5/8-inch-long brass screws that also hold the coil contact strip to the aluminum coil strip, and the coil forms are spaced away from the bakelite by the plastic coil spacers.

The bearing supports should be located on the chassis *after* the contact springs have been mounted on their bakelite strips and these in turn have been mounted on the chassis. Use one of the aluminum coil strips for a template on the chassis. With the contact springs in place, locate the bearing supports on the chassis, being careful to see that each contact bolt hits the center of its contact spring. When the bearing supports have been bolted to the chassis, orient the detent plate.

To take full advantage of the turret, the leads from its fixed contacts should be as short as possible. In this particular receiver, the tuning condensers were mounted alongside the turret, close to the contact strips. To center the tuning dial, it was necessary to drive the tuning condensers through the brass belt and two of the drums taken from an old Atwater Kent b.c. receiver.

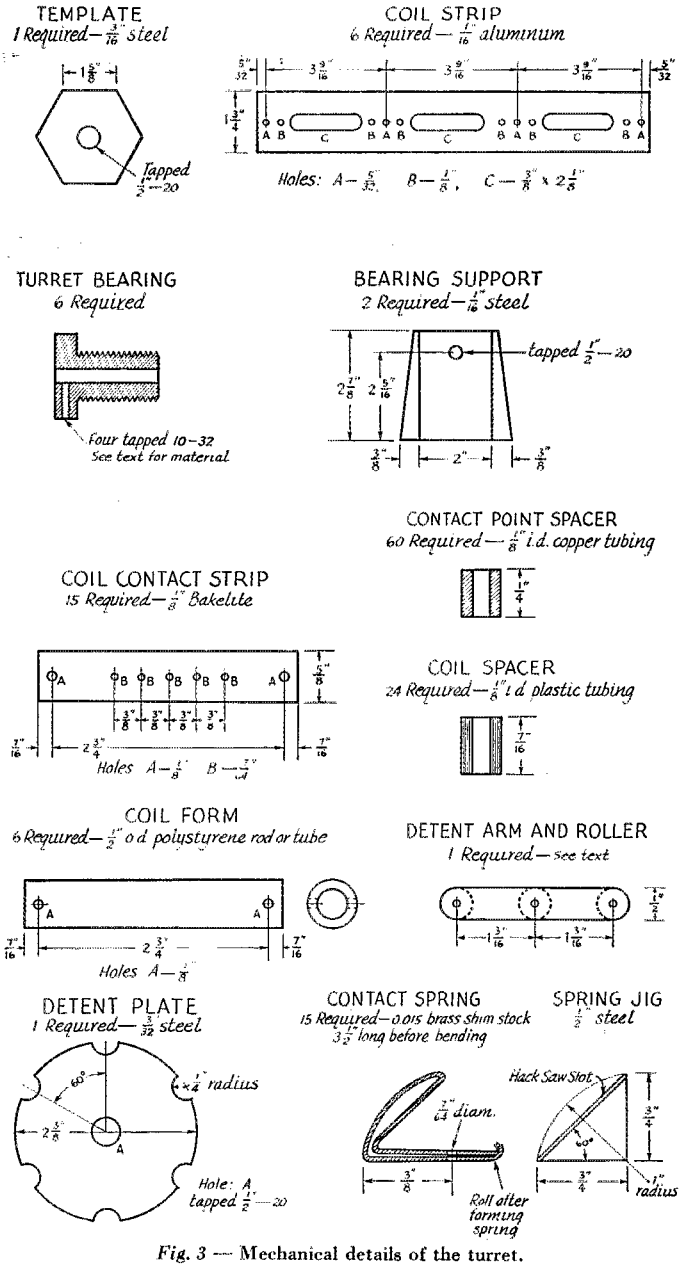


Fig. 3 — Mechanical details of the turret.

Coils

Adjustable ceramic padding condensers were mounted on each r.f. and mixer strip (C_4 and C_5 in Fig. 2), and these can be adjusted by removing the coil strip on the opposite side of the turret.

In winding the coils, the taps were made by twisting a small loop and later removing the insulation at this point and soldering a wire to the cleaned loop. On 10 meters, where heavier wire was used, the taps can be soldered directly to the winding. When all tracking and adjust-

(Continued on page 118)

Announcing the 19th ARRL Sweepstakes

Certificates Will Be Awarded to C.W. and 'Phone Winners in Each Section and to Top Scorers in Club Groups

CONTEST PERIODS

Time	*Start* Nov. 15th & 22nd	*End* Nov. 17th & 24th
EST	6:00 P.M.	3:01 A.M.
CST	5:00 P.M.	2:01 A.M.
MST	4:00 P.M.	1:01 A.M.
PST	3:00 P.M.	12:01 A.M.

IT'S TIME to get your station in readiness for the 19th Annual ARRL Sweepstakes. This popular contest affords you an opportunity to pit your operating skill against the best men in your ARRL section, or to fill in some of those states that are lacking for WAS. Every licensed amateur in every League section is urged to participate; whether or not you're an ARRL member, you are cordially invited to get into the SS and submit an entry. All scores reported in accordance with the rules will be listed in a *QST* tabulation of final results.

As usual, the contest will run over two consecutive week ends, with a maximum allowable total operating time of 40 hours out of the possible 66 for each entry ('phone or c.w.). The rules are practically the same as last year's, except for minor changes in Rules 4 and 5. The "power multiplier" for 'phone entrants who maintain the input power to their transmitter output stage at 100 watts or less at all times during contest operations has been increased to 1.5. For c.w. entrants, this multiplier remains at 1.25. The operation of two or more transmitters simultaneously at single-operator stations now is specifically prohibited. You can operate both 'phone and c.w., but separate logs must be filed for each mode.

Entries by multiple-operator stations are encouraged and will be listed, but only single-operator stations will be eligible for the certificates offered to the top 'phone scorer and the top c.w. scorer in each section. Multiple-operator scores can be grouped with single-operator scores in club competition, however, and a handsome gavel is offered to the club with the highest aggregate score. Within a club, single-operator entries can compete for the "club-certificate" awards given to the top c.w. and 'phone scorers.

The Sweepstakes, like Field Day, puts a premium on operating skill rather than on power, since the score multiplier for stations operating with 100 watts or less insures that much of the operation will be in this power class. The 807s really go to town in the SS!

If you're new to the SS, it won't take you long to catch on. During the contest period, call "CQ SS" or answer such a call, exchange preambles in the form shown elsewhere in this announcement, and keep your log properly. ARRL will gladly send you contest forms upon request, or you can draft your entry in accordance with the sample. Although it is not mandatory under the rules, more and more operators each year are using the 24-hour time system in their SS exchanges. For those unfamiliar with this system, it is based on a 24-hour day starting at midnight. Thus midnight is 0000, 1 A.M. is 0100, 12 noon is 1200, 6:30 P.M. is 1830, and 11:59 P.M. is 2359.

Tune up your gear now, read the rules to acquaint yourself with the pattern, and then get set for an operating spree that is real fun.

Rules

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

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

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

4) *Scoring:* Each preamble sent and acknowledged counts one point. Each preamble received counts one point. Only two points can be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see p. 6) worked during the contest is the "sections multiplier." It is not necessary for preambles to be sent both ways before a contact may count, but one must be received, or sent and acknowledged, before credit is claimed for either point(s) or multiplier. Apply a "power multiplier" of 1.25 to c.w. entries and 1.5 to 'phone entries if the input power to the transmitter output stage is 100 watts or less at all times during contest operation.

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

5) *Reporting:* Contest work must be reported as shown in the sample form. Mimeographed contest forms will be sent gratis upon receipt of radiogram or postcard request. Indicate starting and ending times for each period on the air. All Sweepstakes reports become the property of ARRL. No contest reports can be returned.

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

A single-operator station is one manned by an individual

HOW TO SCORE

Each preamble sent and acknowledged counts one point.

Each preamble received counts one point.

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

For final score: Multiply totaled points by the number of *different* ARRL sections worked, that is, the number in which at least one bona fide SS point has been made. Multiply c.w. scores by 1.25 and 'phone scores by 1.5 if you used 100-watts-or-less transmitter input *at all times* during the contest.

EXPLANATION OF "SS" CONTEST EXCHANGES

Send Like a Standard Msg. Preamble, the . . . . NR	*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges — Contest info. numbers, 1, 2, 3, etc., for each station worked	Send your own call	CK (RST report of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Sample — NR 1	W1AW	589	CONN	1812	NOV 15

amateur who receives no assistance from other persons during the contest periods. He may not have assistance in any manner in keeping the station log and records, or in spotting stations during a contest period. The operation of two or more transmitters simultaneously at single-operator stations is not allowed. Contest reports must be postmarked no later than December 10, 1952, to be eligible for *QST* listing and awards.

6) *Awards:* Two certificate awards will be given in each section, one for the highest c.w. score and one for the highest 'phone score. Only single-operator stations are eligible for certificate awards. Multiple-operator scores will receive separate *QST* listing in the final results.

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

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

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

Sample of report form that must be used by all contestants.

STATION W. . . . — SUMMARY OF EXCHANGES, NINETEENTH A.R.R.L. ALL-SECTION SWEEPSTAKES

Freq. Band (Mc.)	*Time On or Off Air*	*Sent (1 point)* NR	Stn.	CK-RST	Section	*Time*	*Date (Nov.)*	*Received (1 point)* NR	Stn.	CK-RST	Section	*Time*	*Date (Nov.)*	*Number of Each Different New Section as Worked*	*Points*
3.5	On 1810	1	W1AW	589	Conn.	1812	15	7	W8JIN	589	Ohio	1814	15	1	2
"	"	2	"	589	"	1815	"	6	W1BFT	599	N. H.	1817	"	2	2
"	"	3	"	579	"	1820	"	6	W1BJP	579	Vt.	1821	"	3	2
7	"							24	W5KIP	479	Ark.	2005	"	4	1
"	"	4	"	479	"	2115	"	38	W5HJF	579	N. Mex.	1915	"	5	2
"	"	5	"	579	"	2128	"	45	W6BIP	479	S. F.	1820	"	6	2
"	"	6	"	589	"	2133	"	59	W8RSP	589	Ohio	2134	"	..	2
"	Off 2135 Time: 3 hrs. 25 min. On 1845														
14	"	7	"	569	"	1915	18	94	KL7AD	569	Alaska	1418	18	7	2
"	"	8	"	569	"	1925	"	127	W7ZN	569	Idaho	1728	"	8	2
"	"	9	"	469	"	1935	"	114	W7HRM	569	Wyo.	1730	"	9	2
3.5	"	10	"	579	"	2110	"	130	WØLHS	579	N. D.	2005	"	10	2
"	"	11	"	589	"	2112	"		W5KIP		Ark.				1
"	Off 2115 Time: 2 hrs. 30 min.														

Total Operating Time: 5 hrs. 55 min. 3.5, 7 and 14 Mc. used. 10 Sec., 22 Pts. 85 Watts Input Power

Assisting person(s): name(s) or call(s), etc.:.....

Claimed score: 22 points × 10 sections = 220 × 1.25 (85 watts input) = 275

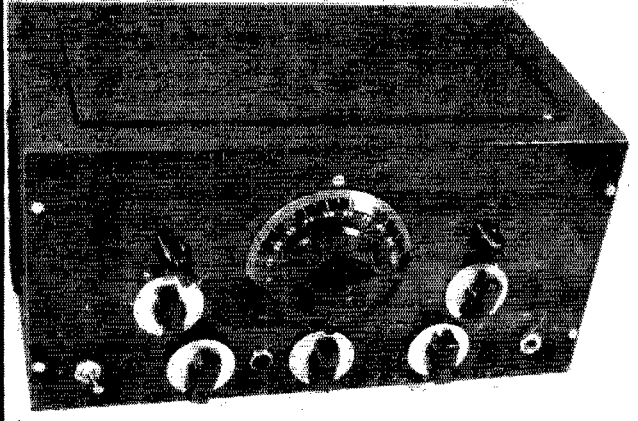
I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is correct and true to the best of my knowledge.

Signature.....

Address.....

Tube Line-Up.....

Number Different Stations Worked.....



Fitting companion to W1PH's coffee-can VFOs, the coffee-can receiver is housed in a 14 × 7 × 7½-inch cabinet. The bandswitches and bandset condensers are on either side of the main tuning dial. The power switch, panel lamp, headphone jack and the three gain controls are lined up across the bottom.

The Coffee-Can Receiver

Bandswitching in a Simple Tuned-R.F. Job

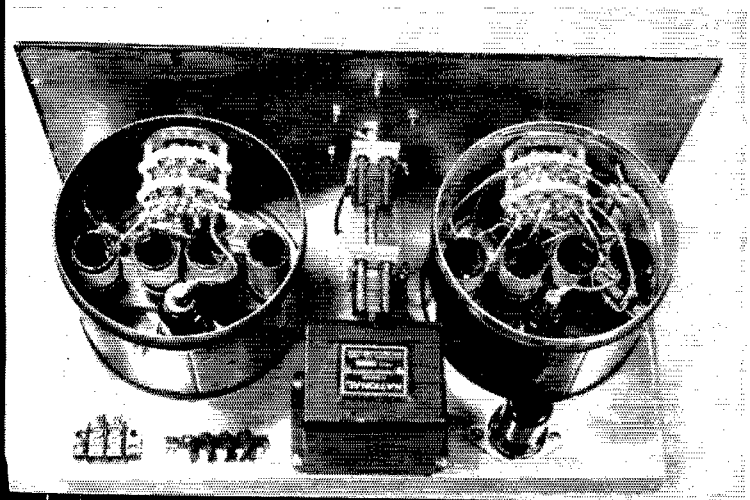
BY EDWARD E. HAYWARD,* W1PH

UNFORTUNATELY, some of us do not have the time or facilities to build the modern super-duper receiver of our dreams, or perhaps we feel that we can't afford to buy one. We have to settle for something much less expensive, or something that we can build in a short time with ordinary hand tools. This does not mean, however, that we can't come up with something pretty good if we have a little time and patience. With enough attention given to good construction, the little receiver shown in the photographs will surprise the most critical. With its small complement of tubes and other components, it will do a mighty big job at low cost. I have used this receiver for some time and have compared it with some big receivers and it doesn't have to take a seat too far back from any of them on c.w. reception. Most of the parts can probably be found in your junk box, except perhaps the wafer switches. If all new parts are required, the cost shouldn't exceed $25.00.

Referring to the circuit diagram of Fig. 1, the arrangement will be readily recognized as a regenerative detector with a tuned r.f. stage and a single audio amplifier. While this is an old type of receiver circuit, with the use of modern high-gain tubes and components of improved quality, the completed unit is bound to constitute quite an advancement over those built in the days before the advent of the superheterodyne.

A set of three coils in each stage covers an overlapping range from 3.5 through 14 Mc. The fourth pair of coils showing in the photograph are experimental for 21 Mc. Results on this band thus far have not been good enough to warrant recommending the receiver for this band. To simplify the construction, the coil-changing switches are not ganged. Good bandspread over the 80- and 40-meter bands is obtained by the parallel-condenser method. A series condenser is inserted for 14 Mc. The bandspread condensers, C_2 and C_8, are ganged. A gain control, R_2, is provided in the r.f. stage to prevent overload on strong signals. R_7 is the regeneration control. With a voltage-regulated power supply, frequent readjustment of this control is not necessary and frequency stability is excellent. One advantage that a receiver of this type has over a simple superhet is that there are no images to contend with. The audio stage provides all the headphone volume you can comfortably use. Audio gain can be adjusted by means of R_{10}.

* 15 Woodbine Terrace, Auburndale, Mass.



The regenerative-detector circuit is in the can to the right, the r.f. amplifier components in the one to the left.

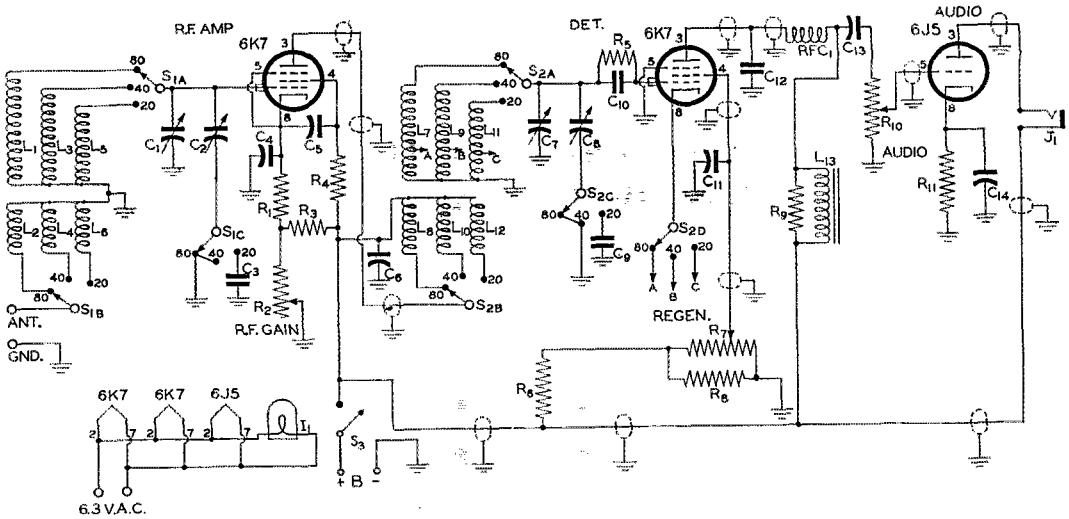


Fig. 1 — Wiring diagram of the coffee-can receiver.

C_1, C_7 — 100-$\mu\mu$fd. variable.
C_2, C_8 — Section of dual 35-$\mu\mu$fd. variable.
C_3, C_9 — 15-$\mu\mu$fd. silvered mica.
C_4, C_5, C_6 — 0.05-μfd. paper.
C_{10}, C_{12} — 250-$\mu\mu$fd. mica.
C_{11} — 1-μfd. paper.
C_{13} — 0.01-μfd. paper.
C_{14} — 20-μfd. 25-volt electrolytic.
R_1 — 250 ohms, ½ watt.
R_2 — 20,000-ohm volume control.
R_3 — 0.1 megohm, 1 watt.
R_4 — 56,000 ohms, ½ watt.
R_5 — 2 megohms, ½ watt.
R_6 — 15,000 ohms, 1 watt.
R_7 — 50,000-ohm volume control.
R_8 — 4700 ohms, 1 watt.
R_9 — 0.22 megohm, ½ watt.
R_{10} — 1-megohm volume control.
R_{11} — 1000 ohms, ½ watt.
L_1–L_{12} — See coil table.
L_{13} — 500-hy. audio choke (UTC S-23).
I_1 — 6.3-volt pilot lamp.
J_1 — Open-circuit jack.
S_1, S_2 — 2-wafer rotary switch, 2 circuits per wafer (Mallory 177-C; see text).
S_3 — S.p.s.t. toggle.

Construction

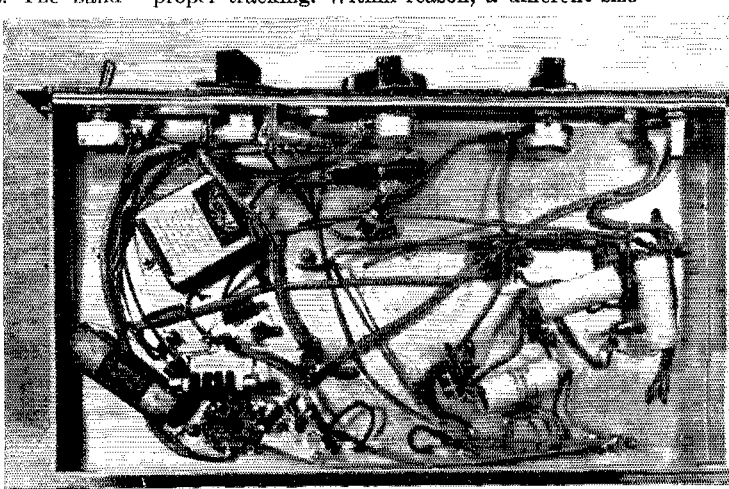
There is nothing tricky about building the unit and it is extremely easy to get going, so long as you shield it well and construct it rigidly. It can be housed in a 14 × 7 × 7½-inch cabinet (Bud C-995) with a 14 × 7-inch panel. The parts are mounted on a 7 × 13-inch aluminum chassis. The components for each stage are enclosed in a one-pound vacuum-pack coffee can. These cans make inexpensive but very effective shielding enclosures. The metal is easy to work and takes solder readily. If you don't like the advertising on the cans, you can hide it under a coat of enamel.

In the detector can, to the right in the rear-view photograph, the band-set condenser, C_7, is mounted at the bottom with its shaft protruding out the side that will be in front. The band switch, S_2, is mounted immediately above the condenser. The tube socket is then wired up with loose leads before it is placed in the can. The assembly includes C_{10} and R_5. Be sure to use shielded wire where indicated in Fig. 1. After connections have been made, the socket is mounted on 9/16-inch spacers as far toward the rear of the can as possible.

The components of the r.f. amplifier are assembled in a similar manner in the second coffee can. One of the switch circuits is not used.

The small components — resistors, by-pass condensers and the r.f. choke in the detector circuit are placed underneath the chassis.

Coil dimensions are shown in the accompanying table. The dimensions (as to the inductance values given) should be followed closely for proper tracking. Within reason, a different size



Bottom view of the coffee-can receiver showing parts and wiring underneath the chassis.

of wire can be used, providing the coil length specified is maintained. Inductance values of the tuned coils are given so that the number of turns for a different coil-form diameter may be calculated, or determined by means of the *ARRL Lightning Calculator*. The coil forms are spaced evenly and cemented to a 1-inch strip of thin bakelite 4¾ inches long. The strip is then fastened across the bottom of the can, between the tube and the condenser, on ¼-inch spacers.

Adjustment

The diagram of a suitable power supply for the receiver is shown in Fig. 2. Voltage regulation is important if you want a stable receiver, free from the necessity for frequent readjustment of the regeneration control. After the power supply has been connected to the receiver, set R_2 (Fig. 2) at maximum resistance. Then turn on the power supply and the receiver power switch. If the regulator tube does not glow, *turn off the power supply* and decrease the resistance of R_2 a bit and try again. Repeat the operation until the VR tube glows when the power-supply and receiver switches are closed. *Remember, always turn the power supply off before adjusting the slider on the resistor.*

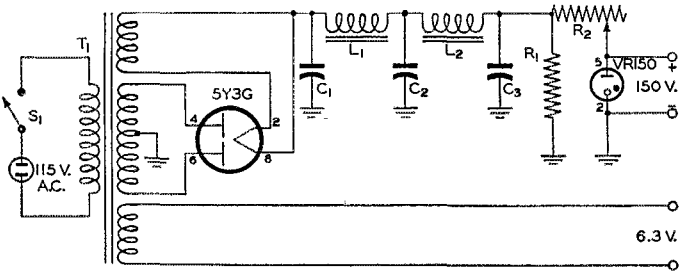


Fig. 2 — Circuit of a suitable power supply for the coffee-can receiver.
C_1, C_2, C_3 — 20-μfd. 450-volt electrolytic.
R_1 — 50,000 ohms, 10 watts.
R_2 — 10,000 ohms, 25 watts, adjustable.
L_1, L_2 — 10-hy. 40-ma. filter choke.
S_1 — S.p.s.t. toggle switch.
T_1 — Power transformer: 400 to 500 volts r.m.s., center-tapped, 40 ma.; 6.3 volts, 2 amp.; 5 volts, 2 amp.

The two cans are placed close to the edge of either end of the chassis and close to the panel so that the shafts of the band-set condensers and bandswitches extend through the panel far enough for the control knobs. The dual band-spread condenser is then mounted between the two cans at such a height that the tuning dial will not interfere with the regeneration control below it. The dial I used is a National type AM.

The 6J5 and L_{13} can be mounted at the rear of the chassis. (I happened to have an old National S-101 audio coupler that I used for the purpose. The unit includes R_9 and C_{13} as well as L_{13}.)

Underneath, the three gain controls are lined up along the front edge of the chassis, with R_2 at the right, R_7 at the center and R_{10} at the left, as viewed from the front. The power switch, S_3, to the left, is balanced by the headphone jack to the right. The jack must be insulated from the panel and chassis.

Coil Table for Coffee-Can Receiver

Coil	*Band (Mc.)*	*Lμh.*	*Turns*	*Length*	*Wire*	*Tap*
L_1	3.5	27	41	⅞ in.	26 s.c.c.	...
L_2	3.5	...	6	...	26 s.c.c.	...
L_3	7	6.2	18	½ in.	22 s.c.c.	...
L_4	7	...	3	...	26 s.c.c.	...
L_5	14	1.7	9	½ in.	22 s.c.c.	...
L_6	14	...	2	...	26 s.c.c.	...
L_7	3.5	27	41	⅞ in.	26 s.c.c.	3½
L_8	3.5	...	12	...	28 s.c.c.	...
L_9	7	6.2	18	½ in.	22 s.c.c.	2
L_{10}	7	...	7	...	26 s.c.c.	...
L_{11}	14	1.7	9	½ in.	22 s.c.c.	1½
L_{12}	14	...	4	...	26 s.c.c.	...

Although a random length of wire will work, better results will be obtained with a resonant antenna system, as with any other receiver. A doublet, cut for the band in use, makes a good receiving antenna.

The detector should slide into oscillation smoothly as the control, R_7, is advanced. After oscillation has been checked on all bands, attach the antenna. Set C_1 at about mid-capacitance and tune C_7 around until signals are heard. Then peak up the r.f. tuning with C_1. Now, with the dual tuning condenser set near maximum capacitance, adjust C_7 for the low-frequency end of the band and peak the tuning of the r.f. stage up again with C_1. The dual tuning condenser should then cover the band without the necessity for readjustment of the band-set condensers. If strong signals tend to block the receiver, reduce the gain in the r.f. stage by means of R_2 (Fig. 1). Set the regeneration control, R_7, at the point of minimum voltage that permits reliable oscillation over the band without readjustment.

Mark the settings of the band-set condensers for this band, switch to the next band and follow the same tuning-up procedure until the receiver is lined up for all bands. If you want to listen in between the bands, set C_7 to the approximate region of the frequency you are interested in, peak up the r.f. stage with C_1, and then tune around with the dual condenser.

DX really rolls in on this little receiver, the cost is very small and, after a few evenings to become acquainted with its operation, I am sure you will be happy that you built it, as I am.

• Technical Topics —

Carrier Control with Self-Biased Clamp-Tube Modulator

ONE of the current mobile modulation schemes is the circuit shown in Fig. 1. Whatever the original idea behind the use of the selenium rectifier, a check of the system shows that its effect is to provide a means of obtaining a certain amount of carrier control. As pointed out previously,[1] carrier control increases the permissible peak input to the modulated amplifier without exceeding either the capacity of the power supply or the modulated-amplifier's rated dissipation, as averaged over a period of voice transmission, by reducing the duty cycle. The rectifier provides the modulator with a d.c. bias that varies with the average of the audio input level. As the audio level increases, the bias on the modulator likewise increases. This reduces the modulator plate current and thus the voltage drop through the modulator plate resistor, R_2. This allows the average or d.c. voltage of the screen of the r.f. amplifier to rise, and so the carrier level rises.

The circuit of Fig. 1 was set up using a pair of 6AQ5s and a suitable driver for the r.f. amplifier. The r.f. amplifier was adjusted and loaded to show satisfactory linearity by checking the trapezoid pattern on a 'scope. With essentially sine-wave audio input and the level set just below the point where the positive or upward peaks of modulation started to flatten noticeably, the envelope pattern of Fig. 2 was obtained. (Flattening of these peaks occurs in this instance when the negative peaks of the audio signal have sufficient amplitude to cut off modulator plate current.)

[1] Technical Topics, "Screen Modulation with Limited Carrier Control," *QST*, April, 1951, p. 64.

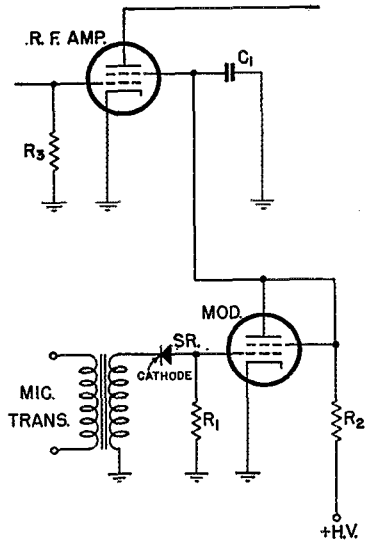


Fig. 1 — Controlled-carrier circuit for clamp-tube modulation. A selenium rectifier is used in the grid circuit of the modulator tube. R_1 in this instance is 1 megohm. R_2 is the modulator plate load resistor. C_1 and R_3 are the usual r.f.-amplifier screen by-pass and grid leak, respectively.

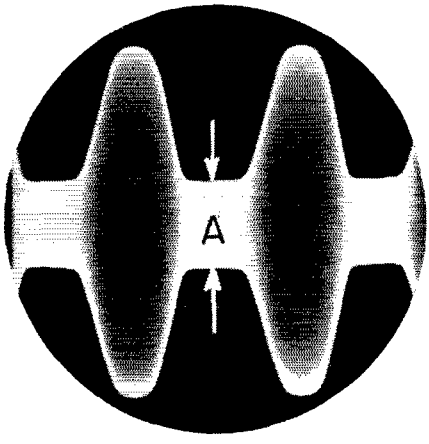


Fig. 2 — Modulation pattern obtained with the circuit of Fig. 1 with sine-wave audio input. The result of clipping of the positive half of the audio cycle by the selenium rectifier is shown by the flat peaks of modulation in the negative direction.

Under these conditions, and with a supply voltage of 500, the r.f. amplifier cathode current was about 45 ma. With no modulation, this current dropped to 22 ma. However, no matter what the audio level, the pattern showed the same flattening on the negative or downward modulation peaks. This might be expected, of course. With the selenium rectifier in the circuit, the audio at the grid of the modulator is limited essentially to the negative half of the audio cycle, the positive half being virtually eliminated by the rectifier.

At this juncture, it might be well to point out that a great deal of confusion seems to exist in the minds of some in interpreting a 'scope pattern of the type shown in Fig. 2. Such a pattern is described as showing "great peaks of audio rising out of the carrier" which seems to indicate that, in some mysterious way, an unusual amount of sideband power is being generated. Even though all laws of modulation are against it, this idea seems to be confirmed by the way a load lamp (or the antenna current) flashes up when modulation is applied. Perhaps this misconception arises from a hasty comparison with the pattern obtained with a constant-carrier system of the conventional type, such as a prop-

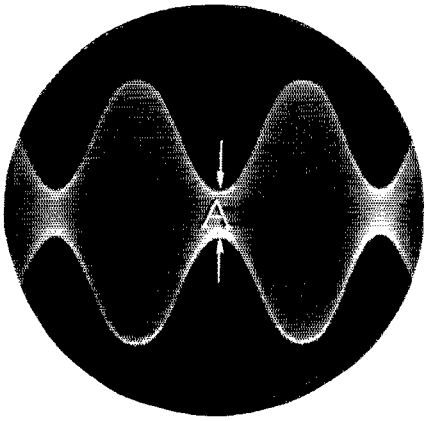


Fig. 3 — Oscillogram of a properly-adjusted clamp-tube rig with about 75-per-cent modulation. Comparison with Fig. 2 will give an idea of the distortion represented in the latter.

erly-adjusted clamp-tube rig. Such a pattern is shown in Fig. 3. In the latter case, the observer first sees a pattern of the plain carrier before modulation is applied. Therefore, when modulation is applied, it is easy to compare the amplitude of the positive modulation peaks with the carrier level. With controlled carrier, the observer sees a relatively narrow band on the screen before modulation is applied. The mistake no doubt occurs when the same sort of comparison is made between modulated and unmodulated patterns. The fact that the carrier level must increase when modulation is applied in a carrier-control system is forgotten or ignored. Just as the carrier is no longer visible in the pattern of Fig. 3, just so the carrier level can no longer be seen in Fig. 2. The part of the pattern labeled *A* in Fig. 2 corresponds to the similarly labeled part of Fig. 3. The fact that Fig. 2 shows flattening at this point, instead of being nicely rounded in sine-wave fashion, as in Fig. 3, merely indicates serious audio distortion. And the fact that *A* is narrower in Fig. 3 than in Fig. 2 indicates that modulation in the negative direction actually is considerably less in Fig. 2 than in Fig. 3. Without analyzing the pattern and determining the true carrier level *with modulation*, it is impossible to know the percentage of modulation in the positive or upward direction.

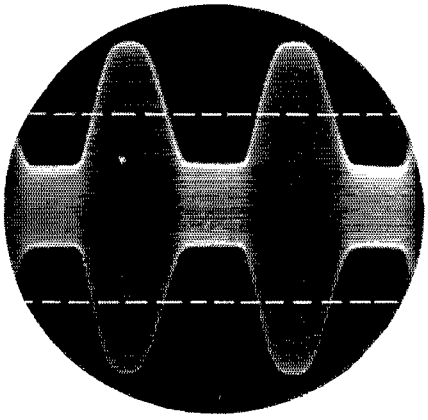


Fig. 4 — 'Scope pattern of a conventional constant-carrier system modulated by the same audio signal generated by the circuit of Fig. 1. The dashed line shows the level of the carrier before applying modulation.

The approximate carrier level can be determined experimentally with the aid of a 'scope and receiver S-meter. First, take an S-meter reading while the signal is being modulated. Then remove modulation and, without disturbing the coupling to the 'scope, increase the input to the r.f. amplifier until the same S-meter reading is obtained. The height of the pattern of this unmodulated carrier will then be the effective height of the carrier level on the original pattern. Input to the amplifier can be raised by increasing the supply voltage, or preferably by inserting a resistor between the modulator cathode and ground and adjusting its value until the desired S-meter reading is obtained. In either case, care should be used not to operate the amplifier under this condition longer than is necessary to make the check, since the input will be above normal rating.[2]

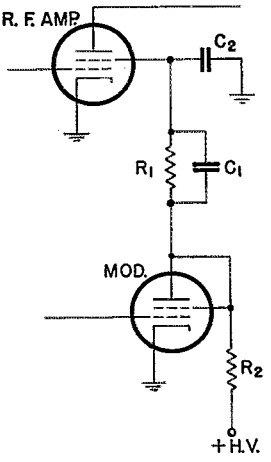


Fig. 5 — For high-percentage modulation, R_1 and C_1 are necessary in the screen lead of the r.f. amplifier. C_2 and R_2 are as in Fig. 1.

Fig. 4 shows the pattern of a conventional constant-carrier system modulated by the same audio signal which modulated the controlled-carrier signal that produced Fig. 2. The dashed line shows the level of the carrier before modulation. It will be seen that the two patterns are identical. With the same input in both cases, the same S-meter readings were obtained, showing that both carrier levels were the same. Also, readings of the audio output from the receiver were taken and these two were exactly the same, proving that the sideband powers were equal. An analysis of these two patterns (Figs. 2 and 4) shows upward modulation of about 80 per cent and downward modulation of only about 55 per

[2] The carrier level can also be determined graphically by drawing a line through the envelope pattern, parallel to the horizontal axis, and at such a height that the area in the light peaks above the line equals the area in the dark valleys below the line.

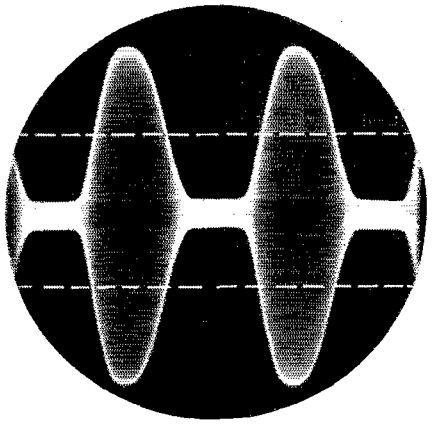


Fig. 6 — Pattern obtained with the circuit of Fig. 1 by adding screen resistor and condenser as shown in Fig. 5. The increase in percentage of downward modulation will be evident by comparing this pattern with the one of Fig. 2.

cent. Disregarding distortion, it is quite apparent that the circuit as shown in Fig. 1 is not a particularly effective one from the viewpoint of "talk power."

As has been pointed out previously,[3] a high percentage of modulation with screen modulation cannot be expected unless the modulator can swing the screen voltage to zero or beyond into the negative region. This can be done only by the use of a proper transformer between the modulator plate and the r.f.-amplifier screen, or by inserting an additional resistor with audio by-pass between the modulator plate and the screen, as shown in Fig. 5. The condenser, C_1, tends to hold the d.c. voltage drop across the resistor, R_1, constant. Therefore, if the voltage drop across this resistor is made sufficient, the screen voltage may drop to zero or even fall to a potential negative in respect to its cathode when the modulator plate voltage is at its lowest point.

[3] Technical Topics, "Clamp-Tube Modulation," *QST*, March, 1950, p. 46.

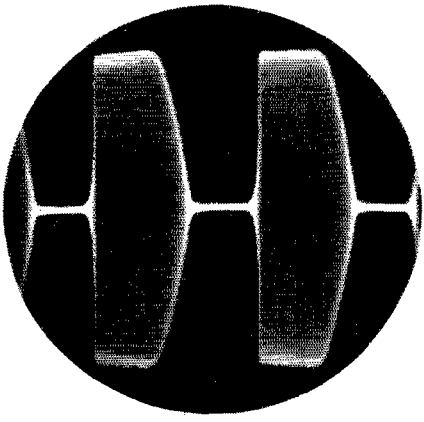


Fig. 7 — Pattern obtained from the circuit of Fig. 1 with the additions of Fig. 5 and with the audio level increased to where the positive modulation peaks are clipped when the modulator plate current cuts off.

For instance, if the voltage drop across the screen resistor is 100 volts when the modulator plate voltage is 300, then the screen voltage will be 300 − 100 = 200 volts. Therefore, if the voltage drop across the screen resistor remains the same and the modulator plate voltage drops to 75 volts, the resulting screen voltage will be 75 − 100 = − 25 volts.

Fig. 6 shows very clearly the improvement in downward modulation that accompanied this change in circuit. It also serves to make it more obvious that the band at the center of the pattern cannot be interpreted as representing the carrier under modulation. With 100-per-cent downward modulation, this band would be reduced to a line. The dashed line in Fig. 6 again shows the approximate carrier level. Downward modulation has been increased to about 83 per cent — just about the limit for screen modulation with good linearity. However, because of the audio waveshape supplied to the modulator grid circuit through the selenium rectifier, this percentage of modulation in the negative direction cannot be reached without producing more than 100-per-cent modulation in the upward direction. Overmodulation in the positive direction can be tolerated so long as the r.f. amplifier operation

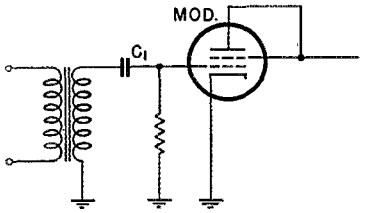


Fig. 8 — The substitution of a grid-blocking condenser, C_1, for the selenium rectifier in the circuit of Fig. 1 reduces distortion without impairing carrier-control operation.

remains linear. In Fig. 6, upward modulation is about 112 per cent.

Fig. 7 shows the pattern obtained with an increase in the audio level. The serious flattening on the positive peaks is the result of driving the modulator grid so far negative that the modulator's plate current is cut off so that the r.f. amplifier screen voltage can no longer rise. Incidentally, this is quite apt to be the adjustment that one would reach by adjusting for maximum kick-up of output under modulation. Experience in this series of tests demonstrates once more the virtual impossibility of proper adjustment of a screen-modulated amplifier without the aid of a 'scope.

In pursuing the subject further, the question comes up of why the selenium rectifier should be necessary. The modulator tube in this instance is not provided with fixed bias but, with the insertion of a blocking condenser, as shown in Fig. 8, it should operate as a grid-leak-biased amplifier. Operating in this manner the average bias would ride up and down with the audio level, at a rate depending on the time constant of the condenser and grid resistor. Furthermore, the

maximum bias developed should approach the peak value of the maximum amplitude of the applied audio signal. Therefore, if the time constant is made long enough, a bias sufficient for essentially Class A operation of the modulator should be held over from one maximum peak to the next.

On the other hand, it is desirable to make the time constant as short as possible while still approaching the Class A condition, because a short time constant reduces the duty cycle and a greater peak input can be used, as mentioned previously. The best time constant is one that allows the carrier to vary at approximately a syllabic rate. A time constant of about 0.25 second has been found to be about right. The values used were a 0.25-μfd. condenser and 1-megohm grid resistor.

In practice, the results do not agree completely with the theory. The reason for this is that the theory holds true only if the impedance of the audio source is low so that its output voltage does not vary appreciably with the varying load of the modulator grid circuit. A microphone transformer is not such a source and the positive peaks in this circuit will be clipped almost as badly as they were by the selenium rectifier. However, even in this case, comparative checks have shown that there is a reduction in distortion compared with that of the circuit with the rectifier.

— *D. H. M.*

YRS-1 Modifications and Experiments

I HAVE BEEN modifying my YRS-1 single-sideband adapter,[1] and some may be interested in certain changes I have made in this truly wonderful gimmick.

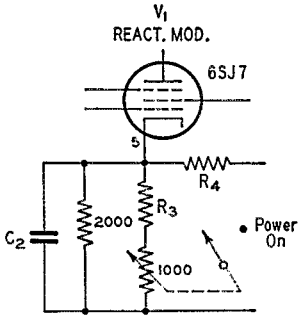


Fig. 1 — Wiring diagram of the modified YRS-1 reactance modulator to allow panel control. C_2, R_3 and R_4 refer to original components that are unchanged.

First, I replaced the toggle-type power switch on the panel with a gain-control-and-rotary-switch combination. The variable resistance is connected into the cathode circuit of the reactance modulator to control the frequency of the reinserted carrier (Fig. 1). This provides panel control for oscillator readjustment and for tuning s.s.b. stations, but, more important, it allows for compensation of warm-up drifts. After initial alignment, any drift in either the receiver or the adapter requires (otherwise) that the receiver be detuned. Oscillator frequency control further permits deliberate detuning of the receiver when desired, in order to favor the outer sideband frequencies or as an aid in avoiding interference.

Secondly, I provided a panel switch in the audio circuitry to permit normal operation of the receiver without turning on the 14 tubes in the YRS-1. This switch merely connects the audio from the receiver detector directly back into the receiver audio system.

Most interesting of all, I have rewired the 6C4 audio output stage to take a 6J6, with the grids connected to the phasing networks, and the plates connected to two 'phone jacks (Fig. 2). This enables one to hear the sidebands separately on headphones, in addition to the operation through the receiver. With separate cords connected to each of the 'phones, the left ear hears the upper sideband, and the right ear hears the lower sideband.

This modification not only aids reception, but provides a certain "sense of direction." A heterodyne and the accompanying monkey-chatter associated with an interfering signal which appears on the right side of the panoramic adapter is heard in the right ear. Another interference on the left side may reach only the left ear. The brain tends to ignore the one-ear signals and

(*Continued on page 118*)

[1] The YRS-1 is the commercial adaptation of the selectable-sideband adapter designed by W2KUJ. See Norgaard, "Practical S.S.B. Reception," *QST*, July, 1948.

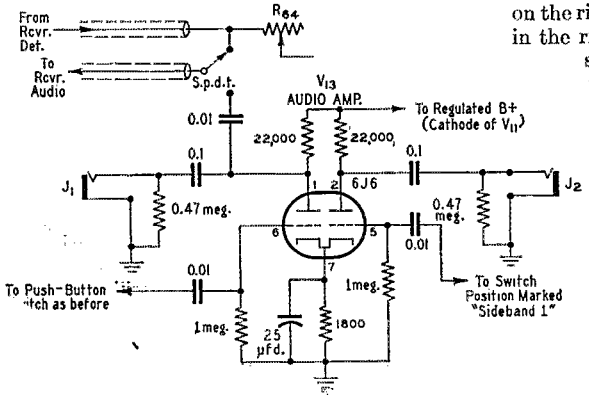


Fig. 2 — Wiring diagram of the modified audio amplifier to allow the use of split headphones. V_{13} is a 6C4 in the original unit — the connections to Pin 6 of the socket remain unchanged. With most receivers, J_2 will provide the upper sideband. The sideband from J_1 is selectable.

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

With the summer hitting a new low for both sporadic-*E* skip on 50 Mc. and tropospheric DX on 144 and higher, many newcomers to the v.h.f. bands were wondering if they had been taken in by false propaganda when they made their start in the v.h.f. region. Those who had been around longer were shaking their heads and writing off 1952 as an almost complete flop as far as DX was concerned, though interest and activity were holding up well.

All during the warm months storm centers had been chasing each other rapidly across the country, and seldom had there been one of those stable highs that remain almost stationary for several days at a time — the sign that v.h.f. men have come to recognize as unfailing evidence that good times are at hand. The first one showed up toward the end of August, with results that were reported briefly last month. But it was September, as in years past, that really poured it on.

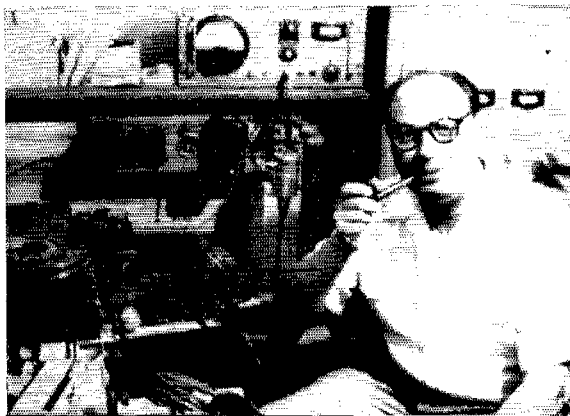
The big siege started in the Middle West on the 7th, when a large slow-moving high moved down across the Great Lakes area from Canada. For several days the weather maps showed only a slight change in shape and position of this high as it drifted slowly eastward, maintaining a stable air mass boundary along its trailing edge. The 2-meter band was open in unprecedented fashion beginning the morning of the 7th, from Minnesota to Texas, and remaining so through early Monday, the 8th. During Monday the opening began to swing around to the east, making possible 144-, 220- and 420-Mc. tropospheric DX such as had never before been worked between low-altitude stations. East-west DX held through Wednesday, the 10th, though the best part of it was worked during Monday night and the following morning. From the evening of the 9th and on through the night of the 10th, emphasis was on north-south work east of a line drawn roughly through Toronto, Pittsburgh, Roanoke and Winston-Salem. In the tabulation of reports to follow no attempt was made to sort out dates and times, but they can be established readily enough by reference to the above timetable.

WØEMS, Adair, Iowa, who was heard and called by more stations beyond 1000 miles than probably any man before him, found the band open to the south Sunday morning at 9:30, and he remained at the controls almost constantly until 1:23 A.M. the following day. When he left for work Monday morning things were still hot, and DX was still audible when he returned at noon. When he called his first CQ early Monday evening, W8BFQ, Everett, Ohio, came back with an S9-plus signal. Margaret then swung around to the east to alert the W2s and 3s, and the hottest east-west opening in 2-meter history got underway. At 9:20 P.M. Frank raised W2NLY, Oak Tree, N. J., and from then until 2:40 A.M., WØEMS was in an enviable position seldom achieved by a W — that of being called with all the urgency and enthusiasm that can be mustered by hundreds of eager W1s, 2s, 3s, 4s, 8s and VE3s, all hungry for a shot at such rare DX!

Sharing the spotlight, and providing contacts for easterners who had never before heard these states, were WNØGUD, Conway, Iowa, who undoubtedly became the country's leading Novice in 2-meter states worked, WØTMJ, Odessa, WØKYF, University City, and WØINI, Pleasant Hill, Mo., W9s DDG and FAN, Sheboygan, Wis., and W4PCT, Ft. Mitchell, Ky.

By Tuesday night stations in the Southeast began to get into the fun, and the big play was given to W4CVQ, W8EP and W4JFV/4, atop Poor Mountain, near Roanoke, Va., who provided North Carolina, West Virginia and Virginia contacts by the hundred to swell the states totals of 2-meter operators of W1, 2, 3, 8 and VE3.

There have been wild DX sessions before in 2-meter circles, and immediately there arises in every mind the comparison between this one and the phenomenal western surge of W2BAV in September, 1950. Probably there was not much difference in the weather conditions that caused these two openings, but the 1950 one was almost a personal monopoly for W2BAV, operating from his superb location more than 3000 feet above sea level up in the Catskills, with close to a kilowatt and a 48-element array. In the 1952 session scores of home stations, many of them seemingly



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

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The 420-Mc. record for two-way communication has been exceeded many times in cross-band work recently. Leader in this department is Dr. Maurice Artigue, FA8IH, Algiers, who worked F9BG, Toulon, France, crossband, 435 to 144 Mc. on August 28th. This hop across the Mediterranean is close to 500 miles.

2-METER STANDINGS

Call	States	Areas	Miles
W1HDQ	18	6	850
W1IZY	16	6	750
W1RFU	15	7	1150
W1MNF	14	5	600
W1BCN	14	5	580
W1DJK	13	5	520
W1CTW	12	4	500
W1KLC	12	4	500
W2NLY	22	7	1050
W2UK	21	7	1050
W2QED	18	7	1020
W2AZL	18	7	1050
W2ORI	16	7	830
W2PAU	16	6	740
W2SFK	13	6	—
W2DFV	13	5	350
W2CET	13	5	405
W2UTH	12	7	880
W2DPB	12	5	500
W2FHJ	12	5	—
W2QNZ	12	5	—
W2BVU	12	4	260
W3RUE	19	7	760
W3NKM	19	7	660
W3QKI	17	7	820
W3KWL	16	7	720
W3LNA	16	7	720
W3FPH	16	7	—
W3GKP	15	6	650
W3OWW	13	6	600
W3KUX	12	5	575
W3PGV	12	5	—
W3LMC	11	4	400
W4AO	20	7	950
W4HHK	19	6	710
W4JFV	18	7	830
W4MKJ	16	7	665
W4OXC	13	7	500
W4JDN	13	6	—
W4IKZ	13	5	650
W4JFU	13	5	720
W4CLY	12	5	720
W4JHC	12	5	720
W4OLK	12	5	720
W4FJ	12	5	700
W4UMF	11	5	600
W4LRR	5	2	900
W5JTI	14	5	670
W5RCI	14	4	790
W5QNL	10	5	1400
W5CVW	10	2	1180
W5MWW	9	4	570
W5AJG	9	3	1260
W5ML	9	3	700
W5ERD	8	3	570
W5ABN	8	2	780
W5VX	7	4	—
W5VY	7	3	1200
W5FEK	7	2	580
W5ONS	7	2	950
W5SWV	7	2	—
W5FBT	6	2	500
W5IRP	6	2	410
W5FSC	5	2	500
W5DFU	5	2	275
W6ZL	2	2	1400
W6WSQ	2	2	1390
W6PJA	2	2	1390
W6NLZ	2	2	237
W6GCG	2	2	210
W6EXH	2	2	193
W6ZEM/6	1	1	415
W6GGM	1	1	300
W6YYG	1	1	300
W8WJC	21	7	775
W8BFQ	21	7	775
W8WRN	19	7	670
W8WXV	18	8	1200
W8UKS	18	7	720
W8EP	17	7	—
W8WSE	16	7	830
W8RWW	16	7	500
W8BAX	15	6	655
W8DX	14	6	530
W9FVJ	22	7	850
W9EQC	21	8	820
W9BPV	20	7	1000
W9UCH	20	7	750
W9LF	19	—	—
W9WOK	17	6	600
W9MBI	16	7	660
W9BOV	15	6	—
W9AFT	14	—	—
W9LEE	13	5	780
W9UIA	12	7	540
W9GTA	11	5	540
W9JBF	10	5	760
WØEMS	21	8	1175
WNØGUD	20	7	1065
WØIHD	16	6	725
WØNFM	14	7	660
WØZJB	12	7	1097
WØINI	12	5	830
WØWGZ	11	5	760
WØOAC	11	5	725
WØJHS	9	3	—
WØHXY	9	3	—
VE3AIB	17	7	850
VE3DIR	14	7	790
VE3BPB	12	6	715
VE1QY	11	4	900
VE3DER	10	6	800
VE3BOW	8	5	520
VEBQN	7	3	540
VE3TN	7	4	480
VE3AQG	6	4	520

not well situated, and with moderate power and only average-sized arrays, got into the act, as may be seen from the DX tabulation.

