QST

devoted entirely to

amateur radio

December, 1949
40 Cents
45c in Canada

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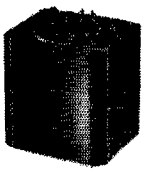
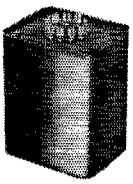
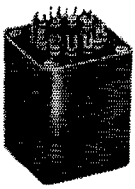
COMPONENTS FOR EVERY APPLICATIO



LINEAR STANDARD
High Fidelity Ideal

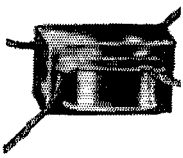


HIPERM ALLOY
High Fidelity . . . Compact

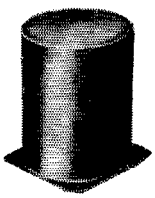


ULTRA COMPACT
Portable . . . High Fidelity

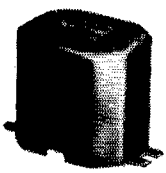
OUNCER
Wide Range . . . 1 ounce



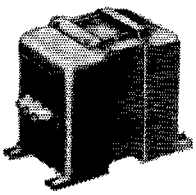
SUB OUNCER
Weight ⅓ ounce



COMMERCIAL GRADE
Industrial Dependability



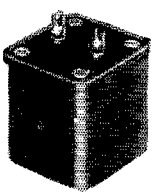
SPECIAL SERIES
Quality for the "Ham"



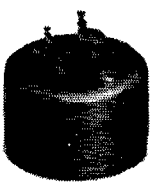
POWER COMPONENTS
Rugged . . . Dependable

VARITRAN
Voltage Adjustors

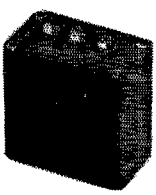
MODULATION UNIT
One watt to 100KW



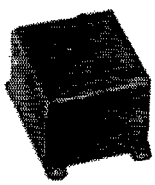
VARIABLE INDUCTOR
Adjust like a Trimmer



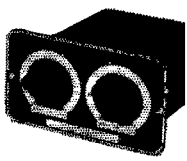
TOROID HIGH Q COILS
Accuracy . . . Stability



TOROID FILTERS
Any type to 300KC

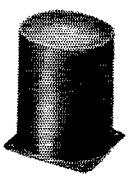


MU-CORE FILTERS
Any type ½ – 10,000 cyc.

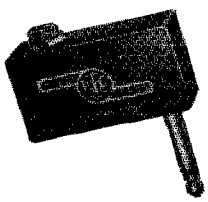


EQUALIZERS
Broadcast & Sound

PULSE TRANSFORMERS
For all Services



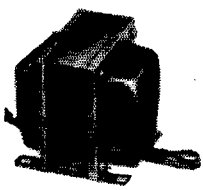
SATURABLE REACTORS
Power or Phase Control



PLUG IN ADAPTER
Impedance Matching

FOSTERITE
Grade 3 JAN Components

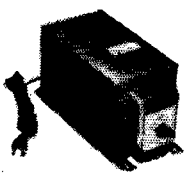
CABLE TYPE
For mike cable line



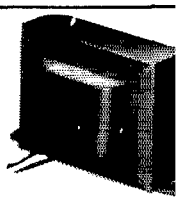
VERTICAL SHELLS
Husky . . . Inexpensive

REPLACEMENT
Universal Mounting

STEP-DOWN
Up to 2500W . . . Stock



LINE ADJUSTORS
Match any line voltage



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Simple Low co

United Transformer Co.

150 VARICK STREET — NEW YORK 13, N. Y.

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2. What Ken-Rad tube is a natural for your VFO circuit?

4. THE COMPACT METAL 6AG7.

6AG7 KEN-RAD

POWER-AMPLIFIER PENTODE

Heater voltage	6.3 v
Heater current	0.65 amp
Max plate voltage	300 v
Max screen voltage	300 v
Max plate dissipation	9.0 w

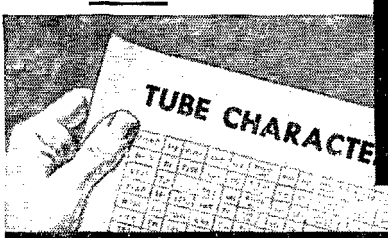
Two features of the Ken-Rad 6AG7 help in VFO work: (1) the tube's high transconductance (11,000 micromhos) which makes for stability in conjunction with a substantial power output, and (2) exceptionally thorough shielding. Besides being a metal tube, so inherently well shielded, the 6AG7 employs an inter-lead shield, which further reduces undesired input-and-output-circuit interaction.

Maybe you're not considering a VFO at present. Even so, there isn't a handier tube than the Ken-Rad 6AG7 for use in any of your low-power r-f circuits. Here's a grand choice for self-excited oscillator, crystal oscillator, or frequency multiplier. The tube takes to r-f work like a spaniel to water.

Ken-Rad precision methods of manufacture give uniformity, meaning you can count on the 6AG7 *you* buy to deliver its full ratings. Visit your Ken-Rad distributor or dealer to inspect the full line of Ken-Rad tubes, metal, glass, and miniature. Learn about their quality and value! Ken-Rad tubes are made right, priced right... they *serve* the radio amateur while *conserving* his dollars.

FOR KEN-RAD QUALITY
LOOK BEYOND THE DATA SHEET!

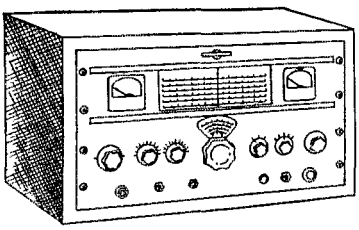
162-HA30



KEN-RAD *Radio Tubes*

PRODUCT OF GENERAL ELECTRIC COMPANY
Schenectady 5, New York

YOUR PREFERRED SOURCE FOR AMATEUR TUBES IS YOUR NEARBY KEN-RAD DISTRIBUTOR OR DEALER



TVI...

a challenge to the future of ham radio!

THE widespread and eager acceptance of television has imposed on the amateur fraternity a new problem of major proportions. Elimination of TVI, as has been explained in QST and CQ, is very difficult due to the harmonic relationship of amateur and TV frequencies, poor selectivity and spurious responses prevalent in many TV receivers and, generally, to the enormous power ratio which must be achieved between desired and undesired output frequencies in an amateur transmitter. Collins Radio, in keeping with its policy of building fine amateur gear, has modified the design of the 32V transmitter to meet the TVI problem. Extensive laboratory development, tests conducted cooperatively with one of the leading TV receiver manufacturers, and field checks in a large number of actual ham installations have shown that the new model (32V-2) is an effective answer to its TVI problem.

At the present time, due to occasional unusual field conditions, we are unable to make a flat statement that the 32V-2 is TVI proof, yet our field tests have shown no TVI in over 97% of the cases. Therefore, we are authorizing our dealers to offer full refund of the purchase price of a 32V-2 returned in new condition, transportation prepaid, within 30 days if the amateur is not satisfied with its freedom from television interference.

We hope that the 32V-2 and this money-back policy will enable many amateurs to continue their enjoyment of ham radio with increased interest.

We are proud of the job we did with 32V-2. As you can imagine, we could not rely on specific measures which might be effective in one case but would not suffice in others. Instead we attacked the problem on a broad front. You might be interested in the way we did the job:

First of all, we modified the tuned circuits in the exciter and output circuits to attenuate greatly not only harmonics but also subharmonics and other spurious frequencies which might cause trouble in a TV receiver. We found that stray r-f around the station equipment is best cleaned up by using 52 ohm RG8-U coax for all transmission lines inside the ham shack. For those amateurs who want to use two-wire open line to their antenna we have developed the 315E-1 Balun Transformer kit which is installed as part of the outdoor transmission line. This ingenious device transforms a 300 or 500 ohm balanced line to 52 ohm coax before the line enters the shack and requires no adjustment when operating on any frequency from 7 to 29.7 mc. Balance is preserved and "flat" or tuned feed systems can be employed without the use of an antenna tuner.

A second reason for standardizing on 52 ohm coax output was to facilitate the use of the 35C-1 external low pass filter which adds over 75 db of attenuation to harmonics in the TV range. The 35C-1 Filter is an accessory priced at $40.00.

For especially difficult cases where a very susceptible TV receiver is to be used alongside the 32V-2 we can supply the 49S-1 cabinet at extra cost. It has very tight shielding, forced air circulation and extra filtering of external lead wires. In most cases the 49S-1 cabinet is not required.

General amateur performance of the 32V-2 has been enhanced rather than compromised by these TVI measures. We invite you to enjoy better ham radio and freedom from TVI with the 32V-2.

FOR SUCCESS IN AMATEUR RADIO, IT'S . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd St. NEW YORK 18	2700 West Olive Ave. BURBANK	M & W Tower DALLAS 1	Fountain City Bank Bldg. KNOXVILLE

QST

DECEMBER 1949

VOLUME XXXIII • NUMBER 12

PUBLISHED, MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., AT WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION

OFFICES

38 La Salle Road
West Hartford 7, Connecticut

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.50 in the Dominion of Canada, $5.00 in all other countries. Single copies, 40 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

Entered as second-class matter May 29, 1919, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized September 9, 1922. Additional entry at Concord, N. H., authorized February 21, 1929, under the Act of February 28, 1925.

INDEXED BY
INDUSTRIAL ARTS INDEX

—CONTENTS—

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Custom Installation TV

Complete front panel assembly and complete cabinet also available.

A *new* chassis, specially designed for big picture-tube operation. Completely aligned and tested. Regular RMA 90-day guarantee applies to all parts. See your local parts distributor for details.

Free

Send for folder of original custom-installation designs.

Model 524 with 10-inch Tube . . $159.50

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Model 520 with 16-inch Tube . . $249.50

skyrider

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Happy Christmas

BILL PETERSEN, WØJRY

PR CRYSTALS SINCE 1934

PETERSEN RADIO COMPANY, Inc.

2800 W. BROADWAY, COUNCIL BLUFFS, IOWA

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 *QST*. **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* are invited to join the ARRL Emergency Corps (ask for Form 7).

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

...from the HAMS at hallicrafters to HAMS everywhere...

comes this new type of receiver the HAM WORLD has been waiting for!

SX-71
$179.50

First announced last summer, then checked and rechecked with the same painstaking accuracy that a Ham would use on his own gear, this outstanding new receiver is at last ready for production.

It's a double superhet, with 2½ kc "nose" selectivity and built-in NBFM reception among its extra features. One r-f, two conversion, and 3 i-f stages provide plenty of sensitivity. Of course, it's temperature compensated and voltage regulated. And the clean-cut station separation is a dream of operating enjoyment.

It isn't a set designed to win praise from music lovers who insist on high fidelity audio. But if you are the Ham who wants *performance above all else,* here is the set for you.

Naturally, there's no use claiming that this 11-tube (plus rectifier and regulator) set is the best on the market. For several tubes and a couple of hundred dollars more, we could (and probably will sometime in 1950) build a better Ham set. But of this we are sure—now or in the future—that, considering both performance and price, the SX-71 will be in a class by itself.

During the month of December, new SX-71's will start appearing at Hallicrafters' distributors throughout the country. We'd suggest you watch for them—and examine one for yourself. Meanwhile, if you want the latest dope, write to us direct and we will be glad to send you a new "spec" sheet.

•

See it at your hallicrafters' dealer

the hallicrafters co.

4401 WEST FIFTH AVENUE • CHICAGO 24, ILLINOIS

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 Secretary at the administrative headquarters at West Hartford, Connecticut.

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1112 State Ave., Coraopolis, Pa.

Central Division

JOHN G. DOYLE W9GPI
4331 N. Wildwood Ave., Milwaukee 11, Wis
Alternate: Wesley E. Marriner W9AND
624 College Ave., Dixon, Ill

Dakota Division

GOODWIN L. DOSLAND . . . . . WØTSN
Moorhead, Minn.
Alternate: Robert A. Kimber . . . . . WØBLK
Canyon Lake Rd., Rapid City, S. D.

Delta Division

VICTOR CANFIELD W5BSR
P. O. Box 965, Lake Charles, La.
Alternate: James W. Watkins W4FLS
220 N. Howell St., Chattanooga, Tenn.

Great Lakes Division

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Alternate: John H. Brabb W8SPF
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Rocky Mountain Division

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Alternate: William R. White . . . . . WØPDA
1263 Pearl St, Denver 3, Colo.

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Alternate: John E. Bickel W6NY
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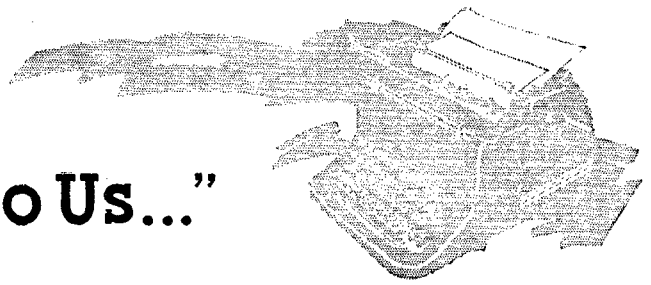
P. O. Box 586, Odessa, Texas
(W5NW at Humble Pipe Line Camp, Odessa)
Alternate: David H. Calk W5BHO
7730 Joplin St., Houston 17, Texas



"It Seems to Us..."

UNITY

WHEN future writers look back upon amateur radio's history, they may well find the date of October 10, 1949, as important a date as December 12, 1901, when Marconi first sent his three dits across the Atlantic, or September 26, 1919, when amateurs succeeded in getting back on the air after War I. For it was on October 10th of this year, in an informal FCC conference climaxing developments of the previous eighteen months, that the amateur body presented a striking demonstration of unity such as perhaps never before existed in our ranks.

Perhaps never before in our history has it been so important that unity of purpose exist. At the conference the Commission had before it several organizations and groups, heretofore professed to be of diametrically opposed opinion as concerns at least several of the FCC proposals up for discussion. If these differences had continued throughout the meeting, the Commission itself would have been forced to take the responsibility of using its own regulatory judgment in deciding just which of the views presented it would accept and place in force. That such did not happen is a tribute to the farsightedness and wisdom of all those in attendance at the October 10th meeting.

Particular credit must be given to the ARRL Board of Directors which, after examining officially for the first time on October 8th the various specific proposals of the Commission, evolved a series of decisions which, upon being put into documentary form in a comprehensive presentation with concluding recommendations, quickly got complete and unreserved endorsement from all other groups and individuals present. Thus at the conclusion of the conference on October 11th, amateur radio had gone on record with the Commission, as one voice, as to its composite views on the various proposals. Similarly, the gratitude of the amateur body must be expressed to other groups and individuals who appeared at the conference, for their affirmative acceptance of the ARRL position as their own — in some respects because they actively supported a specific League recommendation, and in others solely in the interest of unity, an action which required setting aside personal and group views. It was a heartening and splendid example of the true amateur spirit.

We should also like to compliment the Commission on its excellent handling of the conference, under the skilled chairmanship of George MacClain of the legal division, and with the capable assistance of G. K. Rollins, W3GA, R. W. Percy, W4IQR, and Irving Brownstein, who have primary concern with amateur regulatory matters. No person or group appreciates more than ARRL the sincerity of the Commission in its endeavor to maintain a strong amateur service in this country. It was for that reason, particularly, that the Board disliked finding itself opposed to certain of the FCC proposals; at the same time, the Board was pleased to find many of them acceptable and desirable.

All of us — Government, amateur organizations and groups, and individuals — have been working these many months toward the same end; although our paths to reach that objective have not been identical, as of this point we have all achieved a remarkable unity in amateur ranks by a demonstration of common purpose in which all amateurs everywhere may take the greatest pride.

• **Since the war many countries of the world have set up currency restrictions which either prohibit the sending of money outside their boundaries, or make it practically impossible. This has meant that hundreds of amateurs in other lands do not normally have the opportunity to renew their ARRL memberships and receive *QST* regularly. The situation is made more acute by the recent devaluation of many foreign currencies, for now many of those who formerly were just barely able to get together the necessary American dollars now find it utterly impossible to do so. Yet to them *QST* is the lifeline of contact with American and world-wide amateur radio. As one of them said, "I'd gladly forego my bread ration if instead I could get *QST* regularly."**

At the end of the war ARRL did in numerous instances grant membership and *QST* to prewar members overseas on a credit basis, but of course we couldn't carry membership-subscriptions on that basis indefinitely and, in practically all cases, we have been regretfully obliged to discontinue these arrangements. It occurs to us that perhaps American amateurs and club groups might wish this year to make a "care" package gift in the form of *QST* for Christmas, as many did last year. If it's something you'd like to do, we'll be glad to make necessary arrangements. The foreign membership dues are $5. If you have a particular DX buddy in mind, give us his name — *and complete address*. If you have no special name, we can arrange to apply your remittance to a membership-subscription for a foreign amateur who cannot send his own money but wishes to renew. We'll let you know what amateur we select. And of course we'll send the recipient of your gift an appropriate note to tell him who his American patron is. Address ARRL, 38 La Salle Road, West Hartford 7, Conn.

25 Years Ago
this month

December, 1924

. . . President Maxim, Vice-President Stewart, and Secretary Warner have returned from the successfully-completed Third National Radio Conference in Washington. The conference has recommended amateur short-wave bands in harmonic relationship, and has gone on record as opposed to amateur spark.

. . . Amateur DX records have again been smashed, this time by New Zealand z4AA working British g2SZ, and by American 1SF contacting New Zealand z2AC.

. . . The electrical characteristics of commercially-built air-core superheterodyne transformers are taken up in this month's lead technical article.

. . . The newest in tubes — the Sodion D-21 detector — features an extra-large glass envelope to facilitate a better grip for convenience in plugging the tube into its socket.

. . . Western Electric has introduced a cone-type loudspeaker which is expected to replace the horn type.

. . . Emphasizing the need for amateurs to become wavelength conscious, F. Dawson Bliley, 8GU, describes a harmonic-calibrated wavemeter for the new amateur bands.

. . . Communication by amateur radio is credited with a large share of the success of this year's trip of the Canadian Government Steamer *Arctic* to the Far North. William Choate, Canadian c3CO, was the ship's operator.

. . . De-basing '01A and 99 tubes has become popular sport, now that the ARRL 20- and 5-meter tests are but days away.

. . . Central Division Manager R. H. G. Mathews, 9ZN, has issued an ORS certificate to the sailing vessel *Bigbill*, presently on a two-year journey to the South Seas. Other Chicago amateurs coöperating in making the ship's amateur station possible include F. J. Marco, 9ZA, W. E. Schweitzer, 9AAW, Operator E. C. Page, 9BP, and Ninth District Supervisor E. A. Beane.

. . . 8BLP details what promises to be a promising kink for the ham shack — a method of using a Ford spark coil as a plate transformer.

. . . Introduced in "Who's Who": Rocky Mountain Division Director Paul M. Segal, 9EEA, Bernard S. Shields, 5AJJ, and Harry F. Dobbs, 4XS.

. . . *Headquarters doings:* 1MK has been installed in the League's offices on Main Street, Hartford. . . . Department Editor H. F. Mason of *QST* has returned to his home in Seattle, Wash.; L. W. Hatry, ex-5XV, has taken over in his stead. . . . John M. Clayton has joined the League staff to handle technical-information letters.

"JINGLE BELL-ERS" AND BRASSPOUNDERS SPEED ELECTION RETURNS

• Another amateur radio first was chalked up during the Nov. 8th New York State elections when, to the accompaniment of clanging amateur teleprinter carriages and the staccato of ham c.w., listeners to WNYC and WNYC-FM were brought state election returns far ahead of those of the commercial news services. Statewide results were fed by members of the New York State (NYS) C.W. Net to W2TYU, Bayside, L. I., who made copy on a ham teleprinter which fed a similar machine in the WNYC studios. Local Westchester County returns were relayed to the station by a TT net of the V.H.F. Institute of N. Y., which included W2s QGH/2, YBK/2, NJF, BFD, and QDM. Special tribute was paid the work of amateurs during the televising of WNYC's election studios by WNBT. Impressed by the speed and accuracy of the amateur nets, Director S. N. Siegel of WNYC has arranged for a permanent amateur TT installation at the station.

Miniature Tubes in a Bandswitching Exciter

A 75-Watt Variable-Frequency Driver Unit

BY WALTER MAYER,* W8CVU

One more look at the "Big Job" and I was convinced. It had to go. Remembering the long hours of work that went into each chassis did not make the decision easier. It looked nice, in the 6-foot rack, with lots of tuning dials and coils. An 80-meter VFO on the operating desk, link coupled to the "Big Job" in the corner — an 807, doubling or quadrupling, link coupled to a 75T doubling to 14 or 28 Mc., power supplies galore, 600-volt, 1500-volt, bias — all this to drive a pair of 100THs in the final! Modern design? Hardly.

The news in the evening paper was the clincher. Two TV stations within a radius of 50 miles of Bay City would soon be in operation. Elimination of TVI from the existing rig would be rough. A new VFO exciter was definitely needed. Having no experience with TVI, I remembered a few of the words from the boys at the front — complete shielding — tuned doubler stages running a minimum of power — shielding of all external cables. How about combining everything in a single shielded unit? Again, I recalled — ". . . in all stages running an appreciable amount of power, have a considerable amount of capacity from plate to ground." Well, a tube with a big plate-to-ground capacity is a start. An 807 has 7 $\mu\mu$fd. Why not a pair? That's 14 $\mu\mu$fd., which should help.

This exciter was to be built not only for TVI elimination. I had a few requirements myself. Everything in one shielded unit looked good from my viewpoint too. I had to have enough output to drive the 100THs. This requirement was more than fulfilled. I wanted also a minimum of controls, compactness, a good reset accuracy on the oscillator tuning dial, and last, but not least, *complete bandswitching — no plug-in coils.*

*% Michigan State Police, Box 68, Bay City, Mich.

♦

W8CVU's bandswitching exciter. The oscillator tuning control is at the left with the filament and plate-voltage switches below on either side and the final-amplifier resonance indicator above. The bandswitches are at the center with the multiplier tuning control to the right. Above are the output-tank tuning control and the turret switch.

♦

Circuit

The "Clapp oscillator" boys will probably raise an eyebrow when they see the grounded-plate oscillator used in this unit in Fig. 1. However, for the past 12 years the writer has used this circuit very successfully and could see no reason to change. The oscillator tuning dial and condenser should be the best you can afford to buy because here is the beginning of a stable oscillator with good reset accuracy. To me, this means a National PW dial. The condenser, which is better than any other I could find on the market, was removed from a war-surplus BC-458. It also appears in the BC-457 and possibly all transmitters in this series. The fixed-tune condenser found under the oscillator shield can is built very solidly, has both ends of the rotor mounted in ball bearings and, as an added attraction, has a trimmer of about 5 to 8 $\mu\mu$fd. with a screwdriver guide built into the top. The only modification necessary is to extend the drive shaft. This is done very easily by using a ¼-inch brass shaft, with the coupler made from a ½-inch piece of brass tubing, ¼-inch inside diameter. First, the tubing is solder-sweated to the condenser drive shaft, then the ¼-inch rod is inserted in the coupler and soldered.

The fundamental frequency range of the oscillator is from 1750 to slightly over 2000 kc. Doubling to 80 meters, 0 to 470 on the tuning dial covers 3.5 to 4 Mc.

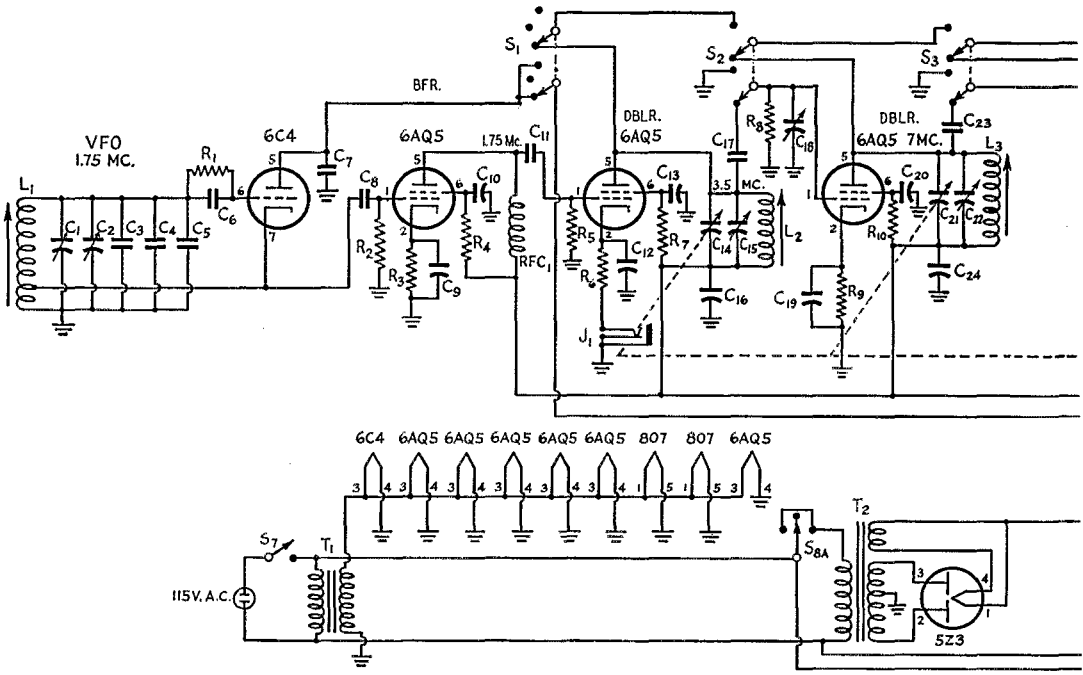


Fig. 1 — Circuit diagram of W8CVU's bandswitching exciter.

C_1 — 100-$\mu\mu$fd. variable (see text).
C_2 — 5-$\mu\mu$fd. air trimmer (part of C_1).
C_3 — 300-$\mu\mu$fd. zero-temp. (Centralab type TC).
C_4 — 100-$\mu\mu$fd. zero-temp. (Centralab type TC).
C_5 — 30-$\mu\mu$fd. neg. temp.
C_6 — 470-$\mu\mu$fd. mica.
C_7 — 0.0068-μfd. mica.
C_8, C_{11} — 220-$\mu\mu$fd. mica.
C_9, C_{10}, C_{12}, C_{13}, C_{16}, C_{19}, C_{20}, C_{24}, C_{26}, C_{27}, C_{31}, C_{32}, C_{34}, C_{35}, C_{38}, C_{40}, C_{41} — 0.01-μfd. paper.
C_{14}, C_{36} — 50-$\mu\mu$fd. midget variable (National type UM).
C_{15}, C_{22}, C_{29}, C_{37} — 30-$\mu\mu$fd. mica trimmer.
C_{17}, C_{23}, C_{30}, C_{39} — 100-$\mu\mu$fd. mica.
C_{18}, C_{25}, C_{33} — 45-$\mu\mu$fd. mica trimmer.
C_{21}, C_{28} — 15-$\mu\mu$fd. midget variable (National UM).
C_{42} — 0.005-μfd. 2000-volt mica.
C_{43} — 100-$\mu\mu$fd.-per-section variable (0.03-in. spacing).
C_{44}, C_{45} — 4-μfd. 600-volt filter condenser.
C_{46} — 0.25-μfd. 1000-volt filter condenser.
C_{47} — 5-μfd. 1000-volt filter condenser.
R_1, R_2, R_5, R_8, R_{11}, R_{14} — 0.1 megohm, ½ watt.
R_3, R_6, R_9, R_{12}, R_{15} — 560 ohms, 1 watt.
R_4, R_7, R_{10}, R_{13}, R_{16} — 15,000 ohms, 1 watt.
R_{17} — 6000 ohms, 5 watts.
R_{18}, R_{19} — 50 ohms, 1 watt.
R_{20} — 5000 ohms, 25 watts.
R_{21} — 10,000 ohms, 100 watts.

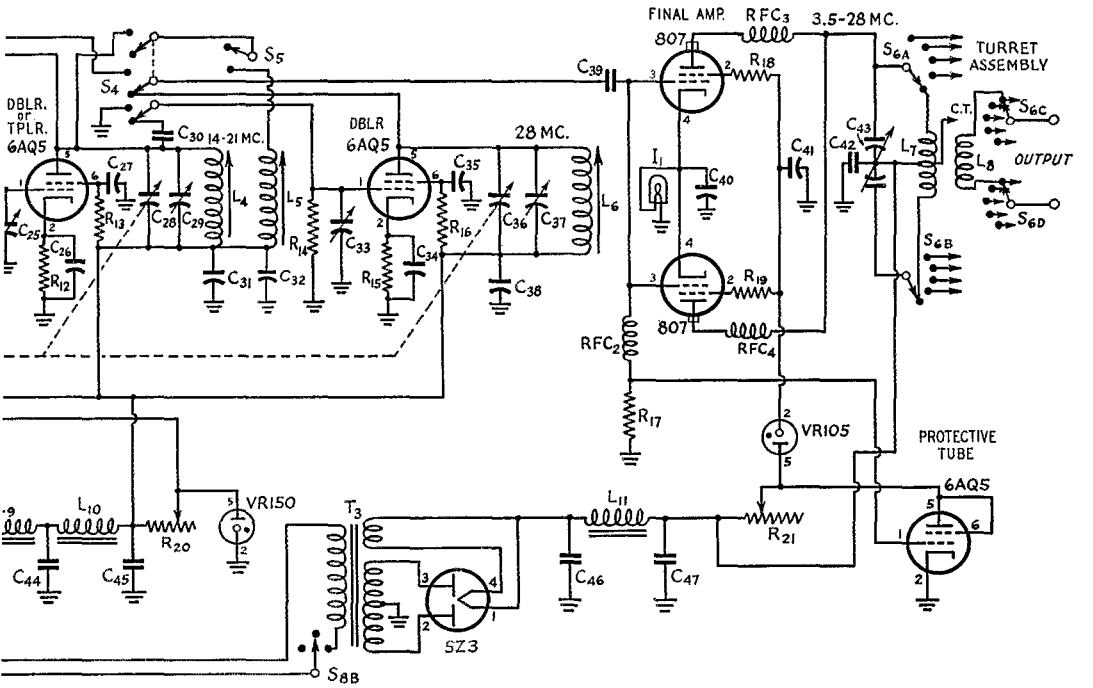
A 30-$\mu\mu$fd. negative-temperature-coefficient condenser, C_5, takes care of the drift problem in fine style. After a 5-minute filament warm-up, the completed oscillator will hold to plus or minus 1500 cycles on 14 Mc. for a period of 4 hours and longer. That's where I quit.

All components of the oscillator are mounted in a Bud 3 × 4 × 5-inch steel box. If aluminum is handy, so much the better. The 6C4 oscillator tube is mounted on top of the box and all wiring is completed before the box is finally mounted on the chassis. The oscillator stage is followed by an untuned 6AQ5 isolation stage operating Class A.

Bandswitching Doublers

Following the oscillator and buffer stages, the line-up consists of a 6AQ5 3.5-Mc. keyed doubler, a 6AQ5 7-Mc. doubler, a 6AQ5 14-Mc. doubler or 21-Mc. tripler, and a 6AQ5 28-Mc. doubler. All multiplier stages are gang-tuned by a separate control and the coils are wound on National XR50 forms. The bandswitches are Centralab lever-action switches. The 3.5-Mc. switch is a 2-pole 3-position unit. Here is how it works. On "up," voltage is applied to the oscillator plate. However, the plate lead from the 3.5-Mc. doubler is broken, thereby cutting off excitation to the final. This is used for frequency spotting on 80 meters. On the higher-frequency bands the "low-high" plate power switch is used (to be described later) since the leakage through the idling final will not overload the receiver on these bands. The switch placed in the neutral position breaks the oscillator plate voltage. On "down," the oscillator is again in operation, and excitation is furnished the final.

S_2, S_3, S_4 and S_5 are Centralab 4-pole 2-position switches. The poles not in use make handy anchorages for the interstage coupling condensers. But make sure only one contact is used on each



L_1 through L_6 wound on National XR50 coil forms as follows:
L_1 — Form wound full with No. 26 enam., cathode tap 6 turns from ground end.
L_2 — 34 turns No. 26 enam., close-wound.
L_3 — 22 turns No. 26 enam., close-wound.
L_4 — 11 turns No. 22 enam., close-wound.
L_5 — 8 turns No. 22 enam., close-wound.
L_6 — 4 turns No. 22, spaced length of form.
L_7, L_8 — B & W turret JTCL, 1 turn removed from each side of 14-, 21- and 28-Mc. coils.
L_9, L_{10} — 10-hy. 200-ma. filter choke.
L_{11} — 8-hy. 200-ma. filter choke.
I_1 — No. 44 dial lamp (0.25 amp.).
J_1 — Closed-circuit jack.
RFC_1, RFC_3 — 2.5-mh. choke.
RFC_2, RFC_4 — 5 turns No. 22 enam., wound on 50-ohm 1-watt res., double spaced.
S_1 — Lever action, 2 poles, 3 positions, nonshorting (Centralab).
S_2, S_3, S_4, S_5 — Lever action, 4 poles, 2 positions, nonshorting (Centralab).
S_6 — Bandswitch in turret assembly.
S_7 — S.p.s.t. toggle.
S_8 — S.p.d.t. center-off switch.
T_1 — Filament transformer: 6.3 volts, 5 amp.
T_2 — Power transformer: 400-0-400 volts r.m.s., 200 ma.; 5 volts, 3 amp.
T_3 — Power transformer: 600-0-600 volts r.m.s., 200 ma.; 5 volts, 3 amp.

pole! All switches up to the one for the band in use are in a "down" position. Therefore, when set up for 14-Mc. operation, for instance, the first three switches are down. The 21-Mc. bandswitch adds an inductance, L_5, in parallel with L_4; therefore the tube in this stage serves a dual purpose, either doubling to 14 Mc. or tripling to 21 Mc.

The Final

In the output stage we find two 807s in parallel. Having built several transmitters using 807s previously, and having cussed them all, the plans for this job called for a balanced tank and neutralization. However, after taking no precautions in layout or shielding, I found no neutralizing was required, no parasitics could be found, and still better, maximum output occurred at minimum plate current, which was a new experience for me! Anyway, in cases where neutralization is needed, it is a simple matter to bring a lead up from the grid, through the chassis alongside the plate tuning condenser, and use a short piece of wire as the condenser. A B & W coil turret takes care of switching in this stage.

The 6AQ5 and VR105 screen-control circuit is an extension of the protector circuit seen frequently in connection with 807s and other screen-grid tubes in lieu of protective fixed bias. With the latter arrangement the input is reduced below the rated dissipation level when excitation is removed, but is not brought to zero. In the extension shown, the VR tube opens when excitation is removed, thereby removing screen voltage entirely from the 807s and cutting the input off completely.

There are some who will insist on a meter in the plate circuit of the final. However, a pair of 807s at 500 volts is mighty hard to overload with the links supplied on most manufactured coils. Where the last watt is needed, a meter is advisable, but

for me a pilot lamp in the cathodes is entirely satisfactory as a resonance indicator.

Power Supplies

There is nothing unusual about the power supplies. One with an output of 190 volts at 200 ma. takes care of the oscillator and doublers. The other, delivering 500 volts at 200 ma., furnishes the voltage for the 807s. Note the plate switch, S_8. In the down position this switch, a double-pole double-throw type with center-off position, energizes only the low-voltage supply. In the "up" position both power supplies are in operation. Two separate s.p.s.t. switches will do the same thing, of course.

Construction

In building this exciter, no special tools, chassis, gears, or gimmicks are required. Starting with a standard chassis 13 by 17 by 3 inches, and a 19-inch panel 10½ inches high, two different sizes of tube-socket punches, an electric drill, an assortment of bits and a hack saw will make the job easy. The only cut-out I didn't like was the square hole through the panel and chassis for the bandswitches, but the job doesn't need to be smooth because here a switch plate covers the opening.

The photographs pretty much tell the story on the layout. The oscillator compartment is mounted on the chassis with a 3 × 5-inch side up. The tuning condenser is fastened to the front of the box with three screws from the outside. This is necessary to align the condenser with the dial drive shaft. The oscillator coil is mounted with its slug-adjusting screw protruding through the top. It's advisable to turn down a 6–32 locknut on the slug after the adjustments are completed, since some slugs fit quite loosely. The oscillator tube socket is submounted on top.

Underneath, the National UM condensers (which are furnished with right-angle mounting brackets) were mounted on a piece of insulating material and then mounted as a unit on the chassis with two bolts and large washers. As a word of caution, do not use the lock washers furnished with the condensers — use fiber washers instead. If the right-angle brackets are grounded, metal lock washers may cause a short to the stator pin on the condenser which is carrying 190 volts. The plate-tank padder condensers should be mounted directly on the UM condensers, and the grid padders as close to the tube grids as possible. More about these later. The 14- and 21-Mc. coils should be mounted as close to the 21-Mc. bandswitch as possible, since we are switching the 21-Mc. coil itself, and the lead must be short.

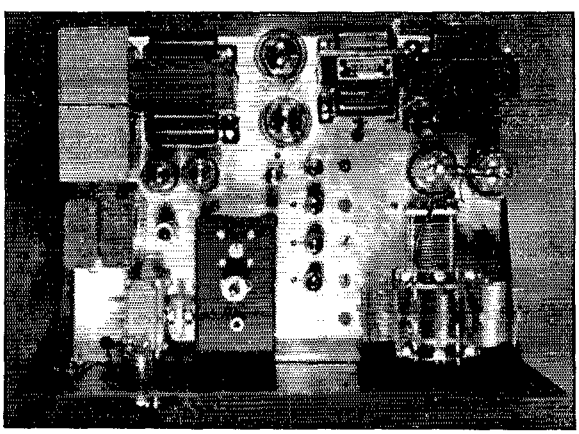
Before mounting the turret for the final, remove one turn from each side of the 14-, 21- and 28-Mc. coils. Also solder the RG-58/U coaxial line and all leads to the bandswitch. Then they can be wired to the condenser after the turret is in position.

Tuning Adjustments

After all the wiring has been checked and double checked, let's see what we have. The oscillator dial should be set at zero (maximum capacitance), filament switch on, 3.5-Mc. bandswitch up, the rest neutral, final turret on 3.5 Mc., plate switch down. First, check the VR-150 in the oscillator supply. The easiest and surest method is to connect a milliammeter between the VR-150 and ground. Adjust R_{20} so that the VR-150 draws 10 or 12 ma. and reconnect the ground lead.

Listening for the oscillator signal in the receiver, tune the frequencies around 3500 kc. You may have to look a hundred kilocycles high or low. Now, with the trimmer condenser, C_2, set at about half capacitance, adjust the slug in L_1 to resonance at 3500 kc. Then 4 Mc. should fall close to 470 on the dial.

The next step is to tune the 3.5-Mc. doubler. Before tackling this exciter, I would break out in a cold sweat just thinking of gang tuning several stages. But I found out that it is actually easy. Set the oscillator at zero, C_{14} at maximum and



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Inside view of the bandswitching exciter, showing the arrangement of components on top of the chassis. The oscillator components are assembled in the metal box to the right of the PW dial mechanism. The multiplier tubes and tuning slugs are lined up to the right of the oscillator compartment. The final-amplifier turret is mounted over the tank condenser in front of the two 807s. Power-supply components occupy the rear portion of the chassis.

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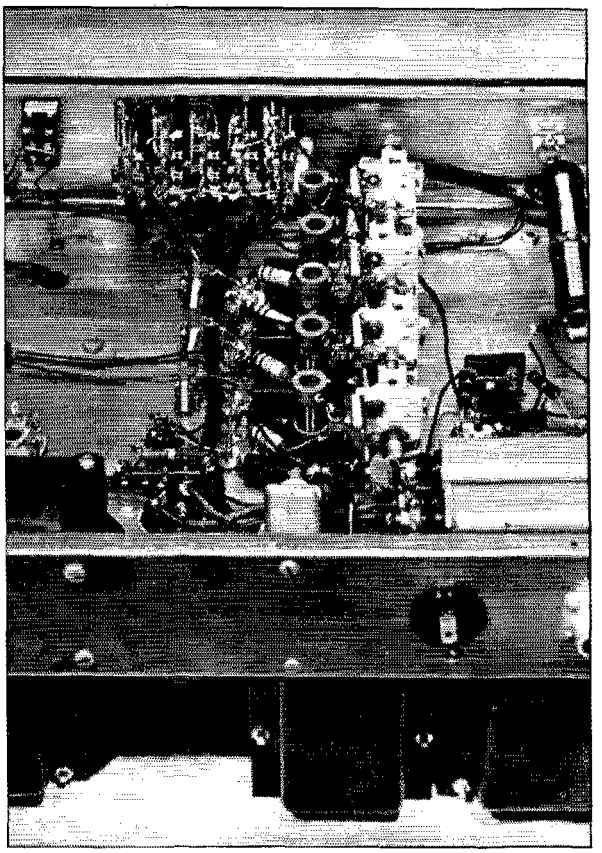


Bottom view of the all-band exciter. The multiplier tuning gang is to the right with the slug-tuned coils and miniature tube sockets lined up alongside to the left. The bandswitch assembly can be seen set in the front edge of the chassis.

padder C_{15} about three-quarters closed, 3.5-Mc. bandswitch down. Connect a miliammeter in the grid circuit of the 807s. This is your best method of checking the tracking of the doubler stages. Adjust L_2 to resonance with the slug. Tune the oscillator to 4 Mc. and adjust C_{14} to resonance. C_{14} should be nearly open. If resonance falls with the condenser partly open, *increase* the capacitance of padder C_{15} and open the slug. If you are unable to hit resonance with any setting of C_{14}, *decrease* the capacitance of padder C_{15} and turn in the slug to resonance. A bit of juggling here, and you will find C_{14} closed at 3500 kc. and open, or nearly so, at 4000 kc.

Now check the 807s for r.f. feedthrough. If the indication of r.f. in the plate tank is appreciable or if there is the slightest change of grid current when the final is tuned through resonance, the stage should be neutralized as mentioned earlier.

With a load on the final, throw S_7 up, thereby applying voltage to the 807s. Resonate the plate and adjust R_{21} for about 225 volts at the screen. Then we should have 5 or 6 ma. of grid current with the final loaded to between 125 and 150 ma. The grid current should remain constant over the complete 3.5-Mc. band.

Next, adjust for 7 Mc. The necessary tuning of the final is, of course, to be made as we continue. Turn No. 2 bandswitch down, resonate C_{18}, the 7-Mc. grid padder. A ¼-watt neon bulb is a handy gadget here. This padder is needed to compensate for the capacitance removed from the 3.5-Mc. plate circuit when the 807 grids are switched to 7 Mc. Proceed with the 7-Mc. plate tuning as described for 3.5 Mc. Here it is necessary only to track from 7 to 7.4 Mc. With the 14-Mc. bandswitch down, follow the same procedure as outlined above, tracking between 14 and 14.8 Mc. With the 21-Mc. bandswitch down, the only adjustment needed is to resonate L_5 by adjusting the slug. The 28-Mc. adjustments need a few more minutes, because a considerable frequency range must be covered — 28 to 29.7 Mc.

That should do it. A final check on alignment, voltages, etc., and you are ready for business. See you on the low end.

Strays

The Marine Corps is preparing a roster of all licensed amateur operators who are presently serving in that branch of the armed forces. If you fit into this classification the following information is requested, in duplicate: (1) name, rank, serial [or file] number, (2) present station, (3) class of amateur operator license, (4) approximate expiration date of license. Send data to Commandant of the Marine Corps, Code AO-3, Headquarters, U. S. Marine Corps, Washington 25, D. C.

FLASH!

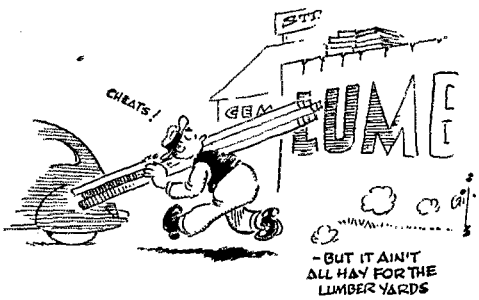
On November 16th, much too late to permit discussion in this issue, FCC issued further notice of proposed rule-making in Docket 9295. For further information, see your director or affiliated club secretary, or write Hq. for a copy of the new proposals. January *QST* will have complete data.

Lumber Facts and Figures

How To Get the Most for Your Money at the Lumberyard

BY JAY F. ANTENEN,* W8SDQ

No lumber company likes to have a reputation for skinning the public, but when a ham finds that he can spend half a week's pay check for a bundle of wood he can carry home in the back of his car the seeds of dissatisfaction have been planted. However, if he knew the margin on which these companies work he would curse only the high cost of living, and then attempt to discover the reasons for the seemingly exorbitant charges, in order to plan his next trip



to the lumberyard more intelligently. What follows is a capsule course in the lumber trade, to that end.

Lumber Widths and Lengths

Lumber is stocked by lumberyards in multiples of two-foot lengths; for example, 1 by 6 pieces 8, 10, 12, 14 and 16 feet long. If you walk out with a 1 by 6 piece 14 feet 6 inches long you may not realize it but you have paid for a piece 16 feet long. And there may even be a charge for cutting it shorter! Even worse, the piece doesn't measure 1 inch by 6 inches at all; it is actually only about ¾ by 5½ inches. This is because the rough stick has been planed down somewhat to provide a finished piece. Doesn't look like you're getting your money's worth, does it? Rest assured that this is all a part of the lumber business; nobody is trying to take advantage of you.

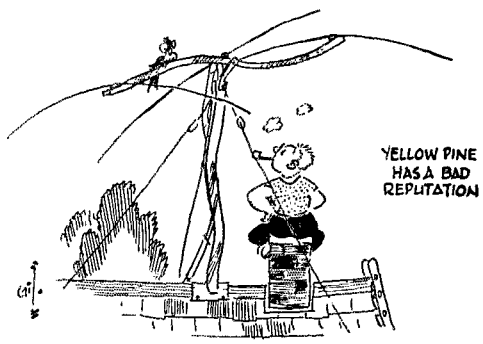
Similarly, 2-inch lumber is actually about 1⅝ inches thick, and about ½ inch narrower than indicated. Keep these facts in mind when you shop for the makings of that lattice tower, and don't expect to get a 2 by 2 that actually measures two inches each way. The lumber company will probably have to rip a wider piece into two or three strips to make 2 by 2s, as they are not ordinarily stocked, and you will find that your 2 by 2 has shrunk to about 1⅝ by 1⅝ by the time you get it out of the yard. Standard widths are 2, 4, 6, 8, 10 and 12 inches, so if you want a 1 by 3 you will have to pay for a 1 by 4 and have it ripped down, which may cost you extra.

The "Board Foot"

The basis of most lumber measurement is the *board foot.* A board foot is the equivalent of a piece of lumber 1 inch thick, 12 inches wide, and 1 foot long. Thus, a piece of 2 by 12 contains two board feet per foot of length, and a piece 10 feet long contains 20 feet board measure. The cost of lumber ranges anywhere from 8 to 40 cents a board foot depending on the variety and grade of the wood, especially the latter. The grade of a piece of wood is determined by the number of knots, the tightness of the knots, shakes, wormholes and all the other ills a piece of wood is heir to. To a carpenter there is nothing more satisfying than a nice clear piece of lumber, but you will have to pay well for it, for, as mentioned above, the grade is a major factor in its worth.

Varieties of Wood

Nowadays, at least in the Middle West, only a few varieties of wood are stocked. Yellow pine, from the Deep South, is a widely-used type. It



costs from 10 to 25 cents a board foot, depending upon the grade. The more expensive kind is good-looking stuff, but yellow pine has a bad reputation for twisting, bending and warping when it dries out in the sun. Also, unless well protected by paint, it will rot readily when alternately wetted and dried.

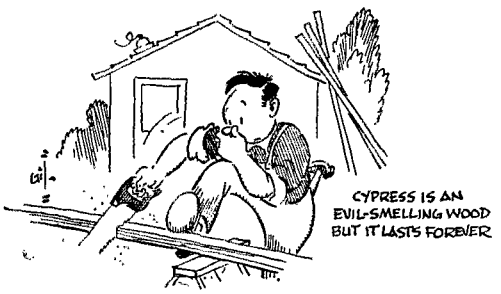
Douglas fir, another common variety, comes from the West Coast, and is a wood roughly like

* 228 N. 7th Street, Hamilton, Ohio.

yellow pine. It costs about the same. Most homes of this day and age are built of either fir or yellow pine. Fir has a grain a little inferior to yellow pine, and it splits easier, but it doesn't warp as readily and can be had in longer lengths. Well-stocked yards may have it on hand up to 24 feet long.

White pine, which comes from Idaho and other Northwestern states, is easiest to work with, and stands the weather well. Various grades are usually available, and the cost will run from 20 to 35 cents a board foot. It is clean and soft, and has a wonderful uniform grain, but it lacks the strength of yellow pine or fir. It is highly recommended for cabinet work and other uses that do not require large sizes or extreme lengths.

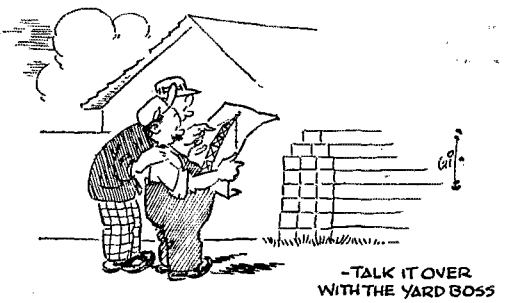
Cypress, from the swamps of Louisiana, spends its career as a tree knee-deep in bayou water. It is an evil-smelling wood, but it will last forever when exposed to the elements, even when not protected by paint. Redwood, from the big trees of California, is also good for exterior work, but despite this virtue it splinters easily and is not very strong.



Now, a word about plywood. A standard piece of plywood is 4 by 8 feet, and it may be had in three-ply (¼ inch thick), four-ply (½ inch thick), and five-ply, which is either ⅝ or ¾ inch thick. Ordinary plywood is made from Douglas fir, and can be gotten "good one side" or "good two sides." Plywood ¾ inch thick costs about 35 cents a square foot and up, so try to figure out cuts that will use up the 4 by 8 panel with a minimum of waste. Plywood is available with a veneer of birch, oak, gum, maple, and other fancy domestic and foreign woods, but they are pretty fancy-priced, too. If you're thinking of fixing up your shack to look like a banker's hide-out, look into a new type of plywood called Weldtex. It has a scoriated surface that works out nicely in paneled walls.

Getting back to that lattice tower, plan on using brass screws, and get a screwdriver bit for that brace of yours to put the tower together. Also, it is an old rule in the building business to give everything fancy that is to remain out in the weather a coat of primer before starting to put things together. This is called back painting. It helps to get some protection on areas that are not accessible to the paintbrush later on.

Well, there you are. Perhaps you will be a little better equipped for the next visit to your local



lumberyard. Take along a sketch of what you have in mind, and when the front office refers you to the yard boss show him the sketch and ask his advice. He hangs out among the stacks of lumber, and he usually knows every piece in the yard. Chances are he'll even help you browse around to find just what you're looking for. After reading this you really ought to know!

[EDITOR'S NOTE: His curiosity stirred by the useful information offered by W8SDQ, your editor paid a visit to a typical small-town lumberyard in Collinsville, Connecticut, to see if the lumber situation here was similar to that described for Ohio. It was found that general yard practice and stocks were much like those given by the author, and prices were about the same. There were some differences, possibly peculiar to New England:

Cypress, we were told, is not generally stocked hereabouts; shipping costs, no doubt. Spruce is widely used, and one item of this wood is popular with hams. "Furring strip," usually 1 by 2 inches, in standard lengths, has many uses around the ham station, and it is cheap and plentiful. If the yard boss is a friendly fellow (and we've found them so) he'll pick out the straightest knot-free pieces for you, or let you choose your own.

If you're located in a part of the country where there is extensive sawmill activity, as on New England's forested hillsides, your local yard may carry stocks of native lumber, at very reasonable figures. Shipping costs run up lumber prices. In this instance, we found birch, maple, oak and hickory, in two-inch stock of various standard widths and lengths. These desirable native hard woods were available at prices comparable to Douglas fir.]

Strays

Plans for a leisurely 'round-the-world pleasure cruise and sightseeing trip to start within the next year are being formulated by James H. Ottley and family of Saratoga, Calif. To handle communications, Mr. Ottley is desirous of contacting a reliable radio amateur who would be interested in making the trip. Crew members will be unpaid and must stand the expense of food for themselves and any guests. The cost of the ship — tentatively a 90- or 120-foot motor-sailer — fuel, equipment, etc. will be borne by Mr. Ottley.

The Design of Low-Pass Filters

Effective Harmonic Attenuators for TVI

BY MACK SEYBOLD,* W2RYI

• **Although low-pass filters have numerous other uses, this article deals with filters designed to be inserted in the transmitter transmission line for the purpose of filtering out signals above the operating frequency, particularly those harmonics that fall in the TV range. Even many who are not bothered with TVI at the present time should find the discussion of the characteristics peculiar to different filter configurations most interesting.**

IN the past, most of the filters in amateur radio equipment have been used in power supplies and audio decoupling networks. The advent of commercial television accompanied by TVI and the beginning of single-sideband work in the amateur bands have brought the electrical filter into a new and important position in our parts lists and equipment designs. During the past twenty years, textbooks and engineering handbooks have presented filter theory with thoroughness and accuracy, and the amateur can gather from them sufficient information to calculate networks for almost all filter applications.[1] Very little has been published in the texts on mechanical arrangement or shielding of the components, but recently the ground has been broken in this field with articles in the amateur journals. More will be said about this important feature of filter design, but first let us review some of the principles involved in filter theory.

Function of Filter Components

A decoupling network in audio amplifiers, such as shown in Fig. 1, is a low-pass filter of extreme simplicity. At zero frequency (d.c.), the only voltage drop across the 25,000-ohm resistor is

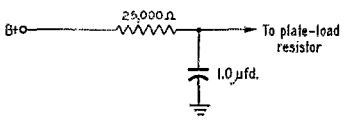


Fig. 1 — Decoupling filter of the type used in audio amplifiers and on a.v.c. lines.

produced by the plate current of the tube. At any frequency other than zero, however, the 1-μfd. capacitor is involved. The higher the frequency, the lower the capacitive reactance (X_C). As shown in Fig. 2, the 1-μfd. capacitor looks like 2600 ohms at 60 cycles. At 600 cycles it is 260 ohms, and at 6000 cycles it is 26 ohms. This capacitor in series with the 25,000-ohm resistor has almost the same effect at each of these frequencies as a regular voltage divider.

At 6 Mc. the reactance is 0.026 ohm, which is practically a dead short, and the voltage division is extreme, providing a great attenuation to any 6-Mc. signal entering the system. The only difference between this divider and a regular bleeder is the fact that the current flowing in a capacitor *leads* the voltage by 90 degrees, so an exact calculation of the voltage division at a given frequency should include the angular relationship of the currents flowing in the resistive and capacitive branches.

When coils or chokes are involved in a filter, the current lags behind the voltage by 90 degrees. This current-voltage relationship must also be considered in the calculations. In addition, a coil differs from a capacitor in that its reactance, X_L, increases as the frequency is increased.

Power-Supply Filters

Filters for power supplies are low-pass affairs that involve both coils and capacitors.

This type of circuit, shown in Fig. 3, is more effective as a filter than the circuit of Fig. 1 because the reactance of the choke gets higher as the frequency is increased (see Table I).

There are two other combinations of coils and capacitors that may be used to advantage in non-dissipative filter circuits. These are the parallel- and series-resonant circuits. They are employed when some specific frequency is to be attenuated.