Better equipment and more widespread activity, particularly in parts of the Middle West and South, were responsible in part for the more complete exploitation of the favorable conditions than we have seen before. Stations like W9s LEE, Westboro, DDG and FAN, Sheboygan, and JBF, Wausau, Wis., WØs OAC, St. Paul, and IFS, Minneapolis, W4CVQ, Raleigh, N. C., W8EP, Terra Alta, W. Va., and numerous new or improved stations in Iowa, Nebraska, Kansas and Missouri enabled W4HHK, W5RCI, W2-NLY, W1RFU, and many others to work DX that was beyond our fondest dreams of a few years ago.

An observer on the 2-meter scene in the fall of 1950, when W2BAV racked up his almost unbelievable record of 21 states worked in a matter of days, would have said that almost anything possible in the way of 2-meter DX had then been done. What chance was there left for the average v.h.f. man to achieve outstanding results? Yet a perusal of the mass of reports that deluged your conductor's desk in mid-September shows that no less than 23 state-to-state "firsts" were made. There were numerous others, we know, but incomplete data make it impossible to record them at this time. For the first time the number 22 appears in the states column of our 2-meter standings, and the working of all call areas looms as a distinct possibility! Some Midwesterners lack only W6 and W7.

Note well that at least three of these "firsts" were made by Novices, operating under the combined handicap of a 75-watt power limit and restrictions that prevent their using VFO tactics, or entering into the first megacycle of the band, where a vast majority of the DX work took place. WN calls also show prominently in the tabulation of outstanding DX worked, other than the first state-to-state records.

DX on 220 and 420

Of interest also to the v.h.f. beginner, particularly the possessor of the Technician Class license, are developments on 220 and 420 Mc. that made history in this same period. They demonstrate that the bands open to the Technician are by no means restricted to local contacts; that when conditions are right, DX of substantial proportions is possible on 220, 420 and probably even higher frequencies.

On the morning of the 9th, when your conductor returned to his operating position after about three hours' sleep, the band was still open to the west. W1RFU, Wilbraham, Mass., having connected with WØEMS for the best DX ever worked on 144 Mc. from W1, was preparing to leave for work after no sleep at all. After the usual morning checks with W2QED and W2UK beams were turned west, and there was W8BFQ rolling in nicely. This was the chance we'd been waiting for — a shot at the 220-Mc. record. For nearly two years there had been a 16-element horizontal array, a 200-watt rig, and a crystal-controlled converter at W1HDQ awaiting just this opportunity. We knew that out at W8WJC-BFQ, Jerry and Margaret were similarly prepared and waiting.

Contact was established on 2, and we asked Margaret to go to 220 Mc. In a matter of seconds, there she was on the higher band, running S1 to 5; some rapid fading, but almost as good as on 144! So, all thumbs and left feet, we started to change to 220 Mc. at W1HDQ. Gassy tube in 832A driver stage — no grid drive. No usable spare, except in 2-meter rig. Two-meter 832 turns out to have oversized base; won't fit in 220-Mc. driver. Final resort to very lame surplus 832, long since discarded for use, but "saved" Yankee fashion. With this one, the 4-65As got about 5 ma. grid drive, and ran white-hot at 200 watts input, but having gone that far (and tried Margaret's patience for a half hour!) we decided to go through with it. No ham was ever more surprised than your conductor when W8BFQ came back, reporting W1HDQ R5 S1 on 220 Mc. — a new record for that band, 450 miles. Contact was established at 9:05 A.M., and maintained for 8 minutes, following which we changed back to 144 Mc. to find signals almost gone on that band. Signal levels were almost the same on 220 and 144, despite less than 25 watts output on 220 at W1HDQ, compared to better than 200 or better on 144.

At the Ohio end, Margaret was running 300 watts to a

pair of 4-65As, and using a crystal-controlled converter ahead of an HRO-7. At W1HDQ the rig was the 4-65A job described in May and August, 1948, *QST*. The receiver was the crystal-controlled 6BQ7 converter that appeared in *QST* for September, 1951, and in the 1952 *Handbook*, ahead of an SX-73. The antenna was a 16-element horizontal array, 40 feet above ground.

On the morning of the 10th, W8BFQ came very nearly being one end of the 420-Mc. record, too. She contacted W2QED on 144 Mc. at 8:30 A.M., and then had him change to 435. His signal was received in Everett, S1 or better, and a crossband QSO ensued. Unfortunately, the 9903 amplifier at W8WJC-BFQ was out of commission, and only an 832A tripler was available for the record try. This was not enough, but crossband contacts were made at 8:30, 9:30, 10:00, 10:30, 11:00 and 11:30. At noon, with 2-meter signals just audible, there was no longer a 435-Mc. signal coming through over this 380-mile path.

The 420-Mc. record was bent, but not broken, on at least two other occasions. On August 28th, as reported briefly last month, FA8IH, Algiers, worked across the Mediterranean to F9BG, Toulon, France, who was completing the circuit on 144 Mc. The rig at FA8IH uses the European version of the 9903, delivering about 10 watts output as a tripler to 435 Mc. The antenna is a 24-element (8 sets of 3) array. As soon as F9BG completes his 420-Mc. rig these two will be trying for a 500-mile record.

On the morning of Sept. 26th, the 2-meter signals of W2QED were exceptionally good on the 7 A.M. schedule, so he went to 435 Mc. There his signal was some 10 db. stronger at W1HDQ than on 144 Mc. Surely this was a time to try for a new record again, so a call was placed for W1CLS, Waltham, Mass., to have a try at W2QED. Doc, unfortunately, was away on a business trip, so W2QED did some telephoning at his end. He succeeded in alerting W3BSV, Salisbury, Md., who then got on 435 Mc. and was received S3 to 5 at W1HDQ, a distance of about 285 miles. The record held, however, when your conductor could not get through to the southern end.

The period of the September V.H.F. Party, the week end of the 20th and 21st, passed without much in the way of unusual propagation. Because of the large amount of time and space we are devoting to reports of the big openings, and because the timing of the contest is such that reporting early details at this time would be slanted toward eastern contestants, we are skipping our usual preliminary summary of contest results this month. We hope to have the complete story ready next month.

As if the goings-on already reported were not enough, September also provided at least one good aurora opening. There were several instances of mild aurora at other times, including some reported in the Middle West by W9WOK and others during the night of Sept. 7th and 8th, which makes one wonder if there is anything more than mere coincidence in the appearance of this aurora in the midst of the biggest tropospheric DX session on record. But the first real aurora binge in several months, and probably the outstanding occurrence of this phenomenon in 1952 to date, came on the night of the 25th.

Reports on this one are not complete as yet, but the following stations were among those making hay on 144 Mc.: W1s IZY PBB HDQ, W2s NLY AZL UK UTH UHI RPO ORI OPQ, W3s LZD PMG, W4AO, W8s DX BFQ DQR FMM, VE3AIB. The opening developed suddenly around 8 P.M. EST, with signals reaching S9 peaks, a rarity in 2-meter aurora reception, soon after. At least one check was made on 220 Mc., with your conductor listening for W8DX, Detroit, without success. To date, the 144-Mc. band is the highest to support aurora communication. If anyone has a chance to gather evidence on higher frequencies we'd be interested to hear about it.

Please remember also that detailed reports of aurora observations on all frequencies are needed for the Cornell University aurora project. Special reporting forms are available on request from ARRL. If you are not already in this work, here is your chance to make a real contribution to a worthwhile study.

V.H.F. DX Summary, Sept. 7th–10th

Realizing that the 2-meter DX worked during the big September opening would be of more than ordinary interest, ARRL, through W1AW and other OBS stations, and in a request to OES appointees and affiliated clubs, asked for detailed reports of stations heard and worked. The response was more than gratifying. The tabulation of reports below is the result. Many thanks, gang! Now, will you please help us to straighten out that states-worked table?

WØZJB	48	W4IUJ	38	W8BFQ	41
WØBJV	48	W4BEN	35	W8LBH	39
WØCJS	48			W8LPD	37
W5AJG	48	W5VY	48		
W9ZHL	48	W5GNQ	46	W9ZHB	48
W9OCA	48	W5MJD	46	W9QUV	48
W6OB	48	W5ONS	45	W9HGE	47
WØINI	48	W5JTI	44	W9PK	47
W1HDQ	48	W5ML	44	W9VZP	47
		W5JLY	43	W9RQM	47
W1CLS	46	W5JME	43	W9ALU	47
W1CGY	46	W5SFW	43	W9UIA	45
W1LLL	45	W5VV	42	W9UNS	45
W1HMS	43	W5FAL	4'		
W1LSN	42	W5FSC	41	WØQIN	47
W1DJ	40	W5HLD	40	WØDZM	47
		W5HEZ	38	WØNFM	47
W2AMJ	46			WØTKX	47
W2RLV	45	W6WNN	48	WØKYF	47
W2MEU	45	W6UXN	47	WØHVW	45
W2IDZ	45	W6ANN	45	WØMVG	44
W2FHJ	41	W6TMI	45	WØJOL	44
W2GYV	40	W6IWS	41	WØJHS	43
W2QVH	38	W6OVK	40	WØPKD	43
W2ZUW	35			WØIPI	41
		W7HEA	47		
W3OJU	45	W7ERA	47	VE3ANY	42
W3NKM	41	W7BQX	47	VE3AET	38
W3MQU	39	W7FDJ	46	VE1QZ	34
W3JVI	38	W7DYD	45	VE1QY	31
W3RUE	37	W7JRG	44	CO6WW	21
W3OTC	35	W7BOC	42	XE1GE	19
		W7JPA	42		
W4FBH	46	W7FIV	41		
W4EQM	44	W7CAM	40		
W4QN	44	W7ACD	40		
W4FWH	42				
W4CPZ	42	W8NSS	46		
W4FLW	42	W8NQD	45		
W4MS	40	W8UZ	45		
W4OXC	40	W8YLS	41		
W4FNR	39	W8CMS	41		
		W8RFW	41		

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

W1PBB, Monroe, Conn. — Worked W3s FPH RUE, W8DX, WØEMS, VE3s BQN DIR AIB. Heard W9s DDG FAN EGH, W8RMH.

W1RFU, Wilbraham, Mass. — Worked W3s RUE FPH, W4BCT, W8EP, WN9RXS, W9EQC, WØEMS. Heard W9s DDG VBG EGH, W8s SFG BFQ, VE3s AQG DIR.

W1HDQ, Canton, Conn. — Worked W3s RUE FPH, W4s JFV CVQ, W9s EGH FVJ. W8BFQ on 220 Mc. Heard WØEMS, W8SFG.

W2NLY, Oak Tree, N. J. — Worked W4s PCT CVQ, W8s EP LPD SDJ GJF, WN8HKQ, W9FAN, W9s EMS KYF, WNØGUD. Heard WØMNN, W9s EQC FVH DDG EGH ALU.

W2QED, Seabrook, N. J. — Worked W8s SRW BFQ SFG, W9s DDG EQC GLW EGH LF, W9s TMJ EMS. Worked W8BFQ crossband, 435 to 144 Mc.

W2UK, New Brunswick, N. J. — Worked W8s SFG BFQ SRW EP LPD NNF WRN FRN WSE, W4CVQ, W9s EQC EGH LF DDG WOK, W9s EMS BIP TMJ.

W2QHZ, Brooklyn, N. Y. — Worked W4CVQ, W8s BFQ SFG LPD, W9s FAN DDG, WØEMS. Heard W9s EGH HRI, W8EP, VE3DIR, WØTMJ, VE3AQG.

W2ORI, Lockport, N. Y. — Worked W9FAN, WØEMS, W8EP, W4s CVQ PCT, and many others.

W2UTH, Rochester, N. Y. — Worked W9s DDG FAN EGH PK, W8s BFQ OQ EJP, WØEMS. Heard W4AO, W8EP.

W3LNA, Greenville, Pa. — Heard 15 states; numerous WØs.

W3FPH, Leechburg, Pa. — Worked WØs HAQ KYF, W9s FVJ FAN, W2s QED YXE, W1s HDQ RFU PBB.

W4AO, Falls Church, Va. — Worked W8s VHB WRN NNF GNN, WN8INQ, W9s FAN YYY EQC FVJ, WØs EMS NNQ LFW BIP, WNØGUD, VE3s AIB BQN AQG.

W4HHK, Collierville, Tenn. — Worked W8BFQ, W9s BPV EQC JBF KPS LEE LF LJV MBI PK TQ YYY ZHL, WN9s QEP REM RXS, WØs BIP DVV EMS HVF OAC ONQ QXR TMJ YRX, WNØGUD.

W4VVQ, Memphis, Tenn. — Worked W9s UED IFA BOV LF, WØs KYF IHD.

W4CVQ, Raleigh, N. C. — Worked nearly 100 W1s and W2s, and many W8s and VE3s.

W5RCI, Marks, Miss. — Worked W9s UED LEE JBF ZHL BPV BOV KPS LF MBI EQC PK TQ, WN9REM, WNØGUD, WØs EMS IHD. Heard W8BFQ.

W8BFQ, Everett, Ohio — Worked W1HDQ on 220 Mc. Heard W2QED on 435 Mc. Worked W9TQ, Milwaukee, on 2-meter teletype. Record?

W8WRN, Columbus, Ohio — Heard or worked (not separated in report) — Many W3s, W4s and W8s, W1s PBB HDQ, W2s BV AZL UK, W9s UED EGH BPI DVG KPS UGD YHA NVK FAN MBI EQC UJM JGA DDG WOK GDM POW YYY BPV LF FVJ ORZ LJV, WN9s SDH RNE RXS, WØs KYF HAQ INI EMS MNQ LFW, WNØGUD.

W9PK, Downers Grove, Ill. — Worked W4HHK, W5RCI.

W9FAN, Sheboygan, Wis. — Worked W2s NLY ORI TSY, W3FPH, W4s AO PCT KZF, WØs TMJ IHD, VE3AQG.

W9FVJ, Toledo, Ill. — Heard or worked (not separated in report) — W1s RFU HDQ, W2s TBD TSY NLY QED, W3s AQG FPH KUN LNA QFM QKI RUE, W4s AO HHK KZF PCT VLA VVQ, W5s RCI SK?, VE3s AIB BWT BQN LU TN, and 56 W8s, 9s and Øs.

W9LEE, Westboro, Wis. — Worked W5RCI, W4s HHK AO, WØTI, VE3AIB. Heard W2NLY, W3WBM.

W9JBF, Wausau, Wis. — Worked W4HHK, W5RCI, WØs EMS DEN ETJ PLJ HVF KYF, WNØGUD, W8s FRN VHB, and many W9s. Heard W4VVQ.

W9WOK, Bensenville, Ill. — Worked W2UK, W3QKI, W4AO, W8s EP BFQ. Heard W1s RFU PBB.

W9MBI, Coleta, Ill. — Worked W3KXI, W4HHK, W5RCI, W8s BFQ VHB OQ LPD AFU BAX EP, W2TSY, WØs QIN DVV EMS, VE3s AIB AQG.

WØINI, Pleasant Hill, Mo. — Worked W3LWN, W8ZND, plus Mo., Kan., Iowa, Wis., Ind., Ill., Mich., Pa., and Ohio stations.

WØEMS, Adair, Iowa — Worked W1RFU (best DX of 1952, 1150 miles), W1PBB, W2s NLY QHZ UK QED ORI UTH AZL CCR TBD, W3s RUE QKI WBM LNA KWL KXI AIR, W4s HHK AO, W5RCI, VE3s BPB DIR BQN, and many nearer. Heard W3OWW, W1HDQ.

WØOAC, St. Paul, Minn. — Worked W4HHK, W3QKI. Heard W3s WBM FPH, W2UK.

VE3BPB, Lambeth, Ont. — Worked W4UBY, W8EP, W3AIR, W2MGF, WØEMS. Heard W9s BPV LF, and many others.

VE3AIB, Toronto, Ont. — Worked about 40 new stations including W1PBB, W2s UK QED PAU, W3s GHX FQR PYW, W4s CVQ AO, W8NNF, W9s BTI UJM DDG LEE. WØs TMJ LFW EMS. WNØGUD.

9903 Improved

The 420-Mc. experimenter who wants to run something approaching the legal limit of 50 watts antenna power doesn't have much choice of tubes. Most conventional transmitting types just won't work in this region, leaving the 9903 and 4X150A as about the only possibilities. The 9903 was favored because it can be used with fair success with conventional circuitry.

There was a weak spot, however, "weak" in this case being used literally. The construction that made the tube capable of operation in the u.h.f. range also left it extremely vulnerable to breakage around the plate pins, as many a 420-Mc. enthusiast has learned, to his sadness.

The physical weakness has now been corrected by the use of fused glass for both base and top, increasing the safe pressure on the plate pins more than fourfold. The new construction also shortens the tube plate leads, raising the efficiency that can be obtained from 420-Mc. tripler or amplifier stages. Installation of the new tube, known as the 9903/5894A, raised the output of the *Handbook* 420-Mc. rig noticeably.

Some Probable "Firsts"

There has probably never been an entire year in 2-meter history when so many "firsts" have been made as during August 23rd–24th and the three days beginning September 7th. Documentation of such records is difficult, but on the basis of the mass of data we have at hand, the following appear as probable first 144-Mc. contacts between the states and areas concerned.

W1RFU	–WN9RXS	Mass.–Ill.
W1RFU	–WØEMS	Mass.–Iowa
W1PBB	–WØEMS	Conn.–Iowa
W1HDQ	–W9FVJ	Conn.–Ill.
W2NLY	–WØEMS	N. J. –Iowa
W2NLY	–WØKYF	N. J. –Mo.
W2NLY	–W9FAN	N. J. –Wis.
W4HHK	–W9LEE	Tenn.–Wis.
W4HHK	–WØOAC	Tenn.–Minn.
W4HHK	–WØDVV	Tenn.–Kan.
W4HHK	–WØQXR	Tenn.–Neb.
W5RCI	–W9LEE	Miss. –Wis.
W5RCI	–WØIFS	Miss. –Minn.
W8BFQ	–W1HDQ	220-Mc. record
WN9SDH	–W5JHX	Wis. –Texas
WØOAC	–W3QKI	Minn.–Pa.
WØIFS	–WØKYF	Minn.–Mo.
WØOAC	–W8MRK	Minn.–Mich.
WØOAC	–WØDVV	Minn.–Kan.
WØJHS	–W9ZHL	Minn.–Ind.
WØEMS	–VE3BPB	Iowa –Ont.
WNØGUD	–W5TOE	Iowa –Ark.

OES Notes

W2UTH, Rochester, N. Y. — 2-meter band open for up to 250 miles during most of period Aug. 25th to 30th. The big session of Sept. 8th–10th seemed to skip the Rochester area to a large extent. Canadian operators were working the DX much more successfully. Six-meter rig and beam under construction.

W2ZHB, Rochester, N. Y. — Concurs in observations of W2UTH. Inquiry of local Weather Bureau brought information that atmospheric turbulence has been more prevalent than usual during summer. Widespread and stable inversions not formed prior to late August.

W3NNV, Colwyn, Pa. — 40-element array for 420 Mc. should be in action by now.

W7JRG, Billings, Mont. — Now running 370 watts to 35TGs on 144.288 kc. Beams toward W7HNI, Gillette, Wyo., nightly at 7 MST; steady carrier, keyed at 2½-minute intervals.

W9IFA, Carrollton, Ill. — Improved 2-meter activity in St. Louis and Peoria directions. Summer DX season on 50 Mc. below normal.

W9MBI, Coleta, Ill. — Still working nightly on 420 with W9ZHB and WØHAQ. Has heard 3rd harmonic of W9LF's 2-meter rig on 432 Mc.

W9CFP, Racine, Wis. — 2-meter survey by Racine Megacycle Club in September, to determine feasibility of county-wide c.d. work on that band instead of 28 Mc.

W9FAN, Sheboygan, Wis. — Big 2-meter openings causing big increase in activity. Bigger and better antennas going up all around. Circular polarization to be checked for aurora work.

W9LEE, Westboro, Wis. — Much improved activity and interest. Sked with WØBBN, Grand Marais, Minn., now entering second year; 0745 and 2100 CST. Would like to hear from Canadian 2-meter operators interested in similar skeds.

WØPLJ, Jackson, Mo. — Several new 2-meter stations worked regularly. W5RCI, Marks, Miss., 250 miles, heard frequently.

W8FKC, Hudson, Ohio — Extensive checks with 432-Mc. mixers. 6J6 and triode-connected 6AK5 best so far, though expects new 6AM4 to be better than either. Lighthouse oscillator made from "gold-plated special" now working on 2400 Mc., and checks to be made with similar design on 1215.

Correspondence From Members-

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

DOCKET 10237

829 Griggs Street
Grand Rapids, Mich.

Editor, *QST:*

. . . The amateur service has proven itself time and again entirely capable of handling any emergency with which it has been confronted and doing it effectively with the provisions it now has. I *do not* believe the proposed "calling and answering" frequencies will aid the amateur service in any manner — and the effective loss of these frequencies will definitely cause harm. This opinion is shared by all local amateurs with whom I have conversed on this subject.

— *K. G. Bullock, W8YDJ*

94 North Grand Avenue
Baldwin, L. I., New York

Editor, *QST:*

I am personally opposed to portions of FCC Docket No. 10237, and to any unnecessary regulation of amateur procedures. I see no objection to provision for clearing certain bands (whether predetermined or not) in time of emergency, but object to any rulings which would in effect deny the amateur of regular communications use of ten-kilocycle segments of our most crowded bands. The proposed calling frequencies and the specified manner of use fill no need in our usual communications, and place an unwarranted restriction on our operations. A considerable burden might be placed upon the Federal Communications Commission monitors, enforcing amateur adherence to these proposed rules. . . .

— *Charles P. Baker*

120 Main Street
Catskill, N. Y.

Editor, *QST:*

The members of the Rip Van Winkle Amateur Radio Society hold no objection to the proposed changes in FCC rules.

— *Dolores A. Ricketson, W2EWO*

730 Wyndale Road
Jenkintown, Penna.

Editor, *QST:*

. . . The Commission, in the last few years, has taken upon itself a work load in excess of its capacity. We can easily see this from the fact that it now takes from six to twelve weeks for the issuance of a new or renewed license. The enforcement of the amendments proposed in Docket 10237 would be next to impossible. Therefore, we might sum up our views on Docket 10237 with one word: Ridiculous!

— *Richard A. Moll, W3PDJ, Secy.*
Abington Township Amateur Radio Assn.

1834 University Blvd.
Abilene, Texas

Editor, *QST:*

. . . It would appear that the public servant has now become the master through a typical growth of power within a bureaucratic administration.

— *William A. Green, W5BKII*

Rt. 2, Box 1162
Vista, Calif.

Editor, *QST:*

. . . It seems as tho the FCC is trying to kill off ham radio just to have a lot of QRM on one side of the band. I can understand that for emergency work the proposal would be an asset. But, in the past, there has never been trouble putting through emergency traffic. . . .

I think that the new proposal is a needless, unnecessary, foolish action that no ham in his right mind would stand for.

— *Merit R. Arnold, W6NLO*

1036 Parkview Avenue
New Kensington, Penna.

Editor, *QST:*

. . . In all sincerity, please (FCC) just let the amateurs in the United States of America retain their rights to a "hobby"; don't try to commercialize and regulate them right out of business. I feel certain that they are competent to solve their own problems of calling and answering and, if they find reason to need corrective measures, they themselves will seek such adjustment through their national representative organization, The American Radio Relay League.

— *C. Ross Acklin, W3OD*

22 Madison Road
Waltham, Mass.

Editor, *QST:*

. . . The principle of calling and working frequencies is so contrary to amateur tradition and to practical application that the proposed calling frequencies will not be used for the purpose intended. . . .

— *Francis M. Dukat, W1BOD*

226 Raymond Road
West Hartford, Conn.

Editor, *QST:*

. . . One word most eloquently expresses my feelings — Why? . . .

— *William R. Marks, W1DEF*

1243 Westridge Rd., S.W.
Atlanta, Ga.

Editor, *QST:*

. . . It is unnecessary from an emergency standpoint because the Federal Communications Commission has authority to declare any part of, or all of, any amateur band reserved for disaster communications. There also exist National Calling and Emergency Frequencies which have been set up by the American Radio Relay League, and which have proven satisfactory in past years.

— *J. C. Fleming, W4KL*

302 West Market Street
Louisville 2, Ky.

Editor, *QST:*

. . . As a substitute measure, we might suggest that the calling and listening frequencies be adjacent to and immediately outside the present ham bands. This would serve [the] purpose without further congesting our already overcongested bands as the original proposal would do.

— *Joseph S. Brownstein, W4JXF, Pres.*
Amateur Radio Transmitting Society

5372 E. Bald Eagle Blvd.
White Bear Lake 10, Minn.

Editor, *QST:*

I hear the FCC has hatched another idea, a "new concept of amateur radio," no less! Twenty kc. on each band exclusively for calling and answering!

What's the idea, anyway? Where does the FCC get the right to tell us what our communication practices shall be? How does this fit in with their duties?

The "new concept" is in my opinion impractical, unnecessary, and would confiscate valuable frequencies in our already crowded bands.

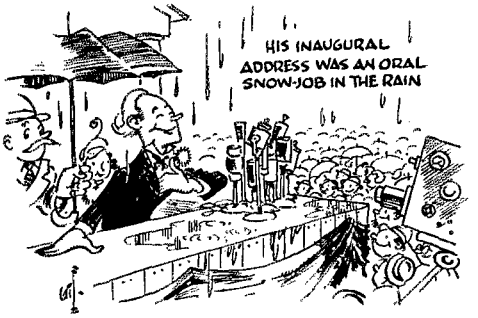
There is considerable alarm among the amateurs in this locality that I talk with over the growing tendency of the FCC Amateur Division to propose new practices and regulations not strictly concerned with the FCC's duties to license and police the amateurs. Some read in these proposals a deep-laid plot by the FCC to take over our frequencies

(Continued on page 120)

The Ham Who Was President

BY ROD H. NEWKIRK,* W1VMW

HIS inauguration went off in accordance with custom; rain seized an opportunity to soak everything in sight. Though it was unnoticed by the multitude, J. Willoughby Winkelspoof could not find his misplaced speech. But the President-elect put his long hamming career to good stead and produced an oral snow-job that would have put his most glib round-table buddy to shame.



Then, in a flurry of tails, gold braid and limousines, it was all over. WØ!! had become WØ!!/3 — the first ham chief executive in U. S. history!

* * *

JWW got the intricate hang of it in no time at all. Appointments, conferences, releases, yachting excursions — all such details kept him so occupied he had absolutely no time to contemplate the trend of conditions on the amateur bands. Months went by. His prideful pals back in Ridiculous Heights, Nebraska, began to figure he had gone high-hat. There was a definite void on the air with old WØ!! QRT.

Finally, a propitious moment arrived. Mrs. Winklespoof was away as guest of the Daughters of the Industrial Revolution, the kids were away at Space Cadet school and somebody, somehow, had neglected to fill in this date with the usual duties of state. "Aha!" chuckled Will.

Shortly thereafter, he appeared in the White House sub-basement surveying four or five crates of ham gear. Clearing out some curious menial help, JWW went to work. He hauled up his old receiver, staggered upstairs with three power supplies, the r.f. section and modulator. He selected an alcove off the Green Room for his shack and soon strange squealing noises could be heard emanating therefrom.

Willoughby whipped out a log sheet and made ready to blast forth a sharp CQ only to realize he had no antenna. Back down into the depths and out he came again with a few rolls of No. 14, some insulators and a pair of cutters. Darkness was at hand; there was need to work fast.

Looking over the White House grounds, JWW elected to rig up an east-west Vee beam. It was

*DX Editor, *QST*.

• "JWW" came up the hard way. He started out with a blooper and a '45 TNT, ran the gamut of '46s, '10s, and a variety of nondescript skywires. But it wasn't until he put his Advanced Class ticket to work on the 'phone bands that he really found his element. From that time on he was a natural. . . .

while he was perched on the iron fence, fastening one leg at the far end, that he ran into his first bit of grief.

A shot rang out through the twilight and J. Willoughby did a dive to the lawn with a clean hole through his striped tail-coat. The fragments of the Pyrex insulator he had been holding rained about him. He had to admit that the guard detachment was really on the ball!

This situation was quickly straightened out and the guard chief apologized profusely. WØ!!/3 was ready to hit the air!

This our hero did with his customary vigor. The Vee worked fine and his first CQ raised a W7 in Walla Walla on twenty 'phone. "You're S9-plus," said the Seven. Winklespoof gloated. "Trouble is," the voice continued, "everybody else is S9-double-plus tonight." Will then increased his modulation from 150 to 200 per cent and began to get results.

But this fun was too good to last. The landline rang raucously, forcing him to abandon the QSO, and when he picked up the 'phone extension he was almost pinned to the wall by the blast. It

turned out to be a Republican over on F Street.

"You no-good — —, I'd like to mangle you! I'd know that hacky campaign squawk of yours anywhere. It's not bad enough you're taxing me goofy, but now you even have to blot out Uncle Wiltie on my TV set. Drop dead!"

J. Willoughby succeeded in placating the gentleman to the extent of selling him some Savings Bonds. But the 'phone resumed ringing as soon as he hung up. Exasperated, he tore the connection from the wall and decided to switch temporarily to c.w.

Thus did time pass as President J. Willoughby

Winklespoof hammed away in his snug Pennsylvania Avenue diggings. He hadn't had such fun in months! However, strange things began to happen on the outside.

FCC monitors were picking up bizarre signals from a weird-sounding transmitter which they triangulated as being very close to the Executive Mansion. The jargon used was undecipherable, although they picked out the combination "RSQ" very often repeated.

Less than an hour later, armored cars, a platoon of infantry, and a company of artillery converged on the White House gates. Signals were still being heard from somewhere within the Mansion.

Will had barricaded the door after his TVI 'phone call, determined to have one decent QSO before he pulled the switch. His concentration was so intense that he heard nothing strange until a tear gas bomb shattered the alcove window and went *pfft!* beneath his chair. Cursing the cigar he was smoking, a gift from the Sultan of Lend-leasialand, whose country he had had the State Department recognize for DXCC purposes, he burst out of the shack and sprawled flat on his face beneath the crossfire of three machine guns.

This unfortunate affair was, with considerable effort, kept out of the papers and things gradually got back to normal. Congress rushed through a bill giving the President an easier call to send — W3E — and the Army assuaged his injured feelings by presenting him with a gold-plated correctly-spacing electronic key.

A special detachment of FCC engineers installed in the Chief's rig a series of 32-section low-pass filters especially designed for W3E by the Bureau of Standards. (These filters served only to aggravate Winklespoof's TVI troubles but the Bureau laid the blame on technical papers of the CCIR, because their components were measured correctly to within one part in forty quintillion. A Congressional investigatory committee later settled the matter with a stiff censuring of both factions.)

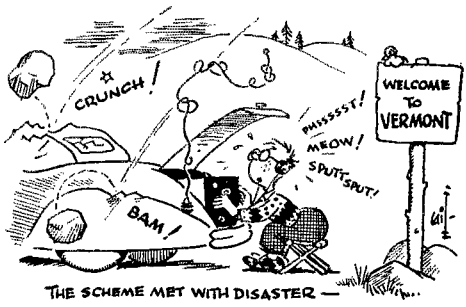
The final solution to the President's TVI problem was found by compulsorily increasing inputs of all local TV stations (from 200 to 200,000 kw.), which power increase extended their fringe areas to points beyond reach of W3E's keying transients, harmonics, and parasitics.

At any rate, despite these minor difficulties, J. Willoughby Winklespoof made out okay. He successfully parried affairs of state while accomplishing WAC, DXCC, and RCC. Yet he was horrified one evening while checking through his logs and QSLs — *he still needed Vermont for WAS!*

Years had passed and his term was drawing to a close. Was he fated to go down in history as the only Presidential ham not to make WAS? Perish the thought!

Thereafter, JWW cut short many a conference to scan 40 and 80 meters in search of Vermont W1s, but for some reason they just couldn't be raised. He even went to such length as having the Interior Department install three one-kw. transmitters close beside the Vermont state line which he operated by remote control from his White House shack. No soap. No comebacks from Vermonters.

Will had another inspiration. The young son of one of his few Capitol Hill senatorial boosters had just gotten his ticket and had a suitcase portable layout ready for action. At the behest of the President, the lad undertook to enter Vermont by automobile, set up his gear and work W3E. But alas — local phenomena beyond the boy's control brought the scheme to disaster.



THE SCHEME MET WITH DISASTER —

The naked truth finally dawned upon JWW. There was no doubt about it. Unless something drastic was done, the Chief was *not* going to make WAS.

And so it came to pass that his next Thursday press conference made history. He looked the hawks of the press in their stolid faces and calmly announced:

"Boys, I've been doing a lot of thinking lately. It wasn't an easy decision to make, but I find it a necessary one. I've decided that, as of now, I've become a Republican."

After the least robust of the reporters had been carried from the room, the news hit the headlines with tremendous impact. Even word of Lisabeth Saylor's seventh marriage and a boy for Eddie Candor were crowded off the front page. The bedlam on Capitol Hill was unprecedented. But the announcement had the desired effect.

Slipping back to his shack, JWW worked five Vermont hams in quick succession and received their QSLs airmail-special delivery in the next post. Special courier brought the cards to ARRL Hq., and J. Willoughby Winklespoof became our first president to accomplish WAS.

* * *

The boos, cheers, and catcalls died away in the distance as ex-President Winklespoof headed for the club car of the outbound Capital Express, clutching his WAS certificate in one hand and a cheroot in the other. There was no band to greet him at the end of his trip, but the Ridiculous Heights Amateur Radio Club met him with open arms and congratulations.

"It was great to be President," said JWW, with an accent on the tense. "But the job certainly interferes with a fellow's ham radio."

Whereupon he went home and fired up the rig on 75.

Simplifying the 10-Meter Crystal-Controlled Converter

A High-Performance Unit for Mobile- or Fixed-Station Use

BY W. W. DEANE,* W6RET

THIS converter offers nothing new in the line of converters, but it again brings to light a time-honored and very useful unit for emergency defense mobile work or fixed-station application for the old-timer or Novice. The circuit has been presented before, but it has been some time since this writer has seen it published in any of the leading radio magazines. It was first constructed for emergency defense work to be installed in my own car, where I wanted a very simple, cheap and easily-constructed unit that would satisfy my needs for emergency defense work in the Ventura County area. As it turned out, not only was it a very satisfactory converter for emergency defense work, but it exceeded my expectations in dragging in DX. The first two stations I heard when I applied the juice were a ZL and a KZ5. (This was one of those especially rare days seldom to be found lately on the ten-meter band.)

Circuit

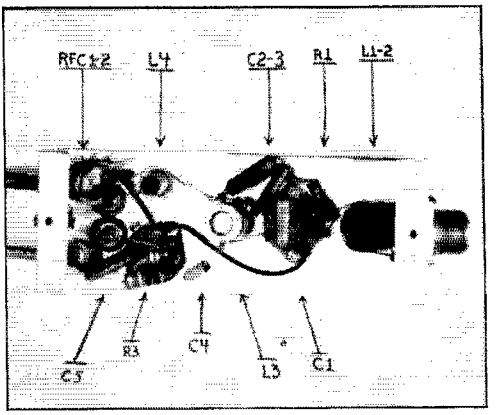
The circuit diagram is shown in Fig. 1. A 6AK5 operates as an r.f. amplifier, and a 6J6 serves as an oscillator and mixer. There are no tuning controls used, and after initial adjustment the converter can be mounted out of the way up behind the dash. A 7025-kc. crystal quadrupling to 28.1 Mc. is used in this particular installation. Other crystals can be utilized to give variations in band coverage. The 6AK5 grid and plate coils are slug-tuned to approximately 29 Mc. These could be stagger-tuned if desired, for more coverage and somewhat less gain. L_2 could be tuned to 28.7 Mc. and L_3 to 29.4 Mc., but I did not find this was necessary. There are no tricky circuits involved, and a minimum of components is used. The oscillator circuit is slightly modified from the conventional in that a tap for the B+ is usually found on L_4. I noted in my original construction that sluggish crystals would not take off readily without adjustment of the tap and, to eliminate this tap adjustment, plate voltage is applied to the oscillator section of the 6J6 through RFC_1.

Construction

The converter is constructed on a 2×1½×5½-inch chassis box. This particular box is home-made, but I recommend one of the many 2¼×2¼×5-inch chassis-type boxes in grey hammertone, black crackle or natural aluminum finished. The antenna input receptacle is placed at one end of the chassis, the power and output cables extend out the other. No precautions other than utilizing short leads were observed during wiring. RFC_1 and RFC_2 are single pi sections from a 2.5-mh. choke, mounted one above the other on a ¼-inch rod. If you can find sufficient room, the full 2.5-mh. choke is OK. No special oscillator injection was required, as proximity of L_3 and L_4 provided sufficient coupling. If a grid-dip meter is available, I highly recommend its use in the adjustment of L_2, L_3 and L_4, with tubes in sockets and antenna connected. I took very special care to adjust the coils so that they peaked in

* 550 South G Street, Oxnard Calif.

This compact crystal-controlled 10-meter converter is small enough to "sandwich in" anywhere in the mobile or fixed station.



The simplicity of the converter is evident in this bottom view, but the performance is all that one could ask for.

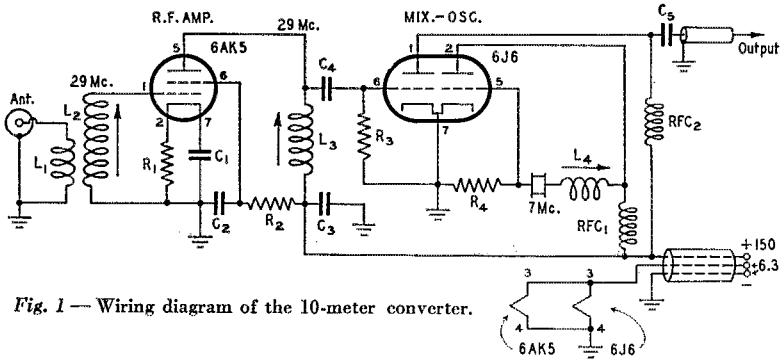


Fig. 1 — Wiring diagram of the 10-meter converter.

C_1, C_2, C_3 — 470-$\mu\mu$fd. mica.
C_4, C_5 — 100-$\mu\mu$fd. ceramic.
R_1 — 270 ohms.
R_2 — 22,000 ohms.
R_3 — 0.1 megohm.
R_4 — 4700 ohms.
All resistors ½-watt carbon.
L_1 — 3 turns No. 22 enam., wound at ground end of L_2.
L_2 — 16 turns No. 22 enam., wound 5/8 inch long on 5/8-inch diam. iron slug-tuned form.
L_3 — 25 turns No. 35 enam., wound 3/16 inch long on 3/8-inch diam. brass slug-tuned form, or 11 turns No. 22 enam. wound 3/8 inch long on 5/8-inch diam. iron slug-tuned form.
L_4 — 35 turns No. 30 enam., wound 1/2 inch long on 5/16-inch diam. iron slug-tuned form, or 16 turns No. 22 enam., wound 5/8-inch long on 5/8-inch diam. iron slug-tuned form.
RFC_1, RFC_2 — One pie from 2.5-mh. r.f. choke.

the ten-meter band and not just close to it. This makes the difference between a so-so converter and a really hot one.

Adjustment

Alignment is quite simple. The oscillator can be checked in any communications receiver covering ten meters. Plug in the crystal and tune the receiver to the fourth harmonic (in the ten-meter band) and adjust C_4 for maximum indication on the S-meter. L_2 and L_3 can be adjusted for maximum noise.

A "B" supply potential of 150 to 175 volts d.c. is sufficient for operating the converter. This converter works exceptionally well into the war-surplus ARC-5 broadcast-range receiver. Different combinations of coverage can be obtained by using various frequency crystals. Assuming a typical car radio covering the range from 550 to 1550 kc., four examples are listed in the table below:

Crystal Frequency	*Oscillator Output*	*Ten-Meter Band Coverage*	*Eleven-Meter Band Coverage*
7000 kc.	28.0 Mc.	28.55–29.55 Mc.	
7025	28.1	28.65–29.65	
7050	28.2	28.75–29.75	
6575	26.3		26.9–27.3 Mc.*

* Car receiver tunes from 600–1000 kc. for this coverage.

Don't confine this converter to mobile use. With a three-element beam on the converter operating into my ARC-5 in the house, it really drags the DX signals in (but not in the last couple of months, as you ten-meter ops will know).

I haven't attempted to offer anything new here. It's just to jog your memory regarding a simple, economical and satisfying way to get on 10.

Strays

W9OMN couldn't clear up his mobile receiver's automotive noise pick-up until he installed a new engine. What price DX!

— • • • —

Amateurs so situated as to have blueprint facilities available may find it a convenience to have enlarged copies of small *QST* circuit diagrams run off for workbench use. Tacking tracing paper over the enlargements will then permit checking off wiring and connections easily as construction progresses.

— *John J. Towey*

— • • • —

W2EQS closed down on ten 'phone one night after QSOing W4MZS. He was greeted on the band next morning by W2MZS.

Ham to BCId BCL who has just stabbed him with a hypodermic: "Thanks for the dope, OM."

— *WØRA*

— • • • —

Articles published in *QST* invariably bring the authors considerable mail from readers desiring clarification or amplification on certain points. While such interest is always welcomed, authors are often hard put to handle such correspondence in volume. To expedite replies, readers should:

1) enclose stamped self-addressed envelopes;

2) when using club stationery include the secretary's address;

3) sign their correspondence with full names and mailing addresses in addition to call signs;

4) stress legibility when handwriting.

Announcing 10-Meter WAS Contest

CONTEST PERIODS

Time	*Start* *Dec. 5th and 12th*	*End* *Dec. 7th and 14th*
EST	6:00 P.M.	6:00 P.M.
CST	5:00 P.M.	5:00 P.M.
MST	4:00 P.M.	4:00 P.M.
PST	3:00 P.M.	3:00 P.M.

All amateurs located in the League's field-organization territory (see page 6, any *QST*), are invited to participate in the Fourth 10-Meter WAS Contest.

High scorers for the past three contests have been W7PUM, W7PUM (again!) and W1ATE. Competition for the 48 states will be especially strong this year. No one as yet has reached this goal, but KH6IJ in January of 1950 missed by just one for a total of 47; he is top man to date. Call area leaders in the 1951 contest were: W1AOQ, W2TVR, W3PQB, W4PJU, W5SFW, W6BTE, W7PUM, W8RXY, W9RQM, WØHOM, VE7YR, KH6IJ, KP4FP.

Contest reporting forms are available upon request, although it is not essential to use them if the sample form shown is followed. Total available operating time is 96 hours. C.w. to c.w., 'phone to c.w./c.w. to 'phone, or 'phone to 'phone may be used.

If you're lacking states for the WAS award, or want to enjoy two weekends of operating fun, just avoid black cats, hope for the right skip, and good luck with your "CQ WAS Contest!"

10-METER WAS CONTEST REPORT

Station..... *Location*.....

Date and Time	*Station*	*Report Sent*	*Report Received*	*Location*	*Number of Each New State as Worked*
Dec. 5					
6:01 P.M.	W9MIR	57	58	Ill.	1
6:03	W5DEW	56	57	Texas	2
6:06	W5OQT	45	46	Okla.	3
6:10	WØICW	58	59	Mo.	4
6:13	VE4AB	579	57	Man.	–
6:18	W9RBI	57	56	Wis.	5
6:21	W9YMF	58	599	Ill.	–
Dec. 6					
3:00 P.M.	W4NFY	57	57	Fla.	6
3:06	W6TT	59	59	Cal.	7
3:10	W9CFT	589	579	Wis.	–
3:13	W6AM	569	589	Cal.	–
3:17	KP4DA	59	59	P. R.	–

Number different stations worked 12
Number different states worked 7
Claimed score: 12 points × 7 states = 84

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

Signature.....

Address.....

Rules

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

2) *Times:* All contacts must be made during the contest periods listed elsewhere in this announcement.

3) *QSOs:* Contacts must include report received and sent, location of station worked.

4) *Scoring:* One point is allowed for each contact and one multiplier point for each new state worked. The same station may be worked but once during the contest for credit. The final score equals the total contact points multiplied by the total number of different states worked.

5) *Reporting:* Contest work must be reported as shown in the sample form. Closing date of entries is January 12, 1953.

6) *Awards:* A certificate will be given the highest scorer in each section.

November 1927

. . . On the eve of the International Radiotelegraph Conference, it becomes increasingly apparent that ARRL must bear the brunt of anticipated anti-amateur pressure.

. . . In "Amateur Radio and the Pacific Flights," J. Walter Frates and A. L. Budlong recount the SOS epic of Erwin and Eichwaldt aboard the ill-fated *Dallas Spirit*.

. . . Technical Editor Robert S. Kruse — in "My 'Phone Isn't Much, If Any, Broader Than C.W." — strikes at the "wabbulation" so noticeable on many signals in our bands.

. . . "Full-Wave Rectification and Crystal Control," by Fred H. Schnell, 9UZ-NRRL, describes in detail up-to-date gear used at his prominent Wisconsin station.

. . . The handling of weather data by radio is the topic of Thornton P. Dewhirst's article on picture transmitting and receiving techniques.

. . . Porter T. Bennett describes a winder for celluloid-supported coils and J. M. Thompson recommends circuits for the minimizing of howls and motorboating.

. . . G. H. Browning analyzes several approaches to the problem of coupling receivers to antennas in his "Receiving Antenna Tuning Systems."

. . . A new line of fixed transmitting condensers, to be known as the "Navy" type, are being manufactured and made available to amateurs by the Sangamo Electric Co.

. . . Also newly available are machined bakelite mounts for 250-watters as announced by Radio Engineering Laboratories of Long Island City, N. Y.

. . . The Teleplex Company of New York City produces a new automatic sender which should greatly ease the pain and strain of learning the radiotelegraph code.

. . . "The Long Way 'Round," by G. C. Knight, takes up the problem of calculating distances traveled by radio waves which deviate from the normally shortest paths.

. . . The Old Man returns to our pages for a blast at "Rotten Broadcasting" wherein the Laughing Lizards Symphonic Ensemble feels the sting of his verbal wrath.

. . . November's 5-Meter Test is announced in detail, a worldwide effort to aid in the evaluation of radio propagation at this relatively unexplored wavelength.

. . . The Communications Department announces a raising of Brass Pounders League standards — henceforth BPL listing will call for 200 traffic points or 50 deliveries.

. . . ARRL SCMs nc4FC, 6ANO, 6NX, 9EFN, 1BVL, 4JR, 9BYA, 5GW, 9DNG and 9CYQ are included in a page of descriptive and photographic portraits.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W1VMW

How:

We hear from some of our younger DXers who have had to trim sail on DXCC aspirations in favor of that bane of youth, the Three Rs. By this time of year the load of homework being inflicted can barely be dented by an axe. Many are the longing glances being cast at dusty ham gear as exam crams grind ever onward.

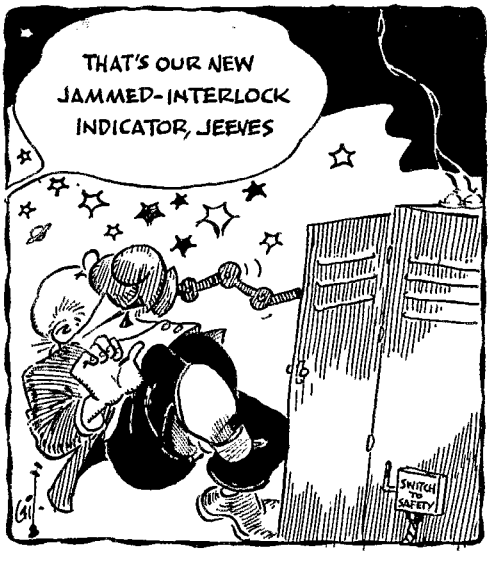
Which strikes us with the thought that this DX game itself isn't exactly a haven for the noddy noggin. It conceivably represents a substantial chunk of curriculum in the alma mater of many, the College of Hard Knox.

You're bound to tuck away a smattering of weird geography — who but a bunch of doughty DX men would know that Venice, Italy, is farther north than Vladivostok, Siberia, or that it's easier to get to Africa in the mornings by going west? As for algebra, one quickly picks up equations of great portent: I1 + AG2 + MF2 = 1 and VP8 = 6, in terms of countries. So far as spelling and history are concerned, try rattling off OH3OQ's address or the date Newfoundland signed up with Canada. Foreign language, hah! — deciphering a few central European SWL cards will give you the equivalent of a stiff semester in a hurry. And you'll never take a real economics course, either, until you've spent a few days trying to squeeze a flexible kilowatt out of an inflexible piggy bank. No need to go on.

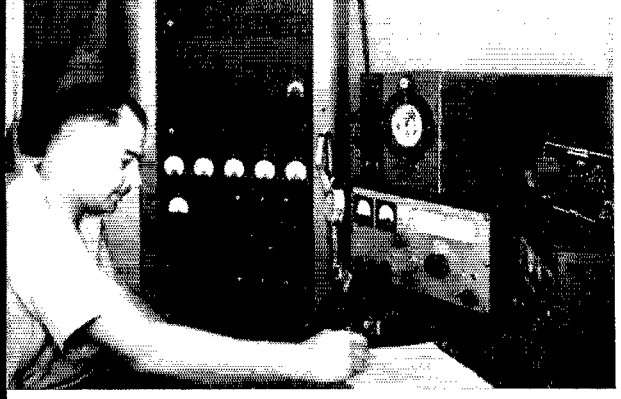
So, for some liberal education, scrape together your notebooks, slates, plenty of sharp pencils and join the class now in continuous session daily on 160 through 10 meters. You may play hookey at will, but watch out for that final exam early next year — ARRL's annual DX Test!