*% Tube Dept., RCA Victor Div., RCA, Harrison, N. J.

[1] Shea, *Transmission Networks and Wave Filters*, D. Van Nostrand pub.; Terman, *Radio Engineer's Handbook*, McGraw-Hill pub.

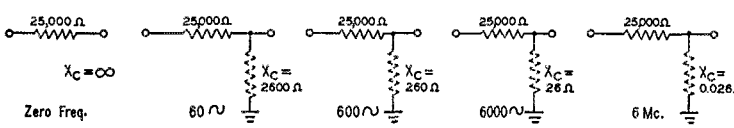


Fig. 2 — This is how the capacitive reactance of the 1-μfd. capacitor shunts the signals at various frequencies.

TABLE I		
f (cycles)	X_L (10 hy.)	X_C (1 μfd.)
0	0	∞
60	3800	2600
600	38,000	260
6000	380,000	26

A parallel-resonant circuit, shown in Fig. 4A, has extremely *high* impedance, and will be most effective for the frequency at which L_1C_1 is resonant when connected in series with the line. On the other hand, the series-resonant circuit at B has extremely *low* impedance. But, if connected across the line, the L_3C_3 combination will also attenuate markedly at its resonant frequency.

Supply-Line Filters

Radio-frequency filters for supply lines behave exactly the same way as the power-pack units.

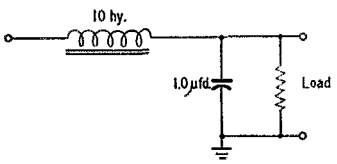


Fig. 3 — Inductance and capacitance in a low-pass power-supply filter.

Smaller chokes and capacitors are used because the lowest frequency they are called upon to attenuate is much higher than the 120-cycle component from a full-wave rectifier that has to be filtered out in a 60-cycle power supply.

The r.f. line filter in Fig. 5 starts to attenuate at about 1 Mc. A similar configuration is used in transmission-line filters to attenuate harmonics, but exact specifications for the coils and capacitor are required to make it operate correctly in an antenna feeder.

Filters in transmission lines must pass desired signals without losses, must attenuate offending harmonics and must provide an exact match to the transmission line. The formulas that follow fulfill these requirements and by plugging in values that represent a particular transmission-line condition, the exact specifications can be met.

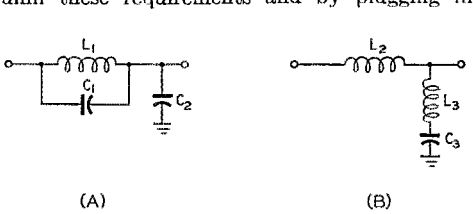


Fig. 4 — High impedance in the series arm in A and low impedance in the shunt arm of B can be used to advantage to attenuate signals of specific frequencies.

Impedance Match for Low-Pass Filters

A proper transmission-line filter consists of input and output sections usually separated by one or more intermediate sections. The input and output sections must match the line to the intermediate sections. To obtain a good match over a wide range of passband frequencies, these end sections must have an attenuation peak (f_P) at 1.25 times the cut-off frequency (f_{CO}). In addition the cut-off frequency should not be too close to the highest operating frequency to avoid loss at the operating frequency. End sections for a filter to attenuate harmonics causing TVI in areas where Channels 2, 4, 5, etc. are in use can fit these requirements easily by setting the cut-off frequency at 45 Mc. which makes the attenuation peak 56.25 Mc. (1.25 × 45). Where Channels 3, 6, etc. are involved, the cut-off frequency can be set at 48 Mc. which produces an attenuation peak at 60 Mc. However, a well-designed filter with a cut-off frequency at 45 Mc. will eliminate TVI in all channels when operated with a shielded transmitter.

The end sections for a low-pass filter are shown in Fig. 6. The formulas necessary to calculate the inductance and capacitance values are also shown in the drawing. The first thing to do when designing a filter is to decide what cut-off frequency (f_{CO}) is to be used in the end sections. After this decision has been made, substitute this specific frequency value in the equations, along with the characteristic resistance (R) of the transmission line, and solve for the capacitance and inductance values. Frequency is given in cycles, inductance in henrys, and capacitance in farads.

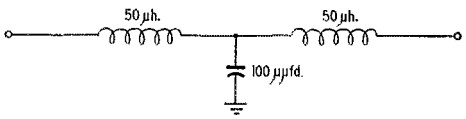


Fig. 5 — Supply-line filter used to prevent radiation of harmonics from lines entering a shielded transmitter.

Methods of Checking Results

A check on your calculations can be made by proving that the resonant frequency of the L_1C_1 circuit is the attenuation-peak frequency. Use the conventional resonance formula: $2\pi f\sqrt{LC} = 1$. The same formula can also be used to check the $L_1C_1L_2$ system, where the resonant frequency of $L_1 + L_2$ in series with C_1 should be the same as the design cut-off frequency. If you have one of the Shure reactance slide rules the checking can be done very quickly.

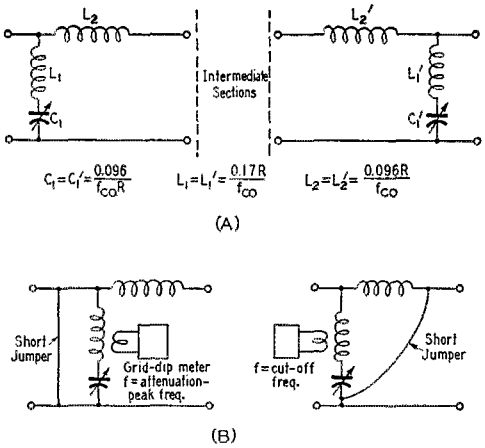


Fig. 6 — A — End sections of the low-pass filter. Substitute the characteristic resistance of the transmission line for R in the formulas and also the frequency, f_{co}, at which attenuation is to start. These formulas match the transmission line to the intermediate sections and automatically place an attenuation peak at a frequency (f_p) equal to 1.25 f_{co}. All units are in farads, henrys, ohms or cycles per second. A typical response curve for a pair of end sections is shown in Fig. 11A. B — Checking an end section of the low-pass filter with a grid-dip meter.

Another method of checking is to use a grid-dip meter to check the resonant frequency of specific portions of the end sections after they have been constructed (see Fig. 6B). This method is used also for locating shorted or open capacitors when repairing a filter.

The end sections of the transmission-line filter are connected to a series of intermediate sections, each of which adds to the attenuating capabilities of the system. Each intermediate section is matched to the preceding and following sections so that losses in the passband will be negligible.

Designing Intermediate Sections

There are two types of intermediate sections. One starts attenuating at the design cut-off frequency and increases in effectiveness as the frequency approaches infinity. The second type starts at the cut-off frequency, and has maximum attenuation at some predetermined frequency where it will do the most good. A filter for TVI can be made with all of the intermediate sections having infinite-frequency attenuation, but such a filter requires more sections than one which employs some of the second type. If, throughout the filter, the two types of intermediate sections are staggered, a nicely balanced unit can be produced. Fig. 7 gives the details for the infinite-frequency sections. Just remember to use the same cut-off frequency that is used for the design of the end sections, and, of course, the R value is the characteristic resistance of the transmission line.

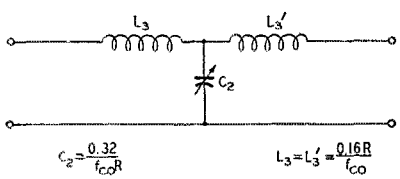


Fig. 7 — Intermediate section having the attenuation peak at infinite frequency. The design cut-off frequency selected for the entire filter is f_{co}, and R is the characteristic resistance of the transmission line. A typical response curve for this type of section is shown in Fig. 11B.

Calculations for the specific-frequency high-attenuation sections are a little more complicated than for the other types thus far discussed, but the extra paper work involved pays dividends in the superior results obtained. The first step in designing these sections is to determine at what frequencies between 50 and 100 Mc. the harmonics of your transmitter are causing the most difficulty. Above 100 Mc., the infinite-frequency sections and the high-frequency characteristics of other sections of the filter will take care of the harmonics falling in Channels 7 through 13. A 28.5-Mc. transmitter will produce detrimental harmonics at 57 Mc. and 85.5 Mc., and a 14.25-Mc. rig will produce the same harmonics, plus another at 71.25 Mc. Transmitters on the 7- and 3.5-Mc. bands will produce harmonics that fall between the other three, but they are weaker, so a filter designed to take care of the worst harmonics of 14 and 28 Mc. will attenuate harmonics from the lower amateur bands satisfactorily. Actually, a filter designed with end sections set to attenuate at 56.25 Mc., an intermediate section set for 58 Mc., one set for 71.25 Mc., and two infinite-frequency sections, will produce an overlapping attenuation characteristic that will protect all TV channels.

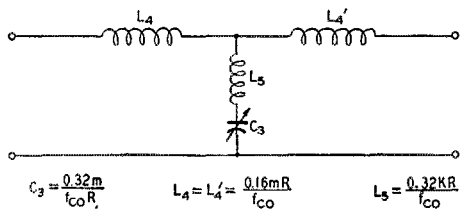


Fig. 8 — Intermediate section having high attenuation at a specific frequency. The relationship between f_{co} and the attenuation-peak frequency is embodied in the factors m and K which are obtained for use in the above equations from the graphs of Figs. 9 and 10.

Matching Factors "m" and "K"

An intermediate section with a specific attenuation peak is matched to adjoining sections by

utilizing the following equation which describes a matching factor m.

$$m = \sqrt{1 - \left(\frac{f_{co}}{f_p}\right)^2},$$

where f_{co} is the cut-off frequency previously selected, and f_p is the frequency at which the section is expected to attenuate markedly. For amateurs who are not buffaloed by equations involving squares and square roots, the factor m may be taken from the equation directly. For the rest of the gang, the curve in Fig. 9 will give values of m for enough TVI filters to please the FCC indefinitely.

After the matching factor m is established, the inductances and capacitances for the intermediate section can be calculated. Fig. 8 shows the structure of the attenuation-peak type of intermediate section. The center inductance, L_5, requires an additional factor, K, but this factor is also a function of m, so it can be obtained from the graph of Fig. 10.

The exact value of K may be taken from the following equation:

$$K = \frac{1 - m^2}{4m}$$

The graphs of Figs. 9 and 10 are sufficiently accurate, however, for the design of TVI filters if the values are taken from the curves carefully.

Example: Filter for 52-ohm line

Let's go through a sample calculation for a TVI filter and, at the same time, make it practical

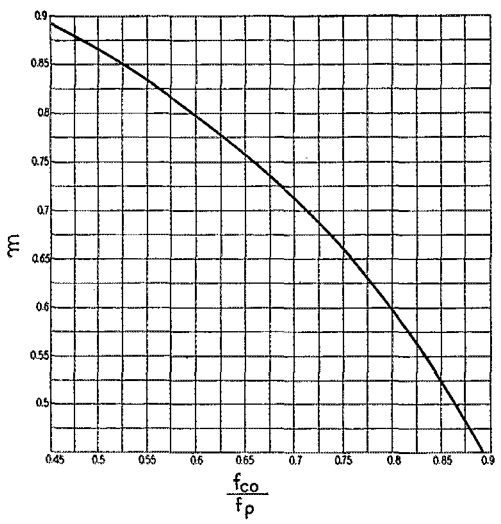


Fig. 9 — In calculating C_3 and L_4, the matching factor m is needed. To obtain this factor, divide the design cut-off frequency by the attenuation peak frequency and use the resultant number on the horizontal axis of the graph to determine m.

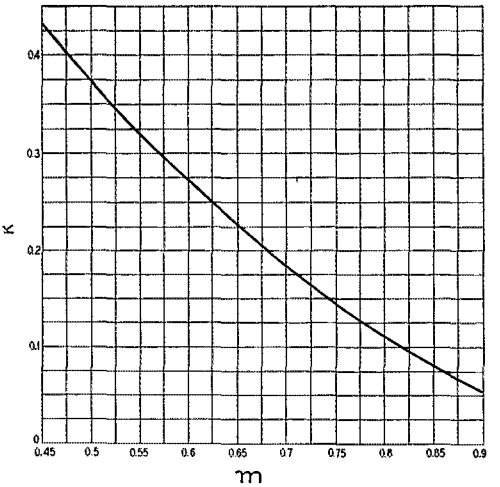


Fig. 10 — The constant K appears in the formula for L_5. To obtain K graphically, use the value of m from Fig. 9 that is used to calculate C_3 and L_4. Then the accompanying value of K is taken directly from this graph.

so that it can be used on any shielded transmitter feeding a 52-ohm coaxial line.

End Sections (See Fig. 6A)

$R = 52$ ohms, $f_{co} = 45$ Mc., $f_p = 1.25 \times 45 = 56.25$ Mc.

$$L_1 = L_1' = \frac{0.17\,R}{f_{co}} = \frac{0.17 \times 52}{45 \times 10^6} = 0.196 \times 10^{-6} = 0.196\ \mu h.$$

$$L_2 = L_2' = \frac{0.096\,R}{f_{co}} = \frac{0.096 \times 52}{45 \times 10^6} = 0.11 \times 10^{-6} = 0.11\ \mu h.$$

$$C_1 = C_1' = \frac{0.096}{f_{co}\,R} = \frac{0.096}{45 \times 10^6 \times 52} = 41.1 \times 10^{-12} = 41\ \mu\mu fd.$$

Check: 1) 41 $\mu\mu$fd. resonates with 0.196 μh. at 56.25 Mc.

2) 41 $\mu\mu$fd. resonates with $0.196 + 0.11 = 0.306$ μh. at 45 Mc.

Two Identical Infinite-Frequency Sections (See Fig. 7)

$R = 52$ ohms, $f_{co} = 45$ Mc., $f_p = \infty$

$$L_3 = L_3' = \frac{0.16\,R}{f_{co}} = \frac{0.16 \times 52}{45 \times 10^6} = 0.184 \times 10^{-6} = 0.184\ \mu h.$$

$$C_2 = \frac{0.32}{f_{co}\,R} = \frac{0.32}{45 \times 10^6 \times 52} = 136 \times 10^{-12} = 136\ \mu\mu fd.$$

Check: Both L_3 coils (0.184) in parallel = 0.092 μh. An inductance of 0.092 μh. resonates with 136 $\mu\mu$fd. at 45 Mc.

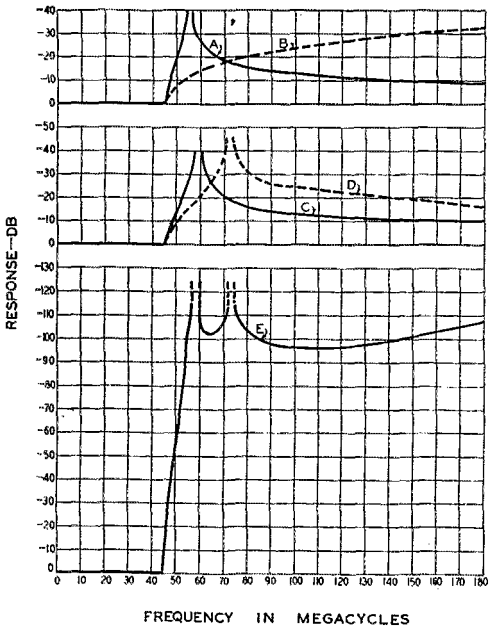


Fig. 11 — Response curves of filter sections.
f_{co} = 45 Mc. R = 52 ohms.
A — Combined response of end sections.
B — Response where $f_p = \infty$.
C — Response where f_p = 58 Mc.
D — Response where f_p = 71.25 Mc.
E — Theoretical response of complete filter with four intermediate sections.

Note: The other identical section will be called

$$L_3''L_3'''C_2'$$

Two Sections with Specific Attenuation Frequencies (See Fig. 8)

First Section: 58-Mc. peak (f_p), 45-Mc. cut-off (f_{co}), R = 52 ohms.

First find m. $\frac{f_{co}}{f_p} = \frac{45}{58} = 0.775$. At this point on the graph, Fig. 9, the value of m = 0.632. The equation defining m may also be used to obtain this value of the matching factor.

$$L_4 = L_4' = \frac{0.16\ mR}{f_{co}} = \frac{0.16 \times 0.632 \times 52}{45 \times 10^6} = 0.117 \times 10^{-6} = 0.117\ \mu h.$$

$$C_3 = \frac{0.32\ m}{f_{co}\ R} = \frac{0.32 \times 0.632}{45 \times 10 \times 52} = 86.5 \times 10^{-12} = 86.5\ \mu\mu fd.$$

$$L_5 = \frac{0.32\ K\ R}{f_{co}}$$

Note: K = 0.237 from graph, Fig. 10, when m = 0.632. The equation defining K may also be used.

$$L_5 = \frac{0.32 \times 0.237 \times 52}{45 \times 10^6} = 0.087 \times 10^{-6} = 0.087\ \mu h.$$

Check: 1) Circuit of L_5 (0.087 μh.) and C_3 (86.5 $\mu\mu$fd.) is resonant at 58 Mc.
2) Circuit of L_4 (0.117) in parallel with L_4' (0.117) = 0.0585.

This combined inductance is in series with L_5 (0.087), producing a total inductance of 0.145 μh. The resonant frequency of 0.145 μh. and 86.5 $\mu\mu$fd. is 45 Mc.

Second Section: The second similar section is calculated the same way as the first, but 71.25 Mc. as f_p and 45 Mc. as f_{co} are used for determining m and K. The values produced are $L_6 = L_6'$ = 0.144 μh.; C_4 = 106 $\mu\mu$fd.; L_7 = 0.048 μh. These values are also checked.

Theoretical Response

The curves for four of the sections have been plotted from equations in T. E. Shea's textbook [1]

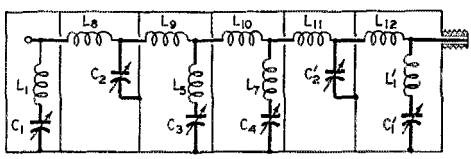


Fig. 13 — The shielding walls between compartments in the filter box are shown as part of the circuit. Connections shown in heavy lines should be made as short as possible.

C_1, C_1' — 41 $\mu\mu$fd.
C_2, C_2' — 136 $\mu\mu$fd.
C_3 — 87 $\mu\mu$fd.
C_4 — 106 $\mu\mu$fd.
L_1, L_1' — 0.196 μh.
L_5 — 0.087 μh.
L_7 — 0.048 μh.
L_8, L_{12} — 0.294 μh.
L_9 — 0.301 μh.
L_{10} — 0.261 μh.
L_{11} — 0.328 μh.

to show what each section, by itself, is capable of doing (Fig. 11). Response values are given in decibels, because it is the most convenient form

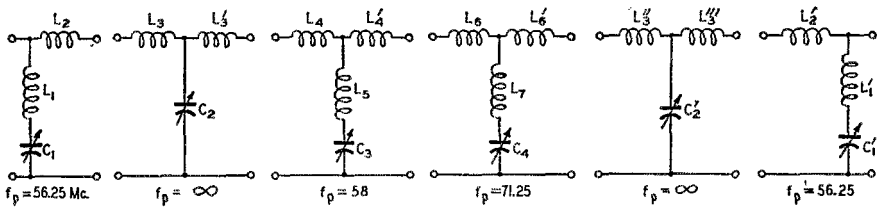
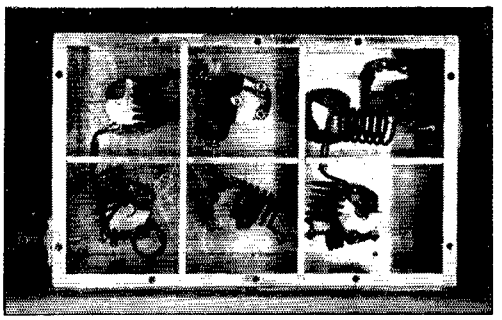


Fig. 12 — All individual sections are arranged in order before joining the connecting inductances.



Low-pass filter built by Dick Zucker, ex-W2DB, the OM at W2QKT. This unit is an interpretation of the Fig. 13 circuit with the addition of one more intermediate section having an attenuation peak at 58 Mc. The signal enters the upper-right compartment and emerges at the coaxial fitting at the lower left.

for calculating the over-all effect of an entire filter. As one section is added to the next, the resulting curve is found by merely adding the db. values of each section for each frequency point plotted. That is how the theoretical curve (E, Fig. 11) for the entire filter assembly was constructed.

Combining the Individual Sections

The component values for each section of the low-pass filter have been determined. It now remains to fit the sections together electrically, and then assemble the entire filter in a mechanical arrangement that will operate efficiently. Fig. 12 shows all the sections laid out as calculated. The sections are staggered so that adjoining sections are as dissimilar as possible, and the sequence from end to end has some semblance of balance. Where L_2 joins L_3, L_3' joins L_4, L_4' joins L_6, etc., the inductances are connected in series, so one coil of the proper inductance can take the place of two coils where one section is joined to another. Inductances in series can be added numerically, so:

$L_2 + L_3 = 0.110 + 0.184 = 0.294$ μh. (call L_8).
$L_3' + L_4 = 0.184 + 0.117 = 0.301$ μh. (call L_9).
$L_4' + L_6 = 0.117 + 0.144 = 0.261$ μh. (call L_{10}).
$L_6' + L_3'' = 0.144 + 0.184 = 0.328$ μh. (call L_{11}).
$L_3''' + L_2' = 0.184 + 0.110 = 0.294$ μh. (call L_{12}).

With this consolidation, the filter looks like Fig. 13.

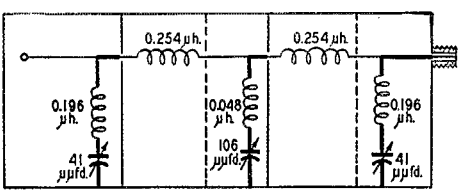


Fig. 14 — Simple filter with a single intermediate section. Values given are for a 52-ohm line and an attenuation peak of 71.25 Mc. Dotted lines indicate optional baffle plates.

Simpler Filters

Of course, there may be areas where the attenuation provided by the arrangement of Fig. 13 is not required. The end sections of the filter are always necessary, but one, two, three or more intermediate sections may be used as found necessary. Fig. 14 shows a filter with a single intermediate section. With the values shown, the end sections will match a 52-ohm line and the intermediate section has an attenuation peak at 71.25 Mc. The theoretical response is obtained by adding values from curves *A* and *D* in Fig. 11. The resultant curve is shown in Fig. 15.

Mechanical Considerations

An ideal filter of this design would be constructed so that all inductances are isolated. No coupling should exist between them. The arrangement shown in Fig. 13 and pictured in this photograph is somewhat of a compromise in that some compartments have two coils, but if these particular coils are mounted at right angles and as far apart as possible, the filter will function

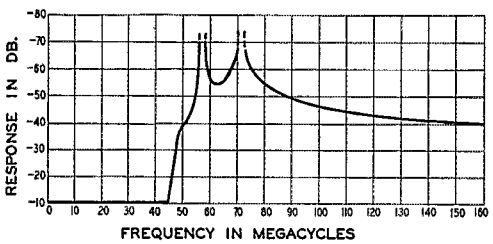


Fig. 15 — Theoretical response curve for the simple low-pass filter of Fig. 14.

satisfactorily. Each of the remaining compartments has only one coil. Rigid self-supporting coils can be made of No. 12 copper wire. An important item in the isolation of sections is keeping the connections, designated in the diagram by heavy lines, as short as possible. As often pointed out, a long lead to a capacitor acts as an inductance that can pick up and transfer an unwanted signal from one section to the next. In addition, the capacitor leads must be short to keep the inductance in each circuit as near the calculated value as possible.

High-Q ceramic capacitors with a 600-volt rating may be used in the low-pass filter, but variable air padder capacitors are the most foolproof. The APC type takes up more space and more careful planning of the filter box arrangement is necessary, but it is capable of filtering a kw. rig, has low losses, and makes it possible to set the capacitance to the exact value calculated for each section.

The box for the filter must have compartment walls that are tightly bonded to the sides and bottom. Soldering compartments into a copper box is ideal, but aluminum may be used if a good

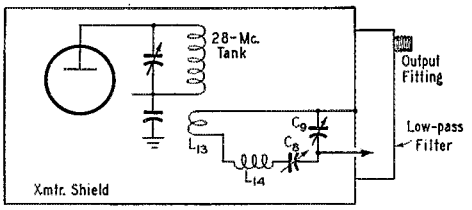


Fig. 16 — Circuit to couple transmitter to filter. This device acts as one more filter section and is of the band-pass variety.
C_8 — 15-$\mu\mu$fd. variable, ¼-inch spacing.
C_9 — 100-$\mu\mu$fd. air padder.
L_{13} — 2- or 3-turn coupling coil.
L_{14} — Sufficient inductance to resonate L_{13}, L_{14}, C_8 and C_9 at 28 Mc.

fit is made at all joints, and bolts are used profusely to hold the assembly together. The lid for the box must fit tightly over all compartments. Good bonding of the lid to all compartments is necessary to minimize r.f. leakage between sections and to provide a solid path for all ground terminations in the filter. The filter box should be firmly bolted to the outside of the transmitter shield.

The output connection at the filter is a coaxial fitting bolted to the box. The input connection is a short lead through the bottom of the filter box. This lead goes through the transmitter shield directly to the coupling capacitor.[2] The components for use in a 10-meter transmitter are shown in Fig. 16.

I have not, as yet, used balanced lines on my shielded transmitter, but from experience with high-pass filters on TV receivers, I would suggest that the construction shown in Fig. 17 be tried if any experimenting is to be done with 300- or 600-ohm lines. The only ground point for the antenna system would be at *X*. Nevertheless, the filter compartments should be tightly constructed, and the box should be bolted to the shielded transmitter. When a filter is being designed for a balanced line, proceed with the calculations as previously outlined for an unbalanced line. Then, after the common inductances joining the sections have been calculated, divide

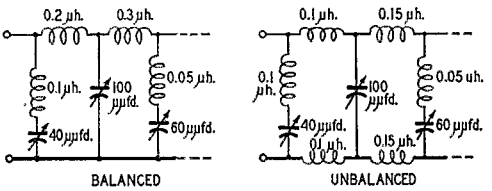


Fig. 18 — Arbitrary values are used to illustrate the method of changing an unbalanced filter to a balanced system. Note that the shunt arms are not modified, but that the inductances in the series arms are changed to establish balance.

each one numerically by 2, and use the resulting value for an inductance in each leg of the section as shown in Fig. 18.

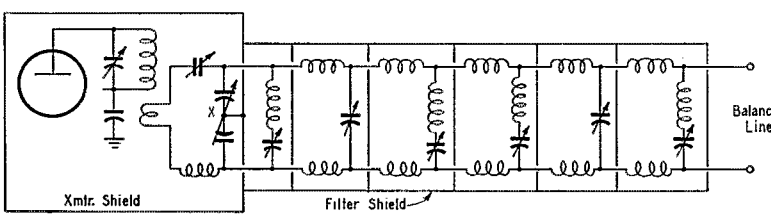


Fig. 17 — Suggested structure for balanced line.

The theoretical attenuation characteristic of the low-pass filter designed in this article is shown by *E* in Fig. 11. In actual practice, this filter has worked as well as a filter utilizing fifteen intermediate sections of the variety having peak attenuation at infinite frequency.[3]

Filters for Balanced Lines

All of the discussion thus far as been on low-pass filters for coaxial transmission lines. The popular 300-ohm polyethylene Twin-Lead will not operate as a balanced line if the circuit of Fig. 13 is used, even if the components are computed at 300 ohms.

[2] Grammer, "Interference with Television Broadcasting," *QST*, Sept., 1947, p. 24.
[3] Seybold, "TVI-Free Transmitter for 10 Meters," *CQ*, Oct. and Nov., 1949.