What:

On *twenty*, many students have been making good marks. W4AUL turns in **EA9AP** (14,008), **FQ8AP** (045 t8), **TG9CR** (080), **VP5BH** (012 t8), **VS6CG** (038), **YI2AM** (035 t8), **YU1AG** (052) and **ZB1BR** (050 t8). John hears ZB1BR is W2ISW and that C3AR is closing down . . . SEC work keeps W1MIJ's DXing time limited but Carl caught several FP8s, a YI2, CP1BK, **EA6AM** (052), **HE9s LAA** (068), **LAB** (030), **TA3AA** (018), **VS6BA** (078), **3A2AH** (110) and **4X4BT** (100). He's having a deuce of a time raising DUs — do they all have R.I. already? . . . At W9UZS we encounter **GD3UB** (106), **HZ1MY** (080), **EK1FM** (012), **KB6AJ** (030), **KJ6AR** (096), **KA2LF** (104), **YUs 3AC** (036) and **4BN** (071). Walt now has 131 confirmed . . . **FQ8AG** (085), **HCs 1JW** (015), **2ME** (070 QRH), **HH3L** (030), **HR1RL** (125), **OX3BQ** (065), **PJ2CC** (020), **YV5BZ** (070), **ZB2I** (025) and some CN8s came back to W8HEV's 200 watts and Windom . . . Eighty-seven countries with a c.c. 25-watter make a nice score at W3MAL; PJ2AD was Ray's latest . . . K2BU reached 136 with guys like **LZ1KAB** (040), C3AR, **FB8AA** (010), **LU4ZI** (055), **MP4KAE** (020) and **ST2GL** (020). Ken is happy with three fixed 2-element bidirectional arrays . . . **FQ8AK** (050), OA4C and a TA3 answered W8ZJM; VE3BXY settled for **KG4AF** (020) and **YV5FL** (075) . . . Twenty-five watts got EA8BE and OE13USA for W8DLZ; W9ALI sports a shiny new DXCC diploma . . . SM5FA paid a personal visit to W2TXB. Al is up to 224 with YI3BZL and **LB6XD** (020) . . . KP4KD went back to work on his 194/187 record after an extensive U. S. visiting tour. LZ1KAB greeted Ev's return to the air . . . KH6PM reports an encore by **VR7AB** (000 t8) and observes W5MPU/KS6 having difficulties with mammoth pile-ups after his CQs . . . **KM6AH/-KB6** (045), **TG9AC** (100), an EA9 and an FQ8 are among W8YGR's catches . . . Some "When" info courtesy W1APA, times EST: CT3AA 1720, CX1FB 0535, FQ8AG 1544, HR1RL 0835, KV4AA 0655, LU4ZI 0534, SL3AU 0637, ZB1AH 1425 and FF8GP 0522. Gil spent three weeks recovering from auto crash injuries. *That* type of pile-up is no fun at all . . . More times and frequencies from W8NOH: **OE13HP** (013) 1345, TA3AA 1420, **YU3AT** (012) 1406, **KL7ANS** (006) 1935 and **9S4AX** (002) 1604. Lou likes his new Vee beam . . . W8KPL has been trying a vertical, scaring up EA8BF, OA4N, VP7NJ, ZS3s HX, U and assorted FP8s with his 807 and 30 watts . . . **ZB1KQ** (018) is number 55 for W2TKG; W6AM found **W5MUP/KS6** holding forth on 14,084 kc. . . . W2QHH accounts for CP1BX, **HB1s/HE IL** (005), **JJ** (021), **KT1PU** (044), **OE13RN** (004), SP9KKA, **TF3ST** (016), **VP6UN** (022), **ZB1KA** (097), **ZD2DCP** (020) and **W5AGB/F-M** (080) who is just eighty miles from the Pole . . . Forsaking his favorite 28-Mc. range, W2ZVS got his 813 and a 3-element squirter perking on 20 to the tune of FY7YC, SP3SF, VP2MD, VS6CM, YU1AS, **ZK1BC** (079) and 9S4AR . . . The DL4LQ six-watter made off with **TF5TP** (070) and **SVØWB** (050) while ex-WN8JGU's first General Class ticket DX was KM6AH/KB6 . . . KA9AA (old W4VE), TG9LC, ZB2A, ZS3Q and 4X4FQ worked W4KE. It's good to see that Fred is crackin' through from Hokkaido . . . **FO8AD** (385) of Rapa Island claims to be active every week end . . . School vacation enabled WØAIH to bag **CR6s AR** (008), **PI** (083), **FL8MY** (120), KC6DX, KH6CB/KJ6, YI3BZL, **ZB2A** (065), ZC2MAC, **ZC4RS** (060), **ZK2AA** (012), **4W1MY** (120), 4X4s BD and BN. Paul has been given to understand that SU1AO was strictly n.g. . . . Awaiting his General Class license, WN8KLW ran into one LZ1H and VQ4KRL while tuning the band . . . **FB8BE** (055), **VQ3BM** (056) and 5A2TS will get fast QSLs from W3MFW



* DX Editor, *QST*.



. . . . . West Gulf's DX *Bulletin* points up the activities of **AP2N** (028), CRs. **7CH** (145), **7LU** (055), **9AH** (100), **CS3AC** (008), **CT2BO** (078), **FB8s BA** (090–110) **BB** (110), **BH** (140), **ZZ** (050), **FK8AB** (040), **FM7WF** (050–125), **FN9ON** (102), **FO8AC** (080), **FQ8AR** (020–054), **FR7ZA** (030), **FY7YB** (032), **F9QV/FC** (090), **JY1AJ** (013), **KC6QY** (007), **KM6AX** (105), **LZ1KAH** (010), **MF2AG** (013), **MP4KAI** (009), **OX3BF** (035), **ST2HK** (020), **TF3SV** (043), **VK1GN** (100), **VQs** 4BP, 5CL (011–045), 9FD (052), **VR2s BZ** (027–063), **CG** (010), **CK** (075), **CN** (025), **VSs 6AE** (060), **9AW** (100), **VU2JK** (021), **XA3AC** (056) "Peking," **YT4LB/MM** (045), **ZB1JZ** (028), **ZC4XP** (110), **4X4RE** (001), **6L6MY** (120) of Qatar and **9S4AX** (005).

DL4QH has been going over *twenty 'phone* with a fine-toothed comb: **APs 2K** (14,120), 2L (140), 5HQ (134), **CR6BW** (180), **EL9A** (305), **FQ8AJ** (224), **JY1OG** (146), **PJ2CB** (120), **SUs 1JY** (120), **1SS** (193), **5EB** (155), **VQs 2DC** (164), **5AU** (136), **5DQ** (128), **8AL** (131), **VS1s DQ** (130), **EU** (171), **VS2s BS** (185), **CR** (145), **CY** (161), **DL** (171), **VS6BA** (145), **VS7s ER** (142), **FG** (197), **RF** (132), **SP** (135), **WA** (172), **VS9AW** of Oman (155), **YA3VB** (151), **YIs 2AM** (150), 3BZL and **YK1AC** (172) all answered Don . . . . . **HP1BR** (160), **OA4E** (164), **TI2SR** (355), **OX3BQ** (303) and **VP3LF** (165) wound up in W9LMC's log . . . . . **ZP5CB** (220) worked WØAIH; W8NOH tallied **HP1HO** (196) and HC1FS . . . . . **FO8AD** (385) fires up his 'phone on occasional week ends, we are told . . . . . The *DX Bulletin* has these active on voice: **AP2N** (307), **CR7AG** (218), **CS3AC** (210), CT3AN, DU1AP, **EA9AI** (320), **EAØAC** (140–210), **ET3R** (220–270), **FB8s BA** (105–210), **BB** (200–230), **BC** (150), **BR** (100), **FF8s AF** (130), **AP** (140), **CJ** (260–310), **FM7s WF** (125–230), **WY** (150), **FO8AB** (180), **FP8AQ** (198), **FQ8s AD** (220), **AK** (170), **FR7ZA** (140–300), **FY7YB** (022), **HB1JJ/HE** (150), **HE1JZ** (180), **HH5SS** (178), **HI6TC** (200), **HZ1AB** (187), **IS1BFJ** (120), **KB6AO** (295), **KJ6AW** (250), **KX6AS** (218), **MF2AA** (150), **MI3s AB** (340), KE, OE13TM, **PZ1WK** (180), **SP5s AB** (111–128), AG (170), **SU1s AS** (150), **TH** (270), **SVØWT** (308), **TAs 2EFA** (300), **3AA** (175), TF5SV, **VK9s DB** (170), FN (195), **VPs 1AB** (120–250), 2DC (133–195), **1SJC** (180), VQs 2DT, **5CY** (170), **VRs 1B** (143), **3C** (140), **VSs 1AD** (320), **1ES** (190), **2CY** (120), **7DB** (135), **7GR** (150), **VU2ET** (125), **YIs 2AS** (190), **3WH** (185), **YJ1AA** (208), **YK1AA** (220–320), **YU1AD** (135–150), **ZBs 2A**, **1BZ** (185), **ZCs 4RX** (150), **4XP** (140), **6UNJ** (305), **ZDs 4AX** (150), **4BC** (207–330), **4BF** (150), **6EF** (170–190), **6RD** (150–170), **ZK2AA** (200), **ZM6AA** (317–325), **3V8s AN** (150), **AS** (150–280), **BA** (260), **4X4BE** (152) and **5A2TV** (210) . . . . . **LX1DC** (300–340) is one of the few Luxembourg entries active on 20.

Fifteen gets more and more attention all the time. It's turning out to be a pretty interesting bunch of kilocycles. W3MFW roamed this range for contacts with GD3UB, **FF8AG** (21,042), FA8CR, OA4C, OE13USA, TA3AA, **VQ4HJP** (063), YI3BZL, **ZD9AA** (030) and these more common varieties: DL, F, G, ON4, PY6, KP4, ZL and ZS. Russ reports that Ws 2AJR 2WZ and 6VX plug 15 regularly . . . . . W2QHH found **KH6ARA** and **W8NOH** tried 21 Mc. for **VS2CR** (032) at 1323 EST . . . . . KP4KD knocked off a fast 15-meter WAC — giving Ev all continents on five separate bands — by way of **ZC4RX** (040), FA8CR, G8FF, LU3EL, ZL4FO and VE7AIH . . . . . W3RZL caught up with FF8AG and W6AM finds the band has intriguing possibilities out West.

FK1AN (7100) may have excited some of the gang on *forty*. It was a rig aboard the yacht *Miru*, bound for the East Coast out of the Pacific . . . . . Conditions on 7 Mc. have been varying rapidly from "phooey" to "oh, boy!" and back again. W3DLI snagged CM1AR, an uncommon Cuban call area, **VK6SA** (020–025), **CN8AF** (008) and FP8AQ . . . . . Fifteen-year-old W2IFP left the Novice category for OK3HM, TI2PZ, VK3NM and others . . . . . A batch of VKs rewarded the early-morning efforts of W2TKG; W1TRB sweated out TI2TG and YU3APR QSOs . . . . . Seven-Mc. newcomer W8JGU captured VKs 3RP, 3ZO and 5MD. Bill's only thirteen . . . . . W8HEV dug up **FA9VN** (010), **FM8AD/FM7WD** (015) running four watts, KH6ARA and **VP6AG** (010).

Eighty and one-sixty have been laboring under the usual equinoxial growing pains. The 3.5-Mc. band should get much play during this winter's wee hours, higher frequencies acting as they are. What our low band will do is almost anybody's guess. Last year's 160-meter tests were a little below expectations but things could well swing the other way and the mail bag should make interesting excerpting. Let's have a good showing this season from you lower-frequency DX hounds!

PY2RT can dish it out . . .

The outstanding signal of ZS6BW is familiar on all DX 'phone bands. You'll find this feller listed regularly in DXCC 'Phone Honor Rolls.

♦

Where:

VR2AS, of the Fiji bureau, desires it understood he cannot handle QSLs for stations in other VR call areas. Stan has of late been heckled by cards for some joker borrowing his call — even had to return some gear sent as result of the pirate's solicitation! . . . . . We have home addresses for many newly licensed Japanese nationals (JAs) but "Where" policy limits the following list to stations reported active or imminently active DXwise. Also, we strive not to duplicate listings to be found in the latest *Call Book*. Here we go:

CR6PI, Ant. Gomes Piedade, P. O. Box 191, Luanda, Angola
DL4BY, Pirmasens Signal Depot, APO 227, % PM, New York, N. Y.
FF8AP, P. O. Box 6020, Dakar, Fr. West Africa
FM7WF, P. O. Box 50, Fort-de-France, Martinique
FQ8AR, Jean Pierrat, Box 108, Brazzaville, Fr. Equatorial Africa
FQ8AS, C. Narolles, Box 138, Brazzaville, Fr. Equatorial Africa
FQ8AT, Louis LeCocq, Box 69, Aeronautique Civile, Fort Lamy, Fr. Equatorial Africa
HP1CC, Dr. Carlos M. Arango C., Apartado 168, Panama, R. P.
JA6AA, Yasuhiro Itahashi, 1-28 Komeyamachi, Kumamoto, Kyushu, Japan
ex-JAØIJ, (QSL to W4QCA)
JY1AJ, George Haley, RAF, Amman, Jordan

This layout at KG4AF knocked off an average of over 32 QSOs per hour and racked up second high non-W/VE/VO c.w. score in ARRL's 1952 DX Test.

♦

KA9AA, (W4VE) Doc Westervelt, APO 309, % PM, San Francisco, Calif.
KR6JZ, (WN4TMD) PFC Wm. D. Landon, RA-6980395, Hq. Co., 2nd Bn., 29th Inf. Regt., APO 331, % PM, San Francisco, Calif.
OE13HL, (W3HQU) M/Sgt Henry C. Lybrand, RA-13069647, 7644 STIT, APO 168, % PM, New York, N. Y.
OE13HP, (QSL via W7MYG)
ST2HK, (QSL via RSGB)
SV1SMX/MM, Spiros Moumouris, MMWO, % RCA, Buenos Aires, Argentina
VP1AB, Stann Creek, British Honduras
VP2AJ, Box 103, Antigua, B.W.I.
ex-VQ2JS, (QSL to VE6NL)
VQ6MY, (QSL to HZ1MY)
VQ9FD, (QSL via FQ8AF)
W5MUP/KS6, Ray S. Caldwell, Pago Pago, American Samoa
YA3VB, (QSL via HZ1MY)
YK1AH, Fadel Chehabi, Mazaraa Street, Damascus, Syria
ZK1BC, (QSL via W6MUR)
3A2AU, Pierre Albertinoli, 3 Impasse des Carrifres, Monaco
6L6MY, (QSL to HZ1MY)

These through the courtesy of W1RWS, WN1WIQ, W2s AOS/KG6 BBK BUV, W3LXE, W4KE, W8s NBK NOH, W9s CFT KA, WØs AIH RZR, PJ2AA and WGDXC's *DX Bulletin*.

Tidbits:

Asia — From W9FWV, WØRZR and sources direct we get pitch on the JA/KA situation. Call areas for Japanese nationals are JA1, Kanto and Shinetsu districts; JA2, Nagoya and Hokuriku; JA3, Kansai; JA4, Shikoku; JA5, Chugoku; JA6, Kyushu; JA7, Sendai; and JA8, Hokkaido. Licenses have been issued to over 30 applicants in most of these call areas. JA1s AA AC AD and AE are prewar J2s IB MI PU and KM, respectively. JA6AA reports that J5CC, prominent prewar Kyushu DXer, perished at sea during hostilities. WØRZR is ex-W6MNQ and holder of the call KA2BE. QSL cards for Japanese nationals may be sent via JARL, P. O. Box 377, Tokyo, and those for KAs via FEARL . . . . . Recently ticketed KR6JZ finds ham radio booming on Okinawa. The KR6s have a live-wire club going and the local QRM is fierce . . . . . More notes on VS5ELA's Brunei safari: Clyde managed 450 QSOs with all continents and U. S. call areas and had a peak run of 45 contacts in one hour. All this in five days of operation near the Brunei shore, two miles from inaccessible Sarawak. But the jaunt wasn't all peaches and cream — WØELA got back on the air in Minneapolis some 15 pounds lighter . . . . . More re AC4YN: DL4LQ was told by G3KP that "Mr. DX" is safe in India . . . . . OD5AJ, now active with a 6C5-6F6-KT66 25-watter, is working on an 807 final to be modulated by Class AB_1 6L6s. He regrets official red tape has held up the lifting of the W ban on OD5 QSOs for so long . . . . . YI3BZL, closing down and heading back to G3BZL, writes he did his utmost to plant the radio bug in Iraq so that the country will continue well-represented on our bands. Activity of YI2AM will attest to this and is the result of YI3BZL's gear being converted for club-station use. YI2AM commenced operations with a stock of 3000 QSLs fresh from the printers. Johnny sends his thanks and best wishes to all W/VE/VOs with special bows to Ws 1MCW 3RIS and 8HRV. He left YI2FD active on 40 meters with YIs 2AM and 3WH inhabiting 20 . . . . . WN1WIQ, now a happy ex-SWL, reports YK1AH a believer in 100-per-cent QSLing. Fadel has a c.c. 60-watter, a dipole and a home-grown 7-tube super cooking on 20 meters.

Africa — ZS6GV-ZS7B reports difficulties encountered in his ZD7 planning — he'll have to take into consideration the generating of his own power. Other details have been accounted for, we are told, so grit your teeth for some potent pile-ups! . . . . . W1PWK/CN8EG still gets about the Mediterranean. Spain and Algeria were his latest stops but Steve managed no EA and FA hamming . . . . . W5HBM is home from the VQ1RF wars and, via W9GNU, wants it known he'll be glad to make good on Zanzibar

cards gone astray. Send details of your VQ1RF QSOs to W5HBM at Dripping Springs . . . . . Dark Continental gleanings from WGDXC's *DX Bulletin*: When FD8AB returns to Togoland from France he expects to sign FD4AB. . . . The call FF8AB has been pirated on 20 'phone. . . . FQ8AS is the son of FQ8AG, FQ8AT has a pair of 807s on c.w. and FQ8HC is making a comeback with 100 watts. . . . I5GO rebuilds for 'phone. . . . VQ9FD is active again from shipboard . . . . . CR6s AE and AM, father and son, operate an electronics laboratory in Nova Lisboa.

Oceania — Some Pacific data from KC6QL. Call-sign blocks have been authorized as follows: KG6SA-KG6SZ, Saipan; KG6TA-KG6TZ, Tinian; KC6AA-KC6ZZ, Carolines; and KX6NA-KX6XX, Marshalls. The latter assignment does not include Eniwetok and Kwajalein areas. The Trust Territory of the Pacific Islands High Commissioner's office also made call assignments for official amateur stations at each District Center. Some of these may be active shortly from such spots as Majuro, Ponape, Yap and Koror. Bob is getting ever closer to DXCC at KC6QL. He notes that KC6AR will join the Truk on-the-air gang soon. KC6DX is QRT, bound for home, and KC6SJ is said to be preparing for 28-Mc. 'phone work . . . . . KG6ABA, of the Guam QSL bureau, is accumulating stacks of juicy DX cards for KG6s whose operators have left the island. He would appreciate hearing from such ex-KG6 personnel so that these pasteboards may be claimed and the backlog cleared away . . . . . KH6WW tells us of the strong possibility of a KS6 amateur becoming active on a two-year residency. He won't ever be lonesome if he has a receiver and a few watts available! . . . . . W6AM was W5MUP/-KS6's first U.S.A. contact.

Europe — EDR (Denmark) sponsors 1952's Sixth All-European DX Contest in conjunction with the Danish society's 25th Anniversary Jubilee. The c.w. section runs from 0001 GCT, Dec. 6th, till 2400 GCT, Dec. 7th. Next

(*Continued on page 126*)

. . . and DL4JN (W4LAP) can take it.

M. A. R. S.

Announce Name Change for MARS

The name of the Military Amateur Radio System has been changed to the Military Affiliate Radio System, according to an announcement by the Department of Defense. The program will continue to be known by the short title MARS.

MARS is a joint Army-Air Force program. The two services have organized the efforts of skilled technicians in order to direct them toward one over-all communications plan founded on a national, rather than a local, need.

The name was changed because the term "military affiliate" more clearly defines the relationship between the Armed Forces and individual members of the system. The word "amateur" was employed originally in order to emphasize the technical qualification for membership — possession of a valid amateur radio operator license issued by the Federal Communications Commission.

The Chief Signal Officer, U. S. Army, and the Director of Communications, U. S. Air Force, direct the operations of MARS within the two services. An advisory committee, composed of both military and civilian members, advises the Chief Signal Officer and the Director of Communications on MARS policy. Governmental agencies and civilian organizations represented on this committee include the Federal Communications Commission, the Federal Civil Defense Administration and the American Radio Relay League.

Major Long Appointed New MARS (Army) Chief

Major James A. Long, AB6ACB-KH6ACB/3, has been named Army chief of MARS by Maj. Gen. George I. Back, chief signal officer, U. S. Army. He replaces Capt. Lester A. Peterson, A4YCV/W4YCV, who has completed his tour of

(Continued on page 128)

Major James A. Long (*right*), new Chief of MARS, and Captain Lester A. Peterson, whom he replaces.

U. S. N. R.

Carolinas Hurricane

During the August hurricane in the Carolinas, coöperation between the Naval Reserve and amateurs was an important factor in providing emergency communications. At the height of the storm, the landline between Sixth Naval District Headquarters at Charleston, S. C., and the Naval Ammunition Depot at Charlotte, N. C., failed. A Naval Reserve radio circuit to the Naval Reserve Training Center at Charlotte was used to reëstablish communications. However, contact was lost after a frequency shift. Amateur station K4USN joined the South Carolina Amateur Net 3930-kc. 'phone and relayed a message to Charlotte with the assistance of W4ANU, W4FXH, W4OTW, and W4NS. Delivery was made within ten minutes and normal operation on the Navy circuit was restored.

Emergency radio communication was established with other Naval Reserve radio stations during the storm and valuable assistance was provided by the following amateur stations: W4s BZX EDQ ETC EOZ EZT KLD MCL NC. Operators who assisted in maintaining a watch at the Naval Reserve Training Center at Savannah, Ga., were George M. McCoy (W4MIA) and Paul M. Carter, commercial operator, first class.

Code Practice Transmissions

District Naval Reserve Master Control Stations of the Fourth and Eighth Naval Districts conduct code practice schedules, as shown below, for the training of Naval Reserve communication personnel. These transmissions are available to amateurs desiring code practice.

Station	*Frequency (kc.)*	*Operating Periods*	*Speed (w.p.m.)*
NQD Philadelphia	4010	7:45–8:15 P.M. EST	12
		8:15–9:30 P.M. EST	8
	2792	9:30–10:00 P.M. EST Mon. thru Thurs.	16
NDF New Orleans	8000	7:30–8:00 P.M. CST	7
		9:30–10:00 P.M. CST Mon. thru Thurs.	10
	2854 4105 5155	8:00–8:30 P.M. CST Mon. thru Thurs.	15

Here & There

H. A. Heller (W7LGS), RMN3, USNR, has been appointed ARRL emergency coördinator for the Boulder City, Nevada, area. Chief Radio Electrician F. A. Wilson (W7HJ), USNR, received a similar appointment for the state of Nevada. Both are members of Volunteer Electronics Platoon 11-35 of Boulder City.

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K6NCB, operated by the Naval Reserve Electronics Program office of the Eleventh Naval District, is looking for contacts on 40 meters. Operators are K6DY, Cmdr. J. C. Picken, jr., USNR; W4TJD, Cmdr. B. A. Wambsganss; and W6HYA, Bill Munoz, ET2, USNR.

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W. E. Humphries (W4SRL), RM1, USNR, and Carl Leveau (W6KLY), RM1, USNR, were recently selected for transfer to the regular Navy.

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K4NAA, Naval Reserve Training Center, Covington, Kentucky, is operated by W3GUF, Lt. Cmdr. E. M. Remorenko, USNR, and W8UFA, G. M. Burke, ET1, USNR.

— • • • —

W6SRU, Lloyd I. Burns, of Volunteer Electronics Company 12-1 of Fresno, Calif., was recently commissioned as ensign, USNR.

Hints and Kinks For the Experimenter

INEXPENSIVE DYNAMOTOR RELAY

STARTING relays for dynamotors are relatively expensive and difficult to obtain. An entirely satisfactory substitute can be made easily from a Ford automobile starter relay which costs only about $2.

The Ford relay *could* be used without modification, but it draws 6 amperes. To reduce this unnecessary drain, the coil should be rewound with No. 26 or No. 28 enameled wire.

To get at the coil, pry off the top of the unit with a bottle opener, and then remove the contacts with a wrench. The coil will then drop out. Remove 176 turns of the wire with which the coil was originally wound, and rewind the form fully (the original form is not filled) with No. 26 wire. This produces a coil that will draw only 0.35 ampere. If No. 28 wire is used the coil will draw about 0.20 ampere. Any larger-size wire will work, but will take proportionally increasing coil current.

The winding operation can be done by hand, or by placing a bolt through the axis of the coil form and then slipping the bolt into the chuck of a drill. Large washers will keep the nut and the head of the bolt from slipping through. The spool of wire can be slipped over a spindle such as the blade of a screwdriver clamped in a vise. — *William Herzog, W9LSK*

TIPS ON USING SHIELDED WIRE

SHOWN in Fig. 1 is a method of preparing the ends of shielded wires which produces a neat and simple termination. It is in general use in commercial practice, but apparently has been overlooked by hams.

The sketches tell the story. First, bend the wire, as at A. Next, slide the shield over the bend (B) using either a blunt instrument or your fingernail to separate the strands. Pull the short end out of the shield, as in C, and then pull the shield taut as in D. The end of the shield may then be cut to desired length and tinned for soldering. The result is neat and strong, with no frayed ends to short-circuit the high voltage.

This method can also be used to tie into the middle of a shielded run, as is necessary when wiring the heaters of several tubes in parallel. The method for this type of connection is shown in sketch E. — *Paul A. Quinn, W1QXU*

PROTECTING POLYSTYRENE FORMS DURING SOLDERING

ANYONE who has disformed a polystyrene coil form during the soldering process will appreciate any suggestion that solves this problem. One sure method of protecting the form and the pin alignment is to immerse the form in a shallow pan that has been filled with cold water and ice cubes. If the water extends up approximately ⅛-inch above the base of the form, it will dissipate excessive heat as the soldering operation is performed. — *Carlton P. Ross, W9ABA*

REFRIGERATOR-TYPE TRANSMITTER CABINET

IF your transmitter needs a little dressing up, and if there is an old refrigerator within sight, think twice before dashing off to the radio store for a new cabinet. Here's how I housed my 813 rig in an old Kelvinator unit that outlived its intended purpose. The r.f. units were mounted in the food compartment after the door, the ice-cube trays, and a few other items had been re-

(Continued on page 128)

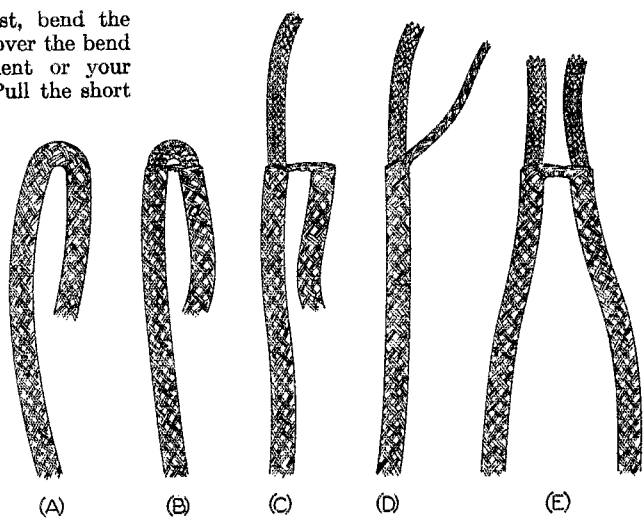

Fig. 1—Here's a simple way to make neat connections with shielded wire. Widely used in commercial practice, it should find equal favor among hams.

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
R. L. WHITE, W6YYN, Asst. Comm. Mgr., C.W.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator
♦
J. A. MOSKEY, W1JMY, Deputy Comm. Mgr.
ELLEN WHITE, W6YYM, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

Wanted! Volunteer Stations To Send 28-Mc. Code Practice. ARRL suggests that club officers arrange for certain members' amateur stations to put on local practice programs with special attention to transmissions on 10 meters. ARRL solicits information on such schedules and also from individual operators who would like to undertake sending a good grade of code-practice transmissions to assist amateurs in their areas in attaining code proficiency. Do you work this band? If so, what schedules can you keep? In return for your proposed schedule that will be effective six to ten weeks ahead (it takes a good part of that time to get data in print and distributed to readers) we'll list your schedule in *QST* and send data on giving practice, if you so request.

We'll include listing of schedules on other bands in *QST* too, but our list generally has more stations on ten since this avoids too many practice transmissions in the lower frequency bands where congestion and interference are greater. In sending *any* sked to ARRL, please advise frequency, days of transmission, starting time and duration of such transmissions as well as the speed ranges covered.

Pointers for Effective Operating By Novices and Others. Timing your reply to follow quickly the conclusion of any CQ (general inquiry) call will produce most replies. Keep reply calls brief. Breaking them into one or two "four times two" calls interspersed with short breaks for any reply will often get your man. Over-long calls lose attention so that replies go to others.

Conciseness or time-saving is the mark of the real *two-way communicator* on c.w. HW? is much shorter and better than a painfully spelled out "turning it over to you now," showing little operating experience. Our booklet *Operating an Amateur Radio Station* (sent free to members on receipt of radiogram request *giving your address*) lists the commoner "Q" signals. Of these you will find the following especially useful: QRK, QRS, QRQ, QTC, QRU, QSZ, QSL, QSB, QSV, QRM, QSY and QRL. The best way to learn their meaning is to use them frequently on the air. Consult your booklet; keep it in the operation position.

On Accepting Traffic. Amateur message service does not compete with other services, since there are no charges and can be no guarantee. As long as no compensation is involved and FCC and international regulations are complied with, messages may be accepted from anyone for sending by amateur radio. It is a cardinal principle for each of us to observe in this matter that as an individual we do *not* accept traffic to be started unless our specialized knowledge indicates that it can be handled in a creditable manner, either through individual schedules or to points contacted through specific nets or via the National Traffic System.

Operators must not make changes in messages without proper authority. It is important that at the point of origination proper suggestions be given (1) to keep messages concise, (2) to insure completeness of address as essential to delivery, (3) to screen the filing of traffic and prevent originations for a local area that are covered by the local telephone system or remote points where delivery through amateur channels is not feasible. While the *importance* of a message can *only* be evaluated truly by the originator or the addressee, it is a disservice to originators as well as amateurs who specialize in devoting their time to this phase of public service to encourage or permit indiscriminate filing of casual greeting messages or those that of themselves indicate a transitory street-corner booth filing. The "rubber stamp" message of this type will usually only overload the system and in view of the higher mortality in transit tends to create a low impression of the potentialities of our service as well as the originating station.

Systems for DX Bookkeeping and General Operating. The availability of the new ARRL Countries List (sent on receipt of radiogram request) simplifies bookkeeping to a minimum for those who merely want to write in the calls from stations representing countries in the list as they are worked. Bookkeeping for attendance on the 'phone or c.w. section nets may utilize a card-file system or ruled paper with calls at left and columns for each period of operations. For general record purposes, if desired, 3 × 5-inch file cards can show call, date worked, frequency band, name, whether A-1, A-3, etc., was used, whether a QSL was sent and what date, etc. We have known several amateurs with an elaborate card-file system. Where neat records are in themselves a hobby, a card file admittedly can be the "ultimate."

For the fellow just getting his General Class license which makes *all* the amateur bands available for c.w., DX, traffic and a number of bands for 'phone too, it may be practical to suggest starting a small notebook or bound record book. For the fellow who decides to get all there is out of *each* kind of amateur radio we suggest devoting the first four or five pages of the book to calls,

days, frequencies and names of those amateurs contacted consistently on the local net of which you should want to be an active member. The list can be just calls and nicknames (or "sines") if that is all you are interested in. If working for WAS or DXCC, the next section of your notebook can be devoted to states and countries, two or three to a page with columns for data on stations as they are worked. The particulars can be as simplified or as elaborate as you may individually desire. We suggest you use just those items of the following list that you wish, simmering down the list to lowest terms but leaving in the items that mean most to you. You might show (1) the call, (2) the city, (3) the band, (4) mode, (5) month-year, (6) nickname, (7) date QSL sent. Keep your FCC log more than the required year and you can go back at any time for more elaborate data. You can save space in listing DX in such a record by listing all colonies of the French, Dutch, Portuguese and groups of British colonies and protectorates together. Some amateurs make out their QSLs while standing by in the course of net operations. If so, QSLs themselves can be used before mailing for making up this supplementary record which will show your progress, enable you to send regular follow-ups on DX QSLs that are not acknowledged, etc.

19th Sweepstakes!!! Novices and Old-timers alike should get into this once-a-year ARRL contest for all it offers. Naturally we'll compare the Novice results printed *only* with reports from other similar operators, for with frequency bands circumscribed and with the operating limits of being new at the game, it would be unfair to compare otherwise. There were more than 150 WNs in the running last year . . . so to all WNs we say, get our free log sheet or at any rate keep a tabulation and send it in for official credit. Have some good fun and get the build-up in operating knowledge that comes with this, the annual "SS."

The 1952 Sweepstakes rules are printed elsewhere in this issue. The ARRL Sweepstakes, for those who are historically inclined, was introduced by the Communications Department in late '29, the first one meeting instant success when held in the continuous period January 18 to 31, 1930. The first two annuals were in the nature of National Relay Contests. A message exchange (10 words each, non-rubber-stamp traffic) was then required with each contact as basis for points. The helpful educational feature of *following an order of parts in a message preamble* (but streamlining to avoid bulky text and permit more stations to be worked) is included to this day. A neatly packaged signal report takes the place of the "check." The name "Sweepstakes" was derived from the unique broom trophies put forward by ARRL to popularize the first one. The *broom* in token of a *clean sweep* was probably first used by the Dutch when skippers tied brooms to their mastheads to signalize victory or success on returning to port . . . and it is noted with interest that the broom as a token is still in public discussion in our national elections with the original meaning! Today the Sweepstakes has evolved into week-end fun instead of 14-day contesting. Also since the 3rd Annual ARRL Sweepstakes, the "SS" has always been in November, to give contest hounds time to rest up and prepare for the February–March ARRL DX Competition, the outgrowth of the International Relay Contest, which developed as a "second section" of those Operating Activities detailed at such length in January '30 *QST*.

The "SS" is one of the big annual operating activities — usually only the Field Day has a bigger domestic following. It's the prime chance for most of us to give the current station set-up a real test of what it can do; it's the chance to get QSLs for shack wall-paper and add to all this station accomplishment (may include WAS too!) the operating fun even aside from the competitive angle, for which there is no substitute! See you all in the "SS"!

— *F. E. H.*

MEET THE SCMs

Arizona's recently-elected SCM, Albert H. Steinbrecher, W7LVR, became interested in ham radio in 1947 and shortly after acquired his amateur license.

He presently holds appointment as Official Observer, Official Experimental Station, Official 'Phone Station, Official Relay Station, and Official Bulletin Station, and holds membership in the AREC, the Old Pueblo Radio Club, and the 25 Club, being past-president and past-vice-president, respectively, of the latter two associations.

W7LVR is situated in Al's den, where seven Addarack units are lined up along the entire wall to accommodate power supplies and controls, transmitters and receivers, together with high-fidelity sound and recording equipment. Transmitters are a Collins 32V-1 and a Millen 90810 modulated by an 815. A kw. rig using 250THs in the final and modulator is under construction. Receiving equipment consists of a Collins 75A, HF-10-20 and VHF-152 converters, DB-22A preselector and a Panadaptor. Antennas: Johnson Rotomatic with 10-20 beams, Munger Rotator with four elements on 6 and sixteen elements on 2 meters, 6-meter ground plane, and a "V" beam with 285-foot legs. Emergency equipment consists of a Subraco MT-15 transmitter, car receiver, and Gonset converter. The Millen is portable and is powered by a Kohler 750-watt MG set.

Al's favorite sport is baseball. Since he is a retired business man he has time for hobbies other than amateur radio, such as photography and music and growing roses and asparagus

Coöperation of all amateurs in a community toward the ultimate in emergency operation and civil defense preparedness is a wonderful thing to behold. Given the proper spirit, a strong sense of organization and support of civic officials and local manufacturers, there is almost no limit to the things that can be accomplished on behalf of emergency preparedness. Where there is organization and teamwork, almost anything is possible. In Detroit, for example, it was decided that hand-carried units would be required in addition to the many mobile units which amateurs already had available or were making available. In the event of a bombing, the likelihood was that there would be many places where mobile units could not go, although communication with persons on foot beyond the limits of automobile movement was a definite requirement. A large number of hand-carried units were required: two to each mobile unit, to be exact.

Rather than try to "hold up" local civil defense officials for the funds to purchase these, the local AREC group got together with a prominent local manufacturer and set up plans for production of 100 such units on a voluntary basis. They got together with civil defense officials, local merchants, the telephone company, interested a few other parties, and first thing they knew they had provided themselves with sources of most of the gear necessary to start work. One of the technical wizards of the group designed the unit, 100 of which are now in production by a group of some 40 amateurs who do the work at night in their spare time.

This is a story which we might have in more detail in *QST* later on. We mention it here merely as an example of what can be accomplished if the desire and urge to do so is strong enough among the entire group, if they all work together toward a mutually-agreed-upon objective rather than, as has often happened, divide up into opposing groups whose differences are usually personal, political or superficial after all. The Detroit story can be the story in *your* community too, if enough of you in that community want it that way.

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"Hurricane Able" approached the Carolina coast on August 30th. The local chapter of the American Red Cross alerted EC W4BAT who got in touch with SCM W4ANK. Together, they set up their lines of communication, and when the storm hit were completely in charge of the situation. SEC W4DX put out a general message alerting the 75-meter 'phone net. This net responded well and many members guarded the frequency continuously until many hours later. In the late evening of August 30th power began to go out and by midnight 90 per cent of Charleston was in darkness. Telegraph and telephone lines along the coast began to fail about 2230 and those that did not fail became unreliable and erratic. Winds up to 110 m.p.h. were experienced in some places. Interference was heavy, making low-power 'phone contacts impossible, but by using c.w. it was possible to get messages through. The lack of a c.w. net was keenly felt.

On the morning of August 31st the Red Cross informed EC W4BAT that communication was needed with Walterboro, Beaufort and Edisto, S. C. W4BIZ loaded W4CXE, W4KOD and a 40-meter c.w. rig into his car, which was mobile-equipped, with the idea of dropping the portable transmitter and one or more of the operators at one point, then proceeding to establish communication at other points. Operation began on 75-meter 'phone, but proved so impracticable that the frequency was changed to 7295 c.w. In Walterboro the Chief of Police was contacted and sent a message to the Charleston Red Cross giving estimated damage, personnel welfare and other vital information. Messages were handled for the police, who were not in contact with their base station, and similarly for the Civil Air Patrol. Messages were handled direct from State Highway Patrol Headquarters in Columbia, W4HMG assisting at that end. Direct contact was also made with Atlanta, Washington and Spartanburg, S. C., all stations reporting the mobile loud and clear at all times. They then proceeded to Beaufort and Edisto, returning to Charleston about 1900 after driving approximately 250 miles. Continuous 100 per cent contact was maintained at all times en route.

The local 10-meter net in Charleston was active on a stand-by basis, but telephone communication was not interrupted by the storm.

Local officials, especially the officer in charge at the Naval Station and the Disaster Chairman of the Charleston Chapter of the American Red Cross, expressed their gratitude to the local amateurs. Charleston papers carried very favorable publicity on the activity.

Several lessons were learned: (1) We need a c.w. net. (2) Members of the 'phone net need to take emergency operations a little more seriously. (3) Amateurs should be cautioned not to give the papers or divulge contents of messages not addressed to them. (4) More emergency drills are needed.

The following amateurs were known to have assisted, although there were undoubtedly others: W4s AAY AJC ANK AZT BFQ BIZ BUF BZX CAD CEL CFJ CXO DDT DMS DNR DX EDQ EOZ EZU FFH FXH GEO HMG HVO HWZ KGP KHC KLD MPR NQP NS NTD NTO NWB OKD OWW PDD PDE PLX RXO STH SUE THZ TSU TWW UPK; K4s USN WAR; W4OSO/5; and W8GAB.

— *W4ANK (SCM) and W4BAT (EC)*

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The Indiana SEC, W9LZI, has made a practice of preparing maps of the state divided into counties, showing the appointed Emergency Coördinator in each county, and attaching a complete list of ECs by name and address. These maps are circulated to ECs and also to Red Cross and Civil Defense officials, indicating to what extent the state is covered by amateur radio, and who is the responsible AREC official in each county. The existence of blank counties is often instrumental in stirring up some activity in an otherwise dormant area.

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On July 29th at about 2115 the 10-meter Birmingham Emergency Mobile Net was alerted, at the request of the Girl Scouts and the Red Cross, for the purpose of establishing communications between Birmingham and Camp Gertrude Coleman, Girl Scout camp, located approximately eighteen miles from Birmingham, Alabama. A forest fire threatened the camp. Within about 15 minutes after the call for aid, two fixed stations and eleven mobile units were on 29,560. Atmospheric conditions were so bad that it was necessary to establish relay points. Six mobile units and four handy-talkies went directly to the camp. The other mobiles served as relays to the fixed stations in Birmingham. The Trussville, Alabama, fire department, police department and utility department; the Alabama Highway Patrol and the Military Police were alerted and stood by keeping contact with the camp through the 10-meter net.

W4VBZ deserves special mention as he hiked several miles into the fire-threatened area with a handy-talkie to report

NATIONAL CALLING AND EMERGENCY FREQUENCIES

C. W.	*'PHONE*
7100 kc. (day)	3875 kc.
3550 kc. (night)	14,225 kc.
14,050 kc.	29,640 kc
28,100 kc.	

During periods of communications emergency these channels will be monitored by stations of the National Emergency Net for personal-inquiry traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be *vacated immediately* to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *'phone* — 3815, 14,160 kc., 28,250 kc.

conditions. The local president of the Girl Scouts, officials of the Camp and Red Cross were present and originated messages to their officials in Birmingham which were promptly relayed and delivered. At 2330 the Camp was declared in no danger and the net was dismissed. Those participating were mobile W4s CJZ ERW KPU NQK NZZ OLG RKS RTI RTP SDX and VBZ. Fixed stations were W4DID and W4GJW. W4TCL assisted with handling of traffic at the camp.

— W4RTI

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On April 14th, W4ROM was bringing a 27-foot cabin cruiser from Eglin AFB, Fla. to Fort Walton, Fla. for repairs, but did not arrive when expected. His XYL 'phoned PLE, EC for the Fort Walton area and asked for aid in locating the missing OM. The Hair Net of the Eglin Amateur Radio Society was alerted within ten minutes to aid in the search. Mobile units reached Chactawhatchee Bay at 2115 and proceeded to look for signs of the missing craft, all the while maintaining contact with W4RKH, who was in contact with the Eglin AFB crash boat section by land line. The search continued until 0100, the net then put on a stand-by status until dawn. At 0400, W4RKH was informed that W4ROM had been found, and the net was closed down.

— W4PLE, EC Fort Walton

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At the request of Philadelphia Civil Defense officials, radio amateurs in the Philadelphia area on April 26th lent a hand in a civil defense demonstration in conjunction with the VFW parade. The parade started at 1430 and proceeded through downtown Philadelphia. The city's mobile c.d. communications truck led the column of 11 amateur radio-equipped cars. Contact was maintained on 29,493 kc. The whole demonstration was essentially to show the public that amateurs were ready and able to render service in the event of an emergency. Twelve local amateurs took part.

— W3DYL, EC Philadelphia

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Early in May, the Bristol Amateur Radio Club set up six stations on the shore of South Holston Lake, a TVA-created lake on the river bearing that name. The occasion was the official opening of the new lake. Each station provided radio communications for life-saving crews from nearby cities. The control station, W4IYU/4, was located on board a boat house. The local AREC gang manned communication circuits day and night at the lake from May 31 through June 2. Thousands of people attended each day, but there were no serious accidents. Traffic was handled involving a lost child and a stolen motorboat, with the amateurs providing life-saving crews with communications into Bristol on several occasions. 160 meters was used and proved ideal for around-the-clock operation, although standby circuits were available on 75 and 10 meters.

— W4IYI, EC for Bristol, Tenn.-Va.

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The members of the Wisconsin Valley Emergency Corps were called on to provide communication for the State Championship Motorcycle Endurance run on May 30th. Nine mobile units and two fixed stations were in operation from 0700 to 2000, stretching over the 225-mile course. Two gas-driven generators were used to power the net control station on Squirrel Hill. At the start-finish point a fixed station was in operation. All units operated on 29,620 kc.

Each mobile unit carried an extra operator and a member of the motorcycle club, and was provided with aerial survey maps of the route of the endurance run. The main job of the mobile units was to call into net control the exact time of each motorcycle rider as he came through a check point. A master chart was maintained at net control. The mobile units waited to accumulate about a dozen tallies before calling in, thus keeping the frequency clear for emergency calls most of the time. A listening period was maintained on the hour and on the half hour.

All participants heartily agreed that the operation could not be equalled in any other dry run or test. Experience gained was invaluable because the whole set-up was run under emergency conditions. Participants: W8s CYU and DQO; W9s CFT EWM IBF IZE JBF PMS PVR QJB QCZ RQM SBQ SHZ and VHA; WN9s PBA and PBB.

— W9VHA, EC Wausau, Wisconsin

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A record-breaking 21 ECs submitted reports in July, including most of the faithful and one newcomer, Vermont. These reports indicated activity on the part of 3980 AREC registrants. Considering that these reports represented the slack midsummer season, we are not too disappointed in the increase which it represents and which it undoubtedly heralds for the coming active season of the year. Still, ECs for 44 sections have not reported this year up to August.

TEHACHAPI EARTHQUAKE

In the early morning hours of July 21st, while most people were soundly sleeping, a wide area in Southern California received a severe shaking. The effect was varied: some people slept right through it, others awoke in terror to find their houses collapsing about them, and a few unfortunates never knew what hit them.

At Fresno, W6GRO, net control of the American Legion Amateur Radio Net, after being awakened by the shock at 0455, put his station on the air and started calling the network together — said network consisting mostly of other stations in the area who had similarly been awakened by the tremor.

The first order of business was to determine the most affected areas and get information on the communications situation there. They soon deduced, by comparing reports from Bakersfield, where the shock was very severe, with San Francisco, where it was hardly felt, with Los Angeles, where it was also quite severe, and many other first-hand reports from stations on the net, that the center and severest damage lay in the Tehachapi range of mountains at the south end of the San Joaquin Valley. Even while this process of deduction was going on, messages were starting to flow in and out of Bakersfield. W6GRA, a member of the net, informed that he was driving to Tehachapi with his son, W6HBV, picking up a Red Cross official on the way, loading his car not only with radio equipment but also with maps, picks, shovels and as much other emergency gear as could be carried. Along the way, he reported having to clear debris from the roads, and at one place having to detour because of a large cleavage in the highway.

W6EHN of Bakersfield was early on the air with emergency power, since commercial power was off. As other stations reported in, many of them not affiliated with the net, W6EHN and W6GRO helped handle many Red Cross and other emergency messages. Also during this period, W6EJU checked in from his mobile unit to say he was also on his way to Tehachapi with other emergency gear.

W6GRA and W6EJU were soon set up in Tehachapi, both with their mobile rigs and other emergency equipment they took with them. W6GS set up some equipment at Red Cross Headquarters at Bakersfield. K6FAJ, of Edwards Air Force Base, also had emergency gear on the scene. Later on, several mobile rigs arrived in the area to assist in traffic handling, and K6NBZ, a Navy station of Fresno, took in a high-powered emergency rig.

Several hundred messages were handled between 0455

♦

The Sheriff of Androscoggin County, Maine, quickly saw the possibilities of amateur mobile equipment, and now the County has eight "mobile Sheriffs," plus one who is working on a rig for his plane. They figure this ought to cover the county. Shown in the picture, *left to right:* W1s CV, MFJ (who owns the plane), UIW, SEJ (EC), SWZ (Asst. EC), LPS, LPA and BYK (SEC).

and 1130 by more than 80 stations in the American Legion Net. There follows a list of stations submitted by W6GRO as having participated during this time, a list which he admits is incomplete since it does not include many who checked in when an alternate net control had charge: *W6s* BAA BLY BUG BUT BZF CF CFJ/M CUX CWK/6 CX CXO DUF/M ECC EFB EHN EJU/M EPB EQO/M EWU FFB FMG/M FZM GCG GCS GRA/M GRO GS GUZ GQH GY HHE HHI/M HMA HMU HND HOV HRI/M HVK HYG ICS IDY JUK KHK KMY KOQ KQL KU KUK MEZ MSW NCP NLM NTF OT PIB PMS POD PPO PRB QDE/M QLV/M QNK QPF RFU SMK UG UJ/M USA WOC WPV WUD WWT YQD ZGR ZRR ZRZ ZUU, *K6s* FAJ NBZ and W7OXX.

The Mission Trail Net was also active, contacting W6ITE of Bakersfield, who informed that the Red Cross requested a mobile unit to be dispatched to Tehachapi. W6ZZC was sent, W6WMU accompanying him. W6JSI was also dispatched. W6ZZC performed services in Tehachapi until late that evening. The Southern Division of MTN was alerted to stand by that day and the channel was monitored by W6HLZ, W6QR and W6DUP. Inquiry traffic was held down until conditions cleared up so as not to confuse and interfere with officials at the scene. W6HLZ says that all amateurs, net members or not, did a splendid job.

The Golden State Emergency Net was activated at 0503, checking with all areas for possible emergency conditions. There were several areas without power as a result of the earthquake, and Golden State Emergency Network members helped supply these areas with emergency communication from their mobile units. W6TDW was net control.

The alert EC for the Antelope Valley-Muroc area of the SJV Section, W6VRF, quickly contacted Assistant ECs W6ZSL and W6OLB. This trio picked up portable power equipment and proceeded to the disaster area as W6VRF/M and W6ZSL/M. En route to the scene, coördination was established with Los Angeles SCM, W6ESR. Arriving in Tehachapi, they found W6GRA/M already in action and in contact with W6GS in Bakersfield. However, Edwards AFB personnel, especially medics who had accompanied W6VRF/M, were in business at 1035 with a message to K6FAJ at Edwards requesting air police and supplies. W6ZSL organized available mobile units, W6OLB established continuing liaison with the Red Cross and screened all traffic, while W6VRF operated the station. W6YDQ assisted in operating after arriving with v.h.f. military gear. The team of W6s OLB, VRF and YDQ kept the station on the air until 1735 on July 22nd by which time four outside telephone circuits had been restored. Two hundred and four messages were originated, 99 received. Seventy-nine messages were operational instructions. Among those assisting were W6s FCS HK IAB and VJQ. Nineteen mobile stations offered assistance, leaving no dearth of this kind of equipment.

At Santa Barbara College of the University of California, W6RFU monitored three channels on 75 meters throughout the day. Operators were W6s CSH LDJ and WN6QOI.

Other amateurs mentioned in connection with this emergency but not listed above include: W6s CTP JIU JMW IWG LDI MNX QNL and VRG.

In San Francisco, Red Cross Disaster Service traffic was handled by W6CXO direct with the disaster area. Operating the station day and night during the critical period were W6NL (SEC), W6BYS (EC), W6JWF and W6LVW. W6GB also assisted from his home station.

CODE-PROFICIENCY AWARDS

Have you received an ARRL Code Proficiency Certificate yet? Twice each month special transmissions are made to enable you to qualify for the award. The next qualifying run from W1AW will be held on November 13th at 2130 EST. Transmissions will be made simultaneously on 1887, 3555, 7120, 14,100, 28,060, 52,000 and 146,000 kc. The next qualifying run *from W6OWP only* will be transmitted on November 9th at 2100 PST on 3590 and 7248 kc.

Any person may apply; neither ARRL membership nor an amateur license is required. Send copies of *all* qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the five speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. 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 Sept. *QST*
Nov. 4th:	*A Two-Band Miniature Mobile Transmitter*, p. 11
Nov. 7th:	*A Bandswitching Exciter . . .* , p. 20
Nov. 10th:	*7-Mc. Beam for the Small Yard*, p. 25
Nov. 12th:	*R.F. Voltmeters*, p. 29
Nov. 18th:	*The Measuring-Cup Band Spotter*, p. 16
Nov. 20th:	*Are You U.L. Approved?*, p. 32
Nov. 24th:	*The "Ultimate" C.W. Receiver*, p. 38
Nov. 28th:	*What Price Precision?*, p. 42

A.R.R.L. ACTIVITIES CALENDAR

Nov. 9th: CP Qualifyin Run — W6OWP
Nov. 13th: CP Qualifying Run — W1AW
Nov. 15th-16th, 22nd-23rd: Sweepstakes
Dec. 5th: CP Qualifying Run — W6OWP
Dec. 5th-7th, 12th-14th: 10-Meter WAS Party
Dec. 19th: CP Qualifying Run — W1AW
Jan. 3rd: CP Qualifying Run — W6OWP
Jan. 10th-11th: V.H.F. Sweepstakes
Jan. 10th-25th: Novice Round-up
Jan. 17th-18th: CD QSO Party (c.w.)
Jan. 19th: CP Qualifying Run — W1AW
Jan. 24th-25th: CD QSO Party ('phone)
Feb. 6th-8th: DX Competition ('phone)
Feb. 8th: CP Qualifying Run — W6OWP
Feb. 11th: Frequency Measuring Test
Feb. 17th: CP Qualifying Run — W1AW
Feb. 20th-22nd: DX Competition ('phone)
Mar. 6th-8th: DX Competition (c.w.)
Mar. 13th: CP Qualifying Run — W6OWP
Mar. 18th: CP Qualifying Run — W1AW
Mar. 20th-22nd: DX Competition (c.w.)

TRAFFIC TOPICS

A lot of the fellows are telling us that their net has established a policy of "refusing" certain kinds of traffic. In some cases it's "fair" traffic, in others "military traffic," old traffic, traffic with incomplete preamble, traffic with long texts, traffic with incomplete address, traffic originating in certain foreign countries, traffic of a "commercial" nature, traffic which does not (the handler thinks) say anything important enough to use up his valuable time, etc. ad infinitum.

Well now, just to keep the record straight, let's first admit that each of us has the right to decide for himself what traffic, if any, he shall or shall not handle. We are still amateurs, and we do as we please, in the main. It is only when an individual (or a net) recommends (or implies) that what he does everybody should do that the matter is opened to discussion and/or criticism. Since that implication has become more or less obvious in that those who are refusing traffic for one or more of the above reasons, or others, feel that they are benefiting amateur radio and the traffic game in so doing, we want to discuss it a little. Not criticize anybody, just discuss it.

To begin with, you can run the thing into the ground. A fellow with a message to peddle (that he probably did not originate), will have to remember which net will condescend to handle which traffic — either that or try handling it and being rebuffed, with consequent ill feeling. It boils down to a question of whether it is more important to make better traffic or better traffic men.

Secondly, since whatever is wrong with the message that makes you want to refuse it is probably not the fault of the station or the operator giving it to you, why slap *his* face? If you *must* refuse the message, for whatever the reason, we think the most diplomatic, not to mention the proper, thing to do is to service the originating station to the effect that you are cancelling the message (and state the cause) or that you are holding it pending correction of whatever is wrong with it.

Thirdly, we think that the most effective place to correct these difficulties is at the source — the originating station. An educational program is perhaps in order, but not a punitive crusade.

Fourthly, let's not lose sight of the fact that amateur

traffic is as much a training activity as a service activity. In the eyes of *some* important non-amateurs, more so. For training purposes, the message form is important but the content not very. Even on commercial circuits the operators do not set themselves up as judges as to what is or is not worth sending. They send what they are given to send — or else. The only difference between that and amateur traffic circuits is that there is no "or else."

Fifthly, the appearance of traffic inexpertly originated in increasing numbers is an indication of some newcomers in the traffic game — a good omen, not a bad one. We old-timers ought to encourage them to do it right, not tell them to keep their &%$#*! traffic out of our net.

Sixthly — but why go on? We see more reasons why nets should *not* refuse traffic than why they *should*, and our recommendation is the adoption of as much tolerance as possible both as individual and net policy; this despite the fact that the writer hits the ceiling just as you do when someone gives him a message in one of the "stinker" categories mentioned in the first paragraph above.

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W1SS reports the August total for the W1 call area of TCPN was 1098. Twenty-three stations participated.

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National Traffic System. The usual upsurge of interest and activity in traffic work was noted in late September and early October. Additional applications in the Transcontinental Corps also helped to reactivate this vital part of NTS. There is still plenty of room for TCC volunteers, and we hope that those interested will not hesitate to make their interests known. Requirements for full-scale operation without overworking anybody call for a total of 50 stations: 20 in the Eastern Area, 10 in the Central Area and 20 in the Pacific Area. Since the start of TCC, we have done with less than that, and by splitting some of the station functions we can use more if they are available.

Among the regional and area nets, all need more support from the various sections in them. Among those needing the most support are Regions 4, 5, 7 and 13. The Twelfth Regional Net, however, not only needs support but does not even exist at this writing. Traffic in NTS for the States of Arizona, Colorado, New Mexico and Utah is being routed via PAN, but don't ask us by what devious routes they eventually reach their destination.

Among area nets, both EAN and CAN had a successful summer, but the Pacific Area Net just barely kept going. With the revitalization of TCC, we hope that this situation will improve; but these hopes will be in vain if PAN Manager W7WJ is unsuccessful in recruiting net control stations and daily participation of representatives of the Sixth and Seventh Regional Nets.

August reports:

Net	*Sessions*	*Traffic*	*High*	*Low*	*Average*	*Most Consistent*
1RN	17*	128	14	1	7.5	Ct., Me., Vt., WM
2RN	42	269	17	0	6.4	NJN
3RN	41	137	13	0	3.3	MDD
4RN	20	107	18	0	5.4	Va., E. Fla.
RN5	13	37	9	0	2.8	Ala.
RN6	54	1020	92	0	19	
RN7	21	194	21	2	9	Wash.
8RN	36	65	19	0	2	Mich.
9RN	27	344	30	3	13	All
TEN	26	399	56	1	15.3	Ia., Kans., Minn., Mo.
TRN	—	14	9	0	—	
EAN	21	596	71	12	28	
CAN	21	505	42	8	24	All
QIN (Ind.)	25	441	38	3	17.6	
Total	362	4256	92	0	11.8	

*Out of 21 sessions held.

The reporting record for August is even better than the almost-perfect July record. Of all existing regional and area nets, only the Pacific Area Net failed to report traffic figures. With a record like this in midsummer, we look forward to a consistent 100 per cent reporting record during the coming active season.

Note that this month we are starting to total the column.

The August NTS reported traffic total of 4256 is tops for the three summer months of June, July and August, showing an early-season increase which no doubt will continue. Totals so far in 1952: January — 6108; February — 7650; March — 7554; April — 8667; May — 8450; June — 4185; July — 3590; *total* — 50,460. With four big months to go, NTS may break 100,000 reported in 1952. Be this as it may, we know that this is but a small fraction of the total traffic handled in NTS. In order to report all of it, we have to have monthly traffic reports similar to the above from every section net, both 'phone and c.w., which sends a representative to its NTS regional net; for section nets are a part of NTS, too. You send in the dope, we'll include it in the tabulation until space forces us to cut it down. How about it?

Fifth Regional Net: W4KIX, Acting Assistant Manager, sends in the August report, but a letter from W5MRK indicates activity toward full reactivation of RN5.

Sixth Regional Net: W6ELQ has submitted his resignation, effective October 1st. Negotiations are under way toward selection of a new RN6 Manager.

Seventh Regional Net: W7GDV and W7CZX have been awarded certificates. W7CZX reported in every session in August, and W7FRU missed only two.

Eighth Regional Net: A fine 8RN bulletin, written by W8DSX and W8ELW, heralds the opening of the fall season for increased activity on 8RN.

Ninth Regional Net: W9TT's TLJ/9RN bulletin lists a roster of 37 9RN members.

Tenth Regional Net: WØBVE has earned a TEN certificate.

Thirteenth Regional Net: VE3BUR and VE3ATR badly need help in keeping TRN going. September should show an improvement.

Eastern Area Net: W8SCW's fall bulletin congratulates the EAN gang (and this includes regional net managers and representatives) for an excellent job in keeping EAN active during the summer months.

Central Area Net :CAN has been improving every month under the energetic leadership of W9JUJ. VE3WY, W4AGC and W9YWE have received CAN certificates.

Pacific Area Net: After a summer in the doldrums, it is expected that activity on PAN will pick up. We need volunteers for NCS duties most of all.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for August traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	269	2793	1999	794	5855
W6IAB	60	1796	1736	38	3630
KG6FAA	474	1191	875	158	2698
W6HK	146	1096	858	128	2228
KA8AB	150	971	823	148	2092
W9JUJ	8	1091	946	16	2061
W4USA	63	745	668	32	1508
W6WPF	34	559	530	29	1152
W7IOQ	38	479	5	524	1046
W6KYV	131	448	278	169	1026
W6GYH	20	446	398	48	912
K6FAL	167	372	243	129	911
W1CRW	57	367	302	63	789
W5LUP	50	350	5	350	755
WØQXO	15	345	265	78	703
W4PFP	3	298	296	8	605
W1SJO	4	271	250	21	546
W9TT	40	242	180	62	524
WØSCA	5	255	247	2	509
Late Reports					
VE1AAK (July)	32	351	136	185	704
VE1MK (July)	337	123	4	89	553

The following made the BPL for 100 or more *originations-plus-deliveries:*

W9NZZ	260	W7BA	126	W2IVS/2	114
W5MN	135	KG6ACH	124	W2BZD/MM	101
		W2AEE	114		

A message total of 500 or more or 100 or more *originations-plus-deliveries* 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.

NET DIRECTORY

The following nets have been registered with ARRL up to and including September 25, 1952. If your net is not listed below, please send us the registration data requested on page 69, September *QST*, if you have not already done so. Registration cards are available from ARRL Headquarters on request. The next list, supplementing and correcting this one, will appear in January *QST*.

The complete cross-indexed lithographed directory of all nets will be available about December 1st. If you have not yet registered your net, *do it now* if you want to get in the complete directory. Nets are registered in the ARRL Net Directory *only on request*, and upon receipt of complete information.

Name of Net	*Freq.*	*Time*	*Days*
Ala. C.W. Net	3680	1900 CST	Daily
Ala. Emerg. 'Phone Net	3955	1830 CST	Daily
Alberta 'Phone Net	3765	1930 MST	Mon., Wed., Fri.
American Legion Net	3975	1900 PST	Mon.–Sat.
Amateur Radio Club of Belleville, N. J., Net	29,600	1000 EST	Sun.
Amesbury (Mass.) C.D. Net	29,626.8	1900 EST	Wed.
Ark. Emerg. 'Phone Net	3885	0600 CST	Mon.
Badger Emerg. Net (Wis.)	3950	1800 CST	Daily
Barnyard Net	3924	0800 EST	Mon.–Sat.
Bay Area EC Net (Calif.)	145,350	2000 PST	Mon.
Bay Area Net (BAN) (Cal.)	3635	1915 PST	Mon.–Fri.
Bergen Co. (N. J.) C.D. Net	29,510	1950 EST	Wed.
Birmingham Emerg. Mobile Net	29,560	1300 CST 1900 CST	Sun. Thu.
Blue Ridge Net (Texas)	1880	0830 CST	Sun.
Brass Pounders Net (4BPN) (Ga.)	3750	1930 EST	Sat.
B. C. AREC Net	3755	1745 PST	Mon.–Sat.
Broward Emerg. Net (Fla.)	29,400	1315 EST	Sun.
Buckeye Net (BN) (Ohio)	3580	1900 EST	Mon.–Sat
Calumet Area Emerg. Net (Ill.)	1805	1900 CST	Mon., Thu.
Central Area Net (CAN)	3670	2030 CST	Mon.–Fri.
Central Gulf Coast Hurricane Net	3935	1815 CST	Daily
Central Illinois Net	1815	0830 CST	Sun.
Confederate Signal Corps Net	29,200	0900 EST	Thu.
Connecticut 'Phone Net	3880	1800 EST 1000 EST	Mon.–Fri. Sun.
Coronation Area Emerg. Net (Alberta)	3780	1000 MST	Sun.
Davidson Co. (Tenn.) 10-Meter Emerg. Net	29,600	1900 CST	Sun., Wed.
Deep Sea Dragnet	3970	1145 EST	Mon.–Sat.
Delta 75 Net	3905	0730 CST	Sun.
Early Bird Transcontinental Net	3845	0445 CST	Mon., Wed., Fri.
Eastern Area Net	3670	2030 EST	Mon.–Fri.
Eastern Mass. Net (EMN)	3660	1900 EST	Mon.–Fri.
Eastern Penna. Net (EPA)	3610	1830 EST	Mon.–Fri.
Egyptian-St. Louis Net	29,640	0830 CST	Daily
Eighth Regional Net (8RN)	3530	1945 EST 2130 EST	Mon.–Fri.
El Capitan Net (ECN) (Cal.)	3655	1330 PST	Mon.–Fri.
First Regional Net (1RN)	3605	1945 EST 2130 EST	Mon.–Fri.
Fla. Emerg. 'Phone Net	3910	1815 EST	Tue.
Fla. 'Phone Traffic Net	3945	0700 EST	Mon.–Sat.
Grand Rapids Emerg. Net	28,620	2100 EST	Mon.
Green Bay Emerg. Net	3950 29,620	0730 CST 1400 CST	Sun. Mon.
Hit & Bounce Net	7040 7150 7150	0500 CST 0600 CST 1600 CST	Daily Daily Daily
Hurricane & Incident Radio Net	29,560	2000 EST	Mon.
Illinois (C.W.) Net (ILN)	3515	1900 CST	Mon.–Fri.
Ill. Emerg. Net (IEN)	3940	1900 CST	Sun., Wed.
Indiana C.W. Net (QIN)	3656	1600 CST 1830 CST 2200 CST	Mon.–Sat.
Indiana 'Phone Net (IFN)	3910	1830 CST 0900 CST	Mon.–Fri. Sun.
Iowa 75-Meter 'Phone Net	3970	1230 CST	Mon.–Sat.
Kentucky Net (KYN)	3600	1900 CST	Mon.–Sat.
Lebanon Valley Net (Pa.)	146,800	2000 EST	Tue.
Long Beach AREC 2-Meter Net (Calif.)	147,300	2015 PST	Mon.
Long Beach AREC 10-Meter Net (Calif.)	29,560	2015 PST	Mon.
Los Angeles Section Net (LSN)	3600	2030 PST	Mon.–Fri.
Maritime Traffic Net (MTN)	3715	2000 AST	Mon., Wed., Fri.
Md.-Del.-D.C. Section Net (MDD)	3650	1930 EST	Mon.–Fri.
Memphis Ten-Meter Mobile Emerg. Net	29,627	1900 CST	Mon.
Memphis Two-Meter Net	145,350	1900 CST	Fri.
Mich. Buzzards Roost Net	3930	1730 EST	Mon.–Fri.
Michigan C.W. Net (QMN)	3663	1800 EST 1900 EST	Mon.–Fri.
Michigan Emerg. Net (MEN)	3930	0900 EST	Sun.
Mich. Upper Peninsula Emerg. Net (UPN)	3930	1000 EST	Sun.
Middlesex Co. (N.J.) 2-Meter AREC Net	147,200	0700 EST	Fri.
Middletown So. R.I.C.D. Net	3995	1000 EST	Sun.
Minnesota Junior Net	3710	1730 CST 1500 CST	Wed. Sat., Sun.
Mission Trail Net (MTN)	3680 3854	1900 PST	Daily
Mo. Emerg. 'Phone Net	3900	1830 CST	Mon., Wed., Fri.
Missouri Traffic Net (MON)	3580	1900 CST	Mon.–Fri.
Montana 'Phone Net	3910	1900 MST	Mon., Wed., Fri.
Morgan-Noble Emerg. Net	3655	1100 EST	Sun.
Nassau Co. (N.Y.) 10-Meter Net	28,720 28,680	2000 EST	Thu.
Nebraska C.W. Net (NEB)	3520	1900 CST	Mon.–Fri.
Nebr. Slow-Speed Net (NSS)	3745	2000 CST	Mon., Wed., Fri.
New Jersey Net (NJN)	3695	1900 EST	Mon.–Sat.
N. Y. C.-L. I. 75-Meter 'Phone Net	3910	1000 EST	Sun.
N. Y. State C. D. Net (YCD)	3509.5 3993	2100 EST	Tue.
NLI (N. Y.) Traffic Net (NLI)	3630	1930 EST	Mon.–Fri.
Newport (R. I.) Emerg. Net	28,900	1000 EST	Sun.
North Carolina Net (NCN)	3605	1900 EST 2200 EST	Mon.–Fri.
N. J. Mobile Radio Club Net	29,532	1700 EST	Mon.–Fri.
N. Tex./Okla Traffic Net	3960	1730 CST	Daily
Northeast Texas Emerg. Net	3940	0800 CST	Sun.
Novice River Forecast Net (QRFN)	3727	2200 CST	Mon.
Nutmeg Net (CN) (Conn.)	3640	1900 EST 2200 EST	Mon.–Fri.
Oak Ridge (Tenn.) Emerg. Net	50,700	1800 CST	Tue., Fri.
Ohio 'Phone Net	3860	2000 EST	Daily
Oklahoma C.W. Net (OLZ)	3682.5	1900 CST	Mon.–Fri.
Okla. 'Phone Emerg. Net (OPEN)	3860	0800 CST	Sun.
Old Colony Net (Mass.)	144,100	1930 EST	Mon.
Ontario Section Net (OSN)	3535	1900 EST	Daily
Ottawa 50-Mc. Em. Net	50,400	2100 EST	Tue.

Ottawa Valley Net	3735	1830 EST	Thu.
Ozark Net (OZK) (Ark.)	3695	1900 EST	Mon.–Fri.
Pacific Trunk Traffic System (PT)	3815	0800 PST	Daily
Pelican Net (La.)	3870	1930 CST	Thu.
Pine Tree Net (PTN) (Me.)	3596	1900 EST	Mon.–Fri.
Post Road Emerg. Net (Mass.)	28,590	1900 EST	Mon.
Potomac-Rappahannock Valley Net (PRVN)	3935 146,800	0900 EST	Sun.
Province of Quebec Net (PQN)	3570	1800 EST	Mon., Wed., Fri.
P.R. Amateur Emerg. Net	3559 3925	2000 AST 2000 AST	Mon. Wed.
Quebec Emerg. Net (QEN)	7275	1100 EST	Sun.
Queen City Emerg. Net (Ohio)	29,600	2000 EST	Mon.
Quincy Mass. Emerg. Net	146,800 28,620	1030 EST 1930 EST 1930 EST	Sun. Mon. Tue.
Quincy Mass. Sector 5 C.D. Net	28,590	1930 EST	Tue.
R. I. Traffic Net	3540	1900 EST	Mon.–Fri.
River Forecast Net (RFN)	3656 7170	0700 CST	Sun.
San Diego Section Net (SSN)	3560	2030 PST	Daily
Saskatchewan 'Phone Net	3780	2030 CST	Daily
Saturday Night Net (SNN)	3615	1945 EST 2200 EST	Sat.
Second Regional Net (2RN)	3690	1830 EST 1945 EST	Mon.–Fri.
S. Dak. C.W. Net (SD)	3615	1900 CST	Mon., Wed., Fri.
S. Dak. 'Phone Net	3870	1830 CST	Mon.–Fri.
Southern N. J. Emerg. Net	145,400	1930 EST	Wed.
Springfield (Mo.) Area Net (SAN)	3720	0800 CST	Odd Sun.
Tall Corn Net (TLCN) (Ia.)	3560	1845 CST	Mon.–Fri.
Tall Pine Net (TPN)	29,224	2000 PST	Wed.
Tar Heel Net (N. C.)	3865	1930 EST	Mon.–Fri.
Tenn. 'Phone Net	3980	0800 CST 1900 CST	Sun. Tue., Thu.
Tenn. Section Net (TN)	3635	1900 CST	Mon.–Sat.
Tenth Regional Net (TEN)	3545	1945 CST 2030 CST	Mon.–Fri.
Third Regional Net (3RN)	3590	1945 EST 2130 EST	Mon.–Fri.
Thirteenth Regional Net (TRN)	3675	1945 EST 2130 EST	Mon.–Fri.
Transcontinental 'Phone Net	3970	1800 EST	Daily
Transcontinental Relay Net (TCRN)	7042	1915 EST 0115 EST	Daily
Tri-City Emerg. Radio Net (Conn.)	29,680	0930 EST	Sun.
Trunk Line Atlantic-Pacific (TLAP)	3630		
(Eastern Division)		2130 EST	Mon.–Fri.
(Southern Division)		1930 CST	
(Western Division)		2000 PST	
Trunk Line J (TLJ)	3565	1945 CST	Mon.–Sat.
Twin City Emerg. Net	29,360	0900 CST	Tue.
Vt. Slow Speed Net (VTSS)	3740	1815 EST	Mon., Wed., Fri.
Vermont Net (VTN)	3520	1900 EST	Mon.–Fri.
Virginia Fone Net	3835	1930 EST	Daily
Waltham (Mass.) C.D. Net	146,800	1900 EST	Mon.
Wash. Amateur Radio Traffic System (WARTS)	3970	1830 PST	Daily
Wash. Section Net (WSN)	3695	1900 EST	Mon.–Fri.
W. Virginia 'Phone Net	3890	1900 EST	Mon.–Fri.
Western Mass. Net (WMN)	3560	1900 EST	Mon.–Fri.
W. Mass. Slow-Speed Net (WMNS)	3560	2000 EST	Mon., Wed., Fri.
W. Pa. & E. Ohio Net	144,138	1830 EST	Mon.–Fri
W. Penna. Emerg. Net (WPEN)	29,425	2130 EST 1100 EST	Wed. Sat.
W. Penna. ORS Net	3585	1900 EST	Mon.–Fri.
Whittier (Calif.) Emerg. Net	3885 29,520 145,280	1930 PST 1830 PST 1000 PST	Thu. Thu. Thu.
Wisconsin C.W. Net (WIN)	3625	1900 CST	Daily
Wis. Slow-Speed C.W. Net	3625	1830 CST	Mon.–Fri.
Worcester (Mass.) Local Civil Defense 'Phone Net	28,720 28,660	1830 EST	Mon.
Yonkers (N. Y.) AREC	28,730	2100 EST 2030 EST	Tue. Odd Thu.

CODE-PRACTICE PROGRAM

The following stations are transmitting code practice in the ARRL Code Practice Program:

W1MNG, Arthur Zavarella, 1702 Main Street, Agawam, Mass. 29,400 kc., Tues., Thurs. 1900 to 1930 EST, beginners' speeds.

W1VBG, Carl Norris, 128 Meadow Street, Westfield, Mass. 29,400 kc., Tues., Thurs. 1930 to 2000 EST, Sun. 1100 EST, advanced speeds.

W6JZ, Ray Cornell, 909 Curtis Street, Albany 6, Cal. 3590 kc., Mon., Wed., Fri. at 1845 PST. Speeds are 5, 7½, and 10 w.p.m. on Monday and Friday and 15, 20 and 25 w.p.m. on Wednesday.

WØYBV, Charles J. Ellis, 404 Milwaukee Street, Charles City, Iowa. 3900 kc., Mon., Wed. and Fri. at 1830 CST.

W7PUL, Kentworth F. Buxton, 4113 N. Jefferson, Spokane, Washington. 28,740 kc., Monday through Saturday 1900 to 1945 PST.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....249	WØYXO....242	W3GHD.....236
W8HGW....245	G2PL.....241	W3CPV.....235
W6VFR....244	W6ENV....239	W3JTC.....235
W3BES....243	W6AM.....237	

RADIOTELEPHONE

W1FH.....221	W8HGW....202	W2APU.....194
PY2CK.....216	W1NWO....201	W2BXA.....192
VQ4ERR....215	W9RBI.....200	ZS6BW.....192
XE1AC.....213	W1JCX.....197	

From August 15 to September 15, 1952, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued to the amateurs listed below.

NEW MEMBERS

HB9GJ.....110	VS7NG.....101	W9ALI.....100
W4AUL.....107	G2DVD.....101	W1JOJ.....100
EA3CY.....106	W8ICC.....100	W3QLW.....100
G8VG.....103	W2RA.....100	

RADIOTELEPHONE

I1KP.....103	VE3TW...100

ENDORSEMENTS

W7AMX....228	W2BJ.....177	KG4AF.....141
ZL1HY.....220	W9HUZ.....171	W5FXN.....140
W6TS.....220	VE3AAZ..170	W9UZS.....132
W5JC.....210	ON4NC.....161	WØQVZ.....130
VE4RO.....210	W5MPG....161	W1LQ.....123
W6TZD....191	W7ENW....160	W2BUY.....120
W2ALO....185	G3BKF.....160	F9QU.....120
W6EHV.....185	ZS2AG.....156	W3AYS.....111
W1LOP.....180	G3FNN....156	W1CDX.....111
W4RBQ.....180	W6NIG.....148	

RADIOTELEPHONE

ZL1HY.....180	KH6OR.....124	I1BPW.....112
G3FNN.....142	GC2RS.....121	W4NYN.....110
CT1PK.....141	VE4RO.....112	

• 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, John H. DuBois, W3BXE — SEC: ISE. RMs: AXA, BIP. E. Pa. Net: 3610 kc. The Pottstown ARA held a very successful doggie roast at Sunnybrook Farms. Families were invited and notables in attendance included 1NJM, 2ZVW, 3LVF, and QV. AD, EU, PDJ, and NNV are rebuilding, the latter on mobile and 430 Mc. News from Lancaster includes: AKC now is on 75-meter 'phone, GGT and PTD are at new QTHs, and RKN is receiving his Advanced Class license. CUL again makes BPL, despite summer inactivity. DUI has a new Viking on the air. DL4MA was a recent visitor at QAG's and yours truly had a pleasant two-day visit with brother FP8s AK and AQ. Traffic: (Aug.) W3CUL 5855, BIP 174, RJB 41, AD 40, QLZ 21, DUI 9, PVY 8, BFF 7, PDJ 6, AXA 1. (July) W3QLI 5.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, James W. John, W3OMN — FCC Docket 10237 caused considerable comment among the amateurs of the section. Regardless of the pros and cons of the proposed regulation it appears that some of the area amateurs are now better acquainted with the administrative procedures governing proposed regulations affecting the Amateur Service. The Maryland Emergency 'Phone Net continued regular operation throughout the summer months with a participation record that was outstanding. Average attendance for each session was more than twenty-five. Net Directors are FWR, AFR, and JZY. Net Communications Manager is JE. Regular Net Sessions are held on 3820 kc. at 0100 EST on Sat. and Sun., and at 1830 EST on Mon., Wed., and Fri. The Chesapeake Amateur Radio Club heard Aaron Leder speak on "Elements of Radar" at its Aug. 11th meeting. TDB spoke on "Diagnosis of Television Troubles" at the Aug. 25th meeting. The CARC meets the 2nd and 4th Mon. at American Legion Hall, Post 22, Willow Ave. & York Rd., Towson, Md. The Rock Creek Amateur Radio Assn. discussed FCC Docket 10237 on Aug. 22nd and held a mobile contest for its Aug. 8th meeting. Washington TVI Committee installed the following officers: IZL, chairman; AKB, rec. secy., MSU, corr. secy.-treas.; OQF, coördinator. PZW has a new rig with 4-125s. QZC has a new QTH in D. C. LQK, ex-OX3BQ, has returned to the section. ROU made WAS and acquired 35-w.p.m. certificate. CDQ was appointed RM. Traffic: W3PZW 90, JE 60, COK 38, ONB 36, RJA 20, PKC 6, NNX 4.

SOUTHERN NEW JERSEY — SCM, Lloyd L. Gainey, W2UCV — FUA has been very busy forming a teen-age net on 40-meter c.w. So far more than twenty members have signed up. WJE reports new QTH is Iona Trailer Camp, Iona, N. J., and present activity is on 160 meters. ASG is in the middle of rebuilding his three-element 20-meter beam, just when the JA stations are rolling in strong. PEN finally gave in to the theory that an antenna is needed on 2 meters and has erected a Brownie beam. PAU and PFQ are headed for sub-miniature construction for their new mobile rigs. The 75-meter amateur 'phone net is suffering from a very noticeable shortage of members stations in the extreme southern portion of the State. The net meets every Sunday morning at 9:00 on 3900 kc. CCS is Net Control and will welcome any station calling in on completion of roll call. PWP has shifted his QTH to Huntington, Ind. The DVRA provided communication coverage for the Trenton Soap Box Derby, with a group of 10-meter mobiles headed by UPS. The annual SJRA picnic was held on Sept. 7th and proved to be very successful despite threatening weather. The registration again topped the 400 mark, which makes this occasion the largest annual gathering in the section. Plan to attend next year, fellows, and we may turn this into a section hamfest. Traffic: K2BG 202, W2RG 79, ASG 28, ZI 4, SDO 1.

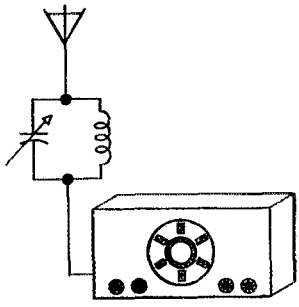
WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — SEC: UTH. RMs: RUF, COU. PAM: GSS. NYS, 3615 kc., 7 and 10 P.M.; 3980 kc., 6:30 P.M. Mon. through Sat., 8:30 A.M. Sun. NYSS 3595 kc., 8 P.M. NYS CD 3509.5 kc., 3970 kc., 9 A.M. Sun. 3QMP, operator at FAV, has been transferred to Alaska by the AF. The NYS 'Phone Net sponsored a basket picnic at Corning, to which NYS c.w. and TCPN were invited. After dinner a tour through the Corning Glass Works was arranged by QLI, after which a meeting was held in the auditorium where the Net Mgr., GSS, presented net certificates to the following W.N.Y. members: UTH, OZR, ROL, ECM, VEP, ABC, TPN, ZRV, UNF, QXS, CYD, QLI, GSS, QAA, SJV, KYJ, THC, BSK, FIX, RJL, RUF, FWQ, and RRK. Picnic Committee consisted of ABC, VEP, and QLI, assisted by YIY, UMJ, DWK, EUQ, VCW, and Bill Hyland. The Cattaraugus County Radio Society has become an ARRL Affiliated Club. RARA v.h.f. group conduct a WAR Nite each month (Worked All Rochester). Contact OWF for details and times to earn a WAR certificate. New officers of RARA are VBH, pres.; TEX, vice-pres.; CZT, secy.; YUE, treas.; QY, PFI, ALL, ICE, VVG, and SNI, executive committee. NYS c.w. now has two sessions, one at 7 P.M. and another at 10 P.M., Sat. at 7 P.M. only. OUJ toured the New England States and worked 10-meter mobile. RPO and UHI vacationed in VE3-Land. Jamestown v.h.f.ers, held a "Beer Fry" at Doc Lincoln's camp on Robin Hill Rd. RPU now is in Snyder on 75-meter mobile. Approximately 80 attended the RARA picnic held in Kerns Grove. ZOL and BTB were observers at Operations Niagara, a c.d. test at Niagara Falls in which amateurs once again demonstrated their coöperation for public service. The Niagara Radio Club picnic was held at PSG's despite heavy dew. KHO lost most of his ham gear when fire destroyed his house. ABC is enlarging the shack in the rear of the garage. TRE moved to Loudenville. WBW is NCS of 10-meter net in Cattaraugus County. YGW is building a Snooper. UTH toured Adirondack and Catskill Mts. and visited 1AW and 1HDQ. RLW is very active in c.d. work. WZQ is going to R.P.I. and heard from SZ. ILI, SCM of Eastern New York, visited SJV. LXE took unto himself a wife. JZW returned to college in Ohio. QIL has a WE357-B running a kw. on s.s.b. JMT dropped the "N" and is on 40- and 80-meter c.w. DVE has an S-43 and RCA mobile rig. MSF is going to Clarkston for E.E. Traffic: W2RUF 233, COU 158, GSS 139, ZRC 128, DJF 58, OE 51, SJV 47, JWU 24, VEP 24, WZQ 20, GRH 11, RJJ 8. K2DG 5, W2KEL 3, ZHU 3.

WESTERN PENNSYLVANIA — SCM Ernest J. Hlinsky, W3KWL — New appointee is LXE as ORS and OPS. From around the section LXE reports his Collins KW-1 is paying off in leaps and bounds and he received DXCC Award No. 1565. OFI reports from Ft. Belvoir, Va., where he is an employee of RCA. RLP is reported as radio officer aboard the *African Enterprise*. UVD reports that LEJ lives in Indiana, KQU will be moving to Philadelphia, and GRZ is moving to Uniontown. The Erie gang held a big hamfest on the *Showboat* at Lake LeBoeuf on Sept. 13th. QPP does a wonderful job in keeping the Erie gang posted on the ARRL happenings each month by his Amateur News publications in his local paper. Congrats to TMK on the new arrival. The Emergency Trailer now is sporting a new TBS transmitter. TFX now is in Alaska. SER has his Gonset installed and now is waiting for his Elmac. KVB's new tower is the talk of all Erie. QN, Erie County EC, reports that there are 25 AREC members, 4 supporting, 6 mobile, and 2 Assistant ECs. Down Pittsburgh way, SVU graduated from Novice to General Class. NKM is going hot on his two-element 20-meter beam. DNO took a sneak peek at the old gang. The WPEN Fall Hamfest was held Sept. 7th. Officers of WPEN are QPQ, AQK, NXU, and LAT. Down Altoona way POP has an effective Zepp antenna. LIV is hospitalized with a broken foot. A suggestion to all club secretaries and editors: Your monthly club bulletins are wonderful; however, it is suggested that you try to use the amateurs' call letters as much as possible to identify each individual. Your SCM would appreciate hearing from anyone using p.p. 4-125A on 2 meters, successfully and without TVI. Traffic: (Aug.) W3UHN 15. (July) W3NCD 22. (June) W3NCD 54.

CENTRAL DIVISION

ILLINOIS — SCM, H. F. Lund, W9KQL — Section Nets: ILN (c.w.) 3515 kc.; IEN ('phone) 3940 kc. SEC: QLZ. Asst. SEC: HPG. RM: BUK. PAM: UQT. The Starved Rock Club, in coöperation with the Red Cross, furnished mobiles and control station at LaSalle Centennial Parade; several minor casualties were kept minor by prompt dispatching of ambulance service along the route of march. QBH is active on 144-Mc. f.m. nets. EVJ has changed QTH and soon expects to be active from Pittsfield. Help! Help! More stations are needed on ILN, especially down State. Your QNI will be appreciated at 7 P.M. on 3515 kc. GBT

(Continued on page 72)



INQUIRIES have been received from time to time, asking what to do about local broadcast stations showing up on frequencies other than the frequency they are supposed to be using. The most frequent complaint appears to be their presence on a range of about 2 to 4 megacycles.

This problem exists because the method used to improve reception of broadcast stations, at least as far as reception in centers of population is concerned, is applied at the wrong end of the system. Apparently, it is cheaper for the broadcast station to buy a 50 KW final stage than for each set-owner to buy twenty feet of wire. So, we have super-power broadcast stations building up field-strength levels to produce satisfactory reception on receivers using midget loop antennas. But then, if you look at it from the point of view of automobile receiver reception, maybe the job is done at the right end as there is a limit to the size of whip that can be waved around on a car. (Or is there?)

Reception of strong local broadcast stations on the wrong frequency is usually due to one of two things. The first possibility, which is fairly uncommon, can be the fact that the station is radiating appreciable energy on a harmonic of its proper frequency. This is easily checked as such radiation takes place on a multiple of the proper frequency of the station. There is nothing that can be done at the receiver to eliminate this signal if its frequency happens to coincide with that of a desired signal. It must be eliminated at the source. Only this Fall, a new broadcast station near Boston was putting sweet music into the 75 meter phone bands. After several complaints by 75 meter hams had been received, it was found that the antenna tuning was incorrect. Retuning eliminated the trouble completely.

The second possibility, which is the usual one, is caused by sufficient signal voltage from the broadcast station getting into the R.F. amplifier and first mixer tubes of the receiver in spite of the selectivity of the R.F. tuned circuits to swing the grids of these tubes beyond the linear portion of their characteristic curves and causing them to rectify or mix. When this happens, the program material or modulation is taken off of all signals being received and put back again, en masse, onto all carriers. The result can be quite dismaying. The more sensitive the receiver, and the larger the antenna, the worse the effect will be. Some relief can be had by using the shortest antenna that is suitable, possibly adding a toggle switch in series with the antenna a few feet from the receiver, similar to the Local-Distant switch used back in the early broadcast receiver days. If the effect is strong, then a "wave-trap," i.e., a tuned circuit, can be placed in series with the antenna, close to the antenna post. This trap is then tuned to the frequency of the unwanted broadcast station so that the unwanted signal does not get into the receiver. A reasonably high C (500 mfd), and high Q coils should be used.

DONALD SWAIN, *Service Manager*

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(*Continued from page 68*)

has a new 144-Mc. rig with 2E26s in p.p. and a VFO. This should keep TVI to a minimum. NQK wants information on how to get more watts out of a TBS-50 on 144 Mc. so he does not have to work MBI crossband. ECP, with a new crystal-controlled converter, is working on a tuneable i.f. companion unit. BA, DJG, and AIU were in charge of communications for a second simulated disaster drill for the fire departments in Madison and St. Clair Counties. KTH and MDB are vacationing and mobiling in New York. KMO reports delivering the first message from Korea. PTZ/MM was heard and worked on his return from the Chicago-Mackinac Race. ACZ got the first edition of the new IEN paper off to a good start. IFA is going good north and south on 144 Mc.; 5RCI and ØOAC are his best DX to date. 4MXU/9 is new ORS at Scott AFB. MBI worked 28 different stations on 144 Mc. in four days, including Nebraska as a new state. Watch the expiration dates on your League appointments. This column can be made longer if you will send those news items to me; deadline date is the 7th of each month. Traffic: (Aug.) W9YIX 261, CSW 170, LGR 145, KMO 61, SXL 15, W4MXU/9 13, W9QBH 11, YTV 8, KA 7, DOR 2. (July) W9KMO 16, STZ 3.

INDIANA — SCM, Clifford C. McGuyer, W9DGA — TT's son is WN9UQP. VJX is new EC for Randolph County. YWE and OXM are increasing their power on 75-meter 'phone. KDV has new mobile rig. NZZ still is handling the Arctic traffic. BFW has a new shack and works 40 meters in the wee hours. KVE lost his antenna to the wind. JBQ reports RFN traffic for August as 19. OWZ made 33 contacts in his first month of operation. Former Novices OGZ, OHA, and OWZ now hold General Class licenses. YZJ, of Auburn, is listed among the Silent Keys. INU mobiled to Minnesota. GUX is back on 75-meter 'phone. LQE is very active as OBS. DHJ reports that 45 stations are active on 2 meters in the Crown Point Area, and that he has held the same call and QTH now for 30 years. WN9TOF is new in Hebron. KCP has moved to California. CZO is in the novelty manufacturing business as well as holding appointment as EC for Decatur and Shelby Counties. KLR has worked 7 states on 2 meters, his best DX is 430 miles. KVE and MOH vacationed in California. KDV spent lots of time this summer working about his house and yard. YWE received 9RN Net certificate. New members of RFN include OLX, PPD, STW, and MIO. VGD has worked 11 states on 2 meters. Anyone interested in 420 Mc. should contact VGD. UIA states this has been the worst summer yet for 6 meters; he worked only 15 states when normally he works better than 35. IRC had a boat trip on Lake Michigan through the courtesy of CYQ. WN9SWR is new in Brownsburg. KOY held open house for amateurs. IRC reports 416 contacts made on Field Day. JUJ and TKO are moving into their new home. TT grinds crystals for new QIN Net members. PEX is the new secretary of the Elkhart Amateur Radio Club, with FSA the activities manager. VNV took time out to paint his house. KRJ uses a four-element delta-matched beam for 2 meters. BKJ reports IFN traffic as 84. ZIB and MWM are working on TVI reduction. TT, JUJ, and NZZ make BPL for August. JUJ reports QIN traffic for August as 441. LXW joined the Indiana State Police and is stationed at Jasper. QLW put his antenna in a high tree. WN9UHY works 80 meters. DKV farms 400 acres with his brother and attends Hanover College. JTU mobiled to Colorado. SWN is a papa. Traffic: (Aug.) W9JUJ 2061, TT 524, NZZ 418, YWE 303, BKJ 141, PMT 124, LZI 84, JBQ 68, FZW 56, TG 53, HSC 42, DHJ 41, DKR 35, QLW 34, DOK 32, NTA 30, WBA 30, ZIB 22, KRJ 20, CMT 15, VNV 15, KDV 13, DGA 11, KLR 10, BDP 8, FSA 2, WN9UHY 2, W9YVS 2, OWZ 1. (July) W9KDV 38, JZB 10.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAM: ESJ. RMs: IQW, SFL. C.W. Net (WIN) 7 P.M. daily, 3625 kc. 'Phone Net (BEN) 6 P.M. daily, 3950 kc. State Mobile emergency and c.d. frequency: 29,620 kc. Net certificates (BEN) have been issued to HWX, CWK, LSH, GTB, IAP, KPG, WHX, and ZGW. New appointments: SFL as RM and Asst. WIN Net Mgr.; CXY as ORS. Appointment renewals: IQW as RM, IVE and GJY as EC. IQW again will be at the helm as WIN Net Mgr., with the able help of SFL as Asst. Net Mgr. CBE is installing mobile in his car. New at Cochrane is WN9SQM and SQM (Technician), who has a TBS-50 and an SX-42. We regret to report OCA as a Silent Key. Don was one of the outstanding 6-meter operators in the section, and one of the very few to have made WAS on 50 Mc. Under the direction of FDX, MRAC has initiated an excellent year-'round achievement program and award. Milwaukee mobiles again turned in an excellent job of handling the Sports Car Races at Elkhart Lake, Sept. 7th. PBA and PBB graduated from the Novice ranks and can be heard minus the "N." On 144 Mc. the boys had "open house" the past month: LEE added Missouri, Kansas, Michigan, South Dakota, Mississippi, Tennessee, and Virginia to bring his states worked up to 13, plus a VE3. DSP managed to work 24 new stations on the Aug. 23–24 opening. Although JBF was out of town that week end, he did manage to catch the Sept. 7 opening to add Michigan, Tennessee, Iowa, Missouri, Kansas, and Mississippi for a total of 10 states. WN9TTP, Rib Lake, will be on with a 522 soon. FAN caught the Aug. 24–25 opening to Iowa, Kansas, and Nebraska. DDG is making a thirty-element beam. WN9SOH added rotator to his beam. BIH, just returned from Korea, is new at Racine. All ECs are requested to send their reports to OVO on the 1st of each month. Monthly reports from all other appointees should be directed to me, also on the 1st. Traffic: W9ESJ 18, CXY 60, SFL 38, IFS 24, IQW 21, FCF 15, CFP 12, DR 12, CBE 8, FXA 8, RQM 4, OVO 2.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Everett E. Hill, WØVKP — Now is the time for you to tune up that rig on a net frequency. While you are at it, send in your name to me if interested in appointments. We need many more appointees as EC, ORS, and OPS. Your SCM now is available for your club meetings to give you the dope on ARRL and activities pertaining thereto. Just let me know about two weeks ahead of time. All clubs are requested to register with your SCM. Traffic held up in good shape during the summer, with DBN at Boy Scout Camp on 75 meters. He was the only means of communication out of the camp. ECG is now 15 dollars poorer. Speeding in Fargo cost him the new tube. The Forks Club is busy building a kw. GZD is swapping parts like mad. Traffic reports should be sent in by mail or radio by the 7th of the month. Traffic for summer months: WØCGM 10, DBN 53, EFJ 8, SWB 92, SWB 70, DBN 226, JVP 359, EFJ 8, SKE 7, DBN 6, UBB 40.

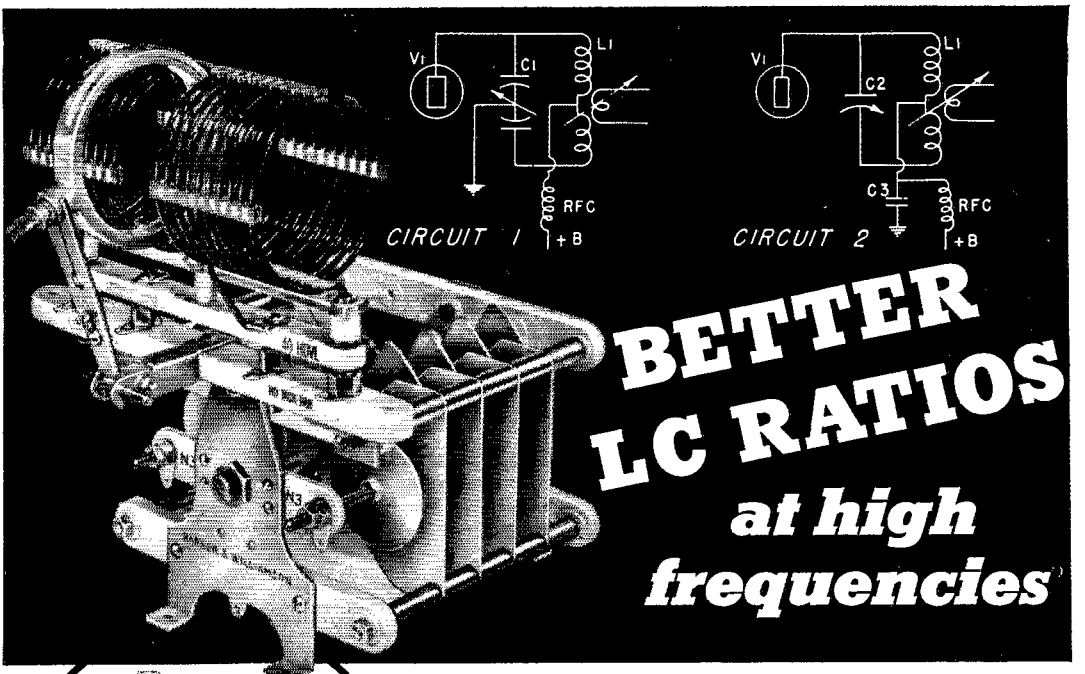
SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — SEC: GCP. RM: OLB. EQP. Mitchell, is attending Augustana College. OLB has announced resumption of the c.w. net at 1900 CST, Mon., Wed., and Fri., 3615 kc., with NCS duties divided between himself, EHO, and CSB. He would like to have others volunteer for the job. TI, Milbank, now is operating 160-meter mobile. New calls at Sioux Falls are KVA and KVB. WNØKYO, Yankton, 12 years old, is believed to be the State's youngest ham. WNØKYA also is new at Yankton. PHR, JLI, and RRN visited the Prairie Dog ARC, Vermillion. BJH has ironed the last bugs out of his Viking — a dead mike and an unwired key being the trouble. New ORS is ISWX/Ø, Rapid City. He also is chief operator of KØFAL, and never fails to send in a monthly report. With activities increasing, how about reports from all sections of the State? Traffic: WØEHO 38, PHR 6.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Jean Walter, ØKYE. SEC: BOL. RM: RPT. The Minnesota Novices now have a net on 3708 kc. known as the Minnesota Junior Net. Everyone is invited to check into this net which meets Wed. at 5:00 P.M. and Sat. and Sun. at 3:00 P.M. HFY and HUV are Net Controls. ITQ is doing a big job with the Tenth Regional Net. AIH has been handling traffic from HZ1AR and KL7AIR. WQM now is using a Viking I and has Balun coils for a line balancer. KJZ and KMP are new hams from St. Paul. We had a total of 93 hams who joined the Royal Order of the Wouff Hong at the Mid-American ARRL Convention held in Minneapolis. IXR can now operate his rig and watch TV at the same time. JNC is getting his rig all set for winter activities. DYD has a BC-458 VFO on 40 meters. We are trying to get the 80-meter c.w. net on a par with or even better than it was a few years ago, so we invite everyone to check into this net on 3795 kc. at 7:00 P.M. EBD, KGW, and IYP plan on v.h.f. 'phone operation. IJO now is a corporal in the Minnesota State Guard. ITF has a new 32V-3 Collins rig. HKF won a National 183-D receiver and WEF won a Morrow converter at the Convention. HKF deserves this receiver for all the equipment that he has built and all the time and effort that he has contributed to emergency work. ANU blew a modulation transformer on his Johnson I. WQM is EC at Hillman. Bob loves traffic-handling so well that he has put up signs in his neighborhood soliciting messages that he can handle. Let's all join the Emergency Corps by contacting BOL, 1130 Delaware, St. Paul. Traffic: WØITQ 325, DQL 154, UCV 98, HFY 65, OHU 32, MXC 23, WQM 18, DYD 15, AIH 14, RXL 13, IYP 9, JNC 8.

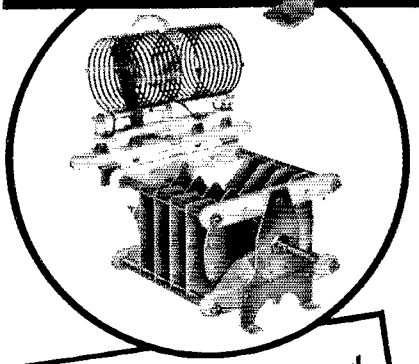
DELTA DIVISION

ARKANSAS — SCM, Fred Ward, W5LUX — The OZK Net opened its new season Sept. 8th. The frequency is 3695 kc., the time 1900 CST. All traffic men are urged to help out this year. MU, BXN, and TOE are working 40-meter mobile. ISX is a new ham at Salem. ULA has new Advanced Class ticket. RDT and RYM are active on 10 meters and would like to get a 10-meter net started in Arkansas. RDT is new EC for Green Forest and he and LUX are pooling equipment for a portable station to be used in emergencies in the area. WEE has a new Johnson rig. RWJ licked the Indians and is busy putting mobile in the new car. VTZ is a new ham in Jonesboro, and WRT is a new call at Harrisburg. OXR has a new rig but the college professors seem to keep him busy at night. DRW has got out the old bug and is ready for a big traffic season. If you are not in one of the nets, they will be glad to have you. Outlets are needed all over the section. Anyone interested in Official Observer appointment, Class III or IV, please contact the SCM. Thanks for the reports, gang, and keep them coming. Traffic: W5FA 23, LHN 9, LUX 4.

LOUISIANA — SCM, Robert E. Barr, W5GHF —
(*Continued on page 74*)



BETTER LC RATIOS *at high frequencies*



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Using B&W capacitors and coils with either fixed or variable center links in a split-circuit arrangement as shown above, effective tube capacity is reduced 75%, while circulating current and coil losses are cut to a minimum. All beam power tubes from an 807 up may be used in this manner with smaller losses, greater output and ease of operation.

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These popular B&W units are featured by leading distributors. See them today—or write for Catalog and Bulletin 547.

Other features of B&W integral coil-condenser combinations are:

- Greater coupling efficiency.
- Easily mounted Faraday Shielded Links.
- Short R-F paths.
- Simplified conversion to push-pull.
- Compactness with a minimum of leads.