Other Filter Circuits

For those who are interested in designing filters for a variety of applications, there are a number of configurations possible. The circuit described in this article is for the series-derived *m*-type filter. A shunt-derived system is also possible, but I have presented the type which has been used successfully in my transmitters and which uses the smallest number of air padder capacitors per section. Other circuits may be found that have certain advantages. As the use of low-pass filters in amateur transmitters becomes common practice, improvements and simplification will undoubtedly develop. In the meantime, a series-derived *m*-type filter can be designed with straightforward formulas, and very satisfactory results can be expected when the device is used with a completely-shielded transmitter.

Installing a Practical 75-Meter Mobile Antenna

How To Feed Base-Loaded Whips

BY JOHN OBERLIES,* W2NNK

When it comes to mobile antennas for 75 meters, almost anyone who hasn't tried it will tell you that a top-loaded job is the only one to put on your car — that it will run rings around a base-loaded system. And perhaps

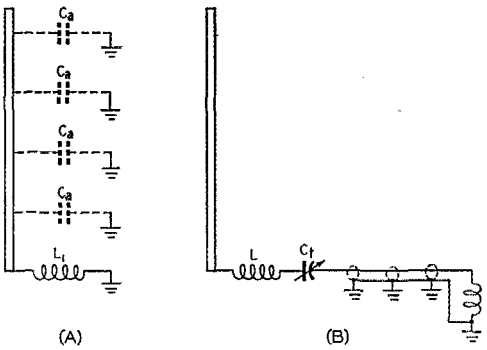


Fig. 1 — A — The capacitance of the vertical whip is combined with the inductance of the base coil to resonate at the desired operating frequency. B — The loading and coupling circuit used by W2NNK. *L* is the loading coil. C_t is a 200-$\mu\mu$fd. variable condenser to tune out the reactance of the link pick-up coil.

it will — at least theoretically. But have you ever seen some of the impractical unsightly contraptions rigged up as top-loaded affairs — especially one after it has hit the branch of a tree at 50 m.p.h.? After a heart-breaking experience or two like that, most top-loaded boosters are willing to settle for a base-loaded whip for their mobile operation. And, in spite of the aspersions some cast at it, don't let anyone tell you that the base-loaded vertical antenna can't be made to perform very well indeed.

Design Procedure

With any type of antenna considerably shorter than a quarter wavelength, the chief consideration is that of devising a system that will feed power to the antenna. This can be done, as shown in Fig. 1A, by combining the capacitance of the antenna to ground with an inductance of such size that the combination will be resonant at the operating frequency. The capacitance of a vertical shorter than a quarter wavelength is given by

$$C_a = \frac{17L}{\left[\left(\log_e \frac{24L}{D}\right) - 1\right]\left[1 - \left(\frac{FL}{246}\right)^2\right]},$$

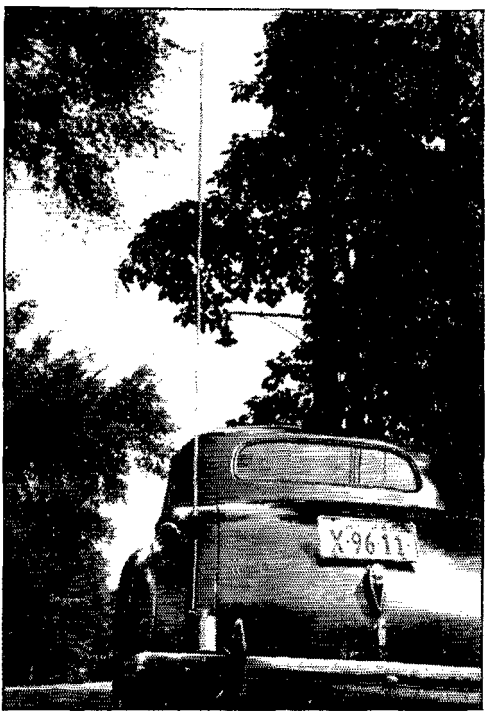
where

C_a = capacitance of antenna in $\mu\mu$fd.
L = antenna height in feet
D = diameter of radiator in inches
F = operating frequency in Mc.

$$\log_e \frac{24L}{D} = 2.3 \log_{10} \frac{24L}{D}$$

To resonate at the desired frequency, the coil should have an inductive reactance equal to the capacitive reactance of the radiator.

Let us take as an example the antenna used by the author and shown in the photographs. This antenna is made of aluminum tubing, one half



W2NNK's 75-meter mobile antenna is mounted on the rear bumper of the car.

*72 North 3rd Ave., Ilion, N. Y.

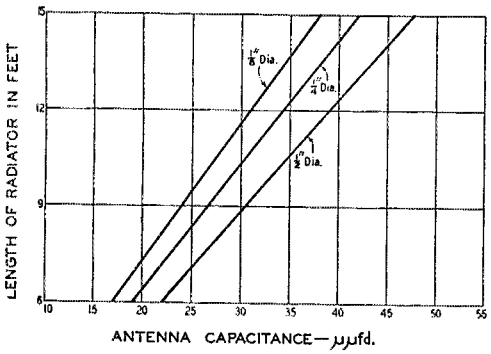


Fig. 2 — **Graph showing the capacitance of short vertical antennas for various diameters and lengths.**

inch in diameter and having a length of six feet. We decided to operate on a frequency of 3.9 Mc. Substituting these facts in the formula, we have the following:

$$C_a = \frac{17 \times 6}{\left[\left(\log_e \frac{24 \times 6}{0.5}\right) - 1\right]\left[1 - \left(\frac{3.9 \times 6}{246}\right)^2\right]}$$

$$C_a = \frac{102}{(\log_e 288 - 1)\,(1 - 0.008)}$$

$$\log_e 288 = 2.3 \times \log_{10} 288$$
$$= 2.3 \times 2.46$$
$$= 5.658$$

$$\text{Therefore, } C_a = \frac{102}{(5.658 - 1)\,(0.99)}$$

$$C_a = \frac{102}{4.658 \times 0.99}$$

$$C_a = \frac{102}{4.6} = 22\ \mu\mu\text{fd. approx.}$$

(capacitance of radiator at 3.9 Mc.)

At 3.9 megacycles, the above capacitance will resonate with an inductance of approximately 76 microhenrys. The diameter and length of a coil which gives this required inductance is readily obtainable from a number of sources.[1]

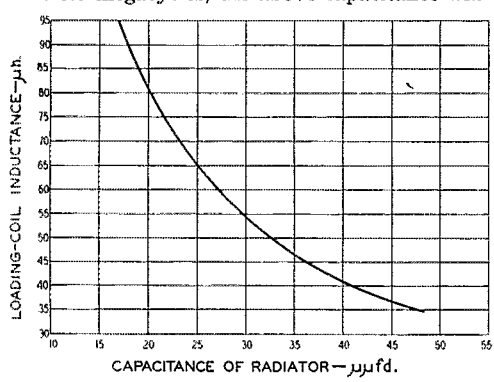


Fig. 3 — **Curve showing the required inductance to resonate at 3900 kc. with various values of antenna capacitance.**

For the amateur not too keen to perform math, three sets of graphs are included. Fig. 2 depicts antenna capacitance *versus* length for a number of typical radiator diameters. Fig. 3 shows the required inductance for various values of antenna capacitance. Fig. 4 (p. 102) shows curves from which the number of turns required for any value of inductance may be determined, depending on the diameter of a loading-coil form having a fixed length of 8 inches. The copper-wire table found in the Miscellaneous Data section of the ARRL *Handbook* should be consulted to determine the maximum size wire that will fit the specified length. If a smaller-size wire is used, the turns should be spaced to occupy the same length. The difference in coil dimensions for 3800 to 4000 kc. is so slight as to be insignificant. The curves are based on the center frequency of 3900 kc.

Close-up view showing the base loading coil and the enclosed tuning condenser.

Construction

The author used a wood dowel 1⅜ inches in diameter and 2 feet long as a coil form. A hole was drilled in the top end of the dowel for a distance of 4 inches into which the 6-foot radiator was mounted. The radiator was strengthened where it enters the mounting hole by inserting a smaller dowel inside the lower portion of the aluminum rod for a distance of about two feet. The length of 8 inches for the loading coil was chosen so as to permit close winding with No. 14 enameled wire, 15 turns to the inch, for a total of 120 turns. The bottom portion of the dowel is used to fasten the antenna to the rear bumper of the car.

Fig. 1B shows the diagram of the radiator,

(*Continued on page 102*)

[1] ARRL *Lightning Calculator*, Type A.

Happenings of the Month

SPECIAL BOARD MEETING & F.C.C. INFORMAL CONFERENCE

The special Board of Directors meeting called by the President for Saturday, October 8th, in Washington, D. C., was primarily concerned with matters arising from the FCC amateur rules proposals in Docket 9295. For the benefit of those who wonder why the Board was able to consider the specific recommendations of the Commission on October 8th when it had declared itself unable to do so in May (until the issue of the basic principle involved in § 12.0 had been solved), it should be stated that during the summer months negotiations by the Headquarters had resulted in the receipt of a letter from the Chairman of the Commission, agreeing that examination of the individual regulations could be conducted while leaving to separate determination the matter of principle — but without in the meantime obliging the League to accept the principle while discussing details. (Sounds involved, but the point was a very important one.) *QST* published highlights of the meeting in its November issue; actual minutes appear at the end of this department.

Decisions of the Board as concern the individual specific proposals (see June *QST* for texts) were embodied by the Hq. staff, over the week end, in a comprehensive 33-page presentation for the FCC informal conference scheduled for Monday morning. At the session October 10th opportunities to make statements were requested by the League, by NARC and SARA, by the editor of *CQ*, by spokesmen for a group of single-sideband 'phone operators, for a group of 6-meter operators, and for the National Council of State Executives for the Blind, as well as by several individuals. First in alphabetical order, ARRL took the stand to read the text of our document, which required the entire morning; 200 copies had been prepared so that everyone present at the conference could have one for study. At the afternoon session, although not filing written statements, representatives of NARC and SARA separately affirmed their complete endorsement of ARRL recommendations as set forth in our presentation. Similarly, during the course of the afternoon every other person who spoke eventually expressed agreement with ARRL conclusions in every respect (the only differences of opinion were of the most minor nature and were quickly ironed out). For example, the 6-meter representative opposed the FCC proposal to establish an exclusive c.w. band 50–50.1 Mc.; the single-sideband spokesman opposed the establishment of a special 50-kc. segment on 75 meters for that type of emission; the blind group representative opposed the 20-w.p.m. proposal for maximum-privilege licenses.

At the request of Commission personnel, a second meeting was held the following day during which FCC staff members queried ARRL representatives concerning various points in the League's presentation, and there was subsequent general discussion. As the meeting was ready to close, the entire amateur group, participants and observers alike, a total of about 70, reiterated endorsement of the ARRL recommendations as its unanimous position on the FCC proposals. Then, although the matter of the basic principle was not on the agenda, at the suggestion of the chair the League drafted and submitted language for § 12.0 which it would find acceptable; with a Commission-suggested addition on the subject of amateurs' furtherance of international understanding, the draft received unanimous endorsement as a conference recommendation.

The Commission has now taken under advisement the results of the two-day conference. The expected procedure is issuance of an amended notice of proposed rule-making on the basis of the data it has thereby collected.

—•••—

Publication of the complete ARRL presentation in *QST* would require a great deal of space; we therefore propose here simply to cover the highlights. A copy of the text of the presentation has been prepared in pamphlet form and distributed to field officials and affiliated clubs, *and will be sent also to any interested party upon request to the Headquarters.*

Of first interest is the ARRL draft of acceptable language for a new section in the amateur rules, as follows:

12.0 *Basis and Purpose.* These rules and regulations are designed to provide an Amateur Radio Service having a fundamental purpose as expressed by the following principles:

(a) Recognition of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

(b) Continuation of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement within the amateur service of a program which provides for advancing skills in both the communication and technical phases of the art.

(d) Establishment of a reservoir of trained operators, technicians and electronics experts.

(e) Continuation of the amateur's unique ability to enhance international goodwill.

In its presentation the League's first conclusion, actually a reiteration of its 1948 request of the Commission, is that the 75-meter Class A telephone band should be extended down to 3800 kc. Here the League points out:

The trends of amateur operation have been such over the past several years that there is not at present full utilization of the center portion of this band where, under the existing regulation, only A1 is permitted in the United States. Limitation of the present subband for radiotelephony to frequencies above 3850 has, therefore, operated to exclude from this band a great many qualified amateurs who would use it regularly were a larger portion open to radiotelephony. The addition of 50 kc. to the portion available for radiotelephony will remove an artificial barrier that prevents full occupancy of the band as a whole by the existing body of amateurs. An extension of 50 kc. is deemed adequate at the present time, all things considered.

But, says the League, we see no need to inflict a 3-kc. bandwidth requirement in the new 3800–3850 kc. segment; single-sideband techniques do not need exclusive assignments, for they can fully hold their own in present a.m. bands. As concerns the establishment of a 6-kc. total bandwidth in other 'phone-band segments, ARRL concludes that the establishment of bandwidth restrictions is neither necessary nor desirable at this time, explaining its views as follows:

We have long advocated the *voluntary* limiting of transmitted bandwidth as a means of reducing interference in congested 'phone subbands. However, it is our opinion that at this time it is undesirable to make this a matter of regulation.

It is of course true that the greater the range of audio frequencies included in the modulation, the greater the bandwidth of the radio-frequency emission. Considering first the audio-frequency requirements, it is well known that an upper frequency limit of 3000 cycles is adequate for the transmission of speech of high intelligibility. It is also well known that the energy in speech sounds above 3000 cycles is very small compared with the energy in lower frequencies. In a properly-operated amplitude-modulated transmitter the sideband components that are more than 3 kc. removed from the carrier frequency are far less capable of producing interference than the sideband components that are close to the carrier frequency. Under the conditions imposed by the fact that amateur stations operate on random carrier frequencies within a given assignment, the improvement to be realized by reducing the audio bandwidth is relatively minor.

Of far greater practical importance, from the standpoint of interference, is improper operation such as overmodulation that generates sideband components of high amplitude at frequencies considerably removed from the carrier frequency. These spurious sidebands have little relationship to the audio bandwidth applied as modulation to the transmitter. The proposed regulation, *per se*, prohibits such spurious radiations, but is unnecessary from this viewpoint alone because purity of emissions is adequately covered under § 12.133 of the existing regulations.

Relatively simple methods may be used to determine whether or not a transmitter is operated in conformity with § 12.133. If a maximum bandwidth, however defined, is made a requirement it would no doubt become incumbent upon the amateur not only to provide equipment for limiting bandwidth but also to provide equipment that will be capable of indicating whether or not he is in compliance with the regulation, and to make appropriate checks at regular intervals. Both types of equipment represent an appreciable financial outlay and the measurement process is difficult. In view of the very small improvement to be expected in overall interference conditions, this additional burden on the amateur seems unreasonable.

The practicability of enforcing the proposed regulation also should be considered. Infractions of certain regulations, such as observance of assigned frequencies, are easily detected by the field monitoring stations. Others, such as overmodulation, are less easily observed by a distant monitoring station but at least the more flagrant cases are detectable under average conditions. Infractions of others, such as the regulation covering maximum power input, cannot be detected at all without inspection of the station while in operation, but the regulations are nevertheless conscientiously observed by all but a very few amateurs because the necessary equipment for compliance is inexpensive and the method of checking is very simple. This proposed regulation likewise falls in the category of those requiring inspection of the station while in operation, since it would be a practical impossibility for a monitoring-station operator to make a quantitative check on emitted bandwidth from a distant point. However, the necessary measurements require a degree of technical skill not to be expected of the ordinary amateur, so voluntary compliance becomes impracticable in the great majority of cases. The regulation consequently becomes unenforceable unless the Commission is prepared to provide and equip a vastly-increased inspection staff. We view with concern the effect on the amateur's attitude toward other regulations that the adoption of this proposal would have, it being known in advance that the regulation could have only the most superficial enforcement.

The League will continue to urge amateurs to limit the audio bandwidth of modulation by such means as are available to them, since even a small improvement in interference conditions is certainly a worth-while objective. However, we feel that the objective can be attained by voluntary action, and that its realization does not depend critically on whatever quantitative limits might be set, as a matter of regulation, on the emitted bandwidth but rather on the fact that any means, measured or not, taken by an amateur to limit bandwidth will be a step toward the desired end result.

In connection with the problem of interference in the more congested radiotelephone subbands, it should be observed that the serious interference arises from two causes when conventional modulation methods are used: (a) the heterodyne between two carriers whose frequency difference is in the audio range, and (b) the fact that conventional modulation methods produce two sets of side frequencies. Single-sideband suppressed-carrier radiotelephony eliminates both these causes of interference but, as discussed earlier, is not in our opinion a proper subject for regulatory action at this time.

ARRL's presentation then discusses narrow-band frequency and phase modulation:

Frequency or phase modulation, because of the nature of the modulation process, requires a bandwidth greater than twice the audio modulation frequency by a factor that varies with the amount of frequency shift or phase swing. In narrow-band frequency or phase modulation the modulation index is limited, by definition, to a value that will restrict the emitted band to approximately the same effective width as amplitude modulation. Even when this definition is pressed to the limit, the amplitudes of the first-order side frequencies are only approximately half the amplitudes of the corresponding side frequencies in amplitude modulation. That is, the effective communication power for a given carrier amplitude is only one-fourth the communication power with amplitude modulation. Expressed differently, for the same communication effectiveness, proper receiving systems being used in each case, narrow-band frequency or phase modulation requires four times the carrier power that amplitude modulation does. This increases heterodyne interference, mentioned earlier as one of the principal causes of interference.

Because the use of frequency or phase modulation has proved to be effective in reducing interference to broadcast receivers operating in close proximity to a radiotelephone transmitter we believe that a 50-kc. assignment, now temporarily authorized under § 12.114(b), should be continued. There is no evidence that this assignment is inadequate for accomplishing its purpose, and in view of the factors outlined

in the preceding paragraph we see no justification for enlarging it.

The League concludes that 50-kc. segments at the low ends of the 3.8- and 14-Mc. 'phone bands should be permanently authorized for n.f.m., and that present temporary n.f.m. privileges on 28.5 Mc. should be made permanent. Dealing further with the 10-meter band, the document reports that the Board found no merit in the Commission's proposal to establish a 1-kc. limit on frequency-shift telegraphy, on the basis that it might discourage experimentation with this type of emission; nor did it concur in the elimination of wide-band modulation methods above 29 Mc., pointing out that the occupancy of the top portion of the 'phone band is not as heavy as in the lower portion, and that certain amateur emergency networks are now organized using wide-band emission privileges. Referring to its earlier discussion on bandwidth limitation, the League opposes any such restrictions in this or the 50-Mc. band. Further concerning 6 meters the League opposes elimination of f.s.k. and wide-band modulation methods in 52.5–54 Mc., on the grounds that such action might discourage needed occupancy. An exclusive c.w. assignment of 100 kc. at the low end of 50 Mc. is now reported as opposed by the Board, because amateur opinion is sharply divided on the question. Primarily to encourage additional occupancy, the presentation concludes that n.f.m. should be permitted throughout the 50-Mc. band.

Turning then to the proposed Technician Class license, the document reports the Board's concurrence with the Commission's proposal and concludes there is indeed a need for such action; a special identifying call or prefix is requested for such amateur stations, however. While the League does not endorse the belief that a Novice Class license is vitally needed for the preservation for amateur radio, it does perceive therein an opportunity to foster additional interest among the nation's youth in the science of radio communication. Continuing, the League says:

It must be admitted that the state of the radio art has advanced rapidly, particularly during and since World War II, and this has had the effect of making radio as a hobby appear more difficult of attainment to the newcomer, particularly youth. If this class of license is established, the League believes it may well serve as a bridge or stepping stone to fuller participation in amateur radio after a year of "apprenticeship" training and experience. Further, the League believes that civic organizations, local and national, may welcome such an opportunity to work radio training into their youth programs. The League is interested in giving every encouragement to the youth of America to become proficient in radio operation and techniques, and while not in favor of lowering the standards set for amateurs, believes that the encouragement offered by the terms of the suggested Novice Class license will afford an opportunity for greater numbers of young people to enter the amateur and, subsequently, allied radio fields. For these reasons, the League regards the Novice Class of license, under suitable restrictions as to power and operating frequencies, to be desirable. The League requests, however, that distinctive call-signs be issued to Novice Class licensees.

Thus the Board accepts this proposed class of license,[1] concurs that it should be a one-year nonrenewable ticket, required code speed of 5 w.p.m., a simpler technical exam and 75 watts maximum input, but proposes that the privileges be c.w. only in 3700–3750 kc. and 26,960–27,230 kc., and 'phone and c.w. in 145–147 Mc., all crystal-controlled. Distinctive call signs are requested.

The Board saw no need for an Amateur Extra Class license, suggesting that if it were desirable to raise standards for the top grade this should be done by more comprehensive examinations rather than the establishment of a new class of license. The Board therefore voted to retain Class A precisely as at present; it was unanimously opposed to requiring eventual reëxamination of Class A operators at a higher level to continue present privileges. In this connection the presentation points out:

. . . the League sees no necessity to take away from such presently-licensed persons the right to use the maximum amateur privileges for which they previously qualified. Never in the course of the history of amateur radio in this country has it been found necessary to require reëxamination of existing licensees when license requirements have been raised. In the early years of the licensing of amateurs in this country, applicants were required to pass only a 5-word-per-minute code test, and a few exceedingly simple questions on theory, operation and regulations. Over the years, the code-speed requirement has been successively advanced from 5 words per minute, to 10 words per minute and then to 13 words per minute, while the written examination has progressed from the original very simple questions to a set of comprehensive questions into all phases of modern radiotelegraph and radiotelephone techniques; questions with respect to the regulations have similarly become more comprehensive as the body of amateur rules has expanded. Yet at no time in the raising of these examination standards has it ever been found necessary to reëxamine those licensed under the old requirements. Nor is it believed that such reëxamination ever would be required, either as concerns operation or regulations, short of some complete revolution in technical development which would, overnight, render all existing equipment and practices utterly obsolete, or some drastic change in international or domestic regulations which made it so imperative that existing licensees become familiar with the new provisions that only actual examination of such licensees on the points concerned could suffice. For these reasons the League regards any proposal for reëxamination of any class of licensee as unnecessary

The Board could not conceive a valid reason for changing the renewal requirements so that they would specify certain hours of operation and include an affidavit of code-speed ability. In the case of the proposed Technician Class, however, realizing that three c.w. contacts might be difficult of accomplishment, the Board believed that a code-speed affidavit would be suitable for renewal of this class of license only. The League does agree with the Commission in that it is desirable henceforth to issue modifications and duplicates of amateur licenses in terms of the original date of issuance, rather than automati-

[1] In 1941 the ARRL Board of Directors requested the establishment of a new class of amateur operator license in terms very similar to those in the present proposal, but upon advice of the military the request was rejected by the Commission.

cally extending the term another five years, as at present. Concluding the 33-page presentation, the Board is reported as unanimously opposed to the regulatory requirement of a control station in round-table operation.

FCC Public Notice 41636
October 13, 1949

RADIOCOMMUNICATION BETWEEN AMATEUR STATIONS OF DIFFERENT COUNTRIES

Article 42, S. 1, of the Radio Regulations of Atlantic City stipulates that "Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications."

Accordingly, the International Telecommunication Union in Notif. 578 has notified the members of the Union as follows:

a) The following Administrations have FORBIDDEN radiocommunications between their amateur stations and amateur stations of other countries: Austria; Burma; French Settlements in Oceania; Greece; Indo-China; Indonesia; Iran; Israel (State of); Lebanon, Madagascar and dependencies; Mauritius; Netherlands Antilles; Siam; S. Pierre and Miquelon; Togoland (Territory under French Trusteeship).

b) Amateur stations: Special Cases.

India: Exchanges with amateur stations of other countries are authorized except with countries forbidden communication of this kind.

Luxemburg: This service does not exist as yet.

Morocco (except the Spanish Zone): Exchanges are conditional on reciprocity.

Rumanian People's Republic: The Roumanian Administration has not yet organized an amateur service.

The foregoing is effective immediately. Licensees of Amateur stations in the United States, its territories or possessions, should be guided accordingly when engaging in international amateur communications.

FLASH! **On November 4th FCC authorized amateurs to disregard terms of the above order, until further notice. Thus U. S. amateurs may resume communication with these countries, pending further clarification of the matter at the international level.**

DX RESTRICTIONS

In an adjoining column we publish the text of a notice issued by FCC October 13th prohibiting amateur communication with certain named countries. Inasmuch as the countries specified in (a) have filed with the International Telecommunications Union notifications of their objections to such communications, the Commission had no alternative but to issue similar notice to amateurs in this country. The League is currently in touch with the Department of State and, largely through IARU, with most of the countries involved to see if such prohibitions may be rescinded. Incidentally, such countries have not filed objections solely to contacts with American hams; they have filed notice with ITU that they do not wish their amateurs to engage in *any* foreign communication.

KEY NEW DIRECTOR

As a result of action of the Board of Directors at its special meeting October 8th in amending the By-Laws, J. Frank Key, W4ZA, has assumed all authority, powers and duties of the Director of the Roanoke Division. Thus the special election for that office is canceled, and it now becomes necessary to hold a special election for the alternate director vacancy.

Mr. Key is well known to Roanoke Division amateurs, having served several terms as alternate director. He is president and general manager of the Columbian Paper Company.

NOTICE OF SPECIAL ELECTION

To All Full Members of the American Radio Relay League Residing in the Roanoke Division:

A special election is about to be held in the Roanoke Division to choose an alternate director to fill the unexpired term of J. Frank Key, W4ZA. Nomination is by petition, which must reach the Headquarters by noon of January 20, 1950. Nominating petitions are hereby solicited. Ten or more Full Members of the Roanoke Division may join in nominating any eligible Full Member residing in the Division as a candidate for alternate director therefrom. Suggested form:

Executive Committee
The American Radio Relay League
West Hartford 7, Conn.

We, the undersigned Full Members of the ARRL residing in the Roanoke Division, hereby nominate .... of ..... as a candidate for alternate director from this division for the unexpired remainder of the 1949–1950 term.

(Signatures and addresses)

See the election notices appearing in August and September *QST* for additional details on standard election procedures and eligibility of candidates, or write the Headquarters for a copy of the Constitution and By-Laws; a copy will be

sent to any member upon request. If on January 20th there is but one eligible nominee, he will be declared elected. If there is more than one nominee, ballots will be sent to Full Members of the division the first week in February. Members of the division are urged to take the initiative and file petitions promptly.

For the Board of Directors:
October 15, 1949

A. L. BUDLONG,
Secretary

ASSISTANT DIRECTORS

One of the groups of unsung heroes who voluntarily give their time and effort to keep this League of ours true to the traditions of representative government is the corps of Assistant Directors. Appointed as lieutenants of the directors, and selected by the directors for their ability, background and acquaintance among the amateur body, these men serve to help keep their directors "informed on conditions and activities in their respective divisions, and on the needs and desires of the League members therein, that they may faithfully and intelligently represent them in the Board of Directors." The list is a rather impressive one, we think, and we present it herewith:

ATLANTIC DIVISION: Gilbert L. Crossley, W3YA; Henry R. Pemberton, W3PN; Elizabeth Zandonini, W3CDQ.

CENTRAL DIVISION: Joseph T. Collins, W9PYM; F. W. Dezonia, jr., W9EBX; F. R. Eggers, W9FMH; Rowland Long, W9NLP; Russell Morris, W9RNX; Brooks H. Short, W9DPI.

DAKOTA DIVISION: J. S. Foasberg, WØNGM; Walter G. Hasskamp, WØCWB; Bill C. Holm, WØNRV; Elmer Kelm, WØJDO; Dr. H. B. Love, WØZRT.

DELTA DIVISION: Robert E. Barr, W5GHF; Graham Hicks, W5IHP.

GREAT LAKES DIVISION: W. C. Alcock, W4CDA; Joe Beljan, jr., W8SCW; Robert B. Cooper, W8AQA; Ellis Smith, W8QV; Dr. H. E. Stricker, W8WZ.

HUDSON DIVISION: L. A. Stafford, W2DIB.

MIDWEST DIVISION: J. F. Avis, WØHMM; Wells Chapin, WØDUD; C. Christiason, WØFLZ; C. A. Conklin, WØEFI; William G. Davis, WØPP; Scott E. Davison, WØOED; Arthur R. Gaeth, sr., WØFQB; Gary Hunter, WØHUY; Earl Johnston, WØICV; Glen Lipscomb, WØHUI; Merton T. Meade, WØKXL; Wharton L. Murray, WØGCT; Richard Pitner, WØFZO; James Studebaker, jr., WØGZR; A. B. Unruh, WØAWP; Marie Van Aller, WØPFO; Ben Wendt, WØICD.

NEW ENGLAND DIVISION: Prentiss M. Bailey, W1AZW; Frank L. Baker, jr., W1ALP; William J. Barrett, W1JAH; Burtis W. Dean, W1NLO; Roy B. Fuller, W1CJH; Walter L. Glover, W1VB; Manley W. Haskell, W1VV; Clifton R. Wilkinson, W1CRW.

NORTHWESTERN DIVISION: Allen N. Davis, W7DIS; Ian A. Elliot, W7JMX; Earl Esselstyne, W7BDN; Ray A. Fretz, W7DSS; Charles M. Gray, KL7IG; Leo W. Loken, W7IOQ; Dr. A. J. Movius, jr., W7IWW; Jack Picard, W7JFR; Alan K. Ross, W7IWU; O. U. Tatro, W7FWD; Karl Weingarten, W7GB; W. N. Wintler, W7KL.

PACIFIC DIVISION: Geoffrey Almy, W6TBK; E. A. Andress, W6KUT; Dorsey S. Behringer, W6MRZ; Loyal Mealer, W6AK; W. N. Nations, W6YDP; Roy E. Pinkham, W6BPT; Harold Smith, KH6KA; N. A. Sowle, W7CX.

ROCKY MOUNTAIN DIVISION: None.

SOUTHEASTERN DIVISION: A. Adams, W4FNR; A. J. Barclay, W4PT; J. W. Hollister, W4FWZ; H. E. Richardson, W4BT; J. M. Smith, W4BP; F. M. Stafford, W4MMB; A. J. Tumlin, W4CAN; A. W. Woods, W4GJW.

SOUTHWESTERN DIVISION: L. A. Cartwright, W6BKZ; Hans R. Jepsen, W6KEI; K. G. Pond, W7MAE; W. J. Schuch, W6CMN; Donn S. Smith, W6JTN.

WEST GULF DIVISION: Bert T. Weidner, W5HXI.

CANADA: W. W. Butchart, VE6LQ.

INVALID QSLs

In its constant surveillance of the amateur bands to seek out unlicensed stations, FCC finds it helpful to have on file QSL cards addressed to expired calls, or to amateur stations who actually never made such contacts as the cards purport to confirm. If as a present or former amateur station licensee you receive cards confirming contacts which never took place, the Commission would appreciate such information. Address George S. Turner, Chief, Field Engineering & Monitoring Division, FCC, Washington 25, D. C.

BOARD-MEETING MINUTES

1) Pursuant to due notice, the Board of Directors of the American Radio Relay League, Inc., met in special session at the Hotel Hay Adams, Washington, D. C., on October 8, 1949. The meeting was called to order at 9:42 A.M., with President George W. Bailey in the Chair and the following other directors present:

J. Lincoln McCargar, Vice-President
Alexander Reid, Canadian General Manager
Harold C. Bird, Great Lakes Division
Leonard Collett, Midwest Division
Goodwin L. Dosland, Dakota Division
John G. Doyle, Central Division
John R. Griggs, Southwestern Division
Wayland M. Groves, West Gulf Division
Kenneth E. Hughes (alternate), Pacific Division
Joseph M. Johnston, Hudson Division
Walter Bradley Martin, Atlantic Division
Franklin K. Matejka, Rocky Mountain Division
Percy C. Noble, New England Division
R. Rex Roberts, Northwestern Division
William C. Shelton, Southeastern Division

Absent: Victor Canfield, Delta Division. Also in attendance, at the invitation of the Board as a nonparticipating observer, was Roanoke Division Alternate Director J. Frank Key. There were also present Secretary A. L. Budlong, Technical Director George Grammer, Communications Manager Francis E. Handy, Treasurer David H. Houghton, Assistant Secretary John Huntoon, General Counsel Paul M. Segal and Quayle B. Smith of his office. The meeting was welcomed and briefly addressed by the Chair.

2) On motion of Mr. Dosland, unanimously VOTED that the regular order of business be suspended.

3) At this point the Board heard extensive reports from the General Counsel, the Secretary and the President concerning developments in the League's relationship with the Federal Communications Commission in the matter of Docket 9295.

4) Moved, by Mr. Dosland, to amend By-Law 16 so that the second sentence thereof will read: "In case of the resignation or death of any Director or his inability to perform the duties of director, then the Alternate Director shall notify the Secretary of the death, or the Director shall notify the Secretary of inability to perform, and, with the receipt of such notice, or upon the resignation of the director, the

Alternate Director shall assume all the authority, powers and duties of Director and be subject to all provisions of the Constitution and By-Laws affecting Directors." The yeas and nays being ordered, the said question was decided in the affirmative: Whole number of votes cast, 14; necessary for adoption, 10; yeas, 14; nays, 0. Every director voted in the affirmative except the President and Vice President, who abstained as required. So the By-Law was amended. The President thereupon recognized the voting rights of Mr. Key representing the Roanoke Division.

5) On motion of Mr. Dosland, unanimously VOTED, that the Board reaffirms its stand taken in opposition to the "overall planning and blueprint to provide scope and direction for the immediate and long-range development of the amateur radio service," and now proceeds to an examination of the individual proposals of the FCC in Docket 9295.

6) At this point the Board, finding itself in substantial agreement on certain specific proposals without the necessity for extensive discussion, by unanimous assent AGREED as follows:

a) to accept the proposal to amend § 12.111(a)(2) of the amateur rules to widen the 75-meter Class A telephony band to include 3800–3850 kc.

b) to reject the proposal to amend § 12.111(a)(2) to establish a bandwidth limit of 3 kilocycles in the subband 3800–3850 kc.

c) to reject the proposal to amend § 12.111(a)(6) to establish a maximum frequency shift for radiotelegraph operations in 29,000–29,700 kc.

d) to reject the proposal to amend § 12.111(a)(7) to withdraw c.w. telegraphy privileges in 50.1–54 Mc.

e) to accept the proposal to amend § 12.111(a)(7) to extend the use of narrow-band frequency or phase modulation throughout the telephone portion of the 50–54 Mc. band;

f) to reject the proposal to amend § 12.27 to provide for reëxamination of present Class A licensees at higher levels to permit continued holding of maximum amateur privileges.

g) to reject the proposal to add a new § 12.107 as concerns roundtable operations.

7) On motion of Mr. Dosland, after discussion, VOTED that it is the consensus of the Board that the League oppose any regulation on the restriction of amateur bandwidths of emission but that it continues to recommend to amateurs that they voluntarily reduce their bandwidth of emission insofar as the state of the art permits. Mr. Hughes requested to be recorded as voting opposed.

8) The Board recessed for luncheon at 12:08 p.m., reconvening at 1:50 p.m. with all directors and other persons hereinbefore mentioned in attendance.

9) After discussion, by unanimous assent the Board AGREED to reject the proposals to amend § 12.111(a)(2) and § 12.111(a)(4) to extend the use of frequency or phase modulation throughout the telephone portions of the 3.5 and 14 Mc. band, and to request instead that the existing temporary 50-kilocycle authorizations in these two subbands be put on a permanent basis utilizing the lowest 50 kc. of each subband.

10) After discussion, by unanimous assent the Board AGREED as follows:

a) to reject the proposal to amend § 12.111(a)(6) to eliminate the use of wide-band frequency modulated telephony in 29,000–29,700 kc.

b) to reject the proposal to amend § 12.111(a)(7) eliminating the use of wide-band frequency or phase modulated telephony in 52.5–54 Mc.

c) to reject the proposal to amend § 12.111(a)(7) eliminating the use of frequency-shift keying in 52.5–54 Mc.

11) After discussion, the Board AGREED to reject the proposal to amend § 12.111(a)(7) to establish an exclusive c.w. assignment 50.0–50.1 Mc. Mr. Hughes requested that he be recorded as opposed to this action.

12) On motion of Mr. Collett, after discussion, VOTED to accept the proposal to amend § 12.23 as concerns the establishment of a Technician Class license for operation on frequencies above 220 Mc., but with a request to the Commission that such licenses carry distinctive call signs.

13) Proceeding now to an examination of the proposal to amend § 12.23 as concerns the establishment of a Novice Class license, after extensive discussion, by assent the Board AGREED to accept the proposal of the Novice Class license carrying with it a simpler written examination, 5 words-per-minute code test, and a one year nonrenewable term. Moved, by Mr. Collett, that the frequency bands available to Novice Class licensees be 3650–3750 kc., 7100–7200 kc., and 29,000–29,700 kc., A-1 only; but there was no second, so the motion was lost. Moved by Mr. Griggs, that the Novice Class privileges include the following: 3700–3750 kc., 26,960–27,230 kc., c.w. only; and 52–53 Mc., and 145–147 Mc., radiotelegraphy or radiotelephony. On motion of Mr. Shelton, unanimously VOTED to amend the motion to strike out the band 52–53 Mc. Whereupon, the question being on the motion as amended, the same was unanimously ADOPTED. Moved, by Mr. Griggs, that the power limitation for Novice Class licensees be 50 watts, and that crystal control be required on all bands. After discussion, with the consent of his second, Mr. Griggs changed the power limitation figure to 75 watts. Whereupon the same was unanimously ADOPTED. It was the consensus of the Board that in conveying its recommendation for the adoption of the proposal for a Novice Class license under the conditions and with the privileges indicated, the League request that distinctive calls be assigned. Further with respect to the Novice and Technician Class licensees, after discussion, it was the consensus of the Board that both Technician and Novice Class license examinations should be available under conditions which conform to the general pattern established in the existing regulations, whereby applicants within 125 miles of an examining point are required to appear before Commission personnel for examination, while those more than 125 miles (or as otherwise excepted in present § 12.21) may take examinations by mail.

14) After discussion, by unanimous assent the Board AGREED to reject the proposal to amend § 12.27 to substitute certain minima of hours of operation as a condition to renewal of license, and to reject the proposal to establish the requirement of a statement as to code speed ability as a condition to renewal of license, except to provide that in the case of the Technician Class the license may be renewed upon showing that within the last six months of the license term the applicant has operated an amateur station above 200 Mc. and a statement, subject to proof upon request, that he can still send and receive at a speed of not less than 5 words per minute.

15) After discussion, by unanimous assent the Board AGREED to accept the proposals to amend § 12.29 and § 12.65 to fix the period of all classes of license in terms of the date of issuance, not subject to change of term upon modification.

16) After discussion, by unanimous assent the Board AGREED to reject the proposal to establish an Amateur Extra Class license, and to reject the proposal to establish new examination elements as a requirement for that license.

17) By unanimous assent, the Board AGREED that a code test at 13 words per minute was desirable for all applicants for Class A privileges; Messrs. Doyle, Griggs and Hughes requested to be recorded as not in favor. On motion of Mr. Johnston, VOTED to reconsider the matter. The question again being on the desirability of a 13-words-per-minute code test for Class A applicants, it was decided in the negative, 6 votes in favor to 7 opposed. On further motion of Mr. Johnston, VOTED, 9 in favor to 5 opposed, to retain Class A precisely under the conditions now specified in the amateur rules; Mr. Hughes requested to be recorded as voting opposed.

18) The Board was in recess from 3:58 to 4:08 p.m.

19) At this point, examination by the Board showing that its position on the remaining proposals for amendment of the regulations was contingent upon actions already taken, the Secretary was directed to indicate the position of the League as necessary to support its actions previously taken.

20) On motion of Mr. Collett, unanimously VOTED that there is hereby appropriated from the surplus of the League, as of this date, the sum of six thousand dollars ($6,000) for the purpose of defraying the expenses of holding this meeting

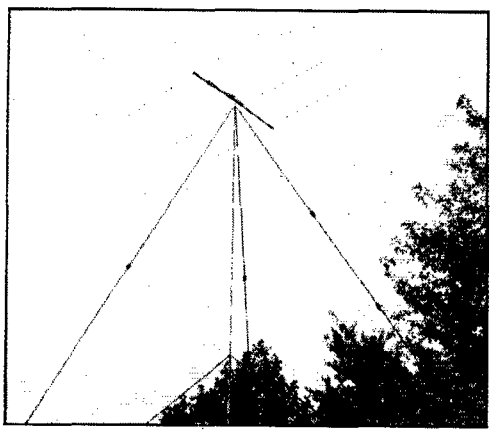
(*Continued on page 104*)

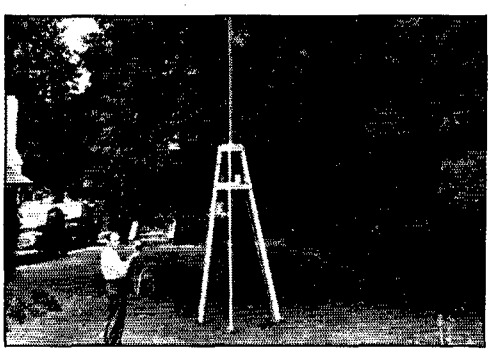
A 53-Foot Rotating Antenna Mast

Supporting the 28-Mc. Beam for Less Than $30.00

BY ROBERT R. GOSHORN,* W8DEU

No experienced amateur is likely to deny the advantages of height in a beam or other antenna. However, cost seems to be a big factor for the average ham in putting his beam higher than a wavelength on 10 or a half wavelength on 20. One hears quite often of investments





The rotating antenna mast at W8DEU raises the 10-meter beam 53 feet above the ground. The pipe mast gets most of its strength from the ⅛-inch stranded-steel guy wires. A pipe along one leg of the tripod is housing for the control wires.

of from two to five dollars per foot in antenna supports. Any such expenditure would take most amateurs, including W8DEU, right out of the high-antenna category. Nevertheless we have a rotary beam 53 feet high that costs less than $30.00, including the beam, mast supports, paint, feed line and everything but the surplus propeller-pitch rotator motor and indicating Selsyn.

Essentially the mast is a 2-inch pipe sleeve supported on the top of a wooden tripod. A 1-inch pipe runs through the 2-inch sleeve and out the top, with the beam mounted on the end of the smaller pipe. The rotator motor is mounted in the tripod.

The Tripod

The tripod at the base is 10 feet high, made from three pieces of straight-grained fir 2 by 4s that cost ten cents a foot. Concrete blocks set in the ground five feet apart serve as a footing for the tripod. No. 9 galvanized iron wire was looped through holes in the concrete and in the ends of the tripod legs, to lash the tripod to the concrete blocks. A small triangular platform of 2-inch lumber, about one foot on a side, makes up the top of the tripod and supports a 2-inch pipe "floor flange." Crosspieces of 2 by 4 mounted 30 inches down on the tripod are used for a cradle for the prop-pitch rotating motor. If a thrust bearing other than the motor itself were used, this cradle could be used to support it. To make things easier, the tripod was assembled on the ground and then up-ended and tied to the concrete blocks.

The Mast

The mast itself is in two parts. A 21-foot length of 2-inch galvanized pipe is set in the flange on top of the tripod, firmly anchored there and reinforced by guy wires. The 2-inch flange on the platform is held in place by ⅜-inch carriage bolts, and before installation a 1½-inch clearance hole was bored in the platform to pass the rotating mast. The carriage bolts were driven up from the bottom of the platform, to be ready to take the flange when the mast was put up.

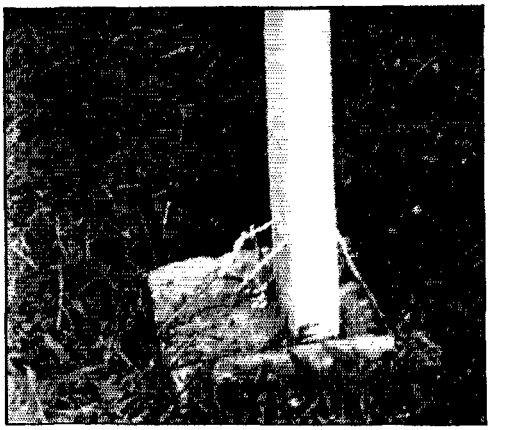
The 2-inch pipe coupling (which came with the pipe) was made into a bearing for the 1-inch pipe. This was done by filling it one-half full of putty and then filling it the rest of the way with hard babbitt metal. It was then chucked in a lathe and bored out to clear the 1-inch pipe freely but not enough to pass a 1-inch pipe coupling. A clamp with three guy-wire holes was fastened around the coupling and secured firmly by drilling holes through it and the coupling. These holes were tapped for 10-24 machine screws, and short screws were run up tight in the holes to prevent the clamp from turning or slipping down.

* 6447 Glade Ave., Cincinnati 30, Ohio.

The bearing (converted coupling) was screwed tightly on one end of the 2-inch pipe and the floor flange was screwed on at the other end. A 6-inch length of 1-inch pipe nipple was fastened on the bottom end of one 21-foot length of 1-inch pipe, and the coupling was removed from the other end. The extended length of 1-inch pipe was then shoved into the 2-inch pipe at the flange end. When it reached the bearing at the other end, it was a simple matter to reach in with a short rod and steer it through the babbitt bearing. The 6-inch nipple was necessary, of course, to give enough length to the pipe so that it would stick out both ends of the 2-inch pipe. A pipe coupling was screwed tightly on to the end of the 1-inch pipe at the bearing, and an 18-inch nipple added beyond this coupling. The beam mounts on the 18-inch length, but before the beam was fastened to the pipe, a slip bearing was slid on the nipple down to the coupler. The bearing, made of $\frac{3}{16} \times$ 1-inch strap iron, was designed to fit sloppily on the pipe but was tight enough so that it couldn't pass over the coupler. Three guy-wire holes were included on this slip bearing. By laying the nipple end of the entire pipe assembly on the top of a stepladder, the beam could be clamped to the 18-inch nipple and the feed line (at least 46 feet long) was snaked down through the pipe and out the lower end. The top of the pipe, where the feed line entered, was well taped to keep out rain. The antenna is a 3-element "plumber's delight" using delta match and 300-ohm Twin-Lead feed line.[1]

We were fortunate in that the location of three trees was such that they offered good anchor points for the guy wires. Without these the guy wires would have required guy anchors or "dead men." The $\frac{1}{8}$-inch galvanized-iron cable guy wires were broken up every 13 feet with strain insulators to minimize any possible absorption of r.f. energy. Three guy wires were fastened to the clamp on the 2-inch pipe, and three more (at least 20 feet longer than the first) were secured to the slip bearing on the 1-inch pipe nipple.

[1] Better practice is to use garden hose or other insulation to space the Twin-Lead away from the metal pipe, and coaxial-line feed is still better. — *Ed.*



The legs of the tripod are set on concrete blocks and made fast by lashing with No. 9 galvanized wire.

A long single-section ladder (we borrowed a 16-foot one) was set up vertically against one side of the tripod and lashed with sash cord so that it couldn't move. It is a good idea to set the ladder in holes a few inches deep, to prevent any slipping of the ladder. A pulley was tied to the top rung of the ladder and a half-inch rope run through the pulley. The mast and antenna were laid on the ground, with the flange end at the base of the tripod and on the side away from the ladder. One end of the rope was tied around the 2-inch pipe just above the flange. (Be sure to use a knot or hitch that won't slip up on the pipe — tape the pipe above the knot or use a temporary clamp.) Then one of the guy wires from the top of the 2-inch pipe was passed over the top rung of the ladder. The mast was ready to go up.

Getting the mast into a vertical position on top of the tripod requires at least two huskies and three small boys or other helpers. Two of the small boys each handled a set of guy wires, while the strongest of them held the guy wire that was passed over the ladder. The top guy wires are best kept out of the way during the

♦

The 10-foot-high tripod supports the pipe mast, the prop-pitch rotator and the Selsyn indicator. The 1-inch diameter pipe that makes up the top half of the mast and supports the beam drops through a 2-inch pipe sleeve directly to the rotator motor. The 2-inch pipe mounts on the top of the tripod in the usual pipe flange. Coils and condensers in the motor leads are for the "hash" filtering.

early operations. The back guy (over the ladder) was kept taut while the two strong men "walked up" the mast until it was standing against the tripod. The feed line out the bottom was protected from damage by setting the flange on a wooden block during the "walk-up" operation. When the mast was vertical, it was lifted vertically to the top of the tripod by pulling on the rope. Someone was required on the ladder to steer the bottom when it cleared the top of the tripod, and the boys on the guy wires had to be careful to keep the mast close to vertical at all times. After the feed line was fed down through the hole in the platform, the flange was set on the carriage bolts and the nuts put on loosely. For final plumbing of the mast, it is advisable to use turnbuckles in each guy. Unless you have a good eye, use a carpenter's level or a plumb bob.

With the antenna up 33 feet, the hard work was done. At this height it rotated freely (heavy cup grease was applied to both bearings while the assembly was on the ground) by turning the bottom end. In still weather, getting the extra 20 feet of height is only a two-man job but if the wind is blowing it is best to keep the small boys around. Another 21-foot length of 1-inch pipe had been cut in three 7-foot lengths and threaded at each end. The feed line was threaded through a coupler and one of these lengths, and the 7-foot length was added to the 1-inch pipe already in the 2-inch pipe housing. To do this, it was necessary to clamp the pipe above the motor cradle with a temporary clamp made from two 2 by 4s held together with carriage bolts. When the 7-foot length is in place, the whole 1-inch pipe assembly is lifted up seven feet, clamped in place, and another section added. The last 7-foot length should have a ½-inch hole bored in the side for the feed line to come through. A short length of ½-inch rubber tubing or plenty of tape should be used here to avoid chafing where the line comes through the pipe wall.

There are many ways to fasten the rotating pipe to the motor and we won't enumerate them here. We did, however, slip a gear over the pipe to engage the Selsyn direction indicator. After the motor is attached or a thrust bearing has been provided, the top guy wires are tightened. They should not provide too much pull -- just enough to maintain the mast vertical and eliminate sway.

Our antenna has been up nearly a year now, and it has taken the buffeting of winter winds and ice and summer storms. With it we have worked the world on 10 meters and consider it a mighty good investment of 30 dollars. The feed line from the delta match was a little haywire and came off after six months, but it wasn't difficult to fix. We borrowed a 32-foot extension ladder and set it up against the 2-inch pipe. After lashing the ladder securely, the raising process was reversed and the beam was brought down to the top of the 2-inch pipe and the top of our borrowed ladder, where it was a simple matter to repair the beam. It only took two of us to do this and boost the beam back up when the repairs were completed.

ANNOUNCING 10-METER WAS CONTEST

Jan. 6th–7th–8th and 13th–14th–15th

How many states and how many stations can you work on ten in two week ends? If you are located anywhere in the League's field-organization territory (see page 6 of *QST*), you are cordially invited to take part in this new operating activity. C.w. to c.w., 'phone to c.w./c.w. to 'phone, or 'phone to 'phone can be used. Certificates will be awarded the highest scorer in each section. The total available operating time will be 96 hours. The week end periods start Friday afternoon (3 P.M. PST or 6 P.M. EST) on the 6th and 13th of January and end on the same times the 8th and 15th.

Scoring is simple. One point is allowed for each contact and 1 multiplier point for each different state worked. The same station may be worked but once during the contest for credit. Total contacts multiplied by the total different states worked gives you your score. Exchange of reports and names of states is all that is necessary for scoring. For contacts that are made with other than the 48 states, for example, KP4 or VE 1 through 8, 1 contact point is allowed but no multiplier point.

A complete announcement of the contest, including the rules governing participation, will appear in January *QST*. Contest reporting forms will be sent to all amateurs who request them by mail or radiogram. It is not necessary to make advance entry or to use these forms if the report form described in the next issue of *QST* is followed. Closing date of entries is February 1, 1950.

How many states can you work, OM?

• Technical Topics —

Half-Wave Filters

An interesting and unusual type of filter for harmonic reduction devised by Donald E. Norgaard, W2KUJ, is described in the current issue of *Ham News*.[1] It is based on a principle that is seldom treated in discussions of filters, probably because thinking is in terms of resonant circuits where a single desired frequency is concerned, and in terms of filters where a band of frequencies is to be transmitted. However, considering any one amateur band, the width of the band of frequencies that must be transmitted by a filter is comparatively small, and a harmonic filter to be used on that band can be regarded as a single-frequency affair.

The Norgaard filter is of the "half-wave" type; that is, it exhibits some of the properties of a half-wave transmission line. As is well known, adding a half-wave section to a transmission line does not disturb the operation of the line insofar as the impedance looking into the line is concerned, and this is true whether or not the transmission line is operating with standing waves and whether or not the half-wave section inserted has the same characteristic impedance as the rest of the line. The half-wave filter behaves in the same way as the half-wave line section in this respect, and so can be inserted between the transmitter and the line without disturbing the coupling and tuning conditions. The same thing cannot be said of the ordinary types of low-pass filters frequently used for harmonic reduction, except in the somewhat rare case of a perfectly-matched line.

A half-wave line section resonates at all harmonics of its fundamental frequency, and so is of no value at all in harmonic reduction. But this is not true of the half-wave filter; it is a circuit with lumped constants, which behave differently than the distributed constants of actual transmission lines. A half-wave filter is no more resonant at harmonics of the frequency for which it is designed than is an ordinary *LC* circuit. It will, in fact, suppress with great effectiveness any off-frequency signals fed to it.

It is desirable to construct a half-wave filter in two sections,[2] each corresponding to a quarter-wave transmission line. The circuit of such a "quarter-wave" filter in the familiar pi-section form is shown in Fig. 1A. To correspond to a quarter-wave line the impedance at the input terminals must be infinite, theoretically, when the output terminals are short-circuited, and must be

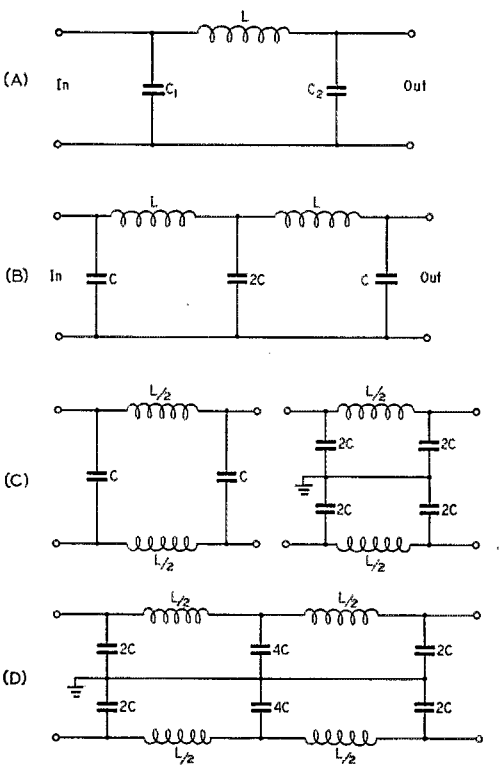


Fig. 1 — Development of the half-wave filter from the basic quarter-wave section (A). Balanced and unbalanced circuits are shown at (D) and (B), respectively.

zero when there is no load on the output terminals. These two conditions correspond to the short-circuited and open-circuited quarter-wave line, respectively.

It is not hard to find the filter constants that will meet these conditions. If the output terminals are short-circuited, C_2 is also short-circuited, so L and C_1 are connected in parallel. A parallel LC circuit has theoretically infinite impedance only when it is resonant, so L and C_1 must resonate at the operating frequency. On the other hand, if the output terminals are open the only way for the circuit to show theoretically zero impedance is

[1] "Harmoniker," *G. E. Ham News*, Nov.-Dec., 1949.