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B&W

(*Continued from page 72*)

Hats off to UXE, 13 years of age, of New Orleans. Pete was a rapid graduate from the Novice ranks to a full-fledged General Class licensee, and plans to operate 28.5-Mc. 'phone and 7-Mc. c.w. this winter as well as 3.5 Mc. Louisiana hams welcome the news that LXX/LDH, Phil Stipakoff, is steadily improving after being stricken with poliomyelitis on June 25th, and expects to leave the hospital in the early fall. FMO sends an FB report of activity as OO, and invites hams to call on him for accurate frequency checks. VRA now is a regular on the low end of the 3.8–4-Mc. 'phone band. The Pelican Net now is entering its 6th year of continuous operation. All c.w. operators wishing to take part in 80- and 40-meter traffic during the winter should write the Route Manager, NG, for net schedules. 3870 kc. continues to be the Louisiana 75-meter 'phone frequency, and is a good spot to find your traffic inlet, as there usually is some station in the State monitoring each evening, with a regular net schedule Thurs. at 7:30 P.M.

MISSISSIPPI — SCM, Norman B. Feehan, W5JHS — We regret very much to report that FPZ was accidentally electrocuted at his rig recently. Election results of the Keesler Club: TUO, pres.; FZK, vice-pres.; WNØKEH, secy.-treas.; TVI, act. mgr. New officers of the Hattiesburg Club are TIW, pres.; UTK, vice-pres.; FGE, secy. MUG's new QTH is Biloxi. TAK's new QTH is Jackson. UTK has graduated from Novice to General Class. JJA is on 75 meters with 500 watts. BEV works 75 and 20 meters. Your SCM now is Advanced Class and is on with 500 watts. VCV has a new Viking and works 40- and 20-meter c.w. and 10-meter 'phone. WN5WQQ is a new Novice at Columbus. 9OSO/5 now is mobile on 75 meters. RIM is doing a very fine job with his MARS Net in the State. The Hurricane Net meets daily on 3935 kc. at 6:15 and will take your traffic. Traffic: (Aug.) K5FBB 246, W5RIM 121, KYC 54, W9OSO/5 51, W5JHS 29. (July) W5RIM 42.

TENNESSEE — SCM, Mark M. Bowelle, W4CXY — SEC: AEE. RM: AGC. PAM: PFP, FLW, our leading OES, has decided to give the c.w. net a whirl this season and his QNI will be welcomed by the RM. The c.w. net is back on winter schedule at 1900 CST daily except Sun. on 3635 kc. PFP has an average of 40 QNI on the 3980-kc. Tennessee 'phone net at 1900 CST Tues. and Thurs. and at 0800 CST Sun. By the way, John set a new record by making BPL this month, a feat that no other Tennessee 'phone station has ever attained before, according to the best information the SCM can gather. IIB still is going strong on MARS, as well as TPN and the Tennessee net, although he says each month that he must slow down. Well, Verne, your health comes first but we sure can use that FB signal of yours as long as you see fit to stay with us. PMR has entered ETSC and is looking forward to an E.E. degree four years hence. RMJ again is jumping back and forth from the c.w. to the 'phone net as an interchange station and in his spare time he operates 75-, 20-, and 10-meter mobile. Traffic: W4PFP 605, IIB 118, RMJ 18, AEE 13, CXY 13, FLW 6, PMR 4, FEB 3, NDC 1.

GREAT LAKES DIVISION

KENTUCKY — SCM, I. W. Lyle, Jr., W4KKG — TAV says there is not much activity but her traffic total doesn't bear out that statement! TZT graduated from the Novice ranks. WBG has a new kw. job on 10 and 20 meters. KZF has separate r.f. sections for all bands. This and his new shack must be something to see. BAZ has resigned as EC for Louisville and Jefferson County because of the press of business and MFI has been appointed to the office. See Russ and sign up for AREC. CDA is getting his outfit ready for the season. SZL got his Advanced Class license and has new half-gallon rig pouring on the coal. UWA, down Topkinsville way, fires in a nice report. Keep 'em coming, All MWX, our RM, calls on all those who have a spare night to report in to the KYN, 3600 kc., at 7:00 P.M. CST, Mon. through Sat. High speed or low speed you are welcome. When you read this you will have only two more months to get your nomination filed for SCM. Get busy now and get it in to Headquarters. MGT got a new TV set and we haven't heard from him since then. Hi! CNE and FR handle Louisville traffic for KYN. MDB is back from Portugal with some beautiful color shots. KKG spent some time in Birmingham on microwave work and met a flock of Alabama hams. Their rigs also were gathering dust because of the extremely hot summer. Traffic: K4WBG 388, W4TAV 271, MWX 115, UWA 21, CDA 11, KKG 8, SZL 5.

MICHIGAN — SCM, Norman C. MacPhail, W8DLZ — Asst. SCMs: J. R. Beljan, 8SCW; R. B. Cooper, 8AQA; M. C. Wills, 8CPB. SEC: GJH. RMs: YKC, ELW, UKV. PAM: UTH. The Grand Rapids gang reports the Muskegon picnic was tops again. Those boys really do a bang-up job every year. RJC, QRT for two months during the summer, is back in business on QMN, QIN, 8RN, and many others. DAP is looking for a "skyhook" to help him erect his new 40-ft. steel tower. GNS was elected NCS of the UP Net at the annual UP picnic. ZLK and EGI report they are back in harness and rarin' to go after a summer layoff. FX is experimenting on antenna tuners and making plans to attend the Minneapolis Convention. 3UGF, ex-8YNY, now is living in Washington, D. C., and will be active on all bands with a Viking. Wil is cocking an ear for Michigan CQs. ZEE reports the UP gang did a great job covering the boat races on Trout Lake on Labor Day. SWF says he has been down for three weeks because of too much moisture in the shack! Whady'a mean, George — schnapps, ditch water, or humidity? NQ speaks for many of us when he says; "Too many summer activities — no time left for radio." EEF is battling rectifier hash in his mobile rig. QAM got rid of his, Norm. He sold his rig! EGI reports BMH is leaving Lansing for Detroit on a permanent change of QTH; also KMR and KWO are new Novice calls in Lansing. EXZ has been a camp counsellor all summer, but found time to take and pass his Advanced Class exam. We understand the natives at Torch Lake still are trying to figure out what was going on around CTC's vacation camp when HM and a few others were there helping Jimmy grow antennas. Traffic: (Aug.) W8NZZ 397, ELW 240, RJC 205, ILP 94, QBO 72, FBV 65, NOH 59, DAP 55, JYJ 32, SPF 30, RTN 27, AQA 26, GNS 20, IV 18, TBP 14, WVL 14, EGI 13, QGZ 13, LR 12, ZLK 10, GJB 9, FX 8, DLZ 7, EEF 4, TQP 2. (July) W8YIN 90, COW 29, GNS 24, FFG 11, RTN 11, AHV 10, EEF 5, URM 4, EGI 1. (June) W8EEF 4.

OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: C. D. Hall, 8PUN, and J. Erickson, 8DAE. SEC: UPB. PAM: PUN. RMs: DAE and PMJ. New appointees are APF and YQW as ECs; JWS as OES. We welcome a newcomer to the section, 2LMB, who shortly will become an OPS. NGW, former QSL Manager, now at Camp Polk, has a 50-watt mobile on 20-meter 'phone. Walt says that FAI and FKG are headed overseas. ARO, our most consistent traffic man, is specializing in G. I. messages. FYO was laid up in a Dayton hospital. Our SEC, UPB, again must be congratulated upon the fine work he's doing. Carty barely has time for meals these days. Bouquets to the BN on its 100 per cent schedule maintenance throughout this hottest of summers. BF recently returned from a trip to the West Coast. ZJM has a new 20-meter beam. ET has resigned from the CACARC because of the pressure of social activities. The Case Tech. Radio Club has a crystal-controlled rig for Novice members. LBH has set up a station for Novice KZS, his neighbor. PEN is back on 7 Mc. KL7AGP, of Xenia, is at T-3, an ice island, near the North Pole. 8RN, under NCS DSX, has been active throughout the summer. The Michigan boys have had better representation than the lads in this section. ZSL6LA, son of ZS6TC, visited the CWA meeting of Aug. 29th. We notice that HQK is editing the 2-meter column of *Mike and Key*. The CARA's *Carascope* states that HOK has acquired a new daughter and a new mobile set-up; FYW has an Eimac mobile transmitter; and the 2-meter gang is going strong with about ten members in the fold. The *Q-5* out of Springfield relates the following: The club furnished radio communications for the annual golf tournament at the Springfield Country Club; BMC, DCJ, and WAU are going mobile, thereby joining EQN, who for two years was the sole member with a mobile rig; and BLN had charge of the Sept. 20th and 21st V.H.F. Contest Outing. Traffic: W8ARO 352, FYO 193, UPB 167, DAE 84, EQN 26, W2LMB/8 25, W8JUJ 10, RN 8, WE 6, GZ 4, DZO 2, ZJM 2, DAD 1, ET 1.

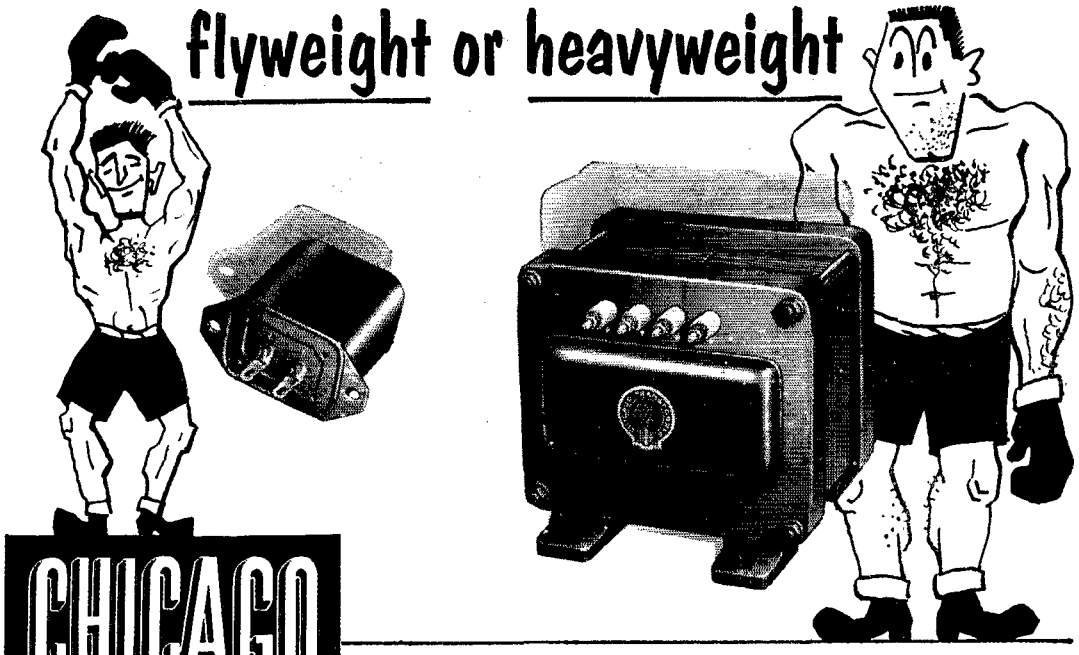
HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — RMs: TYC, KBT. PAMs: IJG, K2CA. IVS has returned to New York City after a short vacation at Camp Woodland in Phoenicia. KN2AYM (14 years old) is the youngest licensed amateur in the RVWARS. K2AVN is c.d. station at the Court House in Catskill. Our congrats go to ESL and JJP; the new arrival is named Kathy. JKJ is active on 14 Mc. FVP, EYG, and KHQ are active on 1.8 Mc. KHQ is using a Lettine 240. Despite the rain RVWARS members had an FB turnout at their annual picnic. TYE enjoyed a short vacation in Port Jervis and New York City and has returned to Union College for his senior year. VDX is in Korea. 1DWO and TUD visited HH while on vacation. AARA now is incorporated and the new year book supplied by JQI is off the press. Many thanks, Harry, for an outstanding job. RMM, APF, and GM have returned from a fishing trip in Canada. RMM claims that the fish were so big that he had to saw them in half in an effort to get them in the boat. HEI has installed a 'scope for modulation monitoring and is waiting for a new BC-348. EFU is the new Zone 4 Coördinator. KN2BDJ is a new Novice and is very active in Scotia. MHE/2 represented the IBM Radio Club in the V.H.F. Contest. NYS meets on 3615 kc. at 7 P.M.; NYSS on 3595 kc. at 8 P.M. daily; NYS 'Phone Net on 3980 kc. at 6:30 P.M. daily and Sunday at 8:30 A.M. Your membership in the AREC is very important. If you have not registered, contact your EC or the SCM now. Many new Official Observers are urgently needed. A note to the SCM will bring full details. Appointments: AFI as OO, MHE as OPS. Traffic: (Aug.) W2IVS/2 167, LRW 117, TYC 65, ILI 57, EFU 18, APH 10, HEI 5. (July) K2CA 114, W2PHO 37, KBT 18. (June) W2KBT 12.

NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, jr., W2OBU — Asst. SCM: Harry Dannals, 2TUK. SEC: KTF. RM: TUK. PAM: YBT. The summer season is over and from all reports our clubs, Emergency Corps, 'phone and c.w. nets appear to be in a healthy state and it promises to be a very active fall and winter

(*Continued on page 76*)

flyweight or heavyweight



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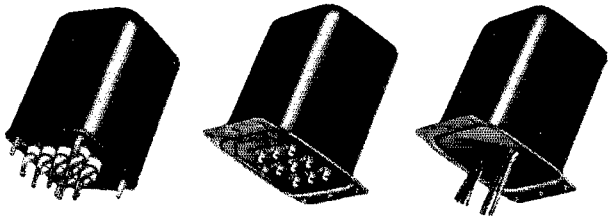

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(Continued from page 74)

season. Your SCM will be glad to help anyone who is interested join a local club or an emergency/civil defense, slow-speed, c.w. or 'phone net if you will contact him on the air or by mail. Appointments in all levels are available and can be obtained by writing the SCM. The AREC now boasts a membership of 373 and an increase monthly during the fall will approach the 500 mark if the trend continues. There are now 162 Official Mobile Units participating in our AREC and this number also is on the increase. Preparations are in full swing for the Northeastern States C.D. Drill that will put into action all the emergency facilities we can muster. IVX, Brookhaven Township EC, reports that two c.d. stations have been set up at the Police Headquarters and at the Brookhaven Labs, with c.d. drills held Sundays contacting mobiles on 50.4 Mc. The NLI Traffic Net has resumed full season schedules, meeting Mon. through Fri. at 1930 local time on 3630 kc., with GXC, VNJ, LPJ, JBQ, and IVS as Net Control Stations. Contact TUK, the RM for the net, on how to join up. The Lake Success, Mid-Island, and Nassau Clubs combined with civil defense authorities to put on a bang-up display and demonstration at the Mineola Fair, where the entire c.d. booth brought down from the New York State Fair at Syracuse was the scene of a complete station set-up operated as during an emergency. It was one of the hit exhibits of the Fair. The Columbia University Amateur Radio Club is conducting a Novice net and information can be secured by contacting AEE, the club station, or by writing JXM. IAC notes flying saucer reports coincide with band openings. Hi. PF put on ROWH initiation at the Hudson Division Convention. JBQ is changing QTH to Nassau County. LGK says he would like to find another NLI OPS on 10 or 2 meters in CD Parties. OJX is the proud father of a 7-lb. girl. TUK spent a day of vacation with the FCC and came up with the Extra Class license. MQB has been transferred to Maine and transferred his ORS to that section. IXE got his Extra Class license and had his call changed to K2DZ. The New York Club presented Capt. Carlsen, ZXM, with a membership card showing an expiration date of June, 2052. KHJ sweated out a Code Proficiency run and came up with a 35-w.p.m. certificate. What c.w. man in Nassau had his picture taken with a WAC 'phone certificate over his head? ZUC has gone Maritime Mobile in his new sailboat. BHJ is looking for afternoon contacts on 2 meters. AOD changed final from 832A to an AX9903A and is looking for more 420-Mc. contacts. DZK attends Adelphi College and QNIs into the NLI Traffic Net between classes. He took his mobile, with 16-foot whip, to Atlantic City and caused more excitement than the Miss America Pageant. KN2ASN, ANX, and AXL are new calls in Huntington, all the product of WLQ's tutoring. Traffic: W2AEE 277, VNJ 246, GXC 217, EC 153, BZD/MM 123, OBU 63, JZX 40, PF 26, JBQ 25, CSO 16, OJX 7, EEY 6, WL 1.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — Asst. SCM, Donald V. Reid, 2FMG. SEC: NKD. Until Feb. 1st IEW will be fixed portable in Bethlehem, Pa. CCS complains that his vacation put a big hole in his traffic report. NIY received his ORS certificate and is active in the Jersey Net. K2BCK, ex-KH6ADY/2, has a new antenna and hopes to go places with it. JKH repaired his 20-meter rotary, painted, tuned, and replaced it. GFW passed the amateur Extra Class exam. EWZ is putting finishing touches on his attic as a new operating room. GVZ received his new OO certificate. Westwood C.D. station now is on the air on 29.510 Mc. in the Bergen County Net Wednesday nights using the call CCS. The Garden State Amateur Radio Assn. held a picnic Sept. 7th at McGuiers Grove. The GSARA rig at Red Cross emergency headquarters tested on 5-kw. emergency power system and appears ready for emergency duty. The Metropolitan District Civil Defense Emergency Coördinators held a meeting at the Newark Armory Aug. 27th and discussed plans and operations for future emergency operations and the State test of Sept. 27-28. The following were in attendance: VQR, FMG, NUI, LEG, ZXA, IIN, YJC, LOB, NUL, CUF, ZBY, and NKD. EAS still is operating 75-meter s.s.b. 'phone, voice break-in, and recommends it highly. He also works NJN on 3695 kc. and skeds RU on 3690 kc. CUI skeds NJN on 3695 kc. at 7:00 P.M. nightly and NJCD Net Tuesdays at 7:45 P.M. on 3505.5 kc., N. Y. State Net and 2RN 6:30-8:45 on 3690 kc. JCN became a Novice July 17, 1951, General Class Aug. 7, 1951, and Class A Aug. 18, 1952. He is interested in joining N. J. Nets, c.d. traffic and skeds and operates all bands with folded dipoles and 150 watts out from an 812 with a pair of 807 modulators. He hails from Landing, near the north shore of Lake Hopatcong. TPJ, Official Observer, has been logging second-harmonic discrepancies. EKU reports the following from the Raritan Valley Radio Club, Inc.: UK now is on 2 meters daily. IAT spends sleepless nights worrying about RVRC funds. John is treasurer. WN2FQD plans to take his General Class exam. COG continues active on c.w. bands. LFI opened a new TV store. Ex-FBZ let his ticket lapse but feels better about it since he saw a newspaper picture of the good-looking YL now using it. Tony promises to take the exam again. A trio of old-timers are back on the air on 2 meters and working each other after a lapse of a quarter of a century. They are K2DI, CMK, and WR, the latter N.N.J. SCM about 1926.

(Continued on page 78)

IT'S NEW!
THE JOHNSON **Viking II** TRANSMITTER KIT

Greater Power — TVI Suppressed

240-102 VIKING II TRANSMITTER KIT, COMPLETE WITH TUBES, LESS CRYSTALS, KEY AND MIKE
AMATEUR NET **$279.50**

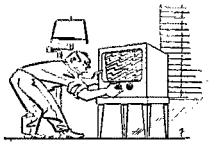
ADDITIONAL FEATURES

- Amateur Bands—10 to 160 Meters
- 100% Amplitude Modulation
- VFO Input Provision
- Dual Power Supplies
- Self Contained—No Plug-in Coils
- Pi-Network Coupling Output Amplifier
- 135 Watts Phone Input
- 180 Watts CW Input
- Instant Bandswitching

The transmitter kit you've waited for! The JOHNSON Viking II, successor to the Viking I, and the most complete transmitter kit on the market. The Viking II is an expertly designed transmitter, furnished unassembled but complete to the last detail. Includes all necessary parts, hardware, tubes, wiring harness, and cabinet. Assembly manual contains detailed photos, drawings, and *step-by-step* instructions. All amateur bands from 10 to 160 meters, 100 watts phone output, 130 watts CW.

RF section: 6AU6 oscillator, 6AQ5 buffer/doubler, parallel 6146 final amplifier. Modulator: 6AU6 voltage amplifier, 6AU6 driver, pp 807's class AB2, 6AL5 bias rectifier. Full excitation delivered to the final amplifier on all frequencies. Continuous tuning pi-network amplifier matches a wide range of antenna impedences. All stages metered, dual power supplies designed for economy and operating convenience.

For novice operation, the final amplifier input may be reduced to 75 watts—no transmitter modification is required.

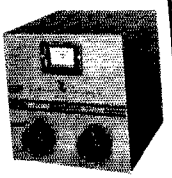


TVI SUPPRESSION MEASURES . . .

The Viking II is enclosed in a heavily copper plated, steel cabinet; perforated top and bottom. Lid bonded with silver plated, phosphor bronze contact fingers. Special shields for meter, dial window, and VFO power socket. Filters at: keying jack, microphone connector, VFO power receptacle, power cord, and antenna relay connector.

VIKING VFO KIT

The JOHNSON VFO kit is accurately calibrated for all amateur bands from 10 to 160 meters. Stability is excellent, assured by rigid construction and temperature compensated ceramic padders. Vernier tuning, clean keying, and perfect "break-in" on all bands. Assembly is simple. Kit complete, less tubes.



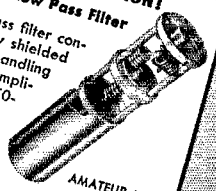
240-122 VIKING VFO KIT
AMATEUR NET **$42.75**

INCREASED HARMONIC ATTENUATION!

Johnson 250-20 Low Pass Filter

The JOHNSON low pass filter consists of four individually shielded sections. Capable of handling more than 1000 watts amplitude modulated RF, the 250-20 can provide an additional 75 db harmonic attenuation in the antenna circuit.

SO-239 coaxial connectors, completely assembled and pre-tuned.



AMATEUR NET **$16.50**

The Viking II is also available wired and tested at nominal cost. Write for free booklet 714, describing the Viking II in detail.

E. F. JOHNSON COMPANY

CAPACITORS, INDUCTORS, SOCKETS, INSULATORS, PLUGS, JACKS, DIALS, AND PILOT LIGHTS

210 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

BJU recently got married. QOB now is located in New Brunswick. GVZ, OO, reports ten violation notices sent out. WCL is doing a fine job as RM. A state-wide meeting of all civil defense radio coördinators was held Sept. 12th at the Newark Armory. Issuance of RACES station authorizations was discussed. Traffic: W2CCS 161, CUI 146, EAS 85, GVZ 8, CJX 6, FMG 4, JCM 4, K2BCK 3, W2NIY 2.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — The Corn Belt Ham Club held its annual picnic Aug. 10th at Lost Island State Park at Ruthven attended by 43 licensed hams and their wives and families. An election of officers was held with the following results: GEL, pres.; FKB, vice-pres.; DDU (YL) secy.-treas. The Club meets on the air each Sunday on 160 meters. It is with regret that I must report in Silent Keys the name of Richard O. Spry, DFE. He was one of our younger hams. His death was caused by an auto accident. BVE reports that he got on 'phone but could take it for only a couple of days. SCA's eleven days of vacation almost cost him his BPL but he squeezed in 509 to make it. BBZ went back to the University and will be going to the classes in Omaha this year. FTF left radio station WOC to join the sales department of Lew Bonn in Minneapolis. QVA reports there is not much news this month. BBZ has a factory overhaul on his 240-D. A new member of TLCN is DIT, of Cherokee. New hams in Waterloo are LAV and KVG. IZH is back home after a tour of Navy duty in Alaska. OPK reports he's putting out the Official Bulletins as received and off a new antenna. With vacation time coming to a close, reporting to your SCM should become a habit again so let's have the news, fellows. Traffic: WØSCA 509, BVE 400, BDR 351, BBZ 55, QVA 40, NYX 14, PZO 12, DIB 8, OPK 5.

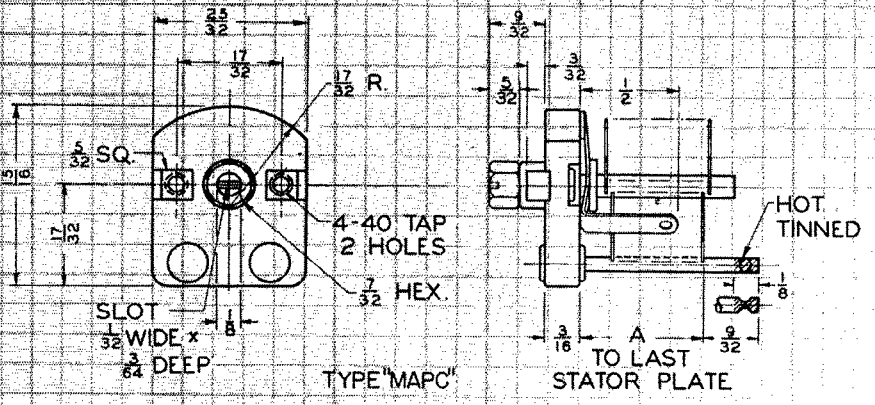
KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. RM: FDJ. PAM: HEC. Congratulations to the Hi Plains Amateur Radio Club, which recently became an ARRL Affiliated Club. We met a number of the club members at the Kansas-Nebraska Radio Club picnic Sept. 7th, which incidentally was a highly successful amateur gathering. More than 133 were registered and the parking lots were full of mobiles. An abundance of food, swell prizes, bingo games, an auction, mobile contests and the get-togethers of various groups were the highlights of the affair. DQW, of Delphos, who just got his mobile rig, worked the biggest DX en route the picnic. CHJ, of Junction City, has revamped his station, now using a Viking, HQ-129X, home-built ECO, and well-designed antennas for all bands. FOG, a newcomer on 75 meters, is using a Command transmitter hooked on to ½-wave vertical supported by Abilene's water tower. IFR is active again with Viking on 75-meter 'phone. BAH and AKT, of Wichita, have new 10–20 beams. WNØHLS now is WØHLS, running 110 watts to BC-457 on 40 meters. EZT now has WAS. OFR is organizing a radio club in Nemaha and Brown Counties. The Missouri Valley Emergency Net still is reporting 100 per cent turns in traffic report. KEN has a new Elmac in his new Chrysler Royal. KVRC has mobile transmitter hunt and picnic Sept. 7th. ELW and ZMC moved to Wichita. Traffic: WØNIY 119, BLI 51, FDJ 45, WMQ 26, VBQ 16, ICV 9, BNU 8, GHR 8, BEO 6, LIX 2, BHV 1.

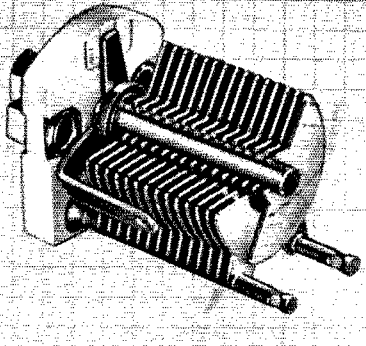
MISSOURI — SCM, Clarence L. Arundale, WØGBJ — SEC: VRF. The SMARC held its annual picnic at Springfield on Aug. 31st. OZN, our Midwest Division Director, gave an interesting discussion on current problems. VRF, our SEC, expressed the need for more ECs. Lots of prizes were awarded and the XYLs had their own prize drawing. KVH is a new ham at Sarcoxie and does his operating from a wheel chair. The following hams erected a 10-meter beam for KVH: CZT, EIK, FKM, GLZ, HET, JEJ, PKI, and SOM. VRR has organized a radio club at Senior High School in Springfield which has been issued the call KPG. TGG is operating mobile on 10- and 75-meters. CGJ and CIA are on 75-meter 'phone. QMF has installed 75-meter mobile unit. PME has a Viking on order. YLM has a new jr. operator. UXQ now is located in Kirkwood. PLJ worked 5RCI, a distance of 250 miles, on 2 meters. ETW has worked 42 states in the first 6 months of operation. RMX took a vacation trip to Canada. QXO earned another BPL certificate. CPI is waiting for replacement transformer for the Collins exciter. New Novice operators are WNØKYT and WNØEPS. GAR complains of erratic conditions on 40 meters. New AREC members are WNØIVL and WNØIEZ. Ex-VMO is back on the air with his old call, VMO, again. Appointments: ECs, RMX, FKM; OO, CXE. MON needs more active reporting stations and additional stations in areas not now reporting into the net on 3580 kc. All stations handling traffic are urged to send traffic reports the first of each month to the SCM. Traffic: (Aug.) WØQXO 703, CPI 249, KØWBD 47, WØCXE 34, KIK 21, IQY 16, EBE 14, TGG 14, HUI 13, OUD 13, CKQ 12, GAR 11, GBJ 11, QMF 10, ETW 6, WIS 6, EDA 1. (July) WØQMF 8.

NEBRASKA — SCM, Guy R. Bailey, WØKJP — I have just received the information that your new SCM is to be Floyd B. Campbell, CBH, of North Platte. This is very welcome news to me because Red is one of our outstanding hams. I know he has the ability and know-how to put

(*Continued on page 80*)

J.C. Hammarlund has the capacitor to fit your need
Jack





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Nebraska on the traffic map this coming season, which I could not do this past season. However, I want to take this opportunity to thank all the gang for the fine coöperation I received during my short term as your SCM. The club at Grand Island recently put on a fine picnic which the SCM attended. Everyone had a swell time, and all are looking forward to the next one which will be held at Wayne. I have not received any reports this month, so there aren't any activities to be recorded here. I want to ask all of you to give Red your very best. The more we support him the better job he will be able to do. So once again, thanks to all of you and 73.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Roger C. Amundsen, W1HYF — SEC: LKF. PAM: FOB. RM: KYQ. CN-3640 kc., CPN-3880 kc., CEN-29,680 kc. Members of the Connecticut Amateur Radio Association turned to over Labor Day week end and helped out the State Police with a safety patrol. CN leaders: KYQ 21, QJM/1 and RRE 12, LV 11. FOB and KYQ have their respective nets well in hand and the fall meeting on Sept. 20th at NEM rounded out any corners. CWA enjoyed a picnic on Sept. 6th. AJO renewed EC appointment and BIH again is ORS. The Stamford Amateur Radio Emergency Corps and Trumbull Emergency Communication Assn. are now ARRL affiliated. RMT and BGT renewed EC appointments. KYQ is trying a monthly bulletin on CN for net news. NPG, QLF, and ITX are Assistant ECs for TJX. ORP has 600 watts on 80 meters but Ed has not been heard in CN yet. LV visited Milwaukee. FOB went North. 2LZ visited AOS along with lots of others. CUH has a new pole. EMF had QSO with TIA over 100 miles mobile on 10 meters. ODW, with a new twin five, will be on 2 meters shortly. SJO makes BPL again. WN1VLT, at Waterford, is aero mobile on 2 meters. JYP is ex-4GKY in Ridgefield. TJR has been in Redding for the summer. Traffic: (Aug.) W1SJO 546, AW 103, KYQ 80, AYC 48, HYF 43, QJM/1 33, EMF 19, ODW 18, NBP/WBO 16, FOB 13, LIG 13, RRE 13, NEK 12, CUH 6. (July) W1KV 6.

MAINE — SCM, Orestes R. Brackett, W1PTL— SEC: BYK. PAM: OLQ. RM: LKP. Pine Tree Net on 3596 kc. at 1900 Mon. through Fri. Sea Gull Net on 3960 kc. at 1730 Mon. through Fri. We are sorry to report the passing of BFZ, of Bangor. HZE, at Yarmouth, reports that he worked K4USA on 40-meter c.w. with a 3–4–9 report and with no plate voltage on the final. In spite of a downpour of rain about 200 attended Steve's hamfest from all parts of the State, as well as two from Canada. Our SEC, Don Dean, even came with a broken ankle, also TO's XYL, who had a broken arm, attended. About 35 mobiles were there; 23 took part in the 75-meter hunt with JSY coming in first and PGZ second. In the 10-meter hunt SSK came in first and received a prize of 25 dollars, given by AUR, who is a very ardent 10-meter man with a great many countries to his credit. The usual fine chicken-pie dinner was served and Steve says, "Sure I am going to have another one next year." Many thanks to all the gang up there in Aroostook, and others along the way who made Ruby's and my vacation so much fun. It really was swell. Now that vacation time is over I sure hope that we receive some very good traffic reports from all members of the PTN and the SGN. I might add that in the near future I am going to start cancelling the appointments of those who do not show some interest in the way of reports. Traffic: W1OHT 81, LKP 40, BX 25, PTL 8, EFR 7, SUK 3.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — QFN is new EC for Fall River. WK and TQS are new OOs, Class IV. Appointments endorsed: AVY as EC for New Bedford; AVY and HWE as ORS. The Hingham Amateur Radio Club, VPR, and the Old Colony Amateur Radio Assn. now are affiliated with ARRL. UBV, of Quincy, has his Extra Class license. He received his first license in 1916 and was a charter member of the NAWA. UXK, at Fort Devens, has a 50-watt rig on the air and is on 3.5- and 7-Mc. c.w. DHX has moved to Rhode Island and has a new QTH with a 400-ft. elevation. DHC now is working in New York City. TOY has his Class A license. TOY OLN, HP, DOX, RYJ, QUY and XYL, RLT, and HQO went to the Portland Hamfest. ICU, Amesbury EC, and his Assistant ECs, QUY and RYJ, conducted a "simulated alert." HPH has new TBS-50. UIE has rig on 28 Mc. in his car. FXB has a Lettine transmitter on the air. AVY's jr. operator has the call WGN. AVY and group have been handling traffic with K1WAF/2 at Camp Drum, N. Y., with JJY at the station. The Southeastern Mass. Amateur Radio Assn. has resumed meetings at the New Bedford YMCA with AVY, pres.; LAZ, secy.-treas. Visitors are welcome. SZO, Methuen EC, sends in a very nice report. PFA and OHZ are his assistants. The Merrimack Valley Amateur Radio Club, NBN, is control station for Region 4 Net. WN1VYJ, Topsfield, is on 3.5 Mc. with an NC-125 and a Gonset Tri-band. The Post Road Emergency Net, formerly the Walpole Propagation Society, now is on 28 Mc. and anyone is invited to check in, says OLP. The South Shore Club's "Mystery Trip" was held at Canobie Lake, N. H. WK gave a talk on TVI at summer meeting of the South Shore Club. UIR worked VE1QY on 144 Mc. MME is

(Continued on page 82)

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Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuation per 100 ft	Frequency (Mc)	Attenuatio per 100 ft
100.	2.65	100.	2.10	100.	1.90	100.	3.10	100.	3.75
200.	3.85	200.	3.30	200.	2.85	200.	4.40	200.	5.60
300.	4.80	300.	4.10	300.	3.60	300.	5.70	300.	7.10
400.	5.60	400.	4.50	400.	4.35	400.	6.70	400.	8.30

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active in the Deep Sea Drag Net and TCPN. QON has a new Viking on all bands. QFE is mobile on 144 Mc. WN1VHF, of Lynn, has a new jr. operator. QJF is on 28 Mc. THT and his XYL toured the U.S.A. on vacation. A new net on 28 Mc., known as the Windy Net, has been formed with TYR, pres.; SMC, vice-pres.; GOU, prime minister; TUP, secy.-treas. Work ten of the following members and send QSL to Box 126, Quincy, Mass.: TAA, THL, QJK, FWS, TQQ, CSZ, ECX, TSJ, UKB, BBP, OOQ, KXN, QMD, RQZ, TUU, UKG, TZQ, ZK, TYU, UVF, IS, UIR, OMX, SSA, UDC, FON, PIG, DXO, PKQ, GFO, MMH, ONV, VOU, RMK, PXH, UBE, TSB, VVW, SCA, VRW, WFU, AUU, AJA, UGC, VVZ, and QZO. PEC and UKA took a trip to VE-Land and had a 25-watt rig on 3.9 Mc. 3QVL is moving to Danvers. SHV has rig in the car on 28 Mc. 8AUN spent two weeks in Beverly and took JFS mobile to Portland. LN spent two weeks in China, Me. VXA, Fort Devens, has a 500-watt transmitter, also a 2.5-kw. generator. PZA is on 144 Mc. RRP is mobile. WJF is a new ham in Boston. QMD has moved to Philadelphia. LJT now is on 144, 28, and 7 Mc. OKK is on 3.9 Mc. LQX, Malden, is on 3.9 Mc. NBS has moved to Norwood. TVZ is on 28 and 7 Mc. FVD went to Ohio on vacation. VYS is new EC for Weston. Traffic: W1EMG 162, MME 114, AVY 21, JCK 19, TY 15, CTR 11, BY 8, WU 8, HWE 5, QON 5, LM 3, LJT 2.

WESTERN MASSACHUSETTS — SCM, Victor W. Paounoff, W1EOB — SEC: KUE. RM: BVR. PAM: RDR. WMN on 3560 kc. at 7 P.M. Mon. through Fri. WMNS (slow-speed net) at 8 P.M. Mon., Wed., and Fri., 3560 kc. KUE, Thomas Barrett of 759 White Street, Springfield, is the new SEC as of Sept. 1st. New OES is SWJ and new ORS is TVJ. TZA passed exam for Advanced Class license. Please note times and frequency of the slow-speed net. Detailed instructions on net operation can be obtained by writing BVR at 37 Broad St., Westfield. RFU is setting 2-meter records from Mt. Wilbraham. BDV is back from York Beach, Me. TRB finds that working for a living curtails operating time. Worcester c.d. net was alerted for hurricane threat with nine stations reporting, per EC SPF. TAY handles most of his traffic mobile. EFQ is returning from 2 years as Comm. Officer of U.S.S. *Block Island*. SWJ is having excellent results with new Elmac A54 mobile rig. Effective Nov. 10th our new SCM will be Roger Corey, JYH, of 67 West Allen Ridge Road, Springfield. Let's all get behind Rog and build our section up to the heights it once held. I want to thank all of you who have been active in our organized activities in Western Massachusetts. I appreciate very much your assistance in making the past two years as SCM a pleasant experience for me. See you all on the air. Traffic: W1BVR 40, TZA 31, HRV 16, TAY 11, SDT 10, TVJ 8, SPF 3.

NEW HAMPSHIRE — SCM, Carroll A. Currier, W1GMH — The Merrimack County Emergency Net operates on 28,600 kc. Tuesdays at 1830 and would like to tie in with adjoining counties. PUK is back on with a new rig. QJX has pole set for 10-meter beam. EKN has moved to Worcester, Mass. RET is on 75-meter 'phone. Many from Concord, Nashua, and Manchester attended the outing of the MVARC at Salem and the grand prize was won by the XYL of RYD. WBM has a new 32V-3 and says it is FB. WN1TVQ now is W1TVQ. Several members of the Nashua Mike and Key Club enjoyed a day with OMZ aboard his Cabin Cruiser at Lake Winnipesaukee. LVG is back from Japan and working 10 meters with an Elmac transmitter. The Port City Radio Club at Portsmouth is doing a good job with code and theory classes and has two transmitters in the making. The Manchester Radio Club has acquired a plot of land on the summit of Mt. Uncanoonuc as the site for new club house. GDE, Hillsboro County EC, is looking for recruits for the Emergency Net. UNV has new 10-meter beam. Traffic: W1CRW 789, JNC 34, QJX 34, POK 12, GMH 11, UNV 2.

RHODE ISLAND — SCM, Roy B. Fuller, W1CJH — SEC: MIJ. RM: BTV. PAM: BFB. The RI Net meets Mon. through Fri. at 1900 on 3540 kc. SLT is confined to the VA hospital in Providence for the next couple of years, so I think Bob would appreciate a visit from some of the gang around here on occasions. KCS has been appointed by Radio Chief Gordon to the post of Maintenance Chief of Radio Communications in the Rhode Island civil defense set-up. NAARO now holds meetings each Friday. Visitors can show up any Friday and find the Club open. TFX has been transferred to Corpus Christi and will be on the air and looking for all the gang in this section. BBN is recovered and is back on the air handling Rhode Island traffic. Traffic: W1OIK 25, QYX 20.

VERMONT — SCM, Raymond N. Flood, W1FPS — SEC: W1JEN. PAM: W1AXN. RM: W1OAK. Asst. RM: TAN. Hal Drown, our SEC, sent in his first report, which shows Chittenden County away ahead in AREC membership. Under the leadership of EC QQN this group is going places. Excellent work. OM! TXY is struggling to get the 2-meter rig working properly. Ralph says he managed to get that extra dash out of his 80-meter rig. NWW installed TVI kit in his Viking I. ETE and his XYL took a vacation trip to Canada. KJG is working on Marine Mobile unit. TQD now is operating /VE2. AXN should be in his new QTH when you read this. Our new season is under way!

(Continued on page 84)

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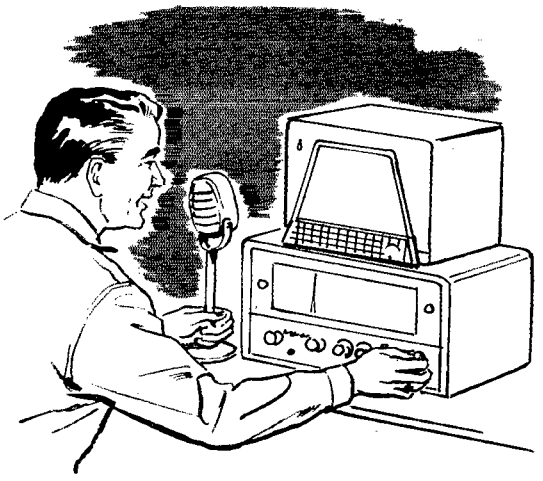

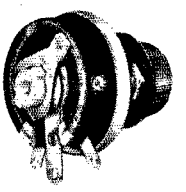

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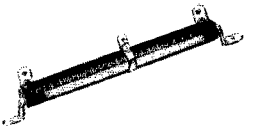

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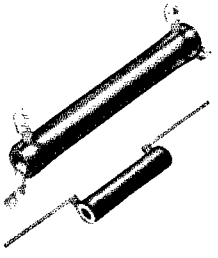

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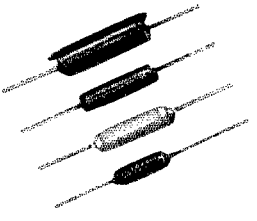

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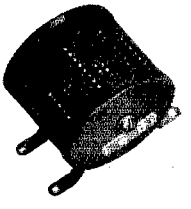
Single-layer-wound on low power-factor steatite or bakelite cores. Seven stock sizes for all frequencies, 3 to 520 mc. Two units rated 600 ma; all others rated 1000 ma.



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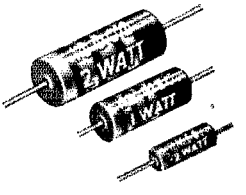

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NORTHWESTERN DIVISION

ALASKA — SCM, Glen Jefferson, KL7NT — PDQ is back in Fairbanks after temporary detail in Anchorage and has been appointed OBS. PE is back in harness as SEC. There has been much activity on 75-meter mobile of late. AGU has just about completed details for a tie-in of mobiles with the Territorial Highway Patrol control station at Anchorage, establishing procedures for reporting emergency conditions encountered by mobiles traveling on the highway in the Ancorage sector. IS and his XYL, Jeanie, enjoyed several weeks touring the Territory by land and air visiting friends and former QTHs; AN and his XYL, Rose, have been doing the same by land only. Bill and Rose really handed out some tall tales about fishing down Homer and Kenai way. AN did some fine mobile work on 75 meters, too.

IDAHO — SCM, Alan K. Ross, W7IWU — Hayden Lake: FIS still is using Bendix TA-12 on 10, 20, 40, and 80 meters. The following are Emergency Coördinators in Idaho: KOG Grangeville, FIS Coeur d'Alene, BDL Pocatello, FT Heyburn, HAH Burley, OQT Twin Falls, GHT Boise: ETU Nampa, ELH Moscow, and FRM Lewiston. To show your activity, please try to check into the FARM Net on 3935 kc., Inland Empire Net on 1995 kc., or GEM Net on 3638 kc. We can insure good coverage for Idaho if at least one amateur in each city and town checks into one of the above nets — if for nothing more than to say "hello." Blackfoot: LQU turns in more DX for August with his log showing XE2, KL7, KZ5, CM2, VE2, and VE3. Boise: The hamfest in September netted a good crowd with FB contests in the QLF, v.h.f. antenna design, and mobile hunts. NPI, of Nampa, walked off with the door prize, a Weller soldering gun. Traffic: W7MKS 36, FIS 7, LQU 2.

MONTANA — SCM, Edward G. Brown, W7KGJ — Mobile activity is on the upswing in the Billings Area with KUH, FTV, KGF, 1WW, SAW, CPY, JBC, LBK, and LIT all sporting mighty nice mobile rigs. JRG has finished his p.p. 35TG final for 2 meters running about 370 watts to a twelve-element beam. Ken also is active on 6 meters and has made some very nice contacts from his new QTH. 6CIN/7 has a new Viking I and is active on 10 and 20 meters. MBV moved to 3520 6th Ave. No., Great Falls. CT has arranged sked with 6HMA at Treasure Island, Calif., where his son is studying electronics. The Electronic Supply Company has invited the Billings Club to hold meetings and set up a club rig in their new two-story building which recently was completed. CRV has p.p. 812s going on 20 meters and the new rig sounds swell. FTV soon will move into his newly-constructed home. Your traffic and activities reports are needed. Traffic: W7KGJ 173, OQI 76.

OREGON — SCM, J. E. Roden, W7MQ — HDN has been making trips all over the State, visiting various clubs *and getting the AREC program as well as RACES program* going. He is the SEC for Oregon and doing a bang-up job. BDN is getting started once again in his radio shop after somewhat recovering from a disastrous fire that took everything. BUS and MWE are quite active in MARS, and represent the Pendleton Area in the MARS program. OEN has reorganized, concentrating most of the activity of the Net to Oregon, but still welcoming neighboring states to check in. RACES Net in Oregon did a swell job for amateur radio in the recent state-wide official e.d. test. Oregon amateurs are urged to enter the RACES program by contacting their local ECs as well as e.d. officials. More station activity reports are invited by the SCM, especially from sections of the State that seldom report. Traffic: W7HDN 37, GNJ 36, MQ 36, MLJ 30, EUG 23, KEN 12, JKU 11, KTG, 9.

WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: BTV. RM: FIX. PAM: NRB. KTL spends most of his time on 75 meters. CWN has good luck with his *portable rig. AIB has dipoles for 80, 40, and 20 meters.* ETO still is trying to get rid of his chirp. EKT checks into WARTS, and works c.d. mobile at other times. LYA is at the V.A. Hospital in Spokane and would enjoy seeing other hams. JXT is with Northwest Airlines in Alaska. QXW bought OCD's rig. QCI has new Viking on 160 and 10 meters. NZP and PXA work and live at the V.A. Hospital in Spokane. OHI has new 30-foot steel tower for his antenna. RFP made a training cruise with the Naval Reserve. PUL, JGV, and JNP are on 10 meters. PCV expects to move to the northwest part of Spokane. OPR spent vacation in Yellowstone Park. 5RHE/7 is stationed at Fairchild AFB. NXN is interested in TV since returning from the East. FLQ plans to go to low power when Spokane gets TV station. The Walla Walla Club had three hidden transmitter hunts during the month. AVM is on the air regularly from Aberdeen. RHM has a new ham shack all set up and SFN made his first contact from her shack. ENR is on 75-meter 'phone only. *EAT is on 10 meters.* ZA has 600 watts on 40 meters. SJ is building a 'phone rig. FLD has 1 kw. on 20-meter 'phone. The VARC held its picnic on Tanwax Lake. EHJ, IYU, PHC, HMQ, MPH, NDO, QGB, PFZ, OIH, OEB, LEC, and SWL Duane White and their families attended.

(Continued on page 86)

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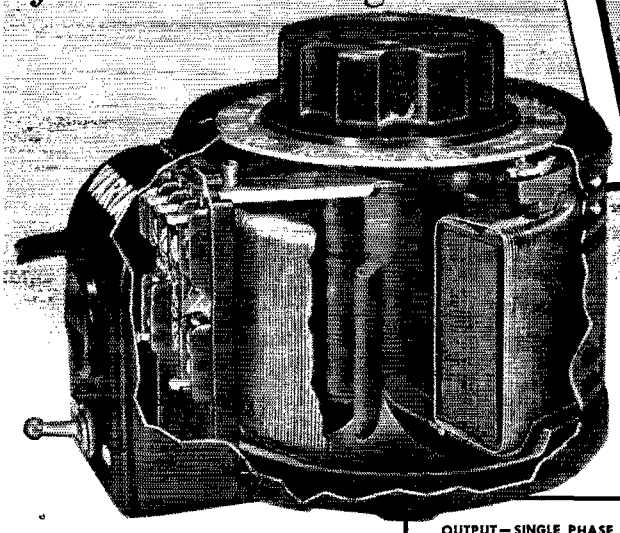

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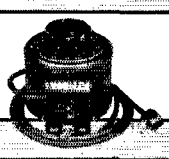
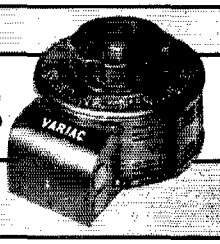
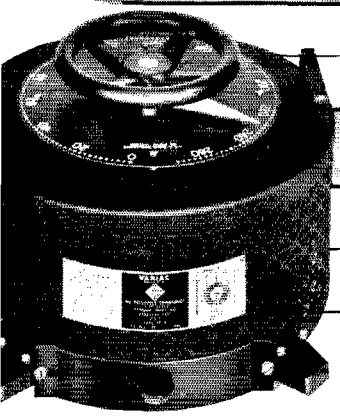
Input Voltage	OUTPUT—SINGLE PHASE DATA KVA	Output Voltage	Rated Amperes	Maximum Amperes	Type of* Mounting	Type	Price	
115	0.17	0–115 0–135	1	1.5 1.0	I	200-B	$12.50	 Type 200-B
115	0.86	0–115 0–135	5	7.5 5.0	I II III	V-5 V-5M V-5MT	18.50 20.50 25.00	Type V-5
230	0.60	0–230 0–270	2	2.6 2.0	I II III	V-5H V-5HM V-5HMT	21.00 23.00 27.50	
115	1.5	0–115 0–135	10	13.0 10.0	I II III	V-10 V-10M V-10MT	33.00 35.50 40.00	
230	1.2	0–230 0–270	4	5.2 4.0	I II III	V-10H V-10HM V-10HMT	34.00 36.50 41.00	
115	3.	0–115 0–135	20	26.0 20.0	IV	V-20M	55.00	Type V-20
230	2.4	0–230 0–270	8	10.4 8.0	IV	V-20HM	55.00	
115	5. 10.	0–115 0–115	40 80	45.0 90.0	IV V	50-A 50-AG2	140.00 310.00	
230	7. 14.	0–230 0–230	20 40	31.0 62.0	IV V	50-B 50-BG2	140.00 310.00	Type 50



*I Unmounted model.
II Protective Case around windings.
III Protective Case, terminal cover, line switch, convenience outlet and line cord.
IV Protective Case, terminal cover and BX outlet.
V Two gang assembly — requires type 50-P1 choke — $12.00.

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with guests being CZY, IIU, PRW, PRV, MRX, and PPR. NZM and OAB joined the VARC. PHP is home on furlough from the Air Force. JJK checks into WSN from California. OEB made BRAT award for July and August. The Seattle civil defense has seven complete stations set up with two transmitters and receivers at each station. LWX is working out fine with new Workshop 20-meter beam. LBF is home and operating 10-meter mobile while de-TVIing his home rig. LWX, PGY, OEX, and JPH helped BA raise his 10-over-20 beam to the top of the 90-foot tower. KZP, HXA, LBF, and AWP installed fish aquariums, complete with automatic pumps, heaters, etc. PGY has power line noise S9 plus 20 db. JWE is using an 814 with clamper tube on 75 and 20 meters. Traffic: W7IOQ 1043, BA 334, ETK 262, CZX 186, FRU 157, JWE 96, EVI 86, FIX 80, KCU 74, APS 61, FWD 46, MSI 46, OEB 45, OPO 40, AQN 32, EKT 19, ZU 18, ETO 14, AIB 12, CWN 9, NTU 4, NRB 1.

PACIFIC DIVISION

HAWAII — SCM, John R. Sanders, KH6RU — HARC had another interesting talk on Propagation Forecasting by AED. The Honolulu Mobile Club "hidden picnic hunt" resulted in a wild dash clear across Oahu and ended up at Haleiwa Park. KC took first prize, GG second. Prizes also were awarded for the mobile-to-fixed station contest which ran for a month. NES was fixed winner. DQ and AME took first and second prizes for mobiles. The Honolulu YL Club held a picnic-meeting at Ala Moana Park. OB is active on 14 Mc. with equipment gained from MN, who is busy building a new home at Kailua. ABI is rebuilding to higher power. IJ visited Honolulu for several weeks. The Hilo Club held an outing with equipment set up at Kawaihae. AO works much 14-Mc. DX c.w. with a modest antenna at Waikiki. EZ is rebuilding his three-band mobile rig. RU is assembling a long-anticipated kw. rig. *Far Pacific Area:* KG6ACH comes through for BPL on originations this month. KG6FAA, BPL again, works 28 Mc. frequently in spite of its poor condition. Traffic: KG6FAA 2698, KA8AB 2092, KG6ACH 136.

NEVADA — SCM, Ray T. Warner, W7JU — SEC: HJ. ECS: JLM, KOA, MBQ, OXX, TJY, VO, LGS, and ZT. RM: PST. OPS: JUO. OO: LGS. Nevada State frequencies are 3660, 7225, and 29,360 kc. We regret to report the passing of Frank Parrish of Henderson. Many of us know his last days were eased by his interest in ham radio and his recently-acquired call, RSO. Boulder City hams again are 100 per cent AREC. BVZ is looking for openings to try his new 6-meter transmitter. ECs ZT, OXX, MBQ, and JU participated in a c.d. exercise called by the Sixth Army Area. A new Nevada c.w. net is being formed by MARS members. Applicants are invited. Write to Signal Office, Presidio of S. F. The RACES program awaits the appointments of Radio Officers before getting up a full head of steam. Camp Desert Rock MARS station should now be on the air.

SANTA CLARA VALLEY — SCM, Roy I. Cousin, W6LZL — The San Mateo County Fiesta was held this month with a very fine exhibit put on by the County EC, QIE, with the very capable assistance of the clubs in the area. The Santa Clara County Fair is next on the list for SCCARA and plans are well under way. AEV, our SEC, reports activity still is low throughout the area at this time of year, but fall reorganization is about to begin with a possibility of new appointments to further the efforts and distribute the work load. The PAARA tried something new at its Aug. 1st meeting, a transmitter hunt on 146 Mc., and it met with great success. The NPEC had at its Aug. 1st meeting Mr. Barrington, of Bell Telephone, who spoke on Microwave Technique. At the Aug. 15th meeting WB gave an interesting talk on mobile antennas. MMG is back from two weeks in W1-Land and was amazed at the DX possible on low power from the East Coast. ALL and spouse spent a few days in the Yosemite Area and lost their 144-Mc. whip on low branches. GCG made a very good score in the June V.H.F. Contest; he operated from Mt. Loma Prieta. On Aug. 9th the SCCARA held one of its most successful BAR-B-QUEs to date. More than 400 hams, XYLs, and jr. operators had one swell time with good eats and lots of prizes, followed by a dance to round out a full day of activity. IUV reports a lot of time spent on 144 Mc. He will be back on c.w. this fall. HC reports that signals will be forthcoming from his QTH via a Viking I. Traffic: (Aug.) W6HC 81, MMG 5. (July) W6YHM 121.

EAST BAY — SCM, Ray H. Cornell, W6JZ — Asst. SCMs: Guy Black, 6RLB, and Julio Amaro, 6WGM. SEC: RVC. RMs: IPW and JOH. IUD is rebuilding to cure TVI. HHX is concentrating on traffic and becoming mainstay on BAN. IPW and JOH have worked hard on BAN, the result — a first-class traffic net. Incidentally, their traffic totals are increasing regularly. YDI finds time to handle a little traffic each month. NGC visited W and VE7 on his vacation. So did LRT. RVC says the month of August was the lowest in AREC activity because of summer weather. HSY is a new AREC member. The Oakland Radio Club has accepted a communications truck from the Red Cross. It will see double duty in c.d. and Field Day work. QT is putting on code practice for beginners as well as others. For details see AKB, Club prexy. HFK is very active in OT. He hopes to have RTTY going on 40 meters one of these days. Fred says

(*Continued on page 88*)

ENGINEERING

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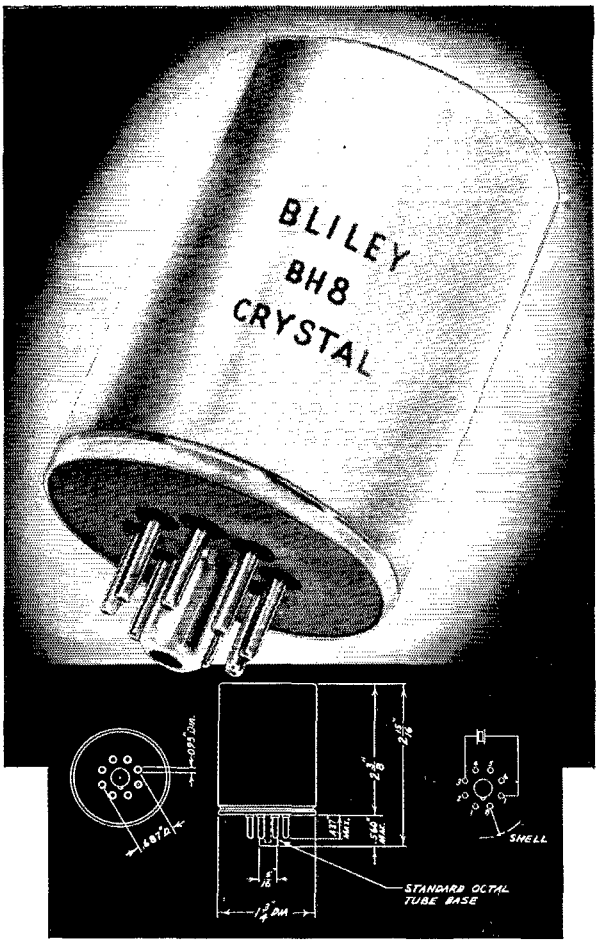
REQUIREMENT



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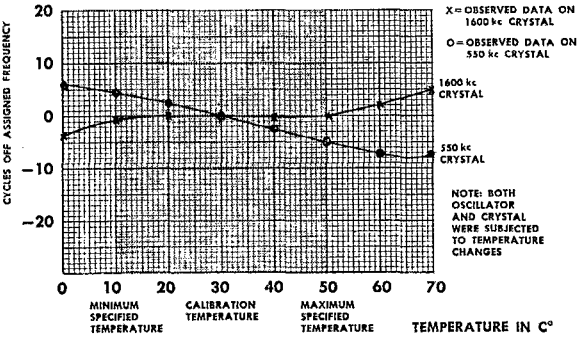
The resultant production units,type BH8, are calibrated at 30°C with maximum deviation not exceeding ±10 cycles thru the temperature range from +10°C to+ 50°C.

TYPICAL STABILITY DATA



Bliley CRYSTALS

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when you continually blow fuses in the HV circuit, look over the ceramic feed-thrus. Sometimes they make like a neon lamp when they short to ground. VS was pleased to find out his case of TVI was only fundamental overloading of the neighbor's TV. KZF moved to Marin County. Anyone interested in the PAM job? CML, COY, EKF, KZF, QZ, VJN, WGM, and YDI report into MTN A3 Net regularly. SARO is going to QSY the 10-meter net to 2 meters. A group project to construct 2-meter converters is underway. NQJ not only maintains Solano County's radio system but is very active in c.d., AREC, and in the NBARA. JZ has a new 65-foot pole; looks like 20-meter DX is going to catch it again. CTL says there was very little activity by the DX boys during August. K6FAL makes BPL again. BEZ has been running his 474A with 8 watts input on 75-meter 'phone with excellent results. LTL vacationed in Colorado. LGW is trying out 2 meters with an SCR-522. He likes it. The Mt. Diablo Club furnished communications for the Walnut Festival in Walnut Creek. RVC, LIL, TCU, LGW, and K6AQ covered the parade. The races were covered by IT and JYZ. The club also furnishes communications to the Contra Costa Horsemens' Assn. members on their annual ride up Mt. Diablo. Traffic: K6FAL 911, W6JOH 220, IPW 158, JZ 124, HHX 67, NGC 15, YDI 10.

SAN FRANCISCO — SCM, R. F. Czeikowitz, W6ATO — SEC: NL, Phone: PL 5-6457. *Eurkea Area:* EC: SLX. Ex-7PTC has been issued the call W6REF. Newcomers to Eureka are Paul Flatt, RLY, and Paul jr. At a recent meeting, Blain Mitchell demonstrated the operation of his radio-controlled gas-engine-driven model plane. DWG, of Sebastopol, is temporarily located in Eureka. Congratulations to Duke Johson on his new call, WN6RXQ. On Aug. 22nd ATO, San Fracisco SCM, spoke on TVI and its elimination, and on civil defense. The HARC plans a trip through the new Eureka dial telephone exchange. The Humboldt Amateur Radio Club meets the second and fourth Fri. in the YMCA rooms, rear of Municipal Auditorium, entrance on "E" Street, Eureka. *Santa Rosa Area:* EC: LOU. Henry Davis has the c.d. net in good shape, and has completed installation of county-owned gear in Petaluma, Santa Rosa, and Healdsburg. Congratulations to LOU on acquiring his Advanced Class license. Fred is currently engaged in organizing the 2-meter net. MTH and his XYL, HHD, have left for a new Naval assignment on the East Coast. The chairman of the newly-formed TVI committee is DSI, and TVI troubles are being efficiently handled. New members of the SCRA are WN6MGO, W6YUA, and VNX. JTR observed a smoothly-functioning 29.5-Mc. c.d. drill in Los Angeles. The Sonoma County Radio Amateurs meet on the first Wednesday, temporarily in the Board of Supervisors room, County Court House, Santa Rosa. *Marin County Area:* EC: KNZ. Tamalpais Club EC: ZUB. The Marin Club, inactive during the three summer months, started meetings in September. Meetings are held the second Friday in the American Legion Hall, Larkspur. The Tamalpais Radio Club meets in the home of the secretary, OZC, 7 Loma Ave., Tiburon, on the third Fri. Visitors are invited to both groups. *San Francisco Area:* EC: BYS. Phone BA 1-6157. Active in the Tehachapi and Bakersfield Earthquake emergencies were NL, BYS, JWF, NAC, and GB. These operators individually handled traffic and also kept CXO, the National Red Cross station, open as needed. Stations around Bakersfield known to be active are GRA, JIU, and mobile ZZC. GCW had the distinction of phoning the first news of the Tehachapi Earthquake to the local newspapers, and in appreciation they had him appear on the Aug. 7th Marjorie King Show on KGO-TV. Emergency Corps and c.d. drills are held weekly by NL and BYS. Everyone interested should contact them. Their telephone numbers are listed above. The TVI Committee continues to function smoothly, keeping up with the complaints as received by the FCC and channeled by them to the Committee. More than ninety per cent of all complaints are cured by a high-pass filter on the TV set. The San Francisco Radio Club meets the third Fri. at 71 Lakeshore Plaza. The Highfrequency Amateur Mobile Society meets the second Fri. at the local Red Cross Bldg., 1625 Van Ness Ave. Traffic: W6ATO 7.

SACRAMENTO VALLEY — Acting SCM, Willie van de Kamp, W6CKV — JDN obtained 2nd-class radiotelephone and now is after 1st-class radiotelephone license. CFU is active on MARS. SXF is building for 6 and 2 meters. HQF is exhibit station at California State Fair. EKP has moved to Yuba City. OUB now is mobile on 160 meters. ATQ is showing signs of activity again. In four months WN6PCA has confirmed 15 states, 3 Alaskan, 4 Hawaiian Island, and 1 Carolina Island for the first Novice worked from KC6. Traffic: W6PIV 175, JDN 19.

ROANOKE DIVISION

NORTH CAROLINA — SCM, J. C. Geaslen, W4DLX — AKC, Gastonia, the RM for North Carolina, reports the C.W. Net is back in full swing and would like to have more stations report in. How about some of you ex-Novices who have become bug slingers getting on the c.w. net and becoming traffic men. ROD, NCS on the Tar Heel Net, opens his garage doors with his 75-meter mobile rig. New Novices reported on the air are WDJ, Charlotte; WMZ,

(*Continued on page 90*)

PLAN AHEAD

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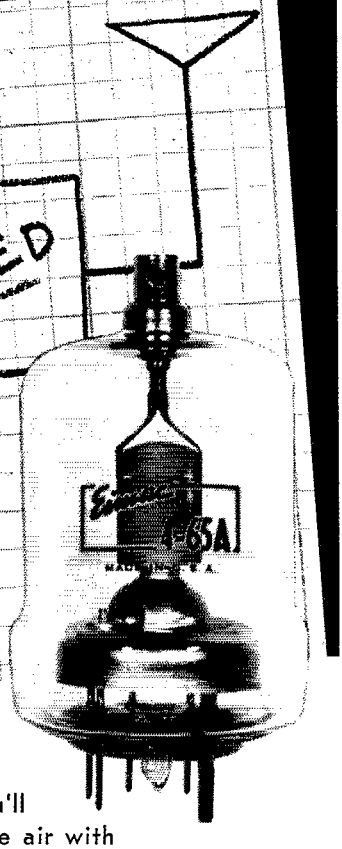
* FOR AN EIMAC 4-65A TETRODE



Hold a power amplifier in reserve, then you'll be all set to go on the air with a wallop when those novice days are over. Your rig will be in style and the change over is easy, efficient and economical with an Eimac 4-65A radial-beam power tetrode. With only two watts needed to drive the 4-65A up to 345 watts input in Class-C telegraphy or FM fone, your present novice transmitter will do the job with power to spare. Circuit design is elementary, neutralization is unnecessary, in most cases, and TVI worry minimized with an Eimac 4-65A.

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Radio frequency power amplifier and oscillator Class-C telegraphy or FM telephony.

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D-C Plate Current -	150 ma.
Driving Power (approx.) - -	2.1 watts
Plate Power Input -	300 watts
Plate Dissipation -	65 watts
Plate Power Output -	235 watts

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Spring Lake; WEU and WNB, Sanford. RRH, Morganton, has a new pair of 813s running 500 watts. PXE has been a busy little bee: he harvested a crop of tobacco, took Advanced Class exam, built electronic keyer, and now has to go to sea as ship operator. The S.C. Net wishes to thank all the Tar Heel gang that stood by on "Hurricane Able" watch. The SCM would like to remind all amateurs, especially official appointees, of the desirability and responsibility of reporting monthly to the SCM. Also, please check all appointments for renewal date and send in your certificates. Traffic: (Aug.) W4AKC 93, RRH 92, DLX 25. (July) W4AKC 321, RRH 149, PIC 21, ANU 12, DLX 12.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — A hurricane struck the South Carolina coast on the night of Aug. 30th and the lack of a South Carolina c.w. net was keenly felt. Much good work was done by the 75-meter net and c.w. stations who participated reported into the 'phone net. The following assisted in handling emergency communications: AZT, FFH, TSU, BFQ, RXO, MPR, KOD, FM, EDQ, EOZ, DX, BIZ, CEL, NTD, BZX, HWZ, STH, NQP, CXO, BUF, PLX, SUE, CXE, NTO, PDE, DMX, HMG, KLD, TWW, NWB, BIH, DNR, RXO, ANK, OWW, BAT, and K4USN. The following operated from the low country with emergency power: BIZ, BIH, ANK, OWW, BAT, KLD, RXO, and K4USN. BIZ, CXE, and KOD went to Walterboro to provide emergency communications. FM sends in an activity report every month and has emergency c.w. rig set up in his furnace room. NJG is very much on the air with single sideband and wants to know if there are any other stations in South Carolina on single sideband. Any station interested in organizing a state c.w. net, please contact the SCM. All stations with emergency or mobile equipment are requested to register same with the SEC, DX. Traffic: W4FFH 106, ANK 57, FM 7.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — Some 200 or more mobile stations now proudly display their call signs by means of the new auto license plates issued by the Commissioner of Motor Vehicles, Commonwealth of Virginia. Only whole-hearted support of hams coupled with plenty of enthusiasm and patriotism of civil and legislative officials made this a successful project. Personal sacrifice of time and money again proves no deterrent to achieving a goal, when hams have a common projected civic interest. Thanks again to all who made it possible. Join up with RACES and put that equipment to maximum use. MLE ended formal courtship and his XYL adds a new love. She is studying for that Novice ticket. Congrats, Mrs. MLE, we'll be seeing you on the air. George also returns to the nets. PVRC held its Novice roundup and welcomed 75 at a special gathering in Washington. FV is QRO and may be depended on for effective liaison between c.w. and 'phone nets. JAQ had VFN running full blast during the summer session. MLE has Extra Class license with new QTH in Harrisonburg. OWV's XYL is boning for a WN. OWV is announcer-engineer at WSVA. NQV returned to Princeton. VZQ now is General Class. MLE renewed his ORS. GR again becomes a Virginian with QTH in Vienna. Welcome back, George. IJK holds down as NCS appointment on VN. RVO was transferred to Maryland. PWX garnered 1st-class commercial 'phone. CD officials of the Norfolk and Tidewater Areas held public display of mobile units with new call tags in conjunction with Emergency Coördinators, ARRL Emergency Corps, and Red Cross units. Traffic totals do not reflect full activities because of the lack of reports. Traffic: W4SHJ 93, OGX 41, FV 33, GR 20, JAQ 17, KFC 3.

WEST VIRGINIA — SCM, John T. Steele, W8MCR — Your SCM has moved to a new QTH. Please address all future mail to Hansford, W. Va. New hams in Princeton are WN8KWP and WN8KVO. IYG has completed a nice-looking outfit. HNC is active on mobile. YPR also is very active on 75-meter mobile and is quite active on C.D., organizing and supervising trial runs. 8DEC, an old dyed-in-the-wool c.w. man, finally has been bitten by the 'phone bug. A little bird tells me he is on 10-meter 'phone. GEP has finished his camp session and now is back at the home QTH with his Viking. 'Phone and c.w. nets are back in operation for the winter. The 'phone net meets each evening at 7 P.M. EST on 3890 kc.; the c.w. net meets Mon. through Fri. on 3770 kc. at 7 P.M. EST. A new ham in Huntington is LBT. DPF is working KZ5s on mobile. The Huntington Club station is raising power to a full gallon. A new column called "Mike and Key" is appearing every Tues. in one of the Huntington papers. LBT is teaching code to YLs and XYLs.

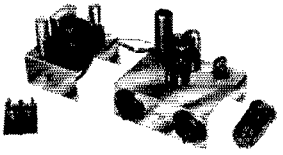
ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, WØIQZ — SEC: KHQ. Asst. SEC: PGX. RM: KHQ. PAM: KHQ. This is my last news write-up as SCM and I want to take this opportunity to thank Orval, KHQ, for the splendid job and the effort he has put in to help in getting Colorado on the map in organizing the Colorado Emergency Net. Colorado still doesn't have an effective emergency net and it is not the fault of Orval. He needs more support from each licensee . . . from you, please. Out of approximately 1000 amateurs, 500 of which are in the Denver Area, a relatively few give their reports each month, which makes for scanty

(*Continued on page 92*)

BEST BUYS from your 1953 ALLIED CATALOG

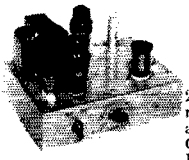
FOR THE NOVICE!



New Philmore Transmitter Kit

Low-cost, 2-band 25-watt CW transmitter. Covers 80 and 11 meters. Uses 6V6 osc., 6L6 power amp., 5Y3 rect. Transmitter and power supply on separate chassis for easy construction and flexibility. Pi-network matches any single-wire antenna. No meters required; uses plate current indicator bulb for tuning. With all tubes and parts, punched chassis, coil forms, coil winding data, hand key, instructions. Less hook-up wire, solder and crystal. Size: Transmitter, 7x5½x6⅛"; power supply, 4¾x5½x6". For 110-120 volts, 60 cycles. AC. Shpg. wt., 6 lbs.

83-556. *NET*..... **$29.40**



NEW Meissner 2-CW Transmitter Kit

20-watt novice transmitter kit for 20, 40 and 80 meters. Quickly and easily built. Crystal controlled 6L6; rectifier is 5U4G. Designed to operate with folded dipole antenna; instructions also for use with random-length antennas. Has terminal strip at rear to permit metering plate current. Overall size: 6¾x10¹⁄₁₆x7½". With 80 meter coil, punched chassis, all parts and instructions; less crystal and tubes. For 110-120 volts, 60 cycle AC. Shpg. wt., 7½ lbs.

83-524. *NET*..... **$24.45**

83-522. 20 meter coil.

83-523. 40 meter coil. *NET EACH* **$2.94**

Tubes: 5U4G, **$0.84**, 6L6G, **$1.79**

Popular "JK Stabilized Crystal"

Type H-43. Popular Amateur type for 3.5 to 4.0 mc., for transmitters above. X-ray oriented, optically lapped and carefully stabilized. Rectangular case holder with ¾" spacing. Low drift 1 cycle/mc/°C. Size, 1⁷⁄₁₆x1⅛x1⁷⁄₁₆". *Specify frequency.* **99-270.** *Only*.... **$2.80**

ICA CODE PRACTICE RECORDS

Consists of 5 vinylite 78 rpm records with code recorded on each side. Speed progresses from 2 to 15 words-per-minute in 10 lessons—soon the beginner can copy code with ease. Includes record album and instructions. Shpg. wt., 6 lbs.

89-950. *NET*..... **$10.73**

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Here are just a few of the hundreds of "buys" you'll find in your 1953 ALLIED Catalog. For ALL the new gear, for ALL the best values, get and use this 236-Page Buying Guide...

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Ideal Amateur microphone at low, low cost! Fine for mobile operation. Noise-cancelling single-button, carbon differential type. Maximum intelligibility under conditions of extreme noise. Blast-proof, water-proof and shock-resistant. Response: 100-4000 cps. Output:—50 db. Press-to-talk switch. Supplied with 5 ft. cable. Size, 2¼x1½x1⅛". Shpg. wt., 8 oz.

99-587. List, $16.50.

***Only* $9.70**

ANTENNA VALUES!

Amphenol Folded Di-pole

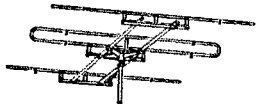
New folded dipole antenna kit. Features high-strength laminated "T" block to insure permanent positive contact to transmission line. Copper-clad steel conductors. Complete with 75 feet standard 300-ohm twin-line feeder. Ready-cut to low end of Amateur band for easy trimming to any frequency. Shpg. wt., 4 lbs.

98-318. 10 Meter (18 ft. length). *Only* **$5.23**

98-319. 20 Meter (35 ft. length). *Only* **$5.88**

98-320. 40 Meter (68 ft. length). *Only* **$7.64**

98-321. 80 Meter (134 ft. length). *Only* **$11.02**



Hy-Lite 3-Element Rotary Beam

Ruggedly constructed; quickly and easily assembled. Elements are high grade telescopic ⅝" and ¾" aluminum tubing. Elements have locking clamps to secure setting after tuning. Strong aluminum castings support adjustable reflectors, directors and elements. Crossarms are 1" aluminum tubing. Complete with 6' mast, less transmission line. Shpg. wt., 28 lbs.

97-496. 10 Meter (matching 52 ohm coax). *Only*..... **$42.40**

97-497. 20 Meter (T-match, 52-300 ohms). *Only*..... **$64.95**

AMATEUR STATION CLOCK VALUES

Fig. A. 24-Hour Amateur Station Wall Clock. Marked in 24-hour time (0000-2400). 10" dial with sweep-second hand; 6" inner dial shows time directly in all world time zones. Self-starting. For 110-120 volts, 60 cycle. AC. Shpg. wt., 3 lbs. **78-325.** *NET*, including excise tax..... **$15.00**

Fig. B. 24-Hour Numeral Desk Clock. With seconds scale calibrated in 5-second intervals. Ivory plastic case. 4x7¾x4". Self-starting. For 110-120 volts, 60 cycles AC. Shpg. wt., 3 lbs. **78-341.** *NET*, including excise tax..... **$8.77**

78-340. As above, in ebony plas. case. *NET*, including excise tax..... **$8.77**

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news. When asked why I didn't put in some news of a particular activity I have had to say it was that no one had bothered to write in the news. (!) I wish to commend LZY, ZJO, IC, PGX, DD, TV, OWP, and several others who so ably assisted in various activities. You who assisted will know who you are, and an orchid to you. It is very disappointing to any SCM not to have the most in coöperation especially from the very people who elected him. It is expected that Karl Brueggeman, WØCDX, 1945 Kearney St., Denver, Colo., will be your new SCM and we wish him the best of success. Give him your best support! Also there's no reason why anyone should be so busy he can't spend two minutes a month filling out a card for the SCM to give news. Traffic: WØKHQ 192.

WYOMING — SCM, A. D. Gaddis, W7HNI — PKX, RM, is starting the YO Net rolling again after a summer lay-off. Your support is needed on 3622.5 kc. JDB has a new 183-D receiver and is helping with the OO job. GOH is keeping the transmitter in good tune. GS has a Viking transmitter. HNI heard JRG (Billings, Mont.) on *2 meters* three nights in a row. NHC is stumping the experts with transmitter troubles. MWS is moving. Lots of fellows want Wyoming contacts, so get on the air, gang, and report your activities on the first of each month.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Dr. Arthur W. Woods, W4GJW — RACES activity is reported as being at a high level in Huntsville, Birmingham, Montgomery, and Mobile. Looks like other cities could try to keep pace. Huntsville's club has come ahead faster than any other since the war in the matter of membership, activation, projects, monthly bulletin and, of course, AREC participation. Hats off to Huntsville, and other localities please copy! DXB notes that the lightning arrestor protected his house but not his transmitter. (Switch to Safety.) BFM claims 50 per cent operating time is for traffic. We think it's more nearly 100 per cent. UHA, in his first report (thanks, OM, for helping the column), reports he answers into AENB and MARS nets. KIX continues to skipper AENB, which now shows signs of enlarging. Traffic: W4KIX 51, GJW 37, BFM 24, UHA 17, DXB 5.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — Ole August Hurricane Able skeered us a mite but our weather net was right on the job, so congrats to all. The U. S. Weather Bureau Miami bulletin of Aug. 28th really gave our gang some good national publicity. Let's give our nets on 3675 and 3910 kc. even greater support. Daytona Beach: RWM reports new c.d. station with Harvey-Wells, SX-71 and NC-125. Deland: RVU says CQX/KH6 wants Florida contacts. Phil has the DX bug (BRB, please note) but took time for the CD Party. Fort Lauderdale: The AREC application for RACES license is one of the best prepared I have seen so far. IM says RACES has great possibilities. The Club deserves congrats. Ft. Myers: LNE is off to Japan. SMK took Advanced Class exam. Ken reports that FH, in Homestead, uses a Collins transmitter, SVX, of Winter Garden, will be at Fla. U. (I would like to have list of all there), and that UHC has passed out of the "N" class. UHC seems to be the lone ham in St. Augustine. SMK is off to Fla. U. Jacksonville: UGT, of West Palm Beach, called to give new QTH at Fort Jackson. The JARS really threw a picnic at WPDQ site. FJC toured the State to meet his Florida DX in person. Miami: WN4TYI's 50-watt rig is per May *QST*. Orlando: Mobileers include TOD, DQA, AWS, QN, and KCK. QN is on s.s.b. AKF says MTP is back and VXY is ex-3OVA. The gang welcomes the recovery of DQA, the EC. AKF says, "Beware of PE-75 deals!" Sarasota: THX is off to Iowa State U. with all new gear. LMT is getting c.d. radio under control. West Palm Beach: CKB will enter Fla. U. Bev, in West Virginia, visited 8PQQ, who is ex-PX1AR. MVJ reports that KH6AAH and W4WBM now are at West Palm Beach. IUJ and MVJ are proud papas. Traffic: W4FPC 173, DRD 160, PZT 129, LMT 57, WS 30, FJC 19, SVX 15, FWZ 10, TKD 8, RVU 6, IM 3, UJX 2.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: PQW. EC: PLE. AXP has new RME-50 to go with the RME-45. JM is building an FB console for the station. BYE is smoothing out the mobile rig. MFY is looking over 430 Mc. SMM is planning a new mobile rig. SSP is experimenting with a "J" antenna. SUQ has some high power about ready to turn loose. SYP has an FB mobile signal. UGQ is doing FB with JYK's old rig. UXW has another new rig. RDW is bird-dogging a coax whip for the EARS station, SRX. The Hair Net now has 15 stations reporting in for drills. RKH is getting set for mobile operation. The I Scream Net drills Monday nights on 29,560 kc. TTM has been studying for the Advanced Class ticket. NOX and NYZ have been handling G.I. traffic. BFD proves that you can operate on 14-Mc. 'phone with low power. ACB is getting steam up again. BKH handles G.I. traffic. MS is putting up three elements on 14 Mc. as well as ten elements on 144 Mc. WN4UYS is working on a receiver. UTB and VCB are members of the I Scream Net. 9CGO/4 has been heard on 28 Mc.

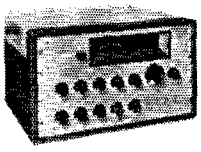
GEORGIA — SCM, James P. Born, jr., W4ZD — The

(Continued on page 94)

Just Arrived!

– and of course you'll see it at TERMINAL!

The NEW Hallicrafter Transmitter

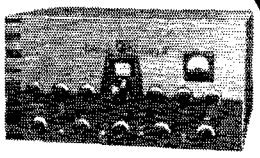


A versatile, completely TVI-proof transmitter with commercial performance at amateur prices! Complete bandswitching 10 to 160 meters. 10-position crystal selector switch. Spurious radiation at least 90 db. below full output. Pi network output for 50 ohm coax with special low pass filter. OUTPUT of 115 Watts CW or 100 Watts phone at continuous operation rating. Provision for external VFO and many other new features.

HT-20 complete with all tubes **449.50**

We regularly stock the complete line of Hallicrafter receivers.

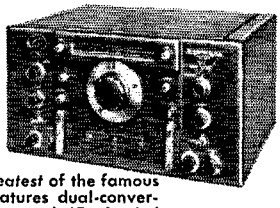
The NEW Johnson Viking II Kit



All the features of the famous Viking I plus TVI suppression in a special copper plated cabinet, up to 180 watts input to two 6146 final amplifier tubes and with many other new features making this the most outstanding transmitter kit ever offered!

Viking II complete with all tubes	$279.50
Viking II complete with tubes, wired and air tested	324.50
Viking VFO Kit, worthy companion to the Viking II	42.75
Viking Mobile Kit, up to 60 Watts input for that rig-on-wheels	99.50
Viking Low Pass Filter, 4 section, 75 DB Att., handles a KW	16.50
Viking TVI Kit, everything to TVI-proof the Viking I	24.75

New NATIONAL HRO-SIXTY



Here's the *latest* and the *greatest* of the famous NATIONAL HRO series! Features dual-conversion plus 12 permeability-tuned IF circuits! Many, many other newly designed features to make this the outstanding communications receiver value of the year! **483.50**

Matching Speaker **$16.00**

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SW-54 Built-in Speaker **$49.95**

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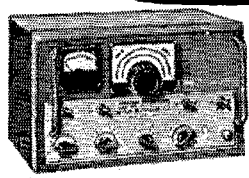
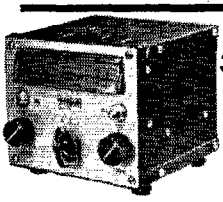


ELMAC 50 WATT TRANSMITTER

Fills a long-felt need for a moderately priced mobile transmitter with a real SOCK—or for a low-power regular or stand-by fixed station transmitter. 10, 11, 20 & 75 meter vith crystal or with direct-reading VFO on all bands. 50 Watts input, hi-level plate modulation, built-in *Pi* antenna Network, compact measuring only 7½"x7½"x12" complete with tubes.

A-54 for carbon mike	$139.00
A-54H for hi-Imp. mike	149.00
110 VAC power supply	39.50
6 VDC dynamotor supply	87.50
Electro-voice 210 carbon mike	16.50
Electro-voice 600D dynamic mike	23.10



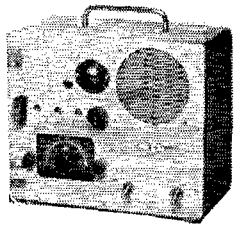
New SONAR 3-BAND RECEIVER

The complete 4-watt output receiver (not a converter) which has created such a sensation among the "mobile" gang! Covers 10-11, 20, 75 and 80 meters. Ten slug-tuned circuits, 8 tubes, with 500 KC IF's to give better than 1 micro-volt sensitivity. Exceptional selectivity. Built-in BFO and ANL. Full 180° electrical bandspread easily read on accurately calibrated full-view dial. Requires 250 volts at 80 Ma.

Complete with tubes, plugs and mounting bracket less power supply and speaker. **89.95**

— *Preview* —

The NEW GONSET 2-Meter XMTR-RECEIVER



A complete 2-meter fixed-portable unit, the new GONSET provides an ideal unit for home, mobile and portable use!

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Atlanta General Depot Amateur Radio Club was formed at a meeting held Aug. 4th at the Depot conference room at Conley, Ga. The Club starts with a membership of 34. Officers are as follows: CFJ, pres.; MIP, vice-pres.; Norma Luallen, secy.-treas.; WN4UMK, sgt. at arms. WN4WBB and WN4WEA are new hams in Savannah. The Carrollton Radio Club members made an enjoyable tour of the General Electric Anniston Tube Works in Anniston, Ala. Any club or group interested in visiting the tube works should write Mr. W. M. Nane, Manager, P. O. Box 1400, Anniston, Ala. for an appointment RJY has a grand harmonic, a girl. LWP is building new 500-watt rig with p.p. 810s in final and modulator OPE has a new 813 final rig and is active in traffic-handling. W4USA is active on 14-Mc. DX. Congratulations on his FB traffic count of 1508 this month. The Brass Pounders Net meets every Saturday night at 1930 EST on 3750 kc. The net is a slow-speed net and all are urged to meet it as often as possible and help our Route Manager, OSE, make the coming fall and winter season a highly successful one. MTS and TNT have their Advanced Class tickets. WN4WIX and WN4WND are new hams in Atlanta. EJN has a new rig on 14 Mc. p.p. 4-125A in the final. Traffic: W4USA 1508, EJC 151, POI 50, ZD 40, MA 25, OPE 19, HYW 17, KLJ 15, OSE 12.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: ES. Welcome to new AREC members HV, SK, TC, TF, and W3OIG/KP4. TF was W4JPY. KD returned from long State-side vacation visiting hams from Florida to Maine and westward from Illinois to Louisiana, stopping off at ARRL Headquarters, too KD and PK received Defense Day certificates. RD returned from the States with ulcers. QO is CAP station at Isla Grande Airport. GN is installing 75-meter mobile. AREC 3925-kc. net handled emergency traffic from Washington to Venezuela re shipment of medicine. W1UJX is visiting KP4. VP7NM and KG4AF report to 3559-kc. AREC net Mon. 8 P.M. PQ received Advanced Class ticket. CP and DJ switched to 600-ohm lines for all bands. PW has a new YL jr. operator. DV and RP are assembling Heathkit 'scopes. AZ is rebuilding 75-kw. 'phone. PRARC/AREC members participated in c.d. tests Aug. 8th for Dr. Carroll, FCDA Chief for Territories Mobiles in San Juan Area were DJ, DV, HZ, OW, and PR. Fixed stations in the island-wide test were, AK, CB, CP, ES, GO, HG, ID, ID/KP4, MO, MS, QJ, QO, QR, and ZK. Traffic: KP4DJ 12, ID 12, CP 10, PR 6, DV 5, HZ 3, ES 2, QO 2, HG 1, QR 1, ZK 1.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Samuel A. Greenlee, W6ESR — SEC: KSX. RMs: FYW, GJP. Mgr. LSN: FMG. Section Traffic nets: L. A Section Net (LSN) Mon. through Fri. — c.w., 3600 kc. at 2030. El Capitan Net (ECN), 3655 kc. at 2030, Mon. through Fri. BPL this month was made by GYH, HK, KY, and WPF. Orchids this month to FYW — the maker of traffic men. Through his administration of the El Capitan Net, many of us not ready for the "hot" c.w. nets are taught the principals of traffic-handling at restricted speed (*not* slow speed) on ECN. Some pretty fine operators are graduating from El Capitan and can hold their own in any company. Ham radio won't soon forget Irv's efforts. YSK *says* those stitches in his chin were occasioned by being slapped by a 420-Mc. ground plane gone beserk! YCF reports: ORW is on 2 meters; NGJ is gunning for OM YCF's code laurels — she has 25-w.p.m. certificate, PWZ (ex-W4) no likem his call (for c.w.); ZRR did an FB job handling 'quake traffic. JE has a new 10/20-meter beam, OHX and WN6PZZ are collecting stuff for beer-can antenna (!!!) and SLO Club notes: KL7ALC and WN6RWY are new members. IHD is finishing the Club's new mobile a.c. generator, and ENR is the club treasurer. WPF is burned up at some Wøs horse-and-buggy traffic ideas. BLY reports: KHT now is General Class; CAU and CQI did grand work locating a boy lost in the mountains; KHT, IXA, EYP, LPG, LDG, KJK, and MDD are new AREC members in Whittier. Your SCM was dinner guest of the "Hosts of the Coast" — the Radio 50 Club. Thanks, fellows, for a grand evening. NCP maintains traffic skeds on three bands. K6EA is in Wø-Land for the winter. DPL answers re hot c.w. operators on 40 meters; CCO, NCA, KHK, NCH, and MNN have Sunday 10 A.M. round table on 7250 kc. KYV is resuming his Eastern traffic skeds. To move Pacific or Eastern traffic in the daytime, break MCAN-4 on 3905 kc. Those boys and gals are *real* operators! WRT is new publicity chairman for LAYL Club. NTN is becoming an FB c.w. traffic operator. FMG sure is building LSN into an FB traffic net. JQB's new QTH is Riverside. LKF is Paso Robles 144-Mc. holder (120 miles) and wants the L.A. gang to beam his way, per FYW. AM met his DX contacts in eight countries during vacation. EBK is going low power on 10 meters. COZ reports: GAE is a newlywed; SW is going half-kw.; HYS, HCC, IDM, and KPD are back at college; DGB is back on 75 and 10 meters; WYM is a new father. ORI is busy de-bugging ARC-4 for 2 meters. GEB is on 20 meters in a big way. KSX just completed 48-ft. tower — now he has to move it 25 miles to new QTH. DPL has new "mixmaster" (electronic keyer). MU asks "wha hoppen" to 10 meters? Thanks for the slug of reports,

(*Continued on page 96*)

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After your period of training (at full pay), you may (1) remain with the company Laboratories in Southern California in an instruction or administrative capacity, (2) become the Hughes representative at a company where our equipment is being installed, or (3) be the Hughes representative at a military base in this country—or overseas (single men only). Compensation is made for traveling and for moving household effects, and married men keep their families with them at all times.

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Assurance is required that relocation of the applicant will not cause disruption of an urgent military project.

fellows, but b'gosh include more information on what you and the gang are doing, please. BHG received the second Master Traffic Handlers certificate ever issued. AREC notes by KSX, SEC: The Hexagon Net in SWLA is being granted AREC status. All nets are showing surprising activity despite summer doldrums. 'Tis said the Daylight Emergency Net is going great guns — Thurs. 146.8 Mc. (ONI, EC). Also reporting: BHG, CIX, CK, COF, EPL, GJP, GYH, HLZ, HOV, KQS, ONI, PIB, PMS, PWZ, QIW, WOO. Traffic: W6HK 2228, WPF 1152, KYV 1026, GYH 912, FMG 272, BLY 197, BHG 149, NCP 108, PMS 100, COZ 87, GJP 81, K6EA 79, W6HLZ 74, WOO 59, HOV 47, ESR 45, WRT 44, QIW 43, KSX 25, PIB 25, NTN 22, CK 19, JQB 13, FYW 9, AM 8, EBK 6, PWZ 6, ORI 4, GEB 3, COF 1.

ARIZONA — SCM, Albert Steinbrecher, W7LVR — Asst. SCM: Dr. John A. Steward, 7SX: SEC: OIF. RMs: JGZ, RJN. Ariz. Net: Tues. and Thurs., 7 P.M., 3865 kc. Phoenix Net: Tues. and Thurs., 7:00 P.M., 29 Mc. Tucson Net: Thurs., 8 P.M., 29 Mc. Ariz. YL Net: Wed. 7:30 P.M., 3865 kc. Ariz. 6&2 Net: Nightly 7 P.M. Ariz. MARS: Tues. and Thurs., 9 P.M., 4025 kc. A surprise state-wide simulated emergency was alerted by civil defense and the following stations participated in handling traffic: HYQ, KOY, KUJ, KWB, LVR, MAE, MDK, NYK, OEO, OIF, OQS, OXN, and RVD. Traffic was handled by OXN and RIJ for the Powder Puff Derby as the fliers passed through Phoenix and Tucson. FGG and UPF gave a demonstrative talk on 2- and 6-meter rigs before OPRC. LLO was in the hospital and PLM and DRQ fixed him with a bedside transmitter and receiver. 4IUT moved from Virginia to Winslow to take charge of radio station KVNC and is getting on 75-meter 'phone. NZS is on 6 meters. 6AIA/7 and DRQ are on 75 meters now, and QHT is on 10 meters. LTM is back on the air. NMU, OWL, and MED have moved to Tucson. PKM got his 30-w.p.m. certificate. NPA is up in Washington. OPS is in England. APE and PCU moved to California. MSQ moved to New Mexico. BH is rebuilding. New Adv. Cl: UKK, PJY. New Commercial: UKK. Appointees: PLEASE SEND IN ACTIVITIES REPORTS. Traffic: W7MLL 49, K7FAG 41, W7LVR 11, OIF 10.

SAN DIEGO — SCM, Mrs. Ellen White, W6YYM — Asst. SCMs: Shelley E. Trotter, 6BAM; Richard E. Huddleston, 6DLN; Thomas H. Wells, 6EWU. SEC: SK. RM: IZG. EC: DEY. The beginning of September brought considerable reshuffling of activity in the section. DVJ has left for Endicott, N. Y., to join IBM. OCY now is teaching field teletype to fellow soldiers in California. MLW passed his Class A exam and is eyeing 20 meters. WN6NNP is sporting a new HQ-129X on his operating table. OQY has dropped the "N" from her call. Congratulations, Betty! New gear at her station includes an HRO-50T-1! Within the space of just a few days, WN6DGZ worked WN6PZN, PZO, PZP, AND PZQ! The past bits of information were passed on to us by WN6NNP, who has a proper name for a ham: *R.F. HAM-NETT!* Our SEC, SK, reports splendid coöperation by local hams in the Harbor Days activities Labor Day week end. Excellent communication was furnished by local amateurs in coöperation with the Coast Guard Auxiliary. Best wishes for a quick recovery following an operation go to our former EC, IOK. Through the medium of this column I'd like to express my appreciation to all the hams in the area who have given me so much help and encouragement during the past few years. The OM and I are leaving for the East and this will be my last report. EWU will hold the reins until the new SCM is elected, and I hope you will give Tom and your new SCM all the aid, news, and friendship you have offered me. BPL for August traffic goes to the Pendleton crew, IAB. Traffic: W6IAB 3630, ELQ 349, IZG 343, FCT 9.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, William A. Green, W5BKH — SEC: JQD. RM: QHI. PAM: IWQ. With the coming of cooler weather the emergency nets have reorganized and have elected new control and alternate control stations. We wish to thank the retiring leaders BFA, LEZ, and KRZ of the NWTEN, NETEN, and NTEN, respectively, for a sometimes thankless job well done. Congratulations to PXI and KBU for NWTEN, LZV for NETEN, CC and JOU for NTEN on assuming responsibility of control. NTEN reports average attendance for the past year of 68.8, with RHP 100, RXI 96.4, RHC 94.5, LY 93, and DRV 92.5. NTX activity has picked up, with TGV acting as NCS Mon. and Wed. TSV, operated by the Pampa ARC, manned a traffic booth at the Top of Texas Rodeo. QHI demonstrated 2-meter operation to the Dallas ARC, stressing simplicity of equipment, modulated oscillator, superregenerative receiver and "J" type antenna. NUX, the c.d. representative, is scheduled for a talk at the Dallas ARC. The TARC local net now is operating on 10 meters. POG and SGR have returned from vacation, having attended SMARC Hamfest. ROH, of Big Spring ARC has given exams to eight Novice aspirants to date. LGY will be in Florida during Sept. and Oct. A sign of progress — youngsters TGV and TFB are reporting nice DX on 20- and 40-meter c.w. Traffic: W5LUP 755, BKH 188, IWQ 84, VRX 67, TSV 65, PAK 60, SRQ 57, UTW 56, CWE 47,

(*Continued on page 98*)

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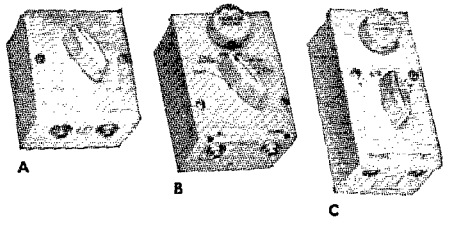

A B C

(A) BC-345. 3½" x 3" x 1⅞" aluminum, 2 standard open-circuit jacks, 3-position switch, 6-contact banana plugs and jacks.
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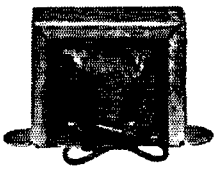

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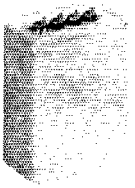

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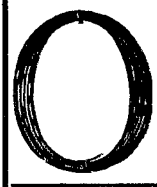

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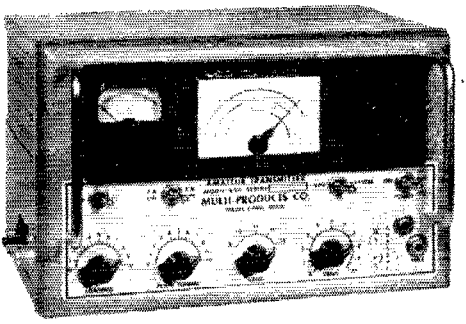

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RME-50, WITH SPEAKER	199.50
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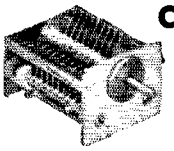

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RUM 32, QHI 28, EBW 27, RRM 15, TFB 15, KPB 12, UFP 10, TGV 2.

OKLAHOMA — SCM, Jesse M. Langford, W5GVV — SEC: AGM. RM: OQD. PAMs: GZK and ATJ: The Lawton-Fort Sill Radio Club held its annual hamfest and barbecue at Craterville Park near Lawton attended by 150 hams from all over Oklahoma and Texas. Included in the group were VE6WT and family, who were vacationing in the States. The SEC, Claude Gardner, and a group of Oklahoma City amateurs brought Mr. Gattlin, the communication officer for State Civil Defense, to the barbecue, where he became better acquainted with the Oklahoma amateurs. The following portable rigs were present: HFN, PML, and a panel truck with emergency radio equipment from Oklahoma City. QXW is new 75-meter 'phone. QJR and LWF are back in Chickasha after a tour of duty with the 45th Division. QJR soon will be operating 75-meter 'phone from Norman. LWF is building 10-meter rig. IKN is a new ham in Tulsa, with KY assisting. TVG is going up for Advanced Class license. A new AREC net has been organized at Tinker AFB. SLC has been averaging two new countries a week. SWN is converting mobile rig from 10- to 75-meter 'phone. REN is moving to WØ-Land. DKX is working 75-meter 'phone with a 16-foot whip antenna with excellent results. OLZ, the Oklahoma c.w. net, started operation for the winter on 3682.5 kc. Mon. through Fri., 1900 to 2000 CST. LCN, El Reno, was killed in a plane crash in West Texas. HZD had his antenna destroyed by lightning. Traffic: W5GZK 201, ROZ 169, OQD 95, PA 91, PML 76, MFX 50, KY 25, GVV 16, EHC 14, SVR 9, ESB 8, HFN 7, OFG 4.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — MN skeds H & B on 7150 kc. each A.M. and KG6FAA at 4:45 A.M. NIY is looking forward to renewed activity this fall. AQE is working in Odessa now and fighting bad QRN. PZS has been in Massachusetts most of the summer. The SARC recently had a swell party at the Pearl Brewery — plenty of cold 807s. HARC held a hamfest at FQQ's place on Old River. OFM found the 10-meter transmitter hidden by CCU and JYM found the 75-meter transmitter hidden by NUD. Plan now to attend the Convention in Houston — July 10-11-12, 1953; FJF, General Chairman. Zone 2 STEN had its annual get-together at Bellville and everyone had an FB time. WID now has a new Viking. OBS is an Engineer at KORA and is a senior E.E. student at A. & M. He is particularly interested in 2 meters. AC, the A. & M. Radio Club, plans to be on all bands. FJF is rebuilding his kw. rig with 4-125As in final and modulator. TPF, who does recording, is at present in college and working 80-meter c.w. 4PMG is at San Marcos A.F. Base and is on 10 meters, fixed and mobile. UTR is active down Port Arthur way. WVC is mobile on 10 meters and also works 80-meter c.w. Our good friend LLT was transferred to Washington, D. C. He is with the FCC and was in Houston for several years. An excerpt from my letter to him in behalf of So. Tex. hams: "You have long been considered a friend of the hams and have done much to cement the bond between us and the FCC. The FCC is indeed wise to select men of your caliber and the caliber of your associates to represent them. Our association with you in both official and social capacities will long be remembered by all of us who have had the good fortune and pleasure to know you." I quote from his letter to the hams of Southern Texas, "I wish to express to you, and to the Houston and Southern Texas amateur through you, my thanks for the farewell party and the letters of appreciation which were forwarded to the Commission. In reply to these gestures of goodwill I can only repeat my previous statement — that the four years of my work in the Houston and Southern Texas Area were the most enjoyable in my Commission experience." We all wish George and Mrs. Ashenden the best of luck. Traffic: W5MN 292, FJF 22, NIY 3.