[2] A theoretical discussion of the half-wave filter is given in Everitt, *Communication Engineering*, McGraw-Hill Book Co., first edition, p. 178, as mentioned in the article of reference 1.

for L and C_2 to form a series-resonant circuit, so L and C_2 must also be resonant at the operating frequency; i.e., C_1 and C_2 are equal. The only point left is to determine the optimum LC ratio. If the filter components are loss free and there are no restrictions on their ratings, the LC ratio theoretically does not matter when, as in the half-wave filter, two quarter-wave sections are connected in cascade. This is because one quarter-wave section reverses everything that the other one does. However, as a practical matter the voltage and current ratings required in the filter components will in general be minimum when the filter has a characteristic impedance equaling the characteristic impedance of the line with which it is to be used. This occurs when the reactances of L, C_1 and C_2, at the operating frequency, equal the characteristic impedance of the line.

It is generally easier to visualize values of capacitance than values of inductance, so the following formula is probably the preferable one to use:

$$C = \frac{159{,}000}{Z_0 f}$$

where C is the capacitance in $\mu\mu$fd., Z_0 the characteristic impedance of the transmission line in ohms, and f the frequency in megacycles. This value is used at both C_1 and C_2 in the basic quarter-wave filter of Fig. 1A. The inductance, L, is then simply adjusted to resonance at the operating frequency (or the center of the band to be used) with *one* of the condensers. The size of the coil can be determined from the usual formulas or the *Lightning Calculator*. The proper inductance value can be verified by connecting the coil in parallel with one of the condensers and checking by using the circuit so formed as an absorption wavemeter or by coupling it to a grid-dip meter.

The half-wave filter, shown in Fig. 1B, consists of two quarter-wave sections, the input terminals of the second being connected to the output terminals of the first. In this and the following figures the capacitance C corresponds to either C_1 or C_2 in Fig. 1A. When the two sections are connected together the output capacitance of the first adds to the input capacitance of the second, so the middle condenser has the value $2C$.

The single-ended circuit of Fig. 1B would be suitable for coax line, but for balanced two-wire lines a balanced filter should be used. As shown in Fig. 1C, the simplest form of balanced quarter-wave filter (at the left) uses the same two condensers but divides the inductance equally between the two sides of the line. However, the form at the right is preferable because the grounded center tap provides the means for draining off harmonics that are coupled to both line wires in the same phase, as by capacitive coupling between the output link and tank coil. Coupling of this type often destroys the effectiveness of a harmonic filter used with open-wire lines, and the simpler form of filter at the left is helpless against it. The center-tap type requires four condensers, each having twice the capacitance, as against two for the simpler type, but the additional complication is decidedly worth while. The complete half-wave filter is shown in Fig. 1D.

In the article referred to earlier [1] it is shown that mica condensers can be used in the filter when the transmission line is operating with a standing-wave ratio of less than 2 to 1. If the filter and line characteristic impedances are equal and the line is perfectly matched, the peak voltage across each condenser in the unbalanced filter (Fig. 1B) will be

$$E = \sqrt{2PZ_0}$$

where E is the peak voltage, P is the power in watts, and Z_0 is the line impedance in ohms. This figure should be doubled for 100 per cent amplitude modulation. In the balanced filter, Fig. 1D, the voltage across each condenser is half the value given by the formula above. If there are standing waves on the line, the maximum voltage across any condenser in the filter will be equal to the peak voltage as found above, multiplied by the square root of the s.w.r. An s.w.r. of 10, for example, will increase the voltage by $\sqrt{10}$, or 3.16. The voltage will be the largest at the end condensers when the load at the output terminals is higher than the characteristic impedance, in which case the voltage across the center condensers will be decreased in the same ratio. The reverse is true when the load is less than the characteristic impedance of the filter.

Aside from the voltages that may develop across the condensers, the selectivity of the filter also is affected by the s.w.r. on the line. A low s.w.r. means that the load for the filter is largely resistive and has an impedance approximately equal to the characteristic impedance of the filter. Under these conditions the filter acts like a heavily-loaded circuit and its frequency response is broad. If the load impedance is very high or very low with respect to the filter's characteristic impedance, high voltages will develop across either the end or center condensers, as noted above, which means that the circulating current in the filter has increased. A high circulating current indicates an increase in Q, just as in the case of an ordinary tank circuit. Consequently, the filter becomes more selective.

In the construction of this as well as other types of filters for TVI reduction it must be borne in mind that the frequencies to be suppressed are in the v.h.f. region, and good v.h.f. layouts must be used even though the filter design frequency is as low as 3.5 Mc. The way in which filter sections are connected together, and the way in which the terminals are connected,

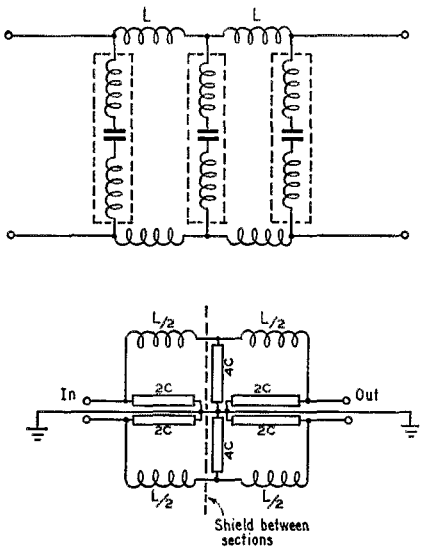


Fig. 2 — (A) The filter of Fig. 1B when lead inductances are taken into account. (B) Suggested construction to reduce the effects of lead inductance. Labels correspond to the filter circuit of Fig. 1D.

can have a very pronounced effect on the performance. The rather complicated-looking circuit of Fig. 2A is actually just a representation of the filter of Fig. 1B as it would be seen by a v.h.f. signal, if the leads to the various condensers and the common lead between sections have enough inductance to be of consequence at v.h.f. The condenser-lead inductances are shown boxed with the condensers. Depending on the capacitance, the condenser and an inch or two of lead can easily be series resonant somewhere in the vicinity of the TV channels. Actual series resonance is not so bad, because the condenser and its leads will act like a short circuit for that particular frequency. However, at frequencies above series resonance the condenser and its leads act like an inductance instead of a capacitance, and you do not have to go very far above resonance before the filter is encouraging the harmonics to go through with little or no attenuation. This situation is complicated, but seldom improved, by the fact that filter coils wound for the low-frequency bands turn into series and parallel-resonant circuits in the v.h.f. bands.

The remedy, of course, is to make the lead inductance as small as possible. Where there is a common lead, such as that in Fig. 1B or the center ground connection in Fig. 1D, it should be a wide strap — or the chassis — instead of wire. Connections to the condensers should be as close as possible to the condenser itself. On the other hand, the leads to the filter inductances are not critical, since the lead inductances here simply add to the coil inductance. The main point about the coils is that they should not be coupled to each other. A good type of layout is suggested in the article referred to, and is reproduced here in principle in Fig. 2B, for the balanced type of filter shown in Fig. 1D. This reduces unwanted coupling through condenser-lead inductance to a minimum. The same construction principles should be applied to any type of filter that aims at suppressing v.h.f. harmonics.

— *G. G.*

WWV Schedule

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

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

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

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

The accuracy of all the frequencies, radio and audio, as transmitted, is now better than a part in 50,000,000. Transmission effects in the medium may result in slight fluctuations in the audio frequencies as received at a particular place; the average frequency received, however, is as accurate as that transmitted. The time interval marked by the pulse every second is accurate to 0.000001 second.

United States Naval Reserve

OF INTEREST to all radio operators is an announcement that the Navy has started construction of the most powerful radio transmitting station in the world. Designed to radiate 1000 kw. on very low frequencies, it will provide effective all-weather Naval communications throughout the Pacific area, particularly in North Pacific regions where propagation conditions are erratic and unreliable.

The station is being built at Jim Creek, Snohomish County, Wash. Jim Creek was selected as the station site because the natural contours of its valley, formed by 2000-foot mountains, permit suspension of antenna spans from one mountain top to another by the construction of relatively-short 200-foot towers, which can be built to withstand high winds and the weight of ice accumulation on the antenna. The antenna spans will vary from slightly more than a mile to about one mile and three-quarters in length. Vertical 900-foot downleads will be suspended from the midpoint of each span.

The transmitter building will be a modified "T"-shaped structure of reinforced concrete. Its construction, involving an elaborate grounding system and the use of copper shielding because of the intensive field of radio energy to be developed, will require from 15 to 18 months. The rear rectangle part of the building will house the station's two dual helix rooms.

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Rear Adm. John R. Redman, USN, chief of Naval communications, not only is an experienced *naval* communicator but an old-time radio amateur as well. He will be remembered as W6NZ (San Francisco) in 1927 and as W3JP (Washington) in 1933. Always deeply interested in radio operating, Adm. Redman is a first-class brasspounder in his own right.

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George H. McClelland, RM1c, USNR (W8KOX), is on duty in the office of the Fifth Naval District Reserve Electronic Warfare Program Officer, Norfolk, Va. He is ex-OX3BG and a native of Lincoln Park, Mich.

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During the destructive hurricane that penetrated Florida in August, continuous communications were maintained between the Sixth Naval District master control station at Charleston, S. C., and Naval Reserve training centers at Jacksonville, Tampa, Orlando, Miami, St. Petersburg, Gainsville, Pensacola, West Palm Beach, and Electronic Warfare Company 6-23 at Marianna.

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Naval Reservists in the Eighth Naval District were alerted on 21 September, following a hurricane warning. Although the "blow" did not reach serious proportions, several Naval Reserve activities near the Gulf of Mexico, in Texas and Louisiana, maintained a continuous radio watch with District Headquarters until the danger had passed.

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The U. S. Naval and Marine Corps Reserve Training Center, Indianapolis, Ind. (K9NR), outdistanced the field for the Ninth Naval District "Oscar" (communication trophy) in the quarter ending 30 September. The Training Center at Kalamazoo, Mich. (K8NRI), was a strong second.

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Emergency-communication exercises are becoming a regular order of business for many Naval Reserve activities in the Ninth Naval District. Among those conducting recent tests were the radioman strikers of the Naval Reserve Training Center, Topeka, Kansas (KØNRZ), who set up their mobile communication equipment northwest of the Center and participated in the regular drill circuit. The District mobile communication unit, operating in Omaha, Nebr., held an emergency drill on 3 October. Other Naval Reserve mobile units at Louisville, Ky., Des Moines, Iowa, St. Louis, Mo., and Kansas City, Mo., were worked. The District mobile unit consists of a large semi-trailer-tractor containing several transmitters and receivers and its own power supply. The Naval Reserve Training Center, Warren, Ohio (K8NRW), has conducted several emergency drills in recent weeks. One such drill involved amateurs, employing the 28-, 14-, 7- and 3.5-Mc. bands. The most outstanding part of the emergency-communication exercise was operation of 28-Mc. mobile stations. Seven mobile units from two counties participated. The following amateurs took part in the Ohio drill: W8s KGD, ADX, FDP, IOO, TAE, ZFZ, SKR, CQL, MTC, DPL, ZWH, ECT, EKX, FZJ and BXA.

(Continued on page 104)

'49 "FD" Tops 'Em All!

As a demonstration of amateur radio's willingness and ability to serve in time of emergency, the Annual ARRL Field Day has proved eminently successful. Each year that it has been held, the number of individuals who participate in this mass-testing of our facilities and the number of portable independently-powered stations taking part have increased by leaps and bounds. In 1946, when the first postwar test was held, 1936 operators and 187 portables participated. In 1949 there were 495 portable stations afield manned by 4942 individuals (a minimum figure, since all reports did not specify the exact number at each station). Amateurs operating the 495 field stations in the Thirteenth ARRL Field Day, held last June 18th and 19th, kept 1390 complete receiver-transmitter set-ups on the air.

The statistics on participation in the 1949 FD do not in themselves paint a complete picture of the magnitude of the operation. Unlike other ARRL activities, which in general involve single-operator stations with only one transmitter on the air at a time and all the comforts of operation at home, the FD is one involving in most cases multiple-operator and multiple-transmitter operation, with few of the conveniences of operation at fixed locations. There are numerous problems to be met and solved. Arrangements have to be made to provide for shelter, food, sleeping facilities, in addition to the primary task of setting up field operating positions, equipment and antennas. Operator schedules must be worked out, too, if high scores are the main objective. The best showings in the FD were made by individuals and groups that took all these problems into account. Careful organization was evident in the reports of entrants that enthusiastically reported their operations successful; conversely, slipshod methods, poor organization and excuses were noted in the entries of those whose efforts met with little success. As in all organizing of amateur facilities for emergency operation, advance planning paid off. Practically everybody who took part in the FD, however, gained some new bit of experience that will help to make amateur emergency exercises, whether real or simulated, function at increased efficiency in the future. Dedicated as it is to emergency preparedness, the FD this year fulfilled its purposes in a manner that does credit to all who took part.

Field Day competition is considered to be among stations using like numbers of simultaneously-operated transmitting set-ups. The final scores are therefore tabulated according to the number of transmitters in operation at each station. In order that Class 1 entrants may compare their scores with the leading groups in their particular geographical area, the top-scoring Class 1 station in each call area from which entries were received is listed below:

W1OC/1	7866	W9AP/9	13,095
W2OM/2	11,862	WØTW/Ø	7209
W3FRY/2	15,597	VE1LC	3042
W4FU/4	11,007	VE2WK	1836
W5MPZ/5	5143	VE3JJ	8883
W6GAL/6	18,777	VE4RM	390
W7GP/7	7708	VE6NQ	2871
W8TQ/8	7794	VE7ACS	1800
		KH6RS/KH6	1845

Since all entries in Classes 2, 3 and 4 were from one-transmitter stations, the call area leaders in those categories may be determined readily from reference to the score tabulations.

Sidelights

"Something new was added this year. Engineers from the 'Voice of America' came along with our group and recorded a program describing the purpose and extent of the Field Day competition. Interviews with some of our members and with Johanne Svenholm, SM8AC, our DX member, were included. The recording was broadcast a few days later. Transcriptions of the program were given to the club by the 'Voice' and are now a treasured part of our historical library." — *Bloomfield Radio Club, W2JC/2.* . . . "We

The St. Paul Radio Club, WØSMT/Ø, worked out an efficient operating system to take advantage of every opportunity to make contacts. Four keys were connected in parallel to four operating positions controlling one completely-bandswitched VFO rig. The arrangement paid off and WØSMT/Ø topped the one transmitter Class 1 groups by a comfortable margin. *Seated, left to right,* Clifford Proetz, WØDPN, A. E. Swanberg, WØBHY, C. W. Davies, WØYCR. *Standing,* Lyle Larson, WØTOZ.

Members of the Delaware-Lehigh Amateur Radio Club gathered for the annual event atop Montana Mountain near Phillipsburg, N. J. Four transmitters were kept in simultaneous operation, all grouped about this central position. Undoubtedly witnessing their first ARRL Field Day, a farmer and his daughter standing near the doorway and a calf, who appears less awed by the array of ham gear, view the proceedings with interest.

had a swell turnout from our local AEC group, five members operating all night out of a possible seven available. Total membership is only nine out of eleven amateurs in our county. A tip on where to secure a large tent for FD: Try your local undertaking establishment. We obtained a 15 by 18 tent with sides and lean-to for only the cost of erection." — *Iroquois County Emergency Corps, W9HKA/9.* . . . "This year's Field Day activity was a unified effort by members of the Richmond Amateur Radio Club with some 45 members taking part. Besides everyone having a great time, closer bonds of friendship were developed among members of our organization." — *Richmond Amateur Radio Club, W4ZV/4.* . . . "Our location was 60 miles east of Mesa, Ariz., on the Miami-Globe Highway at a place called 'Top of the World.' It hadn't rained there in six months — until Friday when the boys left Mesa with equipment for FD. Then it rained all night. Wind and lightning tore down tents, antennas, etc." — *Southside Radio Amateur Club, W7KRW/7.* . . . "This was a test of what one operator could do alone if he were isolated inside an emergency zone for 24 hours. Cooked my own meals, kept generator plant gassed and lubricated, slept some, smoked five packs of cigarettes. Antenna was strung up fifteen minutes before start of FD. No beams, arrays, assistants to keep log, etc. I just heaved a rock and string over a limb of a scrub oak tree in a pasture, tuned up, and called CQ FD." — *"Beep," W0BP/0.* . . . "Eleven contacts were made on 430 Mc. The longest was with W6NLZ on Tecate Peak near the Mexican border, an airline distance of approximately 125 miles. Signals were S9 due to the elevation of the two stations. W6VB was 2808 feet above sea level and W6NLZ approximately 3900 feet." — *The Mike and Key Club of Santa Monica, W6VB/6.* . . . Resourcefulness: W7RT used antennas supported by three 40-foot masts made up on the scene from driftwood, logs, etc. W8OUR employed a burned-out 'speaker field coil as a supply of antenna wire. Only one antenna insulator being available, the necks were broken off a couple of "coke" bottles and used to insulate the other end of the skywire! . . . "It was good to see so many units out on the hills of New England. The New Hampshire mountains were practically alive with activity and signals were heard on 2 meters from almost every hill over 100 feet high in Massachusetts — and some that weren't that high! We all had fun, in spite of the fact that our 7-Mc. power supply conked out before we got started. CU next year." — *Waltham Amateur Radio Assn., W1PYM/1.* . . . "The OM was chief cook, bottle-washer and baby-sitter while I did all the operating. I was at the key for 16¼ hours from 4:00 P.M. to 10:15 P.M. and then an intermission for sleep! Back at it again at 6:00 A.M. and straight through to 4:00 P.M. If only I didn't have to sleep! The gear worked FB — no troubles at all. Elevation: 5000 feet. Had rig placed on box in back seat of car. I sat on the other side of seat; not the best of operating conditions, but lots of fun." — *Rosemary Robin, W6PJF/6.* . . . "Intercommunication between our two units was maintained by means of SCR-522s on 144 Mc. to permit a complete stations-worked list by bands to be kept up to date at both operating positions. This was invaluable

The Pasadena Short Wave Club called their FD venture "Operation Sunstroke"! Operating from the Garvey Hills, they kept seven transmitters on the air. With Jerome Hawkes, W6WXL, in charge, the 2-meter position is kept busy making contacts.

since it permitted rapid checking to prevent duplication of contacts, especially when changing bands or operators." — *Wisconsin Valley Radio Association, W9RQM/9.* . . . "Our program was one of a competitive nature within the club, with all the best c.w. operators doing the brasspounding and others serving as log men. One team was allowed to operate only on 40 meters, the second group could work anything but 40. We felt that c.w. was the fastest means of communication for the power involved as we wished to gain the 30-watt multiplier. Our procedure proved itself as this time we made well over a hundred more contacts than last year. The whole deal was run off with a great deal of secrecy between the two teams. The 40-meter gang had a long wire about 2 or 3 full waves long, erected over water. The 80-meter gang pulled a sneak attack with an Army surplus balloon supporting a 250-foot vertical." — *Findlay Radio Club, W8FT/8.* . . . "Three days before Field Day we were presented with six inches of snow. We set up the FD tents and equipment in the snow and mud; it wasn't until Sunday that the snow melted off. It rained almost continuously, and we had several bad thunderstorms. One was so violent that we had to shut down our receivers for more than an hour until it passed over. One lesson that we learned is to ground all equipment before the FD starts, as static discharges were flying from every piece of gear to ground, before we managed to get things grounded." — *Copper City Gang, W7CJN/7.* . . . "The laugh of the trip came from a W8 who said to our operator on 80 just before FD ended: 'We are probably the only two stations on the air not in FD.' We had to break the news to him gently! All agreed the FD was a lot of work — and lots of fun. Look for W3PKV/3 next year." — *Northeast Radio Club, W3PKV.* . . . "On complaint of a neighbor, we were investigated by Provincial Police to see if we were a Communist Group!" — *Frontier Radio Association, VE3WD.* . . . "At last a Field Day that wasn't the 'Battle of the Elements.' Instead it was the 'Battle of the Bugs,' the crawling, flying kind, millions of them!" — *Cleveland Brasspounders Association, W8BWA/8* . . . "Some new operating twists were tried and proved to be very popular. Two operators were used at a time with twin 'phones. One operator handled the key while the other did the logging and handled the check list. In this way we actually had fifteen out of sixteen operators working and our slower men were becoming accustomed to FD operation and increasing their code speed." — *Candlewood Amateur Radio Association, W1VB/1.* . . . "An accident in the area between an Army truck and a telegraph pole on Sunday morning deprived the entire community of electric power for more than an hour, but FD operations continued without our knowing about the shortage of power." — *Mars Amateur Radio Society, W3PGA/3.* . . . The gals were out on Field Day, too! W6FXD/6, operated by the San Diego Young Ladies' Radio League, set up a two-transmitter station in a trailer at Linda Vista Mesa near San Diego. Operating on 3.5, 7, 14 and 28 Mc., they turned in a very respectable score, trimmed quite a few of the male groups. So far as is known, this is the first all-YL station ever to have participated in a Field Day. . . . "All equipment was taken in three small boats about 5 miles up the Ottawa River from Deep River and the station set up in the 'Wilds of Quebec.' The spot must have been a watering place, as deer were heard in the bush several times during the night. We got a lot of fun and experience out of our first FD outing even though our score was rather low, but next year we'll really be in there!" — *Deep River Radio Club, VE3ARX.*

CLUB AGGREGATE-MOBILE SCORES

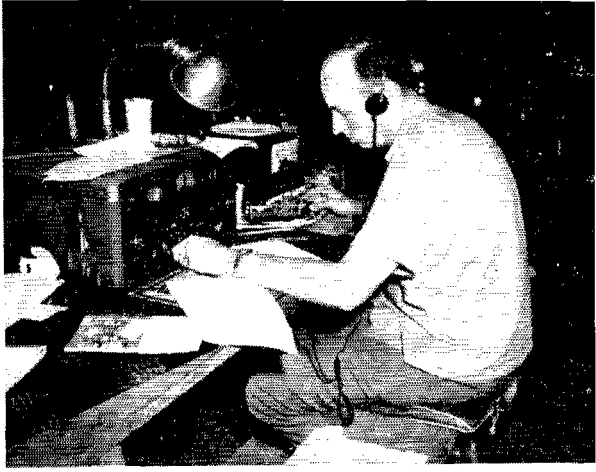
Associated Radio Amateurs of Long Beach	10,791
Palo Alto Amateur Radio Club	1417
Canton Amateur Radio Club	837
Mitchell Amateur Radio Club	418
Providence Radio Assn.	81
Austin Amateur Radio Club	54

The task of reporting results to Headquarters was a rather large one for those FD participants

♦

A station wagon plus a few assorted pieces of lightweight ham gear makes a convenient set-up for operation in FD or during emergencies. This is W6GTM/6, operated on Silver Strand near San Diego, Calif., by W6GTM and W6HQM. The 6L6-807 rig and HRO were powered from a combination of storage batteries, dynamotor and B batteries.

♦



Typical of many of the Field Day operating positions was this tent-protected set-up of the Potomac Valley Radio Club, located at Hopewell Tower, Pa. The old contest maestro himself, W4KFC, was caught by the photographer busily racking up contacts on 7 Mc.

who had to copy logs and make final recapitulations of activity. To all those who sent us the many complete and interesting reports of 1949 Field Day operations, we extend our hearty thanks.

The Fourteenth FD will again be scheduled for a week end in June. Watch *QST* for an announcement of the exact dates. Meanwhile, start your planning *now* for the 1950 FD!

—*J. M.*

CLASS 1

Scores are tabulated according to the number of transmitters operated simultaneously at each field station. The figures and letters following each listing indicate the number of contacts, the power or power inputs used, the number of participants at each station, and the final score. The "power classification" used in computing the score is indicated by the letters A, B or C after the number of QSOs shown. A indicates power up to and including 30 watts (multiplier of 3); B indicates power over 30, up to and including 100 watts (multiplier of 2); C indicates over 100 watts (multiplier of 1). More than one letter indicates that at times power inputs fell within different classifications.

One Transmitter

WØSMT/Ø	St. Paul Radio Club, Inc.	502-	A-11-	4518
W1EH/1	South Lyme Beer, Chowder and Propagation Society	425-	A- 7-	4068
W8HQ/8	Tusco Radio Club	397-	A- 4-	3717
W6CDR/6	(nonclub group)	228-	A- 4-	3415
W8WZ/8	Central Ohio Radio Club	312-	A-15-	3069
W2UBU/2	(nonclub group)	295-	A- 4-	2880
W2JC/2	Bloomfield Radio Club	291-	A-10-	2844

"On location" at W6FXD/6, all-YL-operated two-transmitter FD station of the San Diego Young Ladies' Radio League. Josephine Fredenburgh, W6YXI, and Blanche Weiss, W6BLF, *foreground*, have just checked the generator power supply. The truck housed a rig operating on 80-, 40- and 10-meter c.w. Another rig for 20- and 75-meter 'phone was set up in a trailer.