NEW MEXICO — SCM, Robert W. Freyman, W5NXE — SEC: PLK. RM: NKG. PAM: BIW. Nets: Tues. and Thurs. at 6:00 P.M. and Sun. at 7:30 A.M. on 3838 kc.; Mon., Wed., and Fri. on 3633 kc. JZT now has 400 watts on the 80-meter c.w. net. NKG has high-power final started for c.w. net. RLL checks mobile rig for TVI by parking in front of appliance store with a TV in the show window. FJT has new end-fed Zepp and crystal calibrator. Ken won the prize for the first registration for the State Hamfest. BIW now has the 10-20-meter beam up after four years' planning. LDO is back on 75 meters in new QTH, antenna and modulator. PXA now is mobile on 75 meters. MUK is the proud pappy of a new harmonic. JYX has been transferred to DL4 and ONP has moved to Mishawaka. PSP has been doing an outstanding job with the Novice program in Artesia. AFU moved back to W6-Land. TOU is on 2 meters and now is Class A. DWB has new SS rig and will be tough on c.w. 6KOZ now is in Los Alamos. The Pecos Valley Club had a picnic with an excellent attendance. Traffic: W5NKG 50, RMH 17, NXE 14, ZU 13, JZT 5.

CANADA
MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. RM:OM. Thanks to FQ for pinch-hitting for your

(Continued on page 100)

BEGINNERS! Welcome to our Hobby!

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Since 1925, I've been extending a helping hand to beginners (and OT's too!) seeking information or gear for their shacks. Whenever you have a question, just ask me, or any of the other active Hams in my New York and Jamaica stores. You can always be sure of a dependable, unbiased answer. To all newcomers — welcome to our hobby, and good luck on your exam.

73, *Bill Harrison* W2AVA

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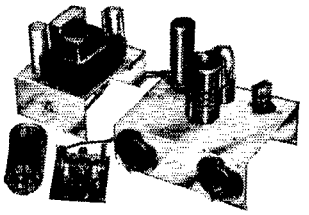

Here s a simple and economical way to get started in the Ham game! Easy to assemble kit brings you all the parts, tubes, drilled chassis, key, etc. to make this complete 25-watt input, CW transmitter and power supply. Covers both 75 and 11 meter Novice bands (can be used later on other bands). Uses 6L6 and 5Y3. Works with single wire antenna. Detailed instruction book gives step-by-step wiring, testing and operating information, including pictorial diagrams.

MODEL NT-200 KIT..... $29.40
Crystal for either Novice band $ 2.75

CODE PRACTICE SET

Consists of high frequency code buzzer with steady, adjustable pitch, and sturdy key with good contacts, mounted on bakelite base plate. Ideal for code practice! (Two sets can be connected for houses-to-house two-way communication.)

JOHNSON 114-450 (Less Battery) $2.64
4½-Volt Battery ..... 58¢

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Has three output frequencies and variable volume control. Ideal code practice set with provisions for phones and keys for group instruction. Use as keying monitor to aid in improving ham's "fist", or for adjusting modulation of transmitters. With tube and self-contained speaker. For 110V. AC or DC.

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FB for Novice (and even Extra Class!) Hams! Covers all bands, 10 thru 160. 40 watts input. Uses: 6V6GT xtal oscillator, 6V6GT buffer-multiplier, 6L6G amplifier, 6V6GT dissipation limiter, 5U4G rectifier. RF output indicator and internal antenna coupler for line fed antenna. All stages metered. Cabinet 9x15x11". Factory wired and tested, with tubes and coil for 80 meters, ready to operate (less only crystal and key).

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MODEL TR-75TV KIT..... $64.95
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Get on the air fast with this course that won't let you "flunk out!" Learning code made easy by new recorded method. Illustrated study sections cover theory, rules, equipment operation and on-the-air techniques. Explains step-by-step construction of operating equipment which can be used upon completion. Includes five 12" Columbia LP records for code instruction, 6 novice theory lessons and exams, ARRL License Manual, and other aids.

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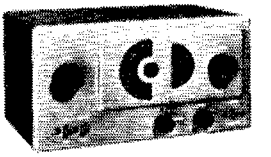

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SCM last month. Sorry to record the passing of two well known VE1s — BD and DI. Recent visitors include XE2NT, XE1W, VE8SF, ex-VO6EP, HG, IE, and VE2VW. HT and QC are receiving congrats on the arrival of jr. operators. AW has been on vacation down Sambro way with portable on 3.8 Mc. LY has returned from vacation in N.B., where he kept in touch with home with the portable on 3.8-Mc. 'phone. HC and PT had a nice trip to Cape Breton via the Cabot Trail and YV. NO has returned via the portable on 3.8 Mc. Both HD and OC have returned to the 3.8-Mc. band with nice signals. DQ has a revamped whip antenna for the mobile. Sorry to hear our newest Halifax XYL operator, AAW, is seriously ill. AFARS nets are being continued as c.d. nets in most cases awaiting word from the c.d. authorities as to acceptance. Renaming of nets using the words "civil defense" will serve to promote better awareness of our presence on the part of the public. AAK and MK made the BPL in July. A new station in Sydney is XV, Fr. McDonald, on 3.5 Mc. from North Sydney. Traffic: (Aug.) VE1FQ 158. (July) VE1AAK 704, MK 553, ABJ 164, AAL 38, AL 35, YV 21, JA 20, CS 19, ZM 9.

ONTARIO DIVISION

ONTARIO — SCM, G. Eric Farquhar, VE3IA — AVS enjoys his Eddystone receiver. BUR announces TRN will be on regular fall sked in October, with AJR being liaison from Ontario 'Phone Net. Frequency is 3675 kc., time 1945 and 2130 EST. SG visited W2RSR. Toronto Emergency 28,250-kc. net has resumed fall and winter activity. ATR keeps splendid skeds with 4DX. OSN and QON nets were hard hit by skip conditions. VZ is the latest Hamilton ORS appointee. BSG won the hidden transmitter hunt in the mobile section of Hamilton Amateur Radio Club picnic. Welcome to our midst to ex-G5JO and ex-LA3HB. BV now is putting ten words to the line with a "mill." AUU heard ZLs on 7 Mc. early mornings. BCV, president of the Quinte Club, snagged a fine prize, a V.T.V.M., at the Club's annual picnic. BSQ recently added an SX-71 receiver to the shack. Ex-VE3BCF now is located at Clinton. ATR, IA, NQ, TG, and W2GRH were instrumental in getting traffic into Newfoundland which enabled the addressee to get home for a funeral. Our sincere sympathy to TM, of Leamington, on the death of his father. Bob was located through the mention of a BCL to one of our section's top c.w. men. ATR, in Kincardine, while down town met a BCL who said that there was an appeal over the local radio station for information as to the whereabouts of an amateur who was believed to be in the area. A short while afterwards, TM rolled into town and called upon ATR. Information led to TM being the person wanted. Michigan State Police, Ontario Police, and radio stations had been alerted. After a short visit TM was homeward bound. Traffic: VE3WY 205, ATR 164, BUR 101, IA 62, NG 44, BJV 43, AHO 42, DU 18, EAU 15, SG 7, AUU 5, DFE 5.

QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — DR again is active on 80-, 40-, and 20-meter c.w. with Sonar VFX680 and has renewed ORS appointment. ACM has had his call changed to FP. DX has been transferred to Vancouver, where he is operating under the call 7QW; he is looking for VE2 contacts on 20 meters in the evening. APP is on 20-meter c.w. with 40 watts from Montreal. FX is active on 20-meter c.w. from Mount Royal. IS is rebuilding transmitter, necessitated by the old rig burning up! CK has been providing 'phone patch for some of the Far North boys. CA, Earle, and Phyl were hosts on Labor Day to the entire gang from Nottingham Island, VE8TL, Resolution Island, and Bob and Pearl, VE8RT, Cape Dorset. A swell Arctic get-together was enjoyed. TH is back in Montreal looking for a place to hang the sky wire. RI has had his call changed to AM and finds that he is kept busy convincing some of those he contacted under the old call that he is one and the same. QN reports continued drills of the AREC in the Quebec City Area. AIO still is building his new super-receiver, and is working to improve the mixer performance on 144 Mc. W1TQD/VE2 is a student in Montreal for the coming year. He has Eldico-TR75, VFO-controlled with S-40B receiver. Traffic: VE2CA 53, GL 6.

VANALTA DIVISION

ALBERTA — SCM, Sydney T. Jones, VE6MJ — GJ has accepted ORS and OPS appointments and is eager to hear from interested amateurs wishing to work with him in forming a c.w. net in Alberta. SC has arrived in Edmonton, having formerly held the call 4DB in Winnipeg. EA has a new house well under way and is reported to have some very definite plans for the future. GD had better look to his laurels or he will be next. WO is new reporter for Northern Alberta for RF and has qualified for Class A ticket. HM and his XYL visited old friends in Prince George. EH and his XYL made a flying trip to Vancouver over Labor Day week end. BV is active again after many years' absence. EP has hit the ham bands on 7-Mc. c.w. LQ has spent a busy

(Continued on page 102)

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Hallicrafter S72L $119.95; S72	109.95
Hallicrafter SX71 $199.50; R46	19.95
Hallicrafter SX73 $975.00; SX62	289.50
Hallicrafter HT20 xmitter	449.00
National SW54	49.95
National NC125	149.50
National NC183D	369.50
National HRO Sixty	483.50
Hammarlund SP600JX $985.00; HQ129X	199.50
Johnson VFO kit (wired $17.00)	42.75
Johnson mobile xmitter	99.50
Johnson Viking II and tubes	279.50
Gonset xmitter $124.50; Gonset Triband	47.60
Morrow 3BR $64.95; 2BR $54.95; 1BR	44.95
Elmac A54H $149.00; Elmac A54	139.00
Harvey-Wells Deluxe $137.50; Senior	111.50
Lysco 600S $189.95; Lysco 600	143.95

Some prices higher on west coast

Gonset, Stancor, Millen, National, Hallicrafters, RME, Bud, Vibroplex, Monkey, B & W, Johnson, RCA, Hy-Lite, Workshop, Elincor, Jensen, Eimac, UTC, Thordarson, Astatic, Turner, Bliley; I have everything for the amateur.

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summer working on his new house. AE has moved to within one block of MJ. DZ has been having receiver trouble but is back in business again. WS has equipment installed in new ham shack and is about ready to try out his new QTH. UJ has been heard working mobile from Cow Town. This column is only made possible by your reports to your SCM. Let him know what you are doing; it makes his job easier. Traffic: VE6HM 179, OD 38, GJ 25, MJ 11.

BRITISH COLUMBIA — SCM, Wilf Moorhouse, VE7US — DH, CX, AOB, ALJ, QC, AC, and AMJ reported this month. The Nanaimo Club was host to members of the AREC at a hamfest gathering in Nanaimo attended by 29 amateurs at which a discussion took place re AREC activities. The SCM, SEC, and ECs AOB, QC, and DH attended. The Vancouver c.d. heads are planning to set up communications and to use AREC members. US's 500-watt rig is now the property of APN at White Rock. QC visited PNE and Vancouver and the VI gang for a few days. The PNE exhibit was considered good and thanks should go to AOB and his helpers. The BCARA is attempting to reorganize its function. The Fraser Valley Amateur Radio Club reports the AREC Net is on 2 meters every Monday evening. AMJ is on with 300 watts. JB is handling Rothman's Marmax items. TM is on 75 meters with a good signal. DD spent his holiday throughout the interior with good fishing results and with AKD for company. The SCM is solidifying AREC organization with up-to-date roster lists for all interested officials. BJ and the 5PX Net still is operating daily. OD was host to 6WB, who was in British Columbia for the holidays. FB was quite active around Vancouver. AOB, Vancouver EC, is active with his mobile and his planning for AREC in his metropolitan area. Traffic: VE7QC 49, DH 25, AOB 18, AC 8, AMJ 3.

PRAIRIE DIVISION

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — During the annual regatta at Wakaw and Saskatoon the following hams took part handling communications: EE, YF, FY, CJ, JF, and DR. RV, at Cudworth, had a crowd around his car listening to the events as they took place; the big rig with CJ ran ½ watt. 4NR now signs VE5RH at Saskatoon. 8WM visited Saskatoon and will be a VE4. FG will be OO by the time you read this, so watch your signals and Don won't be sending you a card. 4GV visited Saskatoon and informed us that Manitoba plans to have a provincial hamfest next year; he also wanted information on SARL for the VE4 gang. DR built a ZL special and is very pleased with the results. PR now is on 'phone. UQ/mobile puts an FB signal on 75 meters to cover the section. SY won a transmitter at the Regina Hamfest. AS, SS, and MK made it three of a kind, with the addition of a daughter to each family. Congratulations. TL "I" will resume this winter after being inactive last year and will clear any traffic. Frequency is 3690 kc. If you wish to join a c.w. net, contact TE. Traffic: VE5HR 16, GO 8, PJ 7, TE 6.

Strays

How times change! Compare the implications of this text from 1927's November *QST* —

Of fifty-six [U.S.A. WACs, there is] none whatever to represent the third district. Why is the third district so backward in coming forward? Surely at least one of the many active stations in that district must be interested enough in foreign DX . . .

— with the fact that this *QST*, 25 years later, has *four* W3s listed among the eleven stations which make up our DXCC Honor Roll.

—···—

Is W5LCA trying to drive us batty? While reading up on some animal lore he was particularly intrigued by the cleverness of bats in their application of radar principles and techniques. He inquires:

"When bats by the hundreds fly out of a cave how do they escape disastrous QRM? When two bats are zero beat which bat QSYs and in what direction, higher or lower? Do bats get away with chirpy signals? Are young Novice bats rockbound?"

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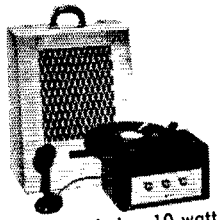

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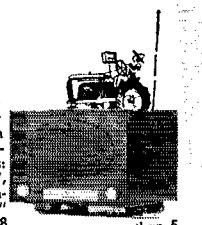

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Excellent as a Turret Booster or as converter for 10, 6, 2, 1¼ meters. (See QST July '51 Pg. 33—conversion article by Ed Tilton, W1HDQ). Either way—a real buy! One of the finest turret tuners ever designed. Balanced input and output circuits. Built-in transformer and power supply. Famous National TVB-2 turret tuner contains pre-set coils providing uniform bandwidth on all channels. Mahogany finished metal cabinet, 6½" x 5" x 5½". Brand new in sealed cartons with instructions. Shpg. wt. 7 lbs. Lists at $39.95. **$10.95**

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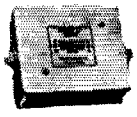

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1 KW Half-Wave	
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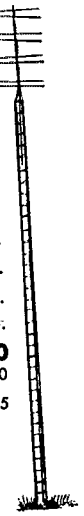

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Mobile Antenna Patterns

(*Continued from page 15*)

we changed db. readings to actual power ratio by use of the formula

$$db. = 10 \log (ratio).$$

This isn't as complicated as it seems. You simply take the db. figure, divide by ten (move the decimal point one place to the left), and then see (by use of a log table or a slide rule) what number has that as its log. That number is your power ratio. The last step is then to plot points and draw your curves, as in Fig. 1.

It should be pointed out that the pattern will be affected by the shape of the car, and the position of the antenna on it, and that some installations will probably have patterns radically different from the one shown here.[1] My thanks and half the credit for this article go to Bud Young, W7HMQ, for his assistance in compiling the data.

[1] It should be pointed out that these observations do not tell the entire story about your mobile antenna, which will probably have both vertically- and horizontally-polarized components. If the receiving antenna is a horizontal 3- or 4-element beam pointed at the car, and its feed line is well balanced, the resultant pattern will be that of the horizontally-polarized component from the car, and will represent the type of response to be expected when working fixed stations that use horizontal beams. If the receiving antenna is a vertically-polarized one, such as a vertical quarter or half wave, with a feed line that has no pick up, the resultant pattern will represent the response to be expected when working stations that have predominantly vertical polarization.

Further, the above statements are true only for short-haul work that doesn't involve the sky wave, since ionospheric propagation can be responsible for changes in the planes of polarization.

And, last but not least, the S-meter calibration is only approximate on most receivers, and must be checked or recalibrated for any close work. — *Ed.*

Strays

The United States (W/K) has common borders with but two DXCC countries. China (B/C) and French West Africa (FF8) are adjacent to fourteen and eleven, respectively.

—···—

Systematic forecasts of radio propagation conditions in the North Pacific and Alaskan areas are now being issued by the National Bureau of Standards Radio Propagation Field Station at Anchorage, Alaska. Disturbances affecting radio propagation have long hindered communications in the Alaskan area (as any KL7 will agree!) and this North Pacific Radio Warning Service will serve the same function for this area as is performed by the North Atlantic Radio Warning Service based at Washington, D. C. The Anchorage station is staffed by specially-trained forecasters and observers and will eventually operate on an around-the-clock basis.

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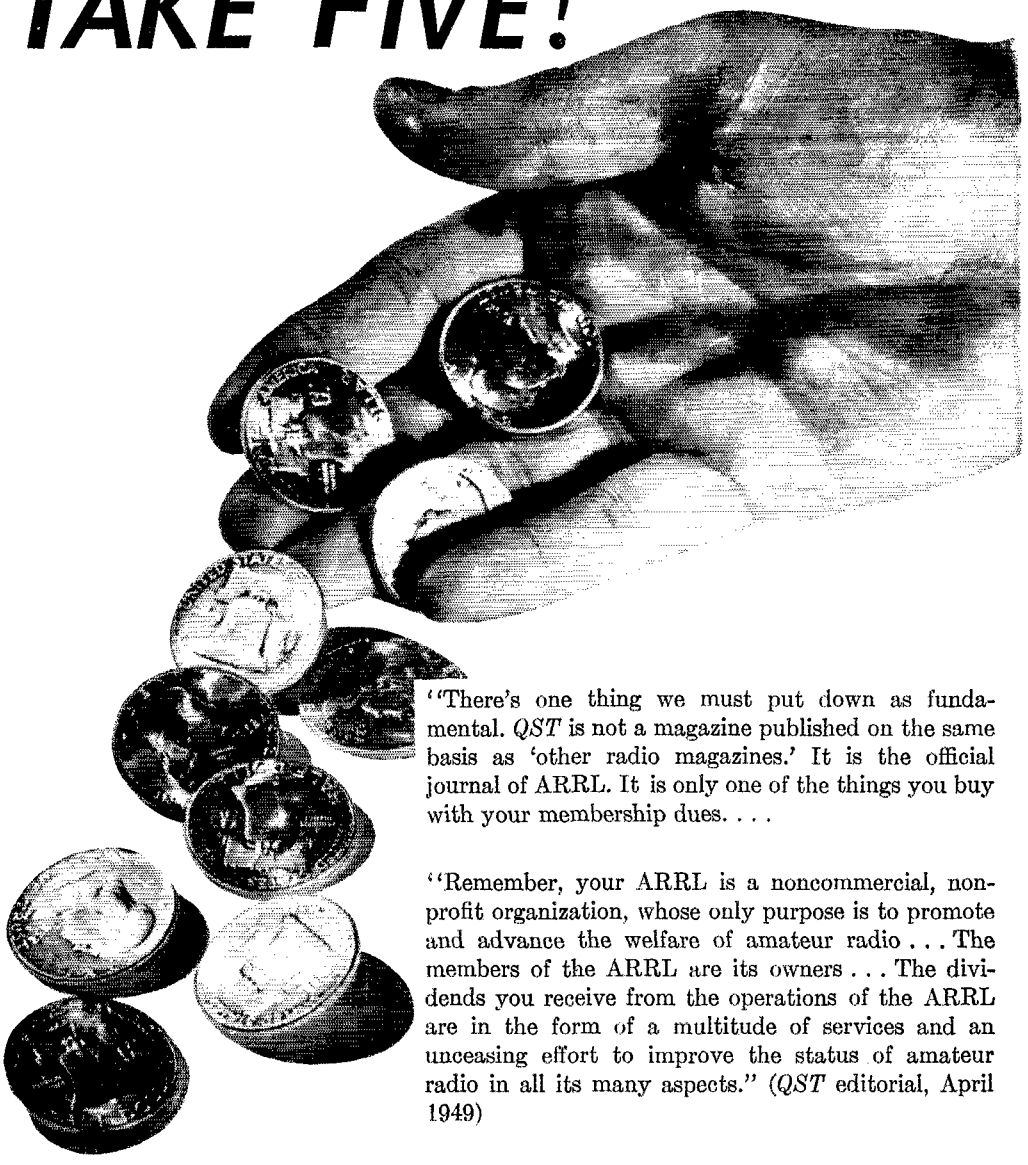

"There's one thing we must put down as fundamental. *QST* is not a magazine published on the same basis as 'other radio magazines.' It is the official journal of ARRL. It is only one of the things you buy with your membership dues. . . .

"Remember, your ARRL is a noncommercial, nonprofit organization, whose only purpose is to promote and advance the welfare of amateur radio . . . The members of the ARRL are its owners . . . The dividends you receive from the operations of the ARRL are in the form of a multitude of services and an unceasing effort to improve the status of amateur radio in all its many aspects." (*QST* editorial, April 1949)

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Utilizing Small Transformers

(Continued from page 20)

tive high voltage and ground in the normal wiring of a transmitter, thus making the peak heater-cathode voltage on each 6X5GT close to 1000 volts. Hence a separate small filament transformer was used for these two tubes, with the secondary connected to the center tap of the high-voltage winding as shown in Fig. 1. This reduces the peak heater-cathode voltage on each tube to about 500 volts, slightly over the rating but not excessively so.

To use the bridge rectifier with a transformer having appreciably higher secondary voltage would require two extra filament transformers instead of one, so that each rectifier cathode could be connected directly to the filament and thus eliminate the heater-to-cathode voltage problem. The insulation requirement is thereby transferred from the tube to the filament transformer.

Filters

The higher output voltage from the bridge rectifier of course necessitates filter condensers having higher working ratings than the ordinary electrolytic. For economy's sake this power supply uses a single-section filter, the input choke, L_1, being a type also standard with several manufacturers and rated at 10.5 henrys at 110 ma. d.c. Although the total current through it is normally around 150 ma. there is no danger of burning it out, because the intermittent-operation considerations apply equally as well to the choke as to the transformer. Since a bleeder is a necessity, a pair of resistors, R_1 and R_2, is used to divide the voltage equally so that electrolytic condensers can be used in series.

This power supply uses an old stunt that seems to have dropped out of use in recent years. The d.c. voltage at the center tap of the high-voltage winding is approximately half the d.c. output voltage from the bridge rectifier (with the 6X5GTs, the secondary forms an "inverted" center-tap rectifier system) and so offers a convenient means for taking off a lower voltage to run an oscillator, the amplifier screen, and so on. This tap is provided with a filter of its own, since good smoothing is needed for the low-level stage or stages in a transmitter. Only the input choke, L_1, is common to both filters. It was made common to both in order to save the cost of an extra choke. Entirely separate filters, with both input chokes in the positive lead (as is customary) could be used instead. A comparison between the circuit shown and separate filters with individual input chokes in the positive lead showed some differences for which we are unable to account completely; putting the choke in the negative lead seems to give some of the characteristics of both choke- and condenser-input filters. We mean by this that the output voltage from the bridge rectifier is higher than it should be, theoretically, with a choke-input filter, although it is not as high as with condenser input. With the choke in the positive lead the load voltage comes down to

(Continued on page 108)

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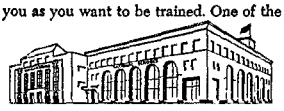

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the proper value. The transformer capacitance shunting the choke when it is in the negative lead has been suggested as an explanation, but tests show that it does not begin to account for the whole effect. The net result is that with a 100-ma. load the output voltage is 600 with the choke in the negative lead as against slightly over 500 with it in the positive lead.

Heating

Several heat runs were made on the unit under representative operating conditions, using it to power a 6V6-807 transmitter in which both tubes were keyed. In a typical run of several hours during which the transmitter was kept on the air as much as possible in ordinary rag-chewing, the secondary winding showed a temperature rise of approximately 35 degrees C. over an ambient temperature of 27 degrees C. (80 deg. F.) and the primary a rise of 31 deg. The plate input to the 807 was adjusted to 53 watts (630 volts at 85 ma.), the figure at which the tube happened to work most efficiently. The measurements were made by the resistance method, and allowing the customary 10 degrees for hot spots gives a final secondary temperature of a little over 70 degrees — far below the 95 degrees generally considered the maximum safe temperature for the type of insulation used in these transformers. In another more severe test the unit was operated with the same load on continuously for a half hour, off 15 minutes, and on continuously for another hour. The secondary showed a temperature rise of 56 degrees after this test, still within safe limits. For comparison, a small transformer operated at its ratings in a condenser-input receiver supply also was measured after a few hours of continuous operation, and the temperature rise was measured to be 61 degrees C. Like most transformers in such supplies, the temperature of the small unit was such that the hand could not be held on it continuously. The transformer in the supply shown here, on the other hand, while noticeably warm, was by no means too hot to hold continuously, after the "half-hour on, etc.," test described above.

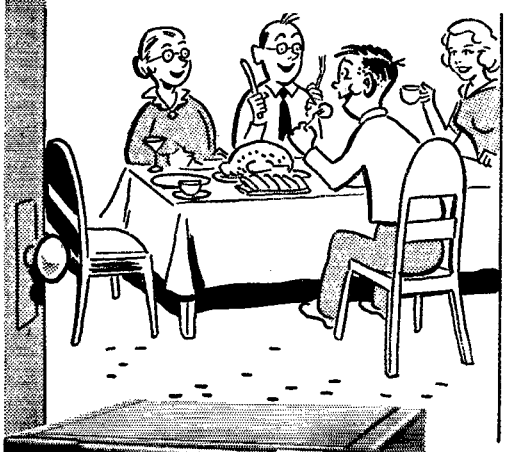
Output Voltages and Currents

The 40,000-ohm bleeder on the high-voltage tap holds the no-load voltage at about 770 volts (with a line voltage of 117). The no-load voltage on the low tap is held at about 300 by the input choke and high-voltage bleeder, and so the low-voltage bleeder is used simply to discharge the filter condensers. There are no set current ratings on this unit, but as more current is taken from one tap less should be taken from the other. Bear in mind that the current from the low-voltage tap has a greater heating effect on the secondary because it is coming from a center-tap rectifier. The transmitter we have used with the unit happens to take about 30 ma. from the low-voltage tap, at which current the output voltage is 240. Another 20 ma. could easily be taken for an additional buffer or frequency multiplier.

On the high-voltage side the voltage drops off

(Continued on page 110)

THANKFUL, YOU BET!



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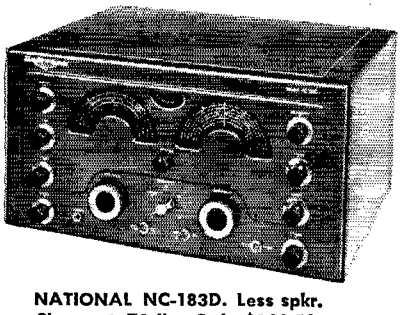

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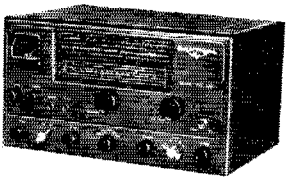

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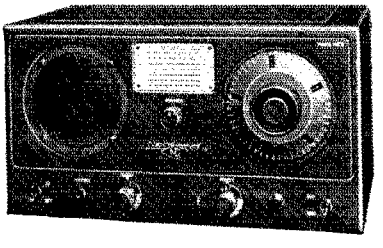

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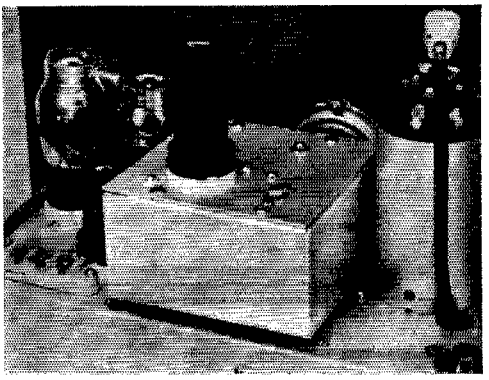
as the load current is increased, principally because of increased drop in the rectifier tubes. Because of this the practical limit was about 60 watts with the particular transformer used. This is a quite satisfactory power level for a small transmitter. The filtering is more than adequate to bring "pure d.c." reports, the ripple measuring 0.4 per cent on the low-voltage tap and 3 per cent on the high voltage, at the load currents mentioned earlier.

35 Watts for 80 and 40

(Continued from page 24)

the reading will be much lower, dipping to just a few ma. at resonance.

Remember that both C_{12} and C_{22} tune through the entire range between 3.5 and 7.4 Mc. This means that in addition to tuning to the desired second and fourth harmonics of the oscillator frequency, both the doubler and amplifier circuits can be tuned to the third harmonic, which is not in a ham band. The third harmonic (5250 to 6000 kc., depending upon the oscillator frequency) is tuned near the center of the range, while the desired second and fourth harmonics are tuned near maximum and minimum capacity respectively. Avoid the center of the dial, then, unless you want to operate outside of the ham bands! It is suggested that a little red paint, or nail polish, be used to blank out the "out of bounds" portion of the two dials. This is especially important if the equipment is to be used as auxiliary gear by operators not familiar with the equipment. The safest course is to check the output frequency with a wavemeter.



Close-up of the oscillator box, showing the shock mounts and general parts placement. The adjustment shaft for C_3 comes through the top to the right of the 6AG7. All parts for the oscillator grid circuit are mounted on the inside of the cover of the box. Also shown is the shielded lead running from the plate of the 807 through the top of the chassis.

With the doubler plate circuit tuned to 3.5 Mc., about 3 ma. grid current flows in the 807 stage. Somewhat less than this is to be expected when the stage is tuned to 7 Mc., but at least 1.5 ma. is required for efficient operation. If grid current is much less than this, it can be improved materially by using a 50-μh. choke for L_2, paral-

(Continued on page 112)

leling it with a 3- to 30-$\mu\mu$fd. compression trimmer, and then tuning the circuit to produce maximum current in the 807 grid circuit. This alternative method results in considerably sharper tuning of the doubler stage, with frequent peaking of C_{12} needed as the oscillator is tuned from one end of the band to the other. With the 100-μh. choke specified in the parts list, the circuit is fairly broad, and C_{12} need not be peaked so often.

Representative operating data for the transmitter are given in Table I. Once you have checked the operation of the doubler stage by measuring its cathode bias, no further metering of the stage is needed unless wide differences between the tabulated reading and the ones obtained are noted.

The transmitter may be operated with any of the usual antenna couplers, depending upon the type needed by your particular antenna set-up.[4] The output circuit is capable of working into a fairly low impedance load without the use of a coupler, but one is recommended even in this case as a harmonic-reducing measure.

Results

The rig has been tested on the air, and reports have been excellent. The first two stations contacted gave tone reports of T9X before they even knew that a new rig was being tested, and all subsequent reports have been T9 or better. There is no chirp when the signal is keyed, and key clicks are below the level where they could be called objectionable. It is inevitable that there be a slight click on both make and break in any keyed-oscillator rig, but by minimizing the current drawn by the oscillator tube, and using somewhat less than cut-off bias on the amplifier, clicks are kept well below the point where filters are needed. The fact that the rig runs only about 30 to 35 watts input is no drawback at all, with contacts being easy to make and hold. It could be that the "clean" signals get the best results. We like to think so, anyway, and we're pretty sure that it is true.

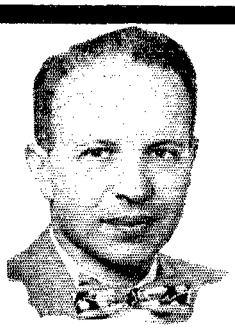
[4] The design information needed for suitable couplers can be obtained from the *ARRL Antenna Book, The Radio Amateur's Handbook*, or from the following *QST* articles: Smith, "Getting the Most Out of Your Antenna," *QST*, July, 1952; Smith, "Practical Antenna Couplers for the Novice," *QST*, August, 1952.

Reception of Single-Sideband

(Continued from page 26)

incoming signal, and increase the amplitude of carrier injection to a point that approximates the amplitude of the s.s.b. signal. When this point is reached, the S-meter will no longer swing with modulation. Carefully adjust the frequency of the external oscillator until the voice sounds natural. Rock the receiver bandspread dial back and forth across the carrier. You will easily be able to tell which sideband is being transmitted. As you leave the carrier, on one side the audio will drop off; as you swing on the other side, the

(Continued on page 114)



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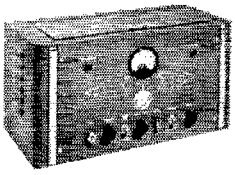

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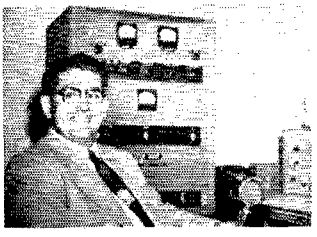

Photo courtesy of Bob Carothers, W7QAT.

Here are some excerpts from a recent letter received from E. K. Bryant, W7CWC, Minister of the Longview Church of the Nazarene, Longview, Washington.

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audio will come up. The more selective the receiver, the more pronounced this effect.

An s.s.b. signal suffers a certain amount of nonlinear distortion when demodulated by a linear rectifier. The amount of distortion produced is relative to the modulation depth of the injected carrier by the s.s.b. signal. Increasing the carrier injection above the 100 per cent modulation point will reduce the nonlinear distortion in the detector to a negligible amount. Increased carrier also helps swamp out adjacent channel QRM and generally to improve the signal-to-noise figure.

The advantages of front-end carrier insertion are:

1) Stability of the received signal.
2) S-meter reports may be given on s.s.b.
3) It makes round tables including s.s.b. and a.m. stations practical, since the receiver remains in the a.m. position at all times.
4) Oscillators in the s.s.b. exciter may be used to furnish the stable carrier to the receiver, providing consistent "on frequency" operation of the transmitted signal.

Point 4 is very important from the standpoint of pleasurable operation and good operating practice of a s.s.b. station. Since the oscillators in the s.s.b. exciter furnish the carrier to the receiver, the transmitted signal is automatically on the same frequency as the received signal. This means that only one oscillator has to be adjusted to get both the receiver and the transmitter on the same frequency. Of course, any large frequency shift would require resetting of the receiver bandspread dial. This method, if universally adopted, would make practical operation of single sideband as simple as operating an a.m. transmitter, by eliminating the extra tuning procedure. With amateur s.s.b. operation still in its infancy, elimination of a tuning operation may not seem of much importance. However, as new s.s.b. stations come on the air and spread out on the bands, the elimination of a tuning operation becomes more important. If all s.s.b. stations involved in a voice-controlled round table were using their exciter VFO for carrier insertion to the receiver, they would remain on the same relative frequency. Using this system, any drift occurring in the local VFO, or drift occurring in a VFO on the other end, is compensated for while listening. It would not be necessary to halt the entire round table QSO every so often and realign on somebody's frequency. Proof of the need for the adoption of this operational method can be obtained by listening to any large s.s.b. round-table QSO on 75 meters. Note the confusion and the lost time caused by off-frequency operation. Then, too, it is rather difficult to impress anyone that single sideband has come of age and can step in the same ring with a.m. after they listen to that sort of operation.

There is another advantage to VFO carrier insertion. Those who have used it have found that when they are in QSO using voice-control

(*Continued on page 116*)

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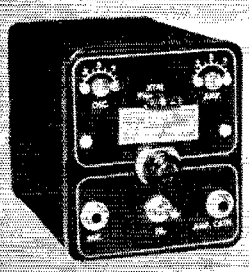
All-Band TVI-Free Transmaster Model 600S. Features a built-in "clamp" tube modulator plus a switching arrangement whereby the power amplifier may be turned off to tune-up or zero-beat another signal without blocking the receiver or causing unnecessary interference to other stations on the frequency. This switch also provides a means for switching from phone to CW operation. Operates on 160, 80, 40, 20, 15 and 10 meter bands. Crystal or VFO operation possible on all bands. Temperature compensated. Uses 6AG7 oscillator, 6AG7 buffer, 807 amplifier, 5U4G rectifier. Power input, 35 watts. Output, low impedance 50 ohm line. Black wrinkle-finish steel case, 17x9x11". For 115 volts, 60 cycles. Wt., 50 lbs.

97F040. NET.....189.95

97F041. Model 600RS.
As above, rack mounted **189.95**



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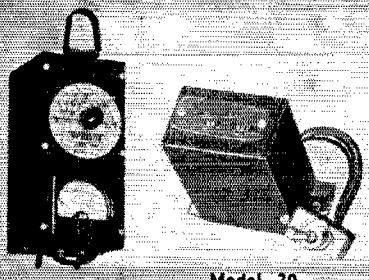
20 Meters	A114T	97F046	A114	97F045
75 Meters	A175T	97F054	A175	97F053
Using 3-6V6GT's	**WITH TUBES**		**LESS TUBES**	
10-11 Meters	B129T	97F052	B129	97F051
20 Meters	B114T	97F048	B114	97F047
75 Meters	B175T	97F056	B175	97F055
NET EACH	33.55		29.95	



Model D11 Grid Dip Meter. Model 30 Noise Limiter.

Model D11 Grid Dip Meter. Extremely versatile instrument that can be used as a grid dip meter, an absorption wave meter, a CW or phone monitor, a signal generator, or a field strength meter. Frequency range when used as grid dip meter, 3.4-160 mc; as signal generator, 3.4-300 mc. Includes 5 plug-in coils. Uses 955 tube. Size, 3x9x 3½". Ready to operate, with meter, tube and power supply. For operation from 115 volts DC, or 110-120 volts, 60 cycles AC. Shpg. wt., 4 lbs.

97F043. NET.....39.95

Model 30 Noise Limiter. Fully adjustable peak noise limiter for use with any superhet receiver. Power requirements, 6.3 volts at 150 ma AC or DC; 100 volts at 6 ma DC. Uses 6AL5 tube. Size: 1½x3x1¼". Wired and tested, with tube. Shpg. wt., 1 lb.

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break-in operation, they can control the QRM situation very nicely. If they hear QRM come in on the low side, they merely move the VFO higher until the QRM disappears. If the QRM comes in on the high side, they move the VFO down until the interference disappears. With the tuning ease afforded by this system, rapid QSY is practical, providing a most effective way to dodge QRM.

Construction of signal-frequency carrier generators will be discussed in a subsequent article.

YL News and Views

(Continued from page 87)

IS1EHM, Maria Marras, was the lucky recipient of a new antenna, the gift of Prince Talal, HZ1TA, son of Saudi Arabia's King Ibn Saud. The Prince flew to Sardinia to meet Maria after a year of QSOs.

—•••—

CR7LU, Lucia Tome, at right, is the only YL in her country who operates c.w. There are only two other licensed YLs in Mozambique — CR7AI, Maria, and CR7IV, Tina, and respectively they work twenty and ten 'phone only. Lucia uses an S-38 receiver and runs 50 watts on twenty c.w. She's generally on 14 Mc. from 1200 to 1400 GCT. DXers might give a listen.

—•••—

Kay Burke, W3QPJ, YLRL chairman of the Third District, recalls her earliest concern about amateur radio was keeping her OM's (W3AAX) first rig, which incorporated a 48-jar chemical rectifier, out of the living room and in the attic. It wasn't until the shack graduated to the house proper that she became earnestly interested. (This deserves consideration, OMs, or are you already in the dining room?) In 1950 she obtained her *General Class* license, and the following year became Advanced Class. No problems at all now — Kay loves to operate all bands from 10 through 80 using her Collins 32V-1 and HRO50T1. She's a member of the Amateur Transmitters Assn. of Pittsburgh, the AEC, RCC, the Pole Cat Net, and she has received two ARRL Public Service Certificates. This year she demonstrated her enthusiasm for YLRL activities by placing third in the YL–OM contest.

Strays

D. C. Watts is W5NIR. . . . W. A. S. Case is VP4TAA. . . . I. Sparks is ZL1TD.

—•••—

One ex-ham to another, sitting on a cloud up in Ham Heaven: "I ran a kilowatt for thirty years and only got shocked once!"

— *W2IHD*

—•••—

W4OFX escorted a busload of 36 Boy Scouts on tour from Tennessee to New Mexico and worked ten 'phone en route and back. Ottie had some nice QSOs in W5 while transmitting with his portable on the back of a pack mule. Next year it's California or bust!

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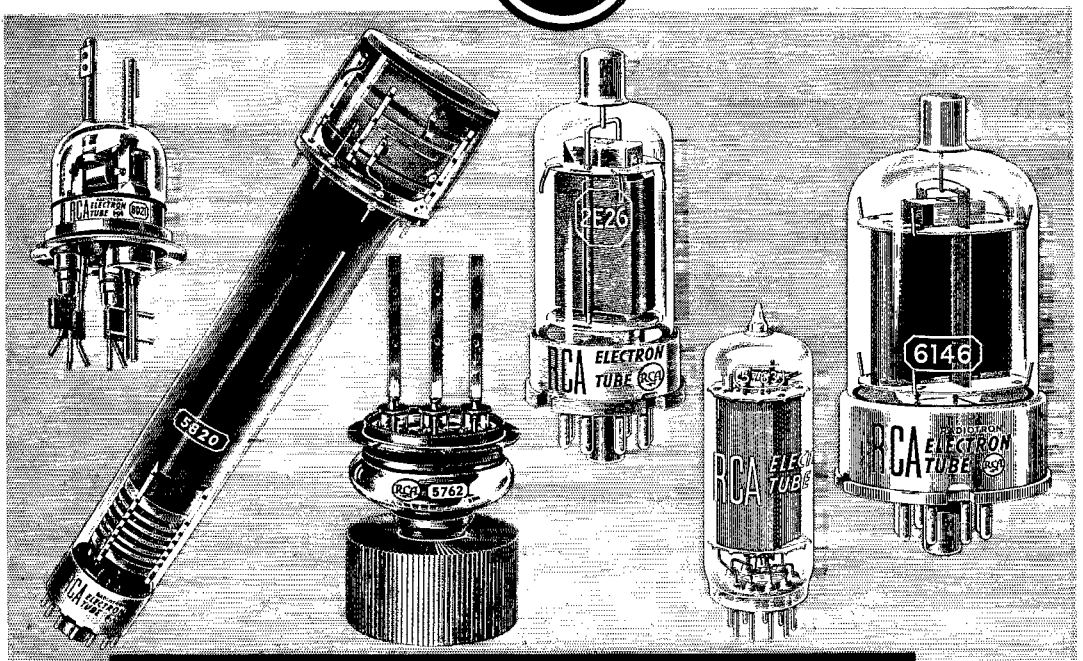

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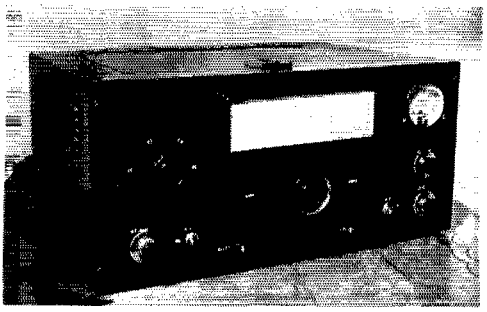
Turret Switching

(Continued from page 35)



Even the chassis and cabinet are homemade in this double-conversion turret-tuned receiver.

ments are complete, the coils are made secure with a thin coat of coil dope.

The front end was aligned by first adjusting the oscillator coil so that it would cover the desired frequency range (the limits are 1700 kc. added to the limits of the tuning range of the particular band). Then the r.f. and mixer coils were pruned until they could be peaked in the middle of the band, and the bandspread taps were then adjusted to cover the range.

Two positions on the bandswitch are not being used yet, but they are available for 21 Mc., 160 meters, the CAP frequencies, or even 50 Mc.

Tech Topics

(Continued from page 44)

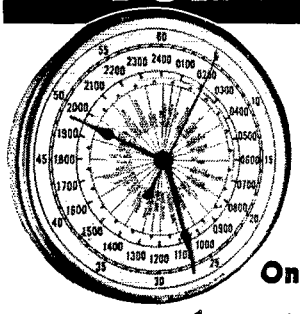
favors the information from both ears. (Don Norgaard has mentioned this psychological effect.) With exalted-carrier reception, as you tune across a signal, the heterodynes seem to move right straight through your head. You know by "feel" which way to turn the tuning knob for oscillator lock-in.

With this binaural system, there seems to be a new realism. Voices (and music, too) seem to come to life. It is almost like walking into a broadcasting studio. Friends concur with me on this. I cannot understand why the difference should be so great nor why the binaural way is more pleasant. Adjusting the level of the 'phones independently proves nothing. Tests made with both 'phones on show a marked difference in "realism" when one 'phone is switched from one sideband to the other, yet tests with only one 'phone show no difference when that 'phone is switched in the same manner.

Properly operated, the YRS-1 with exalted carrier greatly reduces the harmonic distortion normally heard on foreign 'phones, and makes listening to music from such stations much more pleasant. However, the selective fades on such stations, which affect the sidebands separately and produce dissimilarities between them, give a very interesting "three-dimensional effect" when heard this new way. It is very difficult to describe. Perhaps you have heard it. I don't mean to con-

(Continued on page 120)

RADIO SHACK 2-IN-1 BARGAIN FOR A HAM'S CHRISTMAS!



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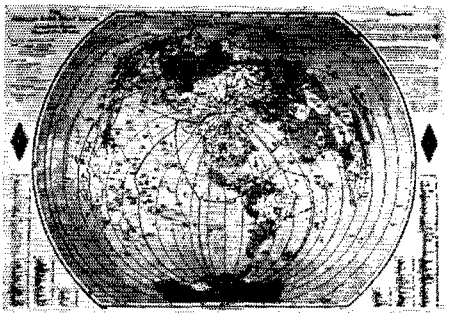

A MERRY XMAS BONUS at no extra cost (sells everywhere for $2), the A.R.R.L. map goes with this clock perfectly. It's printed in 6 colors; measures a giant 30" x 40"; heavy paper. Shows time zones, over 265 indexed countries, amateur prefixes. Accurate with 2% in miles and kilometers. Easily read from his operating position. The finest map of its kind, and FREE with each clock!

Map without clock, 42-803 .....*$2.00*

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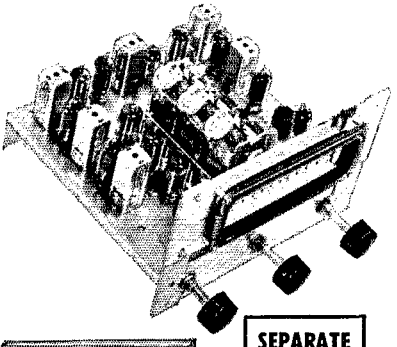

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vey the impression that I am a dramatic type, but there is something mesmerizing about it. I have observed some interesting reactions and comments. Some people can't get enough of it; others seem to be a little frightened by the eerie sounds.

This new venture into "three-dimensional music" is startling, at first. The sound seems to flow around inside your head. There is a tendency at times to turn as though looking for the source of music. Choral music is weirdly beautiful and exciting. Pipe organ recitals reverberate mysteriously, and make you feel you are sitting high up in the belfry of a cathedral. To quote E.T. Canby,[2] switching from one to both sidebands gives "an impression of a tremendous bursting-outward into space." Sound suddenly "jumps away in all directions as though the performers had leaped into the air. Suddenly they are more than room distance away and fully sized, alive."

The usual question is, will it work with two loudspeakers? The answer is "yes and no." The effect is not nearly so interesting with speakers because both ears hear both speakers. However, I do often use the receiver speaker on the left side and a separate amplifier and speaker on the right side, and find it an improvement. I would like to get some more opinions and expressions from others who have tried dual single-sideband reception, or can be induced to make the simple changes (it took about half an hour) to add one more feature to the YRS-1. — *Al Dinsmore, W8AUN*

[2] *Audio Engineering*, January, 1952.

Correspondence

(Continued from page 49)

eventually for the commercials by crowding us out of existence with stifling regulations. All are of the opinion that someone in Washington, the guy that gets all these ideas, should be fired, banished, throttled, or maybe boiled in transformer oil. We don't like it. We deeply resent having a government agency, rather than the amateurs themselves, propose these things. . . .

— *Harvey R. Pierce, WØOPA*

792 Oaklawn Avenue
Winston-Salem, N. C.

Editor, *QST:*

. . . The aspect of the proposal contained in Docket 10237 which is most disturbing to the amateurs whom I know is the expressed attitude of the Commission to tell the amateurs what is good for them rather than meet the request of amateurs for action to solve a specific problem. . . . It is regrettable that the Commission no longer looks to organized amateurs as represented by the American Radio Relay League for proposals to changing requirements on the amateur bands.

— *Roy C. Corderman, W4ZG*

1000 Overlook Avenue
Chattanooga, Tenn.

Editor, *QST:*

. . . Why not consult with representatives of the amateur service prior to releasing controversial proposals? It is obvious that the proposal in question is not the result of collaboration, consultation or coöperation with the 100,000 or more amateurs whom it would affect seriously and adversely. . . .

In general, the activities of the Commission in recent years have not been creditable. The confusion and ill will resulting from Docket 9295 have left scars which will require some time to heal. The arbitrary attitude displayed in im-

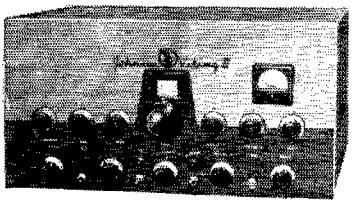
(Continued on page 122)

Lafayette

J.F.D. Zoom-up Mast

Zinc-plated seamless, 16 gauge steel, telescoping antenna masts. Supplied with guy rings, clamps and insulation hardware (less guy wire).

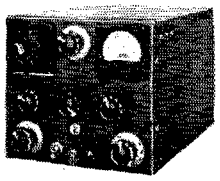
ZU12-20 20 ft. mast	$ 7.35
ZU123-30 30 ft. mast	12.98
ZU1234-40 40 ft. mast	20.41
ZU12345-50 50 ft. mast	33.38



NEW! JOHNSON VIKING II

The Johnson Viking II transmitter kit incorporates all the desirable features of its predecessor plus those required for effective TVI suppression. 100 watts output on phone and 130 watts on CW on all bands 160 thru 10 meters. New final amplifier uses parallel 6146 tubes. All parts supplied, including copper plated steel cabinet, chassis, wiring harness, all hardware and tubes. Complete construction test and operation manual also supplied. Viking II Transmitter Kit.....**279.50**

JOHNSON MOBILE TRANSMITTER KIT



New Johnson mobile transmitter kit, a band-switching 4 band rig, 60 watts input, 100% modulated (30 watts on 300 volt supply) 807 final, microphone input—dynamic, crystal or carbon. Crystal or VFO control. Viking Mobile Transmitter Kit (less tubes) **99.50**

WE CARRY A COMPLETE STOCK OF MASTER MOBILE ANTENNAS

TYPE AB/W75—Meter Whip—**NET 8.75**

MODEL M-20—20 Meter load coil for using 75 meter antenna on 20 meters—**NET 3.23**

MODEL M-40—40 meter loading coil for using 75 meter antenna on 40 meters.....**NET 3.23**

MODEL 100—96S—96" Stainless Steel—**NET 5.14**

MODEL 92—18" Whip Extension—**NET 3.18**

MODEL 9—96T—96" Economy Whip—**NET 3.67**

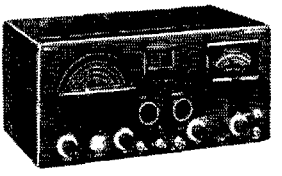
WN2NIJ

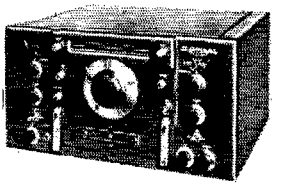
Paul Says

Now that we're all getting ready for another big season of DXing, rag chewing, rebuilding, etc., it's a good time to think of the new equipment we'll need. Many such items are listed here and we have many others in stock. Drop us a line or stop in and talk over your future requirements.