W3ALB/3	York Radio Club	289-	A- 5-	2826
W3IKP/3	Beacon Radio Amateurs	294-	A- 7-	2781
W1NJM/1	Conn. Wireless Assn.	278-	A-10-	2748
W8VVL/8	Queens City Emergency Net	303-	A- -	2727
K8AIR/8	Air Material Command Amateur Radio Club	299-	A- 8-	2691
W7FLB/7	Butte Amateur Radio Club	168-	A- 8-	2605
W9UWT/9	New Albany Amateur Radio Club	249-	A-14-	2466
WØWJA/9	(nonclub group)	248-	A- 7-	2457
W4NEC/4	Alamance Radio Club	236-	A- 4-	2358
WØRFT/Ø	Northeast Iowa Radio Amateur Assn.	220-	A- 6-	2205
W3KSR/3	(nonclub group)	243-	A- 3-	2187
W4TM/4	The Jackson Radio Club	205-	A-10-	2115
W7CJN/7	Copper City Gang	124-	A- 5-	2011
W9VTI/9	(nonclub group)	218-	A- 3-	2007
W5KFW/5	(nonclub group)	147-	A- 4-	1984
W8MF/8	Calhoun Area Radio Club	183-	A- 9-	1872
WØØWY/Ø	Sioux Falls Amateur Radio Club	281-	B- 8-	1848
KH6RS/KH6	Maui Amateur Radio Club	180-	B-19-	1845
W7ABT/7	Glacier Radio Club	135-	A-12-	1822
KH6WO/KH6	(nonclub group)	132-	AB-10-	1813
W9DAY/9	Wright Junior College Radio Club	200-	A- 5-	1800
W8ULU/8	(nonclub group)	197-	A- 3-	1773
W2WFU/2	Rochester Amateur Radio Assn.	160-	A- 4-	1665
W2WER/2	(nonclub group)	184-	A-11-	1656
W8DNZ/8	Aerial Club, Akron, Ohio	181-	A- 8-	1629
W1HY/1	(nonclub group)	179-	A- 5-	1611
W8COV/8	(nonclub group)	177-	A- 4-	1593
W3PFT/3	Reading Radio Club	175-	A-14-	1575
W1ALW/1	(nonclub group)	148-	A- 5-	1557
W1GB/1	The New Haven Amateur Radio Club	139-	A- 5-	1494
W2TIO/2	Newark (N. Y.) Amateur Radio Club	162-	A- 6-	1458
W3BYB/3	V.H.F. Group of York Road Radio Club	137-	A- 6-	1458
W3HNW/3	(nonclub group)	242-	B- 4-	1452
W8YOM/8	Muskingum Amateur Radio Club	157-	A-10-	1413
W4VT/4	The Mid South Amateur Assn.	187-	B-12-	1434
W4FCU/4	(nonclub group)	126-	A- 6-	1359
W5LUX/5	(nonclub group)	95-	A- 6-	1305
K9NRD/9	Quad City Amateur Radio Club	217-	B-10-	1302
W7CGK/7	(nonclub group)	113-	B- 7-	1242
W8RTR/8	The Canton Amateur Radio Club	200-	B-20-	1230
W3NDZ/3	(nonclub group)	111-	A- 3-	1224
W1MDE/1	Shoreline Amateur Radio Club	178-	B- 6-	1218
W9DDG/9	Lakeshore Radio Club	133-	A- 4-	1197
W9QIX/9	(nonclub group)	130-	A- 3-	1170
W7ED/7	Gallatin Amateur Radio Club	86-	A- 5-	1161
W2KQP/2	(nonclub group)	332-	B- 4-	1098
WØFPC/Ø	(nonclub group)	122-	A- 4-	1098
WØDBE/Ø	Mitchell Radio Amateur Club	66-	A- 6-	1044
W8PUF/8	Adrian Amateur Radio Club	113-	A- 6-	1017
VE1JV	Pictou County Amateur Radio Club	98-	A-15-	1017
W6MHX/6	(nonclub group)	87-	B- 3-	1008
WØUCU/Ø	(nonclub group)	97-	A- 4-	1008
K2NRK/2	U. S. Naval Reserve Unit	104-	A- 3-	936

VE6CS	Northern Alberta Radio Club and No. 2 Area Air Force Amateur Radio System	174-	C- 6-	859
W4CGY/4	(nonclub group)	84-	A- 5-	818
W1BIH/1	CQ Radio Club	63-	A- 4-	792
W1ACT/1	Fall River Amateur Radio Club	87-	A- -	783
W5OVX/5	(nonclub group)	32-	A- 3-	769
W1LZI/1	(nonclub group)	55-	A- 3-	720
W8OPC/8	South East Amateur Radio Club	108-	B- 3-	648
W7IMM/7	Blue Mountain Radio Club	71-	A- 3-	639
KØNRG/Ø	(nonclub group)	70-	A- 3-	630
VO6BC	Goose Bay Amateur Radio Club	66-	A- -	594
W1QMF/1	Newington Amateur Radio Club	63-	A-11-	567
W3KYR/3	Boy's Club of St. Marys Amateur Radio Society	60-	A- 4-	540
W7LXW/7	Southwestern Oregon Radio Club	57-	AB- -	538
W9ART/9	Green Bay Mike and Key Club	60-	B-12-	522
W4BX/4	Charlotte Amateur Radio Club	71-	B- -	426
W2QXE/2	(nonclub group)	45-	A- 3-	405
WØRVM/Ø	(nonclub group)	59-	B- 4-	324
WØYJO/Ø	Howlin' Wind Radio Club	39-	B- 5-	234
KØNRI/Ø	(nonclub group)	71-	C- 8-	213
KH6IK/KH6	Kauai High School Radio Club	56-	C-25-	213
W9AML/9	Kickapoo Radio Operators	161-	C-15-	186
W7BIS/7	Capital City Radio Club	10-	C- 5-	45
Two Transmitters Operated Simultaneously				
W9RQM/9	Wisconsin Valley Radio Assn.	688-	A-25-	6435
W9LVR/9	The Milwaukee Amateur Radio Club	546-	A- 4-	5319
W8MRM/8	The Motor City Radio Club	550-	A-14-	5175
W1QOA/1	Bridgeport Radio Amateur Club	515-	A-12-	4860
W8ZZ/8	Detroit Amateur Radio Assn.	477-	A-13-	4518
W6TO/6	San Joaquin Valley Radio Club	326-	A-15-	4401
WØDEP/Ø	(nonclub group)	461-	A- 6-	4284
W9CRU/9	Michigan City Amateur Radio Club	411-	A- 8-	3924
W8SWS/8	Piqua Radio Club	421-	A- -	3789
W4ZV/4	Richmond Amateur Radio Club	411-	A-45-	3726
W8FT/8	Findlay Radio Club	375-	A-20-	3600
W1KKS/1	Manchester Radio Club	344-	A- 6-	3564
W1VB/1	Candlewood Amateur Radio Assn.	358-	A-16-	3438
W3NMR/3	Lancaster Radio Transmitting Society	353-	A-10-	3312
W3ED/3	York Radio Club	365-	A- 7-	3295
W2QYV/2	Niagara Radio Club, Inc.	366-	A- 6-	3294
W8CCO/8	Northeast Amateur Radio Club	339-	A-15-	3294
WØAAB/Ø	Electron Club of Denver	210-	A- 9-	3172
W7KKA/7	Tucson Radio Clubs	328-	B-29-	3123
W3PKV/3	Northeast Radio Club	335-	A-13-	3015
W4HHO/4	Charleston Amateur Radio Club, Inc.	292-	A-14-	2907
WØMJC/Ø	(nonclub group)	187-	A-12-	2889
W3ISE/3	(nonclub group)	283-	A- 4-	2772
W7IIZ/7	Valley Radio Club	176-	A-12-	2713
W1ORS/1	Strattford Amateur Radio Club	264-	A-15-	2601
W3NQA/3	Warren Pa. Radio Amateur Club	260-	A-12-	2565
W3KEK/3	Harrisburg Radio Amateur Club	280-	A-15-	2520
W2EFU/2	Schenectady Amateur Radio Assn.	239-	A-15-	2376
W5BYX/5	Sierra Amateur Radio Assn.	156-	A- 3-	2308
W8YMO/8	(nonclub group)	282-	AB- 9-	2298
WØVML/Ø	QRM Club	229-	A-12-	2286
W5FPH/5	Winkler Amateur Radio Club	252-	B- 6-	2268
VE3GZ	Stratford Amateur Radio Club	248-	A-15-	2232
W6FXD/6	San Diego Young Ladies Radio League	247-	A- 5-	2223
W8DFK/8	Brass and Java League	201-	A- 4-	2034
WØHQA/Ø	Des Moines Radio Amateur Assn.	215-	A-10-	1935
W2GGN/2	Queens Radio Amateurs	318-	B-11-	1908
W9GLY/9	Electron Club	212-	A- 5-	1908
W4DXI/4	(nonclub group)	288-	B- 5-	1878
VE2WK	Westham Radio Club	179-	A- 4-	1836
W3MCG/3	(nonclub group)	184-	A- 5-	1656
W2BXK/2	Brooklyn Polytechnic R. C.	147-	A- 8-	1548
W7BTV/7	(nonclub group)	112-	AB- 3-	1534
W3QZF/3	Horseshoe Radio Club	166-	A- -	1494
W6ZOJ/6	Paso Robles Radio Club	84-	A- 4-	1471
W8OJT/8	Twin Saults Radio Club	134-	A- 6-	1431
W2PVG/2	Elmira Amateur Radio Assn.	195-	AC- 9-	1359
VE7EP	(nonclub group)	140-	AB- 5-	1336
VE3AEA	Peterboro Amateur Radio Club	144-	A-13-	1296
VE3ARX	Deep River Radio Club	121-	A- 5-	1224
WØVDU/Ø	Northwest St. Louis Amateur Radio Club	192-	AB- 8-	1158
W9BCC/9	Point Radio Amateurs	125-	A- 7-	1125
W2UTH/2	Rochester Amateur Radio Assn.	157-	AB- -	1056
W8URD/8	Case Institute of Technology	143-	A- 4-	1044
W1KAE/1	Submarine Signal Amateur Radio Club	149-	AB- 9-	1032
W8VZ/8	(nonclub group)	110-	A- 6-	990
W7GML/7	Laramie Amateur Radio Club	106-	B- 6-	954
W7KRW/7	Southside Radio Amateur Club	81-	AB- 6-	936
W5USN/5	(nonclub group)	250-	C- 6-	825
W2SV/2	Sunrise Radio Club	309-	AB-16-	820
W7PL/7	Pendleton Amateur Radio Club	67-	AB-11-	783
W5JNI/5	Amateur Radio Club of the University of Arkansas	114-	AC- 6-	648
W4FLW/4	(nonclub group)	54-	B- 3-	504
WØEEE/Ø	Missouri School of Mines Radio Club	69-	AB- 4-	489
WØQDN/Ø	Huron Radio Club	132-	C- 8-	477
VE4RM	Winnipeg Amateur Radio Club	40-	B- 6-	390
W2SFW/2	Binghamton Amateur Radio Club	27-	A- 6-	378
W3FXG/3	Phila. High Frequency Radio Club	40-	A- 5-	360
W6BML/6	Mt. Shasta Amateur Radio Club	106-	C- 9-	159
W3LSS/3	(nonclub group)	9-	A- 3-	121
Three Transmitters Operated Simultaneously				
W8TQ/8	Dayton Amateur Radio Assn.	837-	A-20-	7794
W2EWT/2	K B T Radio Club	834-	A-23-	7749
W9AIU/9	Egyptian Radio Club	712-	A-20-	6915
WØGM/Ø	(nonclub group)	681-	A-16-	6354
W2QW/2	Raritan Valley Radio Club	578-	A-11-	5427
W9UDU/9	The Racine Megacycle Club	530-	A-15-	4995
W6SF/6	Stockton Amateur Radio Club	327-	AB-15-	4698
W9ERU/9	(nonclub group)	485-	A-10-	4608
W4MB/4	Nashville Amateur Radio Club	545-	B-40-	4170
W5YJ/5	Oklahoma A & M Amateur Radio Club	305-	A-11-	4482
W5EST/5	Bartleville Amateur Radio Club	130-	AB-24-	4423
W2WUX/2	Utica Amateur Radio Club	472-	A-15-	4311
W8ODJ/8	Buckeye Shortwave Radio Assn.	472-	A- -	4239
W8EYE/8	Columbus Amateur Radio Assn.	425-	A-30-	4059
W8KS/8	Westlake Amateur Radio Assn.	426-	A-10-	3969
W8OG/8	Springfield Amateur Radio Club	420-	A-34-	3969
W5LOV/5	Oklahoma County Emergency Outlet	438-	B-12-	3942
W3DIM/4	Capital Key and Mike Club	412-	A-14-	3933
W3AIR/3	Rock Creek Amateur Radio Assn.	399-	A-16-	3816
W2LR/2	Lake Success Radio Club	396-	A-14-	3789
W9RNM/9	Tri-Town Radio Amateur Club	393-	A- 6-	3762
W2LY/2	South Jersey Radio Assn.	393-	A-12-	3537
W2NVK/2	Livingston Amateur Radio Club, Inc.	433-	AB-16-	3444
W4MN/4	Palmetto Amateur Radio Club, Inc.	380-	A-12-	3420
W6EMM/6	Two Meter & Down Society	190-	A- 8-	3105
VE1FO	Halifax Amateur Radio Club	299-	A-12-	2916
W6MIO/6	(nonclub group)	283-	AB- 5-	2731
WØPOV/Ø	Suburban Radio Club	321-	AB-12-	2653
W4ETN/4	Chattanooga Amateur Radio Club	267-	A- 8-	2646
WØADJ/Ø	Black Hills Amateur Radio Club	264-	A-24-	2601
VE3ASM	Kingston Amateur Radio Club	289-	A-11-	2601
W6BEY/6	Imperial Valley Amateur Radio Assn.	170-	A- 9-	2497
W9KLH/9	Chicago Radio Traffic Assn	249-	A-10-	2466

W7GYE/7	Radio Club of Tacoma, Inc.	147-	A-13-	2349
W8CXL/8	Scioto Valley Amateur Radio Club	288-	AB-25-	2337
W1VW/1	(nonclub group)	227-	A-10-	2286
W7LAB/7	Ogden Amateur Radio Operators Club	209-	B-11-	2115
W9MTO/9	Western Illinois Radio Club	208-	A- 8-	2115
W7CT/7	Southern Montana Amateur Radio Assn.	233-	B- -	2097
W3OFL/3	Schuylkill Amateur Radio Club	214-	A- 9-	2061
W3VV/3	McKean Radio Club	339-	A-15-	2034
W3PIE/3	Ft. Necessity Amateur Radio Assn.	191-	AB- -	2000
W1HGV/1	Nashua Mike and Key Club	198-	A- 5-	1917
W4NC/4	The Winston-Salem Amateur Radio Club	317-	B- -	1902
W5IAS/5	Tulsa Amateur Radio Club	152-	AB- 8-	1845
W5HGT/5	Louisiana Tech. Radio Club	602-	AB- 7-	1806
W8CIA/8	The Louisville Amateur Radio Club	194-	AB- 4-	1506
W5MS/5	Corpus Christi Radio Club	141-	AB- -	1282
WØSEE/Ø	Council Bluffs Radio Operators Club	243-	AC-11-	1263
VE3BIK	Mohawk Amateur Radio Society	131-	A- 8-	1224
W1JP/1	Providence Radio Assn.	199-	B- -	1194
K5NRN/5	Fort Smith Amateur Radio Club	194-	B-11-	1164
W1AZV/1	(nonclub group)	129-	AB- 3-	1128
WØLLP/Ø	Northern Colorado Amateur Radio Club	266-	AB-12-	1110
W3IND/2	Phila. Short Wave Club	96-	A- 9-	1089
W1MHL/1	Waltham Amateur Radio Assn.	162-	ABC-12-	993
W1HOB/1	Parkway Radio Assn.	159-	B-11-	954
W3LEL/3	(nonclub group)	142-	ABC- 6-	921
W9HKA/9	Iroquois County Amateur Emergency Corps	116-	AB- 7-	870
W4NTL/4	Anniston Alabama Radio Club	159-	ABC- 7-	828
W9DUD/9	(nonclub group)	86-	AB- 5-	678
W9NGI/9	Society Radio Operators	142-	AC- -	534
W3TXZ/3	Radio Assn. of Erie	56-	A-14-	504
W4LNF/4	Kingsport Amateur Radio Club	47-	A-11-	423
W3DIS/3	The Darby Creek Radio Club	66-	AC- 6-	303
W2PQZ/2	(nonclub group)	106-	AC- 5-	168
W5FGE/5	Hattiesburg Amateur Radio Club	30-	BC- -	54

Four Transmitters Operated Simultaneously

W8BWA/8	Cleveland Brasspounders Assn.	781-	A- 5-	7272
W9CWP/9	York Radio Club	777-	A-16-	7218
WØTW/Ø	Denver Radio Club	508-	A-28-	7209
W6GM/6	Citrus Belt Amateur Radio Club	475-	A-12-	6615
W9EDK/9	Brasspounders and Foamblowers	641-	A- 9-	6003
W3GJY/3	Beaver Valley Amateur Radio Assn.	634-	A-10-	5706
W8COE/8	Charleston Amateur Radio Club	758-	AB-12-	5505
W5MPZ/5	Sandia Base Radio Club	405-	AB-18-	5143
W9DXU/9	Polecats Emergency Corps of The Hamfesters Radio Club	544-	A-15-	5130
W9ESJ/9	Milwaukee Amateur Emergency Corps	648-	AB-15-	5091
W2FK/1	Westchester Amateur Radio Assn.	520-	A-22-	4905
W2JV/2	The Nutley Amateur Radio Club	545-	A- 8-	4905
W4VP/4	Amateur Radio Transmitting Society	523-	A- -	4707
W9PRO/9	Optimistic Operators	487-	A- 9-	4518
W9LI/9	Elgin Amateur Radio Society	557-	AB-14-	4341
VE3WD	Frontier Radio Assn.	455-	A-20-	4230
W9BAF/9	The Joliet Amateur Radio Society	441-	A-22-	4194
W2AVZ/2	Hamilton Township Radio Assn.	464-	A- -	4176
W3GAG/3	Phila. Wireless Assn.	453-	A- 6-	4077
WØFZO/Ø	Sioux City Amateur Radio Club	645-	B-35-	4032
W2US/2	Suffolk Amateur Radio Club	422-	A-19-	4023
W2KTF/2	Mid-Island Radio Club	442-	A- -	4014
W9CAF/9	Chicago Amateur Radio Club	424-	A-20-	3816
W8OAJ/3	Mercer County Radio Assn.	392-	A-19-	3753
W8VY/8	Kalamazoo Amateur Radio Club	615-	B-14-	3690
W3NF/2	Delaware-Lehigh Amateur Radio Club	407-	A-17-	3663
W8YIZ/8	Thumb Area Amateur Radio Assn.	570-	B-15-	3510
W8WSX/8	Civilian Amateur Radio Monitoring and Relay System	448-	AB-27-	3507
W2SNN/2	Yonkers Radio Club	450-	AB- -	3453
WØHUI/Ø	Southwest Missouri Amateur Club	350-	A-28-	3285
W9DUK/9	The Delaware Radio Assn.	333-	AB-18-	3087
W6IFZ/6	Richmond Amateur Radio Club	214-	AB- 6-	2902
VE6NQ	The Calgary Amateur Radio Assn.	304-	A-10-	2871
W8WMZ/8	The Fort Steuben Radio Club	284-	A-13-	2681
W1BT/1	Manchester Radio Club	290-	A- -	2610
W1PZ/1	Pocahontas Radio Club	264-	A-10-	2601
W2PW/2	Ithaca Mike and Key Club	297-	AB-20-	2577
W2WA/2	Huntington Radio Club	397-	B-12-	2538
WØAVM/Ø	Ar-Sar-Ben Radio Club	433-	ABC-13-	2508
W7LRA/7	Utah Amateur Radio Club	328-	AC-20-	2439
W9DUM/9	Twin-City Radio Club	296-	AB-30-	2112
W9EIA/9	New Castle Radio Assn.	215-	A-10-	2070
W2KOJ/2	Watchung Valley Radio Club	253-	AC-12-	2043
W9ERN/9	Tri-State Amateur Radio Society	257-	AB-16-	1842
VE7ACS	University of British Columbia Amateur Radio Assn.	186-	AB- 6-	1800
VE1ND	Fredericton Radio Amateur Club	220-	AB-15-	1764
WØIAC/Ø	Missouri Valley Radio Club	257-	B- -	1542
W5KWR/5	Santa Fe Radio Club	297-	AB-10-	1494
W3WA/3	Baltimore Amateur Radio Communications Society	162-	A-12-	1458
W7NL/7	The North Seattle Radio Club	134-	B-15-	1449
W1GAG/1	The Quannapowitt Radio Assn.	193-	AB-12-	1326
W5AXD/5	Central Louisiana Radio Club	201-	B- -	1206
W1KEX/1	Great Bay Radio Assn.	106-	A-15-	1179
W8EEY/8	Midland Radio Club	104-	A-14-	936
W4BFB/4	Mecklenburg Amateur Radio Society	138-	B- 6-	828
W4MOE/4	Asheville Amateur Radio Club	86-	AB- 6-	759
W5GEM/5	N. M. State College Radio Club	45-	A- 7-	607
W9ART/9	Green Bay Mike and Key Club	114-	AB- 8-	558
VE7ES	Totem Amateur Radio Club	118-	AC- 6-	549

Five Transmitters Operated Simultaneously

W4FU/4	Ohio Valley Amateur Radio Assn.	1198-	A-15-	11,007
W6FET/6	Valley Radio Society	610-	A-30-	8572
W2AI/2	Central Jersey Radio Club	892-	A-21-	8253
W7GP/7	West Seattle Amateur Radio Club	542-	A-24-	7708
W6YU/6	San Mateo County Amateur Radio Club	470-	A-20-	6682
W1CJH/1	Narragansett Assn. of Amateur Radio Operators	724-	A-14-	6516
W6RFR/6	Crescenta Valley Radio Club	477-	A-15-	6439
W2ZQ/2	Delaware Valley Radio Assn.	680-	A-15-	6363
W2BVL/2	Nassau Radio Club	635-	A-15-	5976
W2ZT/2	Ridgewood Radio Club	628-	A-24-	5895
W6NIK/6	(nonclub group)	405-	A-10-	5859
W9SWQ/9	Four Lakes Amateur Radio Club	619-	A-20-	5796
W9RE/9	Michiana Amateur Radio Club	482-	A-34-	4788
WØCET/Ø	Kaw Valley Radio Club	697-	ABC- 5-	4170
W8FM/8	Grand Rapids Amateur Radio Assn.	523-	AB-31-	4092
W2GM/2	Albany Amateur Radio Assn.	432-	AC-12-	4017
W9SW/9	Chicago Suburban Radio Assn.	433-	A-13-	3897
W2AR/2	Northern New Jersey Radio Assn.	417-	A-39-	3753
VE3BER	Clinton Amateur Radio Club	379-	A-15-	3564
W7MID/7	Saguaro Radio Club	288-	A-10-	3550
K6AIR/6	Hamilton Air Force Base Amateur Radio Club	245-	A-10-	3307
VE3CY	Kitchener Waterloo Radio Club	311-	A-22-	3060
VE1LC	Loyalist City Amateur R. C.	323-	A-15-	3042
W1OSA/1	Pittsfield Radio Club	458-	AB-15-	2943

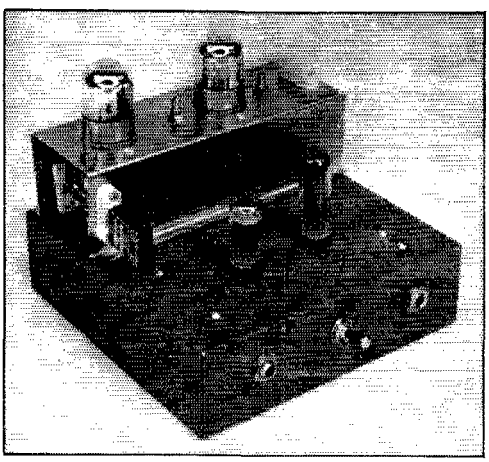
(Continued on page 106)

A Regenerative Oscillator for Harmonic-Type Crystals

144-Mc. Output from One Dual Triode

BY GUS TREUKE,* W6DSR

In designing a mobile rig for 144 Mc., crystal control is practically a necessity if the signal quality is to be above reproach. If the size and current drain of such a transmitter are to be held to the limits imposed by mobile operation it is desirable to start with as high a crystal frequency as possible. The writer tried 48-Mc. crystals with these thoughts in mind, but the results left much to be desired. Output from the oscillator was low,



A complete low-powered 144-Mc. transmitter built in the Headquarters lab, using the circuit described by W6DSR. The main chassis and modulator are from the 420-Mc. unit described in May, 1949, *QST*.

at best, and the crystals were expensive and difficult to obtain. The crystal oscillator described here was developed in the course of a search for something better.

Using 24-Mc. crystals that are relatively inexpensive and readily obtainable, this circuit provides more output on 72 Mc. than is developed on 48 Mc. with the crystals referred to above. With a dual triode it is possible to run the second section as a doubler, giving more output on 144 Mc. from a single tube than is obtained with a 48-Mc. oscillator and the section running as a tripler.

Basically the oscillator circuit is none other than our old friend the "TNT," so popular for self-controlled oscillators of a bygone era. The only difference is the inclusion of a crystal shunted by an inductance between the cathode and ground. The purpose of the inductance (L_2 in the schematic diagram) is, in addition to providing a d.c. path from cathode to ground, to resonate with the capacitance of the crystal and its holder at the desired frequency. The effect at that frequency, in this case 72 Mc., is then that of a pure high resistance making the circuit degenerative and opposing self-oscillation. The crystal, however, operates as an extremely high-Q series-tuned circuit at an odd overtone of the crystal frequency, reflecting a low pure resistance in shunt with the equivalent high resistance in the cathode circuit. Stable crystal-controlled oscillation thus takes place at the overtone frequency, but the circuit is degenerative at frequencies immediately either side.

A Complete 144-Mc. Mobile Transmitter

The schematic diagram, Fig. 1, shows the circuit of a mobile transmitter using this oscillator circuit. Three 7F8s and a 6V6GT are used and the circuit is conventional in all respects following the first stage. Output from the first triode section is on 72 Mc., the second half working as a doubler to 144 Mc. The output stage is another 7F8 connected as a push-pull amplifier. The 6V6 modulator is driven by the second half of another 7F8, the first section of which operates as a grounded-grid amplifier, with the microphone in its cathode circuit. This arrangement provides an exceedingly simple modulator, doing away with the necessity for a microphone transformer and battery.

As with all regenerative crystal oscillators, this one must be checked with care to be sure that oscillation is crystal-controlled. A low-range milliammeter (0–5 ma. or so) should be inserted between the doubler grid leak, R_2, and ground. Without plate voltage on the doubler or final, about 100 volts should be applied to the oscillator. Swing the oscillator plate tuning condenser, C_1, toward minimum capacitance while watching the meter. A sharp rise in grid current may indicate that the crystal is "taking hold," and the quality of the note should be checked. This may be done by monitoring 72 or 144 Mc., or if no receiver capable of tuning this frequency is available the output of the oscillator may be fed into a

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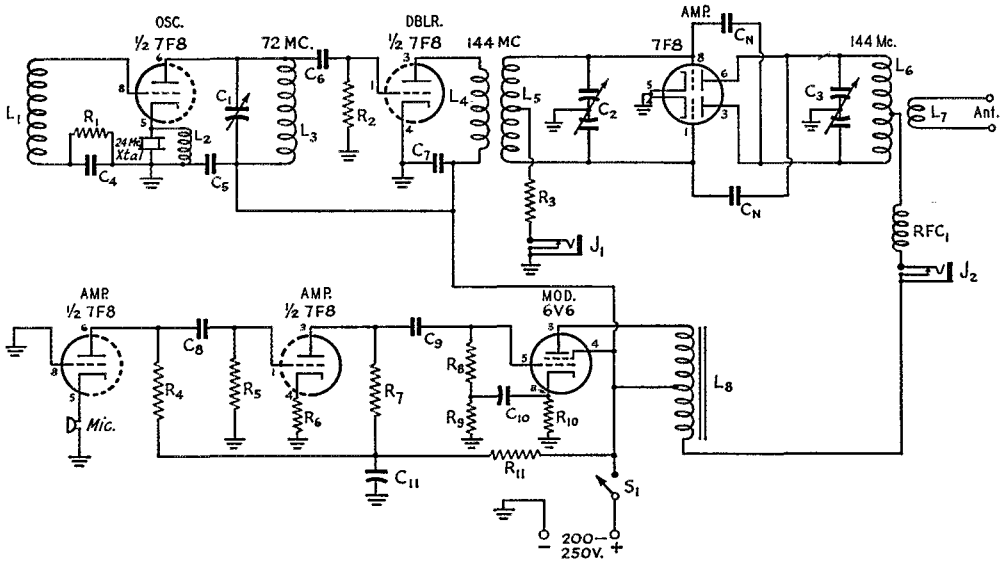


Fig. 1 — Schematic diagram of the 144-Mc. mobile transmitter described by W6DSR.

C_1 — 19-$\mu\mu$fd. midget variable (Johnson 160-110).
C_2, C_3 — 11-$\mu\mu$fd. midget butterfly variable (Johnson 160-211).
C_4 — 100 $\mu\mu$fd.
C_5, C_7 — 680 $\mu\mu$fd.
C_6 — 47 $\mu\mu$fd.
C_8, C_9 — 0.01 μfd.
C_{10} — 25-μfd. 50-volt electrolytic.
C_{11} — 8-μfd. 450-volt electrolytic.
C_N — 72-ohm Twin-Lead approx. 1⅜ inches long.
R_1 — 4700 ohms.
R_2, R_4, R_7 — 33,000 ohms.
R_3 — 1000 ohms.
R_5 — 0.47 megohm.
R_6 — 330 ohms.
R_8, R_9 — 0.22 megohm.
R_{10} — 500 ohms, 1 watt.
R_{11} — 10,000 ohms, 1 watt.
$R_{1\text{-}9}$ are ½-watt.
L_1 — 13 turns No. 28 d.s.c., ¼-inch diam., close-wound.
L_2 — 2½ turns No. 28, ⅜ inch long, on ½-inch slug-tuned form.
L_3 — 4 turns No. 18 tinned, ½-inch diam., spaced ⅛ inch (B & W Miniductor, No. 3002).
L_4 — 3 turns, similar to L_3.
L_5 — 6 turns No. 14 enam., center-tapped; outside diameter such as to make snug fit inside L_6.
L_6 — 4 turns No. 18 tinned, ½-inch diam., center-tapped. Space turns 1/16 inch, and allow ¼ inch at center for L_7.
L_7 — 3 turns No. 22 enam., at center of L_6.
L_8 — Primary of a universal push-pull output transformer.
J_1, J_2 — Closed-circuit jack.
RFC_1 — 2.5 mh.
S_1 — S.p.s.t. toggle switch.

receiver tuned to about one-third of 72 Mc., or 24 Mc. If the receiver has no r.f. stage sufficient 72-Mc. r.f. should reach the mixer grid to beat with the third harmonic of the receiver oscillator. If the receiver has an r.f. stage it may be necessary to remove the tube and run a length of *insulated* wire into the plate contact of the socket.