Paul Vasquez WN2NIJ

LAFAYETTE — HEADQUARTERS FOR COMMUNICATIONS RECEIVERS



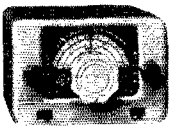


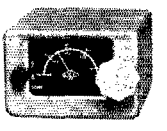
Lafayette has been the Headquarters for fine communications receivers for 32 years. All the latest models are available as soon as released by the manufacturers. Be sure to check Lafayette before you buy your new receiver.

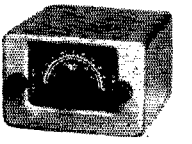
HALLICRAFTERS	
S-38C	49.50
S-40B	99.95
S-53A	79.95
SX-62	289.50
SX-71	199.50
SX-73	975.00
S-76	169.50

NATIONAL	
SW 54	49.95
NC 125	149.50
NC183D	369.50
HRO 60	483.50
HFS	142.00
HAMMERLUND	
HQ-129X	199.50

HEADQUARTERS FOR GONSET AMATEUR EQUIPMENT







GONSET 2-METER AMATEUR AND C.A.P. CONVERTER For fixed or mobile use on 144-182.2 mc. High stability permits use with auto or home broadcast set. Super-imposition tuning and 1 mc (output) IF doubles bandspread, speeds tuning and avoids images from TV, police and other stations outside 2 meter band. 50 ohm coaxial input. Easily adapted for use with open wire line or 300 ohm ribbon. High frequency and extended to cover C.A.P. frequency. Requires 135-250 V. DC, 20 MA; 6 V. DC. Draws power from receiver. Tubes: 6CB6, 12AT7, OB2. Gray case measures 5¼x3½x5¼". Supplied with tubes, cables and instructions. Shpg. wt. 4 lbs.

Gonset No. 3008 2 Meter Converter.....NET 44.50

GONSET 3-30 MC SHORT WAVE CONVERTER Continuous coverage from 3-30 mc on three bands. For use in all-band mobile station installations. 1500 kc output. High sensitivity on short whip, 4 tubes. Uses power supply of receiver to which attached. Size: 5¼x3½x5¼". Shpg. wt. 4 lbs.

Gonset No. 3002 Converter.....NET 44.75

STEERING POST MOUNTING BRACKET – For installing any Gonset Converter on auto steering post.

Gonset Steering Post Mount 3006.....NET 3.90

Gonset 3005 Tri-Band Converter.....NET 47.60

GONSET MODEL 3017 SINGLE BAND CONVERTERS

Available in 10, 15, 20 and 75 meter models (specify band).....NET EACH **39.95**

Lafayette Radio — Radio Wire Television Inc.

NEW YORK 13, N. Y.	BOSTON 10, MASS.	NEWARK 2, N. J.	BRONX 58, N. Y.
100 SIXTH AVENUE	110 FEDERAL STREET	24 CENTRAL AVENUE	542 E. FORDHAM RD
REctor 2-8600	HUbbard 2-7850	MArket 2-1661	FOrdham 7-8813

posing unnecessary regulations on the amateur service under the guise of giving the service "new meaning" has been a bitter pill for us to take. It is a great misfortune that a governmental body which should possess the greatest integrity, foresight and intelligence has failed so miserably to recognize the basic rights of citizens engaged in a peaceful, scientific pursuit. . . .

— *Ward Buhrman, W4QT*

6835 Washington Blvd.
Baltimore 27, Md.

Editor, *QST:*

In reference to the FCC's proposed regulations concerning calling frequencies, I wish to say that I am definitely against them. It seems to me that the FCC is trying to put too many controls on amateur radio and make it more of a profession than a hobby. With more and more government rules, amateur radio is becoming so complicated that it will soon begin to strangle on all of the red tape.

There is absolutely no *raison d'etre* for the proposed regulations. There is too much government control now. The FCC should leave amateur radio alone for a while and stop trying to think up new regulations.

Please, FCC, no more new regulations for awhile!

— *Sol Leise, W3LJV*

MOBILE OPERATING

3145-A N. 48th St.
Milwaukee 16, Wisc.

Editor, *QST:*

The suggestions for short transmissions when working mobiles as printed in "Operating News" in the August issue of *QST* are a step in the right direction.

The use of more push-to-talk operation by fixed stations working other fixed stations has been recommended for many years and would certainly improve our use of the 'phone frequencies, our technique and provide the possibilities of other stations breaking in. However not a day passes but I hear rag-chews (?) so long-winded and without a "station break" (call letters to you) that they make the broadcasts of the national political conventions appear as a brief exchange of pert remarks by comparison! If some of these long-winded ham commentaries were to hear some one else perform similarly in their living room they would have a very poor opinion of the long-winded chap!

Similarly, many mobile operators are making their transmissions far too long. Considering that practically 99 44/100 per cent of all mobiles are equipped with "push-to-talk" here is a group that should be using the fast, bright technique to improve their exchange of intelligence. Also it should be pointed out that very few dynamotors such as are commonly used for mobile plate supply are intended for continuous use. In fact the duty cycle for some commercial mobile equipment is as short as fifteen seconds!

Let the other guy get a few words in too!

— *H. Charles Kaetel, W9SNK*

160 METERS

Northwood
North Dakota

Editor, *QST:*

Evidently W6OZS has never tried operating in "The New Oil State," North Dakota. We have a high percentage of our hams working 160 meters.

Of the eleven nets operating on 160, North Dakota has two which give complete coverage to the entire state. The 75-meter net also checks cross-band to 160 meters for members operating there.

So if anyone wants to see real 160 operation, try North Dakota.

— *Byron W. Engen*

HOW TO WIN FRIENDS

517 West Wishkah
Aberdeen, Wash.

Editor, *QST:*

On a recent Saturday night, when the bands were filled to overflow capacity, two hams holding tickets higher than Novice Class came on the Novice band with high power and held a long QSO of only a casual nature. They were taking up much of the band with their power, thus tending to keep us Novices with the limited space we have in which we may operate from enjoying even a half of a break. I realize these two amateurs were within their rights, but that

(*Continued on page 124*)

if this were brought to their attention they would gladly refrain from such practices.

This will not bother me much longer as I have passed my General Class examination and am sweating it out until I am authorized to work on the other bands allotted or rather assigned to holders of General tickets. But there will still be Novice people working the small allotted space.

— *Charles F. Gibson, WN7ROH*

PHONANTICS

Stow, Ohio

Editor, *QST:*

I seem to have trouble getting some of the boys to understand my call letters, so I use phonetics — but still I don't have much success. I use the following to identify my station: W8K as in Knight, X as in Xavier, G as in Gnat.

Why am I having trouble???

— *Preston E. Jolley, W8KXG*

FROM F.C.C.

Field Eng. & Monitoring Bureau
Washington 25, D. C.

Editor, *QST:*

Your letter to our Chairman transmitting a copy of the resolution adopted by the Board of Directors of the ARRL expressing their appreciation for services performed by the Field Engineering & Monitoring Bureau has been referred to my office for attention.

I am indeed most grateful for their recognition of the interest of our personnel not only in the affairs of the League but also as between our employees and the hundreds and thousands of individual amateur radio operators who are personally known to most of us.

We are most grateful for the very material assistance and coöperation which our field offices and stations have received from the amateurs through the years. This has been especially true in the recent past in connection with the development of a program for the solution of television interference.

In behalf of all the employees of the Bureau, please accept our sincere thanks.

— *George S. Turner, Chief*

"WELL DONE" DEPARTMENT

Ahoskie, N. C.

Editor, *QST:*

I would like to take this means of expressing my appreciation to *QST* and your staff or writers for the fine work that you are doing for amateur radio. I have been a subscriber to *QST* for several years, and have thoroughly enjoyed the magazine. While I have not had the know-how so that I could appreciate the technical articles in the magazine, there are some of them that have assisted me in trying to become a ham operator. On April 22, 1952, I received my Novice Class license, and have been on the air since that time. The other publications of the ARRL have helped to a great extent, especially the *License Manual.*

Having been very much interested in Boy Scouting for a number of years, I appreciate the coöperation given to the Scouting organization through the articles that have appeared in *Boys' Life* magazine. They have been fine. Again thanking you, I am . . .

— *Lowell Powell, WN4VSJ*

Here lies the form of John McFool,
Who took off like a rocket
When he ignored that basic rule,
"Keep one hand in your pocket!"

How's DX?

(Continued from page 57)

week end the 'phones take over from 0001 GCT Dec 13th, to 2400 GCT, Dec. 14th. European stations will call "CQ AW" and others "CQ EU" on c.w., "CQ All World" and "CQ Europe" on voice. Six-digit numbers will be exchanged on c.w., to consist of RST reports with three self-assigned numbers appended; for 'phone, it's five-digit numbers (no tone report). Scoring: Non-European stations may earn 3 points per contact (2 for each number sent, 1 for each receiver) to be multiplied by the sum of the sums of European countries (per ARRL Countries List) worked each band. Logs must be mailed to EDR Contests Committee, Post Box 335, Aalborg, Denmark, postmarked not later than Dec. 31st, 1952. Write EDR or ARRL for any more detailed information desired . . . . . PAØMOT returned to Holland after an Officers Communications Course at Fort Benning which ran from February through June. Wil thanks W hams for hospitality offered — especially W4s DDQ OGO and SWX. PAØMOT would like nothing better than to come back for a longer stay . . . . . OZ8SS tells W8NOH U.S.S.R. amateur activity has apparently dwindled to a new low. He rarely hears them now, even working each other . . . . . LZ1MN, who helps operate LZ1KAB, assures WN1WIQ that LZs QSL a strict 100 per cent . . . . . Can anyone help DL3QQ knock off Ala., Idaho, Mont., Nev., N. Mex., Vt., Wyo. and the Dakotas for WAS?

South America — LABRE (Brazil) announces its intention to sponsor an annual world-wide DX contest to be held each September . . . . . RCC (Chile) tips us off that CE3AG/CE3AX and CE3CZ may soon be signing CEØAA on Easter Island. Call areas in Chile are in for a juggling. The present six numerical areas will become ten. CE1 to CE6 will change little but Punta Arenas amateurs will sign CE8, Chilean Antarctic bases (now CE7Z) CE9 and Easter Island CEØ. Some of CE6 will become CE7 and some CE7 territory will retain the prefix. Reassignment date anticipated is Jan. 1st . . . . . W6EAY expected to greet CP2BK at the San Pedro piers. CP1BX is using former CP2BK gear on 20 and has a Vee beam cooking at his 11,500-foot QTH. Despite this height above sea level, Ted says he's hemmed into a 1000-foot-deep valley. P.S. — The nearest TV receiver is 2500 miles away! [Let's pack, Boss. — *Jeeves.*] . . . . . OA1B went back to VE2 and OA1E is now in Venezuela. OA1F is still active and three other potential OA1s await action on license applications already filed.

Hereabouts — W2BUV tells us VP2MD has a battery-powered 30 watts feeding a folded dipole on 20. Cyril reports sparse activity in the Windwards although VP2SG pops up occasionally on 40 meters . . . . . VE3s ARL and ARM caused a double-take by FP8AK when they worked him in quick succession . . . . . W5AGB/F-M expects to remain active from Fletcher's Ice Island at least until Christmas . . . . . YL W4UF, back on after a lengthy DX vacation, guns for the stuff again with a Floridian 50-watter . . . . . W9HKS now ships with the Navy in the Atlantic and Mediterranean areas . . . . . Fewer flying saucers have been reported since WØTKX reduced power. Bob fears he had been chipping luminous chunks off the ionosphere . . . . . W8YGR learns FP8AP has put 33 years in with Western Union. Gus now works with gear formerly used by the late FP8BX. . . . . The DX gang has lost a strong fellow competitor in the passing of Hal Leighton, W9LM. Steering W9LM through the storms of the 1950, 1951 and 1952 ARRL DX Tests, Hal each time rolled up top W9 scores, setting the pace for that call area in both contacts and multipliers. Not only a crack operator, Hal was an avid experimenter in the field of receiver selectivity. The full-sized 40-meter rotary beam of W9LM was long a familiar landmark at his Itasca, Illinois, QTH . . . . . W2HAE, back from the Pacific, is willing to make good on any KR6GL QSLs gone astray. Incidentally, some KR6GL QSOs were made from the Pescadores, islands off Formosa. Art is operating two meters at his Long Island QTH for the time being.

—•••—

Our own DX shack classroom has a dunce cap on hand against the time when Jeeves passes up a legitimate HV2 or ZA1.

M.A.R.S.

(Continued from page 58)

duty as chief, MARS, and has been alerted for assignment overseas.

When MARS was activated in 1948, James Long, W4OFB, was a captain at Ft. McPherson, Georgia. Col. Charles L. Olin, then Third Army signal officer, selected him to be the Third Army MARS director. With enthusiasm and vigor, Captain Long set to work; the excellence of the present Third Army MARS program is due, in large part, to the groundwork laid by Captain Long.

His work did not pass unnoticed. In 1949 when Captain Long was transferred to duty with the U. S. Army Forces, Pacific, he found the signal officer there awaiting him with an assignment as MARS director, USARPAC. AB6ACB took over where A4OFB left off. He was promoted to major in July, 1951.

Under his guidance the MARS Command Station AB6USA/KH6USA prospered and grew in reputation and favor. Today it is one of the best known amateur stations in the world. One hundred and thirty members are active on MARS nets in Hawaii.

The new Chief, MARS, extends a cordial invitation to all amateurs to visit him at the Pentagon, Washington, D. C.

As soon as the family is settled at the Silver Spring, Maryland, address and the neighbors are checked out for TVI you'll be hearing a new W3 on the air.

Hints and Kinks

(Continued from page 59)

moved. There is ample room for the power supplies in the lower section of the box and the original panel for this section is used as the mounting surface for the control switches, the pilot light and the circuit breaker. — *J. P. Eckhardt, W2CLC*

FINDING INTERMITTENT CAPACITORS

We all dread the task of locating an intermittent capacitor which makes a set change volume or go entirely dead. Regardless of which capacitor is first by-passed with a spare, invariably the surge imposed on the circuit will restore the set to normal operation, perhaps for days. One way to eliminate erratic operation is to replace all of the capacitors, but it must be admitted that this is a highly uneconomical system. A more practical method of locating the trouble maker is outlined below.

The capacitor of doubtful quality is shunted by a series-connected *RC* combination consisting of approximately 25,000 ohms (not a critical value) and the proper value of by-pass capacitance. The purpose of the connection is to allow the intermittent capacitor to remain charged at the usual circuit voltage and to prevent the new unit from acting as a by-pass. Then, when

(Continued on page 130)

the set finally acts up, the series resistor is shorted out with a screw driver or other tool having an insulated handle. In this way, the unit that has lost its by-pass capabilities will be found immediately. Naturally, more than one section of a set can be treated at the same time. — *Robert B. Witschen, WØSV*

TWO-BAND PI NETWORK

A SIMPLE method of switching a pi network for two-band operation is shown in Fig. 2. Constants shown are for operation at 7 and 14

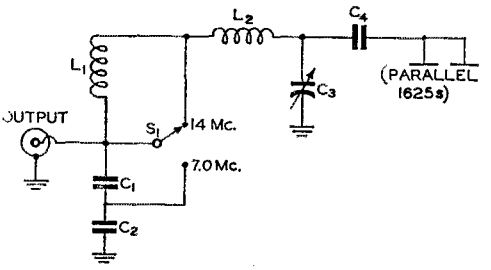


Fig. 2 — Circuit diagram of the two-band pi-network.
C_1, C_2 — 600-$\mu\mu$fd. mica.
C_3 — Plate tuning capacitor.
C_4 — 200-$\mu\mu$fd. mica.
L_1, L_2 — 2 μh.
J_1 — Coaxial connector.
S_1 — S.p.d.t. low-loss switch.

Mc., but the same principle can be applied to any two adjacent bands. In this particular circuit, the effective inductance is 4 μh. and the capacitance is 600 $\mu\mu$fd. with the control switch, S_1, set at the 7-Mc. position. At 14 Mc., the inductance and capacitance are reduced to 2 μh. and 300 $\mu\mu$fd., respectively. — *Capt. R. R. Hay, USN, W4LW*

COIL-TAPPING AID

FINDING the correct point for the tap on a small air-wound coil can be greatly simplified by using a paper clip that has been equipped with a flexible wire lead. The smaller paper clips can be easily slipped over turns that usually cannot be gotten at with the regular commercial clips. — *John J. Schultz, W2EEY*

—*Answer to* QUIST QUIZ *on page 10*—

They have — many of them. And they all overlook the same thing. The doubler (or any other frequency-multiplier stage) is a nonlinear device in which inter-modulation of signals will take place. Thus the sum frequencies of the possible combinations of 449, 450 and 451 kc. will appear along with the second harmonics. The sum frequencies work out to be separated by only 1 kc., the original separation. Introducing the three signals into the doubler stage will produce five signals at the second harmonic: 898, 899, 900, 901 and 902.

The spurious sum-frequency products will be present only when two or more keys are down simultaneously, so they will take the form of "monkey chatter" and may not be immediately identifiable.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 719 World Bldg., New York City.

QSLS: 100, $1.95 up. Samples, 10¢. Griffeth, W3FSW, 1042 Pine Heights Avenue, Baltimore 29, Md.

MOTOROLA used communication equipment bought and sold, W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

SUBSCRIPTIONS. Radio publications a specialty. Latest Call Books, $3.00. Earl Mead, Huntley, Montana. W7LCM.

QSL's-SWL's Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS, SWLS. America's Finest! Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS. Brownie, W3CJI, 3110 Lehigh Ave., Allentown, Penna.

QSL'S, SWL'S. Super-gloss. 10 colors. Four card stocks. Seven styles. Samples, 10¢. Almar Printing Service, Farragut, Iowa.

QSLS: Fluorescent QSLs radiant and glowing with quality-control. QSLS Kromekote three colors and up. Rainbow maps, DX QSLS. Samples rushed, 10¢. Uncle Fred, Box 86, Lynn, Pa.

QSL Samples 10 cents, Minner, W1SQF, Press, Candia, N. H.

PHONE patch schematics, practical discussion, $1.00. Nichols, W1MRK.

WANTED: Cash or trade, fixed frequency receivers 28–42 Mc. W9YIY, Troy, Ill.

QSLS, SWLS. High quality. Reasonable prices. Samples. Write to Bob Teachout, W1FSV, 40 Elm Street, Rutland, Vermont.

WANTED: Marconi multiple tuner, coherer, spark coil, magnetic detector, etc.; DeForest responder, coherer and other early equipment; Marconigraphs, Modern Electrics; Electrical Experimenter and early Call Books and text books of wireless. Franklin Wingard, Rock Island, Illinois.

MICROWAVE test equipment wanted. Weston Laboratories of Weston 93, Massachusetts, will make you a high cash offer on any microwave test equipment, particularly such numbers as: TS-13, TS-120, TS-45, TS-35, TS-147, etc. To those more interested in trading, we offer any new standard ham item or a combination of cash. Write giving full description for prompt reply.

NEED: QST for December 1915 and May 1916. Will pay any price. Have hundreds of old call books, radio catalogs, text books, ARRL Handbooks and 200 issues of QST and CQ to sell or trade for what? Holst, W9MD, 2000 Winnemac Ave., Chicago 25, Ill.

DON'T fail! Check yourself with a time-tested "Surecheck Test" similar to the F.C.C. tests. Novice, $1.50, General, $1.75, Advanced, $2.00. Amateur Radio Supply, 1013 Seventh Ave., Worthington, Minnesota.

WANTED: All types of aircraft radios, receivers and transmitters. Absolutely top prices. W2KUW, 308 Hickory St., Arlington, N. J.

WANTED: Someone with money and vision to buy radio collection comprising complete history of radio, including rare and exclusive old items. Write WØLM, Box 132, Wrightwood, Calif.

MODEL 12 teletype receivers. Single table, $30; double, $45. Mr. Dukes, Cortlandt 7–2253, New York, N. Y.

FOR Sale: 350 watt xmitter in 6 ft. metal rack. All Thordarson transformers. All stages metered. Can be used on all bands. Price, $350.00. C. A. Davidson, WN1VXR, P. O. Box 184, No. Windham, Maine.

WANTED: PE-103 dynamotor with cable. State price. James Lehman, W4POL, Parkview 52-B, Harrisonburg, Virginia.

QSLS-SWLS. Quality service. Samples, 10¢. Refunded. Joe Harms, W2JME, 225 Maple Ave., North Plainfield, N. J.

QSLS?? SWLS?? America's finest and largest variety super-gloss QSLS! Samples 25¢ "Rus" Sakkers, W8DED, Holland, Michigan.

SALE: BC-325 800 watt fone and c.w. transmitter, $350. Frank Mott, W4LJB, 437 Woodward Ave., S.E., Atlanta, Georgia.

FEAR Fire no longer. 24-hour automatic, repeat automatic fire extinguisher protection as used by Westinghouse, T.W.A., etc. Now priced from $6.95. Get details from WN2DVU, Birnbach, c/o Sanby's, 1804 Amsterdam Ave., New York 31, N. Y.

BIRTH announcements, ham-styled, 25 for $1.00. Narvestad, Granite Falls, Minnesota.

TRANSMITTERS, two-meter phone, pre-assembled kits, $34.50. Write for specifications. LW Electronic Laboratory, Route 2, Jackson, Michigan.

FOR Sale: New York area. Presto K7 disc recorder, Revere tape recorder and radio combination. N.R.I. servicing course ($25). Weston photocell and relay that operates without amplifier. Box 382, Newark, N. J.

OPERATION Frostbite! A wintertime hamfest on December 7th at Petrifying Springs club house, Kenosha, Wisconsin. Entertainment and hot barbecues. Further details this month's Hamfest Calendar.

10, 15 and 20 Meter beams, aluminum tubing, etc. Perforated aluminum sheets for shielding. Radcliff's, 1720 No. Countyline St., Fostoria, Ohio.

SELL: New Meissner 150B, complete with shifter, tubes, coils, $259. Spotless R.M.E. 45 with spkr, $123; HRO60, $409, new 3E29, 829B, $15. Pwr supply with 5R4gy, (2) 5Y3's, comp. $13.00. D. Long, 184 L St., South Boston, Mass.

QSLS! Interesting samples, 10¢. Tooker, P.O. Box 71, Lakehurst, N. J.

WANTED: Scott Philharmonic all-wave broadcast receiver in good condition. Workshop or Johnson 20-meter beam. Please give full description and price. R. A. McNeill, VE5RQ, Box 472, Yorkton, Saskatchewan, Canada.

WILL sell RCA mobile transmitter and fixed receiver on 26.47 Mcs., A.M. Brand new. Complete, except for mike. A buy at $85.00. Contact KBOL, R. Miller, Boulder, Colorado.

FOR Sale: HT-17 xmittr. 40-meter set-up minus cabinet. Also 10-meter mobile xmittr, 2326 final, both for $50.00. W2RWD, 191 Rustic St., Rochester 9, N. Y.

PLANS changed. New Millen VFO 90711 only out of carton once. Trade or cash, $110.00. W2FKY.

SX42 Hallicrafters, $170. Cash or swap for S40, NC57, RME, etc., and cash. Harvey-Wells AT3B 6V transmitter. 10 watts output with power supply, $30.00. S38, $30. Leo Liebl, W9NYS, Medford, Wisconsin.

1 KW final and parts for ½ KW power supply. Highest offer. W4NHX, Box 1667, University, Virginia.

FOR Sale: Hallicrafters S40B receiver, fine condition, $60.00. Also Utah 78 rpm automatic record player, $10. F.o.b. New York. Roger Kapp, W2EEL, 111–09 76th Road, Forest Hills, L. I., N. Y.

WANTED: HRO or NC-100 National cabinet in blank form. Please state price and condition. Charles Landsiedel, P.O. Box 216, Matawan, N. J.

COLLECTOR'S item. H. Pieper Leige Damascus steel double-barrel hammer shotgun. Patent 83, April 1881, with shell loading gear all in wooden case. Will swap on Viking I. R. L. Gruver, 68 E. 56th Street, Savannah, Georgia.

COUPLING problems? We have an untuned broad-band antenna coupler for use on all bands, 10 thru 80, from single section transmitter output to balanced three hundred ohm line (e.g. feeding folded dipole antennas). Uses Balun principle, and has Faraday shield, shielded enclosure. The "Pratt" coupler is $12.95 net and available exclusively at Evans Radio, Concord, N. H.

MAP pins, round head, colors red, blue, green, yellow, orange, brown. One buck brings fifty. Robest Products 701 Dewey, Harvard, Illinois.

COLLINS 310B3 complete with tubes and coils like-new condition, $250. QST fifteen years solid, 1932–1946, all perfect. $30 for entire lot. Hunter 20B Band-It, unused, in original carton, $40. Gammatron HK257B/4E27 tubes, new, unused, $10 each. All F.o.b. W9YFV, Ed Schmeichel, 190 East North Ave., Elmhurst, Ill.

FOR Sale: One 1616, 808 at $5; one 826, $8; four 9/7193 at 50¢; one 8012, two 368AS at $10; three 864 at 50¢; one 371, $1, all new. All inquiries answered. F.o.b. Whitewater. Bernard Weinberg, Whitewater, Wis.

FOR Sale: 300 to 500 watt phone, cw xmitter, all bands, 20 meter Hy-Lite beam, Hallicrafters SX43 receiver. Complete for $650. Will not ship. J. Bertuch, Jr., W2NMM, 90 Brookside Ave., Mt. Vernon, N. Y.

WANTED: I-135 test sets, in good operating condition; $35.00 each, plus freight. You may send C.O.D. with privilege of inspection, via Railway Express or any truck line. G & M Equipment Co., Inc., 7315 Varna Ave., North Hollywood, Los Angeles, Calif.

NEW crystals for all commercial services at economical prices; also regrinding or replacement crystals for broadcast, Link, Motorola, G.E., and other commercial types; no amateur. Over 17 years of satisfaction and fast service. Eidson Electronic Company, phone 3–3901, Temple, Texas.

SELL 813 KW, all band final, Sonar VFX680 exciter, and steel enclosed rack, $110.00. Final, $60. Exciter, $50. Now on air. Photos furnished. W9JUQ, R. A. Eberhart, Shelbyville, Ind.

TRADE: Mannlicher-Schoenauer 9.5 MM carbine, some ammo; need Collins 310B or equal. Rifle 1927 model, perfect condition. Is a collector's item. W6LW.

WANTED: Top prices paid: Navy selsyns 1DG, 1F, 1CT, 5CT, 5D, 5DG, 5G, 6G, 7G, etc. and BC-348, BC1221, AN/ART-13, AN/ARC-1, AN/ARC-3, RTA-1B, AN/APR-4. Lectronic Research, 719 Arch St., Philadelphia 6, Penna.

SELL: Signald shifter deluxe 20 through 160 FB condx, $35.00. Bargain list fone and cw parts free. Moving. W4EMJ, 6298 15th Road, North, Arlington 13, Va.

SELL: Johnson rotator with direction indicator, Johnson 2-element 20-meter beam antenna and 100 feet of 8-lead shielded control cable, all are in perfect condition, $225.00. Not sold separately. F.o.b. Dallas, Texas. W5BG, J. H. Robinson, 522 Cumberland St., Dallas, Texas.

SELL: 30 watt, 80 meter, novice rig, complete with power supply, meter, crystal and tubes. First $35 takes it. Robert Yellin, 235 West 71st St., New York City, N. Y.

NATIONAL HRO-50-T1 receiver, complete with speaker, the four standard coils, plus the two broadcast coils and coil AC for band spread of the 21 MC band, plus crystal calibrator. Cost $485.05 and is in new condition with only 45 hours. Will sell F.o.b. in original cartons for $350.00. W7EAA, Tekoa, Wash.

SELL QST's, 1919 to 1952, run almost complete. Meissner signal shifter, $35. TBY walkie-talkie with Vibropack, $35. SX-36, $75. 300 watt modulator, $45. Send for list of power supplies, tubes, high voltage condensers, etc. W2DTE, 29–29 213th St., Bayside, L. I., N. Y.

FOR Sale: Complete mobile rig Motorola P-69-18ARS receiver with Gonset Triband, Motorola FMT-30-DMS dual frequency 10-meter FM-AM transmitter, complete with all controls, cables, mike, less only antenna. Factory reconditioned and adjusted. New unused Gonset Deluxe Tri-Band. New PE-103. National SW-54 receiver, like new. New 5.3 to 7 Mc ARC-5 transmitter. BC-456-F modulator. Used Lysco Model 381 VFO. .1500 watt voltage regulating transformer. All items sold to best offer. F.o.b. W9MTU, Box 789, Anderson, Indiana.

FOR Sale: SX28 and Spkr, exc. condition, $135. NC57 like new, $65. W9WHN, 424 E. 3rd St., Lockport, Ill.

WANTED: 32V transmitter. State condition and price. W8GLK, 26 Riverview Ave., Battle Creek, Mich.

SELL: Viking xmittr, factory wired, new tubes, 4D32, used 10 hours; new JT-40 mike; RME-45 and speaker; KME, HF 10–20. Orville Carter, WØBKN, 103 Beatty, Coffeyville, Kansas.

NOVICES: Hallicrafters S-53A receiver for sale. Excellent condition. $60. Write for details. E. Stuart Baxter, 635 South Brainard Ave., La Grange, Ill.

KP-81, Navy VFO, ART-13, Sig. Gen. 1 198–8, 110 V AC Selsyns, BC603, 683, 442. Kw tank cond. & fil. and transformer, tubes, parts. Sell or trade for SX71, NC183, professional tape or sound equipment. For details write to L. O. Showalter, W6KIE, 825 5th St., Petaluma, Calif.

QSLS. High quality only. Quick delivery. Samples. Dortch. W4DDF, Jocelyn Hollow Road, Nashville, Tenn.

WANTED: Collins 310 series exciter, any model, but prefer 310B1 or 310B2. Please give full details including condition and price. W1AB, H. B. Goss, Box 157, Essex, Conn.

NEW commercial grade UTC swing choke PAI08, 500 Ma. $12; UTC swing choke CG109, 500 Ma. $10; UTC PA301 trans. 110 or 220 Pri. sec. 1300–1100, 650 CT, 500 Ma., $9; Thordarson splatter choke T15C37, $7; Thord. trans T15R60, $10. New 829B, not surplus, $6. Joe Harms, 225 Maple Ave., North Plainfield, N. J.

SALE: SCR-522, unconverted and in FB condition. Lysco transmaster with National MB-40 final tank. Joseph Welch, W3PXX, 5014 59th Ave., Hyattsville, Md.

FOR Sale: BC348-N receiver, converted, in top shape. F.o.b. or C.o.d. River Forest, Illinois. P. Kerwin, W9NDJ, 547 Jackson Ave.

SELL: PE-103, $20; BC459, $7; xformer 6000 ct 500 Ma, $25; BC454 or BC455, $10; WØKUT, 6280 Reber Place, St. Louis 9, Mo.

WANTED: Hallicrafters S27B receiver. W4FJI, Charles Strain, 1261 Niles Ave., N.W., Atlanta, Georgia.

NO ham should be without a copy of "Time Zones of the World". Here, for the first time, is a booklet of a handy size devoted solely to an up-to-date documentation of time as it is observed throughout the world today. A time chart to end all time charts! Compiled with the assistance of authorities in over 40 countries. "Time Zones of the World" carries over 300 country listings, six pages of maps and a universal time indicator. Here is true value for forty-five U.S. cents (including postage). Mail now to: C. G. Costello, 115 Hobart Street, Miramar, Wellington, New Zealand.

NOVICES: $1.00 brings ten monthly lists of late WN QTHs. W1ONV, Art Bates, Box L, Hingham, Mass.

NC-57 receiver, in good condition. Will sell for $65. G. B. Daughton, W3RRZ/4, 3687 Southmont Drive, Montgomery, Alabama.

SACRIFICE NC-183 for $225.00 postpaid. Like new. Reason: tuition. W1RKB, 60 Norwood Ave., Whalom, Fitchburg, Mass.

WANT: War surplus transmitters, receivers, test equipment, technical manuals: Sell: Model 21A teletype midget tape printer, $45; teletype multiplex perforated tape transmitter, $30; Will trade. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass.

SALE: Being transferred. Will sell new, never used, Collins 75A2. Receiver in factory carton, $410. Capt. O. C. Fought, 208 Greenlawn St., Biloxi, Miss.

COINS wanted, U.S. only. Will swap ham gear. D. Bellat, W2GAJ, 708 High Street, Newark, N. J.

FOR Sale: SX42, A-1 shape. Will deliver first 150 miles, $195.00. J. W. Luben, Crawford, Nebr.

WANTED: High power V.H.F. transmitter. Please give full details. Box 1723, Havana, Cuba.

QSTs still urgently needed: June and December, 1916. Have 1916 and other issues to trade. Have cash, too! If you have either (or any 1916 QSTs) please write to Uncle Vern, W6ERS, 700 Rolph St., San Francisco 24, Calif.

CW xmittr, 400 watts; VFO 3 to 18 Mcs., Lo and hi, power supplies (2000 v.) Navy surplus, fully converted with navy manual and spare tubes, $75. BC-221-T, 115 A.C. $55 complete. G. Viehe, W3LGT.

SELL Deluxe 1000 watt phone and cw station, Collins 32V2, pair of Eimac 4–250A final, modulators, pair 805s, 2 power supplies enclosed in three metal cabinets on a dolly to match the Collins pair. Collins 75A1, Millen R9'er, VHF152A, 10 over 20, 3-element beam with Johnson Rotator and indicator with relay change-over, RG8V feed, Collins and Drake TVI filters, spare tubes and parts. A reasonable offer accepted. W8RWZ, C. H. Buchanan, Vale Cemetery Rd., RI., Springfield, Ohio. 2–5671 — 5–3431.

SELL: 522 zmittr, 3 xtals, power supply, fully converted with meter carbon mike. Four tube converter. Worked Halifax to N. Y. 2 m. $50. F.o.b. Dr. C. R. Crosby, East Harwich, Mass.

SELL: Complete station, 32V2 Collins, SX-71 receiver with matched speaker, Astatic mike, Vibroplex bug, miscellaneous equipment. $605 pick-up only. Herbert Rubin, 25 Manorhouse Road, Newton Centre, Mass.

NEW 829B's and 832A's, $5.00 each. W9OSR/5, Paris Trailer Park, Pass Road, Biloxi, Miss.

ROTARY converters: 115DC to 110AC, 13.5 amps, 1.5 KVA. $100; 522 transmitter converted to two meters, husky AC power supply mounted relay rack. $50. Will consider offers for one or both. F.o.b. Fresno. L. E. Edises, W6EKQ, 2506 N. Fruit Ave., Fresno 5, Calif.

SELLING out: A number of Westinghouse 3" panel meters. New surplus, never used. Some in original boxes, some not. $4 each. Send for list. W9NOC, 1207 Wadsworth, North Chicago, Ill.

WANTED: Spare SX-71 or equivalent receiver for XYL, reasonable, guaranteed OK. J. P. Neil, 1567 College Ave., Palo Alto, Calif.

SWAP: Bound set of I.C.S. draftsman's correspondence course and one eight volume set of Machine Shop Practice. American Technical Society. Swap for transmitting equipment or high-voltage power supply. All letters answered. A. L. Godshall, 532 Chestnut St., Lansdale, Penna.

BC403-E oscilloscope. Excellent. Sell or swap, best offer. W5RRO, P.O. Box 385, Reserve, La.

FOR Sale: BC221AK-LM13-BC191F-TCS12 for 12 volt DC operation; TCS-12 for 110 volt AC operation. A. van Breems, Colonial Road, New Canaan, Conn.

SELL Hickok 156 Tracometer, new condition, with all cables. Best offer. W1CRN, 560 Walnut, Fall River, Mass.

BARGAINS: Extra special! Motorola P-69-13 mobile receivers, $29.50; Globe King, $315.00; HT-9, $199.00; HRO-50, $275.00; Lysco 600, $109.00; HRO-7, $199.00; Collins 75A1, $275.00; HRO-5T, $175.00; SX-71, $159.00; SX-42, $199.50; SX-43, $129.00; HRO-Senior, $119.50; RME 2–11, $99.50; RME-45, $99.00; Meissner EX shifter, $59.00; S-40A or SX-16, $69.50; VHF-152, $59.00; HF-10–20, $59.00; Globe Trotter, $79.50; Meissner Signal Calibrators, $24.95; MB611 Mobile transmitters, $19.95; 90800 exciter, $29.50; RCA Chanalyst, $69.50; XE-10, $14.95; Gonset 10–11 converter, $19.95, and many others. Large stock trade-ins. Free Trial. Terms financed by Leo, WØGFQ. Write for catalog and best deal to World Radio Laboratories, Inc., 740–44 West B'way, Council Bluffs, Iowa.

SWAP: 2BR Morrow converter, used 5 hours, and 10 meter Link xmittr with Built-in dynamotor, for good receiver. Stan Cokas, 1 Acorn St., Lynn, Mass.

WANTED: APN-4, APN-9, ARC-3, ARC-1, SCR-694, BC-1306, PE-237, PE-103, ART-13, TCS, BC-348, BC-342, BC-312, BC-221, RA-34, RA-62, APR-4, BC-611, BC-721, LM, DY-17, DY-12, TS and I test equipment, tubes, radar, technical manuals. Arrow appliance, Box 19, Boston 1, Mass. Tel. Lynn 8–3100, Richmond 2–0916.

300 Watt transmitter, BC348Q receiver, other equipment and parts, $375. Bring a truck. W6RXA.

SELL: VT-127-A, $2.00; new JT-30 crystal microphone, $8.00; excellent BC-455, Dynamotor, converted, $10.00; excellent speed-X 515 bug, $5.00; all inquiries will be answered. Robert Crupi, 616 Stockton Court, Madison, Wisconsin.

BARGAINS! Finest condition ham equipment. For sale: DB-224, $45.00; VHF-152, $55.00; NC-183, $189.00; SX-42, $189.00; SP-400X, $249.00; HRO-50, $265.00; HT-9, $189.00; Collins 32V1, $399.00; cash for your commercial ham equipment: 75A1, 75A2, 32V1, 32V2, 32V3, HQ-129X, SP-400X, SX-28A, SX-42, SX-43, SX-71, SX-76, HT-9, HT-19, NC-125, NC-173, NC-183, NC-183D, HRO ST, HRO5-T, HRO5-TA1, HRO-7, HRO50-T, HRO50-1, HRO-60, RME-50, TBS-50. Rush full details, including best price. Ham Gear, Box 48, Grand Rapids, Michigan.

100 KC standard crystal RCA No. VC5M guaranteed. Crystal, special 3 pin socket, and circuit, $4.25 postpaid. Peri, Dumont, N. J.

BARGAINS: New and reconditioned Collins, Hallicrafters, National, Hammarlund, Johnson, Elmac, Gonset, Harvey-Wells, Morrow, RME, Millen, Meissner, others. Reconditioned S-38, $29.00; S40A, $69.00; S40B, $79.00; SX43, $119.00; S76, $129.00; SX71, $149.00; SX42, $199.00; SX62, $199.00; NC173, $139.00; HRO5TA1, $159.00; NC183, $199.00; HRO50T, $249.00; HRO50T1, $299.00; HQ-129X, $139.00; SP400X, $259.00; RME84, $69.00; RME45, $89.00; Lysco 600, $99.00; Lysco 600S, $129.00; Collins 32V1, Collins 32V2, 75A1, 75A2, Viking 1, Harvey-Wells Bandmasters, Eimac A54, Meissner, EX VFO $59.00, and many others. Shipped on trial. Terms. List free. Henry Radio, Butler, Mo.

WANTED: BC610 or BC610 parts or components. State price and condition by letter. C. Porter, 8545 11th Ave., Silver Spring, Maryland.

BEST offer takes four new Taylor 822's. Also new RCA 813's, surplus 304TH's, 304TL's, VT127A's, VT327A's, 829B's, 832's, 832A's, etc. New Thordarson plate transformers, surplus transformers of all types and kinds. Write for list. W/BBB, 5814 Forest Ave., Des Moines, Iowa.

FOR Sale: One Westinghouse GO9 frequency range 3–18 Mc. 3.50 watt c.w. All coils for final less power supply. $50.00. Floyd Cayton, P.O. Box 463, Edenton, N. C.

FOR Sale: 150 watt fone/cw 28 Mc. xmittr TVI proofed, $100; 7 Mc VFO-807 final, TVI proof, $25; welded 70" channel iron rack, $22.50. Write for details. W6BLZ, 528 Colima St., La Jolla, Calif.

FOR Sale: SX28 with spkr, $100; S2OR, $30; Harvey-Wells TBS 50C with Dynamotor, $100; Precision EV10 test unit, $75; BC221-T with batteries, $75; 2 National MB150 multi-tank units, $15 ea. Radio W3BBV, P.O. Box 722, York, Penna.

SYLVANIA 3" oscilloscope, $50; Hammarlund Super ProBC779-B, $165; speech amplifier, $45; plate transformer 1 amp. at 8000–7000–5000 CT taped primary $65. For full particulars write W4FXT, 27 Pine Crest Rd., Birmingham, Ala.

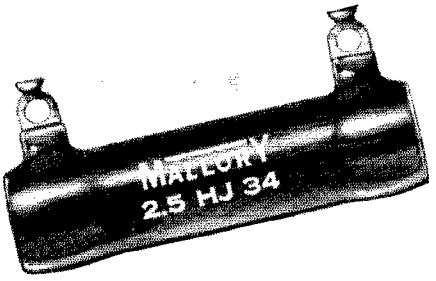
WANTED: Selsyns and Synchros. Top dollar paid. Write full description to: Box 84, Babson Park 57, Massachusetts.

CANADIANS: National HRO complete with power supply, speaker, general coverage and band spread coils on all bands. Rack model. Excellent condition. $200. Raymond Roy, VE2AKO, 74 Gillespie St., Sherbrooke, Que., Canada.

FOR Sale: Meissner 150-B xmitter; 350 watts, mounted in Johnson 66" enclosed black rack. Pr. 813's in final, pr. 811's modulators. Built-in Sylvania modulation meter, VFO controlled, Faraday shielded link, coax relay, B&W coils for all bands, 2 spare 813's; 2 811's, $300. Will deliver within 150 miles. Photo on request. W4RTP, Forrest Sears, 2616-33rd Ave., North, Birmingham, Ala.

Index of Advertisers

MALLORY HAM BULLETIN



NEWS ITEM:

Improved manufacturing methods and new raw materials have made Mallory Vitreous Enameled Wire-wound Resistors even better and more reliable than ever for amateur and commercial equipment use.

As a result of a recent program of thorough laboratory investigation into the physical and electrical properties of wire-wound power resistors, and at the recommendation of expert Mallory resistor engineers, two important changes have been made in the manufacture of Mallory Vitreous Resistors to further improve their already proved characteristics.

Mallory Vitreous Enameled Resistors are now being supplied with a new, non-alkaline, non-hygroscopic enamel which seals the resistor cartridge completely behind a tough, glass-like, moisture-impervious barrier.

The moisture resistant, non-alkaline characteristic of this new enamel has reduced destructive corrosion of the wire element of the resistor to an irreducible minimum by actually eliminating the main causes of corrosion—alkalinity plus moisture in this instance.

In addition, Mallory Vitreous Resistors now include improved metal terminal straps, made of a special alloy whose coefficient of expansion with temperature change is practically identical with the temperature coefficient of the new enamel covering. This means that the opposing forces, normally resulting from unlike temperature coefficients of metal strap and enamel, are practically equalized, thus effectively reducing the possibility of lead breakage at the junction point of the terminal strap and the resistance element.

Accelerated laboratory life tests of representative Mallory resistors, made with these new materials, prove conclusively that far less lead breakage occurs due to sudden temperature changes, and that practically all cases of "high resistance" or "opens" caused by corrosion are eliminated.

If you are bent upon getting the most value for your money (and who isn't), you'll be particularly interested in these resistors, because in spite of the special materials and techniques used in their fabrication, their price still remains no higher than ordinary resistors.

Your Mallory Distributor's store is the place to see and buy these extra quality resistors. Incidentally, while you're there, don't forget those other Mallory parts, including—2, 3 and 4 gang Inductuners*, ham band switches, controls—rheostats—potentiometers—pads, tubular capacitors, transmitting capacitors, dry electrolytics, dry disc rectifiers, vibrators and vibrator power supplies.

**Registered trademark of P. R. Mallory & Co., Inc., for inductance tuning devices covered by Mallory-Ware patents.*

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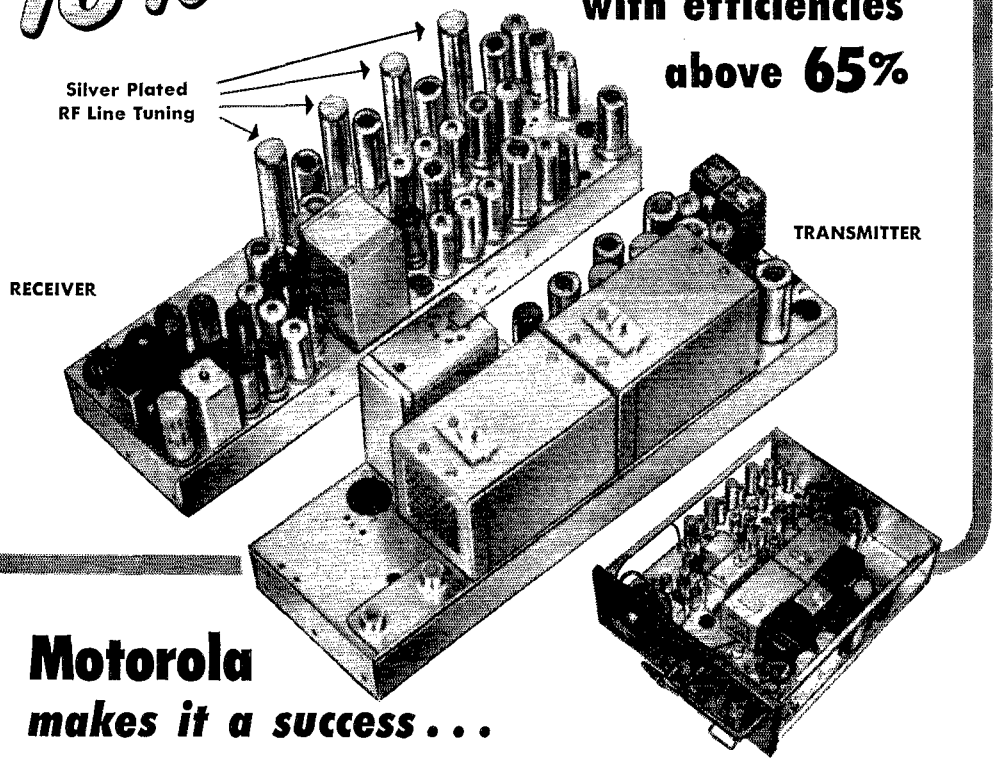

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Motorola's new crystal controlled A.F.C. system provides positive barriers so that the receiver cannot jump to a strong adjacent channel signal.

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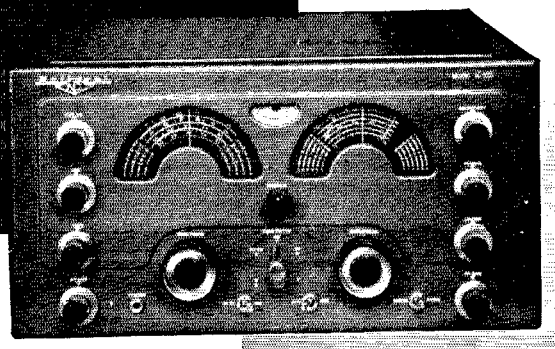
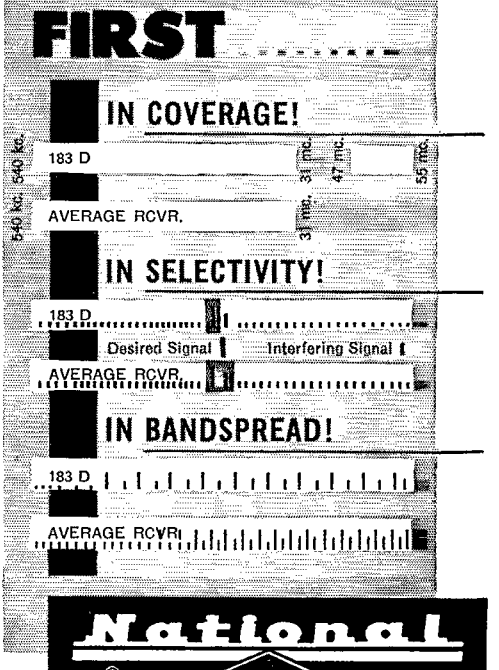


DUAL CONVERSION! 12 TUNED I.F. CIRCUITS! 1 M.V. SENSITIVITY ON 6 METERS!

National proudly announces a brand-new receiver — the NC-183D — *every* feature you want in a truly modern receiver! Dual conversion on the three highest ranges (including 6, 10, 15, 20 and 40 meter ham bands) no "birdies"! Steep-sided skirt selectivity with 3 I.F. stages (*16* tuned circuits on the 3 high bands — *12* on all other bands, compared to 6 normally used) plus a new crystal filter. Approximately 1 microvolt sensitivity on 6 meters for a 10db signal-to-noise ratio! New, indirectly-lighted lucite dial scales! New miniature tubes for improved sensitivity! Bandspread on all bands, including new 15-meter band! New bi-metallic, temperature-compensated tuning condenser for drift-free operation! *Plus* all the time-tested features of the famous NC-183!



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National

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MALDEN, MASSACHUSETTS

RCA Receiving Tubes useful in Amateur Transmitters

	RF Service					AF Service		
RCA Type Number	VFO	Xtal OSC	Frequency Multiplier	Buffer	Final	Voltage Amplifier	Driver	Modulator
6AG7	6AG7	6AG7	6AG7	6AG7	6AG7			6F6
6F6		6F6	6F6	6F6	6F6	6J5	6J5	
6J5						6J7		
6J7							*6L6	6L6
6L6		6L6	6L6	6L6	6L6			6N7
6N7			6N7			6SJ7		
6SJ7							6SL7-GT	
6SL7-GT						6SN7-GT	6SN7-GT	
6SN7-GT								6V6-GT
6V6-GT		6V6-GT	6V6-GT	6V6-GT	6V6-GT			
†5879						5879		
6AF4	6AF4							6AQ5
6AK6	6AK6	6AK6	6AK6	6AK6				
6AQ5						6C4	6C4	
6C4	6C4	6C4	6C4					
6J6	6J6	6J6	6J6	6J6	6J6			
12AX7						12AX7		

Octal-Base Types

Miniature Types

*Triode Connected

†Special Type

An RCA Guide...

...for low-power-level planning

This suggested list of RCA Tubes is prepared for your convenience in selecting small-size tube types for economical low-power-level applications.

All of these tubes are widely proved, and are used extensively in amateur equipment. They provide efficient operation . . . require little chassis space . . . and are inexpensive!

You'll find the table handy. Save it for future reference.

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