The critical factor in obtaining crystal-controlled oscillation is the value of L_2. This coil may be made slug-tuned, or it can be air-wound and the inductance adjusted by squeezing or spreading the turns. When the crystal is controlling the frequency of oscillation doubler grid current will be obtained over a fairly wide range on the plate condenser, C_1, but the frequency of the beat note will change only slightly as the condenser is rotated. If the frequency changes markedly as C_1 is varied L_2 should be readjusted until the oscillation is stable. The value of L_2 also affects the starting of the oscillator as plate voltage is applied, and this factor should be checked when the inductance of L_2 is changed. The optimum point is that at which the oscillator starts readily, without showing a tendency to take off on its own. When the oscillator is working correctly the grid current in the doubler will be zero until the crystal-controlled oscillation starts. There will be a steady rise and fall either side of the peak, with a sudden drop to zero as oscillation stops.

Once the oscillator is functioning correctly plate voltage may be applied to the doubler and C_2 adjusted for maximum grid current in the final stage. Neutralizing of the final stage is done with two lengths of 72-ohm Twin-Lead. The correct length may vary with different layouts; the writer found 1⅜ inches to be the optimum value, but it is suggested that somewhat longer pieces be used at the start. The lengths should be trimmed, equal amounts on each side of the circuit, until there is no change in grid current as the final plate condenser is tuned through resonance with the plate voltage off.

With 200 volts applied to the rig the doubler

(Continued on page 118)

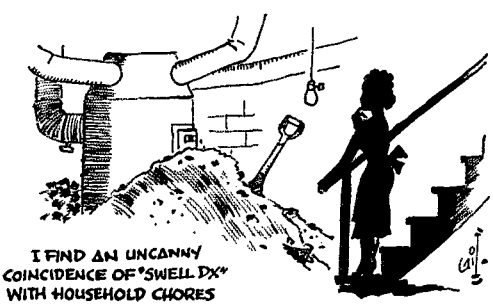
A Ham's Mother Has Her Say

BY DORIS S. COUGHLAN*

EVERYBODY has heard of Whistler's Mother and Mother Machree; but what about the mother of a radio ham? As opposed to her lavender-and-old-lace rivals, this long-suffering creature must be a combination Einstein and Marconi, with the patience of Job, the pixillation of Ralph Edwards, and the metabolism of a jellyfish. Otherwise, her disposition will become QRMed, her brain decidedly off-center fed, her excitation apoplectic. I know: I am the mother of W7LEP.

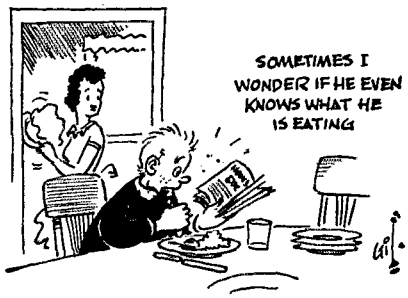
In the dear, dead days when I was blissfully unconscious of the difference between a transformer and a transmitter, life was simple and uncluttered by n.f.m. and c.w. I was actually able to persuade Little Eager Packrat to mow the lawn, remove the ashes, come to meals, and go to bed. Now, however, because of the uncanny coincidence of "swell DX" with any household chore, and particularly with mealtime and bedtime, the grass often reaches alfalfa height, the ashes crowd us out, LEP arrives simultaneously with dessert, and none of us gets much sleep.

But what, after all, I think bitterly, as I bellow like a hogcaller for my be-earphoned son to come to dinner, is a soggy dumpling or a tired omelet



compared to working that last state, or contacting Minsk? Who am I to impede the progress of amateur radio? And when at last LEP appears, does he even know what he is eating? Not for a moment. He either reads and chews, or stares and chews, in glassy-eyed meditation: whether to build a Zepp or a rotary beam antenna.

Time was when I used to gossip at length to friends over the telephone. I'm glad I did while I had the chance. For my son, when rag chewing with his fellow hams, is the most long-winded conversationalist I have yet to hear. He talks in a gibberish peppered with multisyllabled words, of which only the prepositions, articles, and pronouns are understandable to Mom. There is something very disconcerting to a parent's ego about having an offspring who continually not only talks but also reads over one's head. I feel downright embarrassed and apologetic at occasionally having to divert his attention from the rarified atmosphere of *QST* to the need for a haircut.



LEP tries to be patient with his family; but he nearly blows a gasket when we tactlessly run the electric razor, the vacuum cleaner, or even the refrigerator while the bands are hot (and one of them always is!), regardless of long whiskers, dirty rugs, and melting ice cream. It is fortunate that neither the water heater nor the stove is a menace to reception. Otherwise there would be many times when we would perforce join the ranks of the great unwashed and unfed. As it is I have of necessity cultivated a taste for candlelight, as blown fuses are a ritual when the rig is undergoing experimentation — which it practically always is.

The house itself has broken out with a radio rash both outside and inside. The roof, sprouting wires and antennae, resembles a surrealist asparagus patch in metal; and the shingles are chipped and missing from frequent trips across same to adjust these antennae. From the street, the inquisitive passerby is treated to a rear view of the innards of LEP's rig, not to mention the scattering of plug-in doodads on the window sill.

LEP's room is small, originally designed to be a bedroom, and until recently was recognizable as such. Now however, it looks like something that would send Rube Goldberg into a tizzy, and requires a compass and blueprint to locate any of the furniture beneath the accumulation of radio handbooks, magazines, advertisements, order blanks, and parts, both good and discarded.

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The wallpaper is almost completely obscured by QSL cards, maps, licenses, programs, etc., *ad nauseam*. The curtains — what price ruffles? — are stuffed carelessly behind a couple of bias batteries. Dust and flies pass nonchalantly through the two holes that LEP surreptitiously bored in the windowpane for his feed-through insulators.

Atop the transmitter is an ominous sign: Danger — High Voltage! I have never been able to make up my mind whether this is a joke or not. Nor do I care. I wouldn't touch it with a ten-foot pole. Consequently, the windows are just plain filthy most of the time. LEP's table is scrupulously clean; but underneath lurks a labyrinth of wires, plugs, and sockets — each one a potential booby trap to one who is so allergic to electricity that she would as soon take a siesta in the electric chair as replace a blown fuse. As a result, I brazenly permit the Irish feathers to collect until, in the interests of sanitation, I timidly suggest to LEP that perhaps he'd better forsake KL7KQ for a dust mop.

We are an outdoor family, but of late our fishing trips are fraught with discomforts and hazards. Off for a day of fun and fresh air, the three of us plus one wiggly, odoriferous pup are wedged into the front seat; while in the back, in splendid isolation, squats LEP, surrounded by wire, muffled in earphones, endeavoring to tune in his pal back home. I am a jittery driver at best; and it does things to my blood pressure to be jogging

along at a law-abiding pace, and to have LEP shriek "Stop!" I slam on the brakes, visions of corpses, prison bars, and lapsed insurance flashing through my mind, only to hear a reverent exclamation, "Gosh, that's the neatest dipole on that roof I ever saw!"

Arrived at our destination, the rest of us grab poles, baskets, and boots, while LEP remains behind to set up his rig. Once we had only gopher holes, hidden roots, and fallen timber to contend with. Now we have, in addition, fine invisible wires running hither and yon from the car to the top of a tall pine tree, where roosts my son, together with the squirrels and the rest of the nuts.

Ah, yes, life has changed. And sometimes I feel Marconi has crossed me up. Nevertheless, I have a sneaking admiration for these crazy hams I scarcely ever understand. And if at times they get in my hair, well, after all, poor Lacking Enough Power and his friends have their own cross to bear; my corny humor at their expense. Witness this!

Military Amateur Radio System

THE Military Amateur Radio System training program to date has centered chiefly on traffic handling and on the use of Joint Army-Navy-Air Procedures. As the membership increases and as additional facilities become available, MARS chiefs plan to extend the program to include detailed instruction in other communications subjects. The ultimate goal is to provide a source of trained radio personnel for a completely-integrated communications system.

With complete integration a commander could communicate directly with any echelon of command through combinations of wire, relay equipment, and radio. Such a system makes it possible for any echelon of command in one tactical unit to communicate with similar echelons in other tactical units. For instance, the infantryman on the ground can talk to the crew chief of the tank he is following or to the observation plane flying above him. The infantry platoon leader can communicate with another platoon on his flank, the artillery supporting him, or the reconnaissance ahead of him.

Three major levels of communication are served by an integrated system: global, theater of operations, and combat. Certain civil-military telecommunications circuits will handle not only radio, telephone and teleprinter, but also television, facsimile, radar signals, and intercepted radio transmissions.

Maj. General S. B. Akin, chief signal officer of the Army, addressing a group of signal officers recently, pointed out that electronics and telecommunications are the only media "capable of a speed which exceeds that of the supersonic means of warfare now envisioned. Successful defensive countermeasures, electronic or other, against such means are entirely dependent upon telecommunications that will permit the instantaneous interception and transmission of the necessary radar fence and signal intelligence in time to permit effective countermeasures by defending forces."

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

CASUAL LISTENING during an average Sunday morning might give the uninitiated operator the impression that 50 Mc. is nearly devoid of occupancy. But old hands at the game know better. When HC2OT, Guayaquil, Ecuador, heard one signal, W9ZHL, pounding through on 6 at 9:55 A.M. EST on the morning of October 16th he knew it was time to go to work. The chorus of signals that came back to his first CQ was something Steve had often dreamed of, but never expected to hear!

For nearly five hours thereafter he was working stations all over North America, in an opening the likes of which had never been seen by a South American station. Because of its extraordinary interest, we repeat the list of stations worked in full, in the order of the contacts made: W9QKM, W9ZHL, W9UNS, W5BDT, WØINI, WØZJB, W9ZBK, W3BGT, W5GNQ, W8CMS, W2BYM, W2KZG, W3MQU, W2QVH, W1CGY, W4RBK, W9NJT, W3QFL, W9JMS, W9ALU, W6PUZ, W6OB, W3NKM, VE3ANY, W4FI, W8NQD, W5VY, W6ANN, W6ZUX, W5EMY, W6AMD, WØOUE, W7FGG, W6TMI, WØOLY, K6BF, WØQIN, W6BQR, W6SFL, W6ZVD. This ended at 2:42 P.M., but the band reopened at 5:48 and HC2OT worked W5VY, XE1QE and W5ONS, leaving the air at 7 P.M. He returned at 9:50 to work YV5AC. Thus membership in the International Order of Tropical Tramps (open only to amateurs who have crossed the Equator via 50 Mc. to work HC2OT) was augmented by some 40 operators in all call areas and 16 states, Mexico and Canada!

The pile of reports received here leaves little doubt that this was one of the most widespread openings in 50-Mc. history. Not only did it cover most of North America where 50-Mc. stations are active, but several South American countries and KH6 were in on the fun. Our old friend KH6PP began hearing Spanish speech on the low end (HC2OT?) at 3:58 P.M. HST, and LU6DO (50.35 Mc.) was worked with S9-plus signals at 4. LU9EV was raised at 4:03 and LU9MA at 4:07. (Long-winded guy, this KH6PP!) These three stayed in until 4:27, when the band went dead. The signals were very weak at the start, swishing up to S9-plus for ten minutes, then dropping to S1 and swinging between S1 and S9 with about a 30-cycle frequency for 17 minutes before dropping out quite suddenly.

CE1AH, Chuquicamata, Chile, was able to hear very little during most of the time the LUs were working into W and KH6, but Ida did have a QSO with XE1QE at 10:31, and heard another signal, believed to have been W5VY, at 12:59 EST. The band was open to Argentina until 2 A.M. on the 17th, with the LUs running S9-plus, and very steady.

Several LUs were heard and worked by Middle West stations. WØINI, Pleasant Hill, Mo., worked LU6DO, LU9AS and HC2OT. The LUs were in between 8:30 and 9:30 A.M. CST, but HC2OT was heard until 12:35. W9ZHL, Terre Haute, Ind., worked LU6DO and HC2OT. He reports that around 9 A.M. there were numerous Spanish-speaking stations coming through. HC-2OT remained audible until about 1:30 P.M., his signal having been extremely good from 9 A.M. on. At the peak, shortly after 9 A.M. CST, the low part of the band was jammed with rebound signals from various parts of the country, making it sound more like 28 than 50 Mc. W9ZBK, South Bend, Ind., also worked LU6DO and HC2OT at 8:40 and 9:22 A.M. CST, respectively.

These South American openings seem to follow closely on the heels of ionospheric storms. It happened again on the 28th, when, after a mild aurora opening during the evening of the 27th, the band was open to South America at 8:30 A.M. The morning schedule of W1s ZE, DJ, JLK, EKT and NWL was broken up by the appearance of a rip-roaring signal from LU9MA, who had just worked W2BCR, and heard the W1s in contact. This is the first work between Argentina and Northeastern U.S., and may be a North American DX record.

At 4:05 P.M. PST the same day, K6BF, Santa Barbara, Calif., worked ZL4GY, for what is believed to be the first 50-Mc. contact between New Zealand and North America. W6FFF worked ZL1HP immediately after. The signal of W9ZHL has been reported heard by VK2ARG. LU9MA was worked by numerous W6s and W7s on the 28th and 29th, and the band was open between Hawaii and the West Coast almost daily in the latter part of October.

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

Several other items of note appear in the 50-Mc. news for October. Over in Yokohama, Japan, JA2AZ has been running automatic transmissions (reported to be on a 24-hour-a-day basis) on 50.4 Mc. and lower. Numerous reports have come in to your conductor regarding reception of JA2AZ. Without attempt at verification, they are given here in full: Oct. 8th — JA2AZ heard by VK2AH and VK2RU, 4:51 P.M. PST; VK2ARG heard by JA2AZ, 5:51 P.M. PST. Oct. 9th — JA2AZ worked VK2AH and VK2ARG. Oct. 12th — JA2AZ heard by VR2BC, Fiji Islands. Oct. 13th — VK2AH worked JA2AZ, 8 P.M. PST; VR2BC heard JA2AZ. Oct. 15th — ZL1UX heard JA2AZ. Oct. 16th — ZL3OX heard JA2AZ. The automatic transmissions from JA2AZ are turned toward W and KH6 until 7 P.M. PST, and to the South Pacific thereafter. This information is via ZL1-MQ, VK2RU, KH6PP, KH6AR, W3CIR/7, W8GZ, W1MMV and W1CLS. Thanks, boys! Via W3CIR/7 it is also reported that OA4AE was heard by VK4HR on the 13th, around 8 P.M. PST.

Activity on 50 Mc. in KH6 is at an all-time high, with four stations now chasing DX. KH6PP is on 50.027, KH6OV on 50.6, KH6NS on 50.2, and KH6PS on 51.1 Mc. On Oct. 20th KH6PP worked VK2ARG at 12:24 A.M. HST. Signals were in strong for three minutes, expiring with a deep fade and a flutter in two minutes more. K6BF worked KH6OV and KH6NS between 2:30 and 4:15 P.M. PST on the 20th. They also worked W6FFF and W6AMD. The next day K6BF worked KH6PP and KH6NS between 1:25 and 1:42 P.M., and heard W5VY calling CQ SIX on c.w. at 2:00. KH6NS was worked at 2:50 again, and W6JRM, La Mesa, Calif., was heard in contact with KH6NS at 3:25. The signals of W5VY and W6JRM could be heard only with the array at K6BF turned southwest — definitely sharp-angle rebound stuff.

The first KH6-ZL 50-Mc. contact was made on the 22nd, when KH6PP worked ZL1MQ at 5:19 P.M. HST. This was the culmination of much effort on the part of both parties, and it paved the way for a deluge of similar QSOs in the days to follow. ZL1HP was worked on the 22nd also. On the 24th ZLs were heard as early as 10:58 A.M., but no contact was made until after midnight, when ZL1s AO and HP were worked between 0026 and 0050. The band was open again at 7:30 P.M., with KH6s OV and NS working them until Gene got on at 11:15 P.M., when he knocked off ZL1s HP, QS, AO, MQ, UZ, NT, DE, and ZL2AJT. KH6PP worked a total of 18 ZL1s, ZL2s and VK4s around midnight of the 28th. KH6NS worked two ZL1s on the 25th and 28th, and also knocked off three W6s, one W7, one VE7. He heard West Coast stations on October 29th, and worked LU6DO and LU1BV on the 30th.

Though no DX contacts have been reported from the African Continent yet this fall, ZS1P is hearing the Paris TV signal and other signals and harmonics near 50 Mc. VQ2PL is also ready for business, and is active daily at 0400, 1100 and 1500 GCT.

RECORDS

Two-Way Work

50 Mc.: CE1AH — J9AAO
10,500 Miles — October 17, 1947

144 Mc.: W4JFV — WØEMS
830 Miles — September 16, 1949

220 Mc.: W1CTW — VE1QY
275 Miles — June 29, 1949

420 Mc.: W6VIX/6 — W6ZRN/6
262 Miles — July 4, 1949

1215 Mc.: W1OFG/1 — W1MZC/1
37 Miles — July 30, 1949

2300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947

3300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947

5250 Mc.: W2LGF/2 — W7FQF/2
31 Miles — December 2, 1945

10,000 Mc.: W4HPJ/3 — W6IFE/3
7.65 Miles — July 11, 1947

21,000 Mc.: W1NVL/2 — W9SAD/2
800 Feet — May 18, 1946

Correction on 2-Meter Record

News of the W4JFV–WØEMS contact on 144 Mc. came in near copy deadline last month, and there was not time to ascertain the exact locations of the two stations involved in order to permit posting an accurate distance figure. Now we have it, and, though it is somewhat shorter than last month's estimated figure, the 830-mile official record is well beyond previous accomplishments for two-way work. It is probable that it will stand until at least next spring, the season for extreme DX having now largely passed for this year.

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

The big doings on 50 Mc. pushed our news of activity on the higher bands into the fine print this month, but a lot of good stuff was happening on 144 Mc. and higher, and not all of it in the United States. From G6UH, via W2WNO and W1BFH, comes word of reception of FA8IH on 144 Mc. on Oct. 17th at 1955 BST. This report is said to have been confirmed by FA8IH. The distance is in the neighborhood of 1200 miles.

A one-way 2000-mile haul on 144 Mc. is reported by OH2PK, who says that OH2OK was heard by CN8BK, French Morocco, on Sept. 16th, between 2100 and 2200 GCT. OH2PK is attempting to secure more details. He says that OH2OK was reported heard by ON4CC, a 1000-mile hop, on July 4th. Stations in the Helsinki area worked into Sweden frequently during the summer, contacting SM5s VL, ABC, GQ, MN and FJ, at distances of about 300 to 330 miles. OH2OK has an interesting idea in multiband

2-Meter Standings

Call	States	Areas	Miles
W1PIV	13	5	550
W1HDQ	13	5	480
W1BCN	12	4	500
W1CTW	12	4	500
W1REZ	11	4	—
W1JSM	10	3	—
W1GJO	10	3	—
W1JMU	9	3	—
W1OOP	9	3	—
W1QXE	9	3	—
W1MBS	8	2	275
W1AW	5	2	—
W2BAV	14	5	430
W2NLY	13	5	515
W2NGA	13	5	—
W2DFV	13	5	350
W2CET	12	5	405
W2WLS	12	4	—
W2DPB	12	5	500
W2QNZ	11	5	—
W2NPJ	11	5	500
W2PJA	10	4	—
W2PIX	9	4	—
W2WGH	9	4	—
W2FHJ	7	3	—
W2RPO	5	4	—
W2UTH	5	4	—
W2UXP	4	4	—
W3RUE	15	7	760
W3KBA	13	6	—
W3OWW	13	6	600
W3GKP	13	5	610
W3KUX	12	5	575
W3PGV	11	5	—
W3BLF	10	6	—
W3KWL	10	5	—
W3GV	9	5	660
W3HB	9	5	—
W3LMC	9	4	—
W3KWH	8	5	—
W3KWU	8	3	—
W3VVS	7	4	430
W4IKZ	13	5	500
W4CLY	12	5	500
W4FJ	12	5	450
W4FBJ	11	5	—
W4MKJ	10	5	475
W4HHK	10	5	650
W4JFV	9	5	360
W4OLK	9	4	500
W4ODG	9	4	500
W4JHC	8	4	500
W4AJA	8	4	—
W4NRB	8	4	—
W4FQI	6	–	—
W4KKG	5	–	—
W4LNG	4	2	—
W5JTI	9	5	660
W5ML	2	1	425
W5AJG	2	1	400
W5FSC	2	1	250
W5JLY	1	1	1000*
W8UKS	18	7	720
W8WJC	18	7	700
W8BFQ	15	6	600
W8WSE	14	6	620
W8WRN	13	5	—
W8CYE	12	6	—
W8CPA	12	–	650
W8BAX	9	–	—
W8DIV	8	4	—
W8RDZ	7	4	340
W8WAB	4	4	—
W9JMS	12	5	600
W9PK	11	5	460
W9OBW	8	4	—
W9NFK	7	4	450
W9UIA	4	3	205
WØNFM	14	7	660
WØEMS	13	5	860
WØWGZ	10	4	760
WØIFB	9	6	—
WØHAQ	8	4	—
WØLZE	7	4	—
WØZJB	6	3	—
WØGOK	6	–	—
WØLZE	7	4	320
WØDEN	6	3	520
WØHXY	5	2	—
WØJHS	4	2	—
VE1QY	9	3	650
VE3AIB	8	5	520
VE3BPB	6	4	—
VE3ANY	4	–	—

* Crossband.

Note to 2-meter operators: If your listing is incorrect or incomplete, please send in the correct information. Also, how about mileage listings from W6 and W7, and more information on leaders in W9?

arrays. He stacks all-metal arrays for 50 and 28 Mc. about 12 feet apart. A reflecting screen is suspended between the two booms, and this backs up a curtain of eight elements for 144 Mc., fed in phase.

Melbourne, Australia — If you find an American 50-Mc. WAS hard to make, perhaps you'd like to try for an Australian certificate. Recently announced by the Wireless Institute of Australia, this award is offered to any amateur who can submit documentary proof of having worked all of the following on 50 Mc. or higher bands: (1) New South Wales, Australian Capital Territory, or Lord Howe Island; (2) Victoria; (3) Queensland; (4) South Australia; (5) Western Australia; (6) Tasmania; (7) Northern Territory. Sticker endorsements are given for verifications from overseas countries such as New Zealand, Territory of Papua, and New Guinea. Claims for this certificate should be sent to the following address: Awards Committee, Box 2611W, GPO, Melbourne, Australia.

Oklahoma City — After several weeks of consistently successful schedules with W5DFU at Tulsa, W5NLZ is attempting to promote a statewide 144-Mc. net. It is more than 100 miles to Tulsa, yet the circuit is solid at all hours, with signals seldom below S7, and often well over the S9 mark. The Oklahoma City group now includes W5MQI and W5IEQ. W5HLD is on in Enid, LGW in Drumright, and HXK in Watonga. W5DFU and W5NLZ are active each morning from 6:30 to 7. Schedules are kept with Dallas and Ft. Worth Monday, Wednesday and Thursday at 6:45. After the 2-meter workout W5NLZ goes to 75 meters until 7:30. He would be glad to talk v.h.f. with any of the 75-meter gang, and asks that anyone interested in schedules get in touch with him. He adds that the comparison between 2 and 75 is often quite striking. Several times when 75 has been nearly unusable because of atmospheric noise the signals from 100 miles and more on 2 have been clear as a bell.

Springfield, Mass. — Some months ago there were several stations on 50 Mc. in the Springfield area, but activity gradually dropped back to occasional appearances by regulars such as W1QWJ and W1AEP. With a view to making better use of the 6-meter band the Hampden County Radio Club is sponsoring a 6-meter traffic net, to operate each Wednesday night at 8 P.M., beginning Nov. 9th. The net will serve to pick up and deliver traffic for the 80-meter c.w. and 10-meter 'phone nets serving this area. Anyone with 50-Mc. gear is welcome to join in. Frequency is around 50.5 Mc.

Jackson, Miss. — Though W5JTI has 9 states on 144 Mc. he has yet to work two of the states bordering on Mississippi, and he only recently got a third, Louisiana. W5MKP in Baton Rouge is worked daily, as are New Orleans stations W5EM, W5OQW, W5MXJ and W5QER. Though most of these fellows are using 522s and 3- or 4-element antennas, the signals are very good and interest is now developing rapidly as the word gets around. Improved gear and bigger and better antennas are in the works. W5MKP now has an 829 amplifier, a 16-element array, and a cascode preamplifier ahead of a VHF-152. In the course of his operating he has also worked W4HHK, Collierville, Tenn., for the first Louisiana-Tennessee QSO on 144 Mc., and state Number 19.

San Francisco, Calif. — Two 144-Mc. nets are now operating in the Bay area, one on Sunday morning and the other Thursday evening. The Sunday-morning roundup includes 15 to 20 stations from Sonoma to Monterey, and is primarily for rag chewing. The Thursday-evening session starts at 8:30, and is for the purpose of arranging tests between the Bay area and the San Joaquin, Sacramento, and Santa Clara Valley sections. About 25 stations usually take part.

Gaffney, S. C. — Looking for South Carolina on 144 Mc.? W4CPZ, whose efforts have made many of the 50-Mc. state hunters happy, is now on 144.72 with a 100-watt rig and a 5-element horizontal array 70 feet in the air. His first three contacts on two meters were good for three states — a most promising start.

Boston, Mass. — It was still possible to get across the 270-mile stretch of water to VE1QY on 220 Mc. as late as Oct. 14th. W1OOP, W1QNJ and W1IO worked VE1QY crossband 220–144 Mc. at 7 P.M. A schedule was made for two-way contacts, 220–238 Mc., at 9 P.M. Jerry's 2-meter signal had dropped into the noise at W1OOP by 8:45, but he came through on 238 Mc. at 9:25 with a good signal, and both W1QNJ and W1OOP made contact. This with a folded dipole (for 144 Mc.) the only antenna at W1OOP! VE1QY rebroadcast the 220-Mc. signals on 144, and they were heard as far down the coast as W2ADW, East Quogue, Long Island.

The World Above 420 Mc.

Superregenerative receivers are funny critters. Small variations in layout and substitution of different components make great differences in the way they work. The 420-Mc. receiver described by your conductor in May, 1949, *QST*, page 13, is an example. Like about every other superregenerative receiver we've described in *QST*, this one has proved a stumbling block for a certain percentage of the fellows who have built it. Of course, we left out the value of R_{12} in the original write-up, but even with this information (the value was 1.5 megohms) some were not able to make the receiver work. For those who care to experiment, W1CBG passes along changes he made in his, for improved performance. The heater chokes were increased to 25 turns each. R_1 was reduced to 150 ohms, and C_1 to 150 $\mu\mu$fd. C_2 was increased to 0.01 μfd.

Conversion of the BC-645 has been a disappointment to some 420-Mc. workers. They made it work, but the sensitivity (with the minimum conversion) was quite low. The receiver can be made to do a pretty fair job, with a little more work. W1HDF took the following steps to hop up his 645: Applied B-plus to the mixer by running the low side of the first i.f. transformer primary to B-plus, through a decoupling network similar to that used in the following stages. Substituted a 9002 for the 955 mixer, and added regeneration by connecting a small 15-$\mu\mu$fd. variable across a 10,000-ohm resistor in the mixer cathode. Installed a good split-stator variable condenser across the oscillator line, and equipped it with a vernier dial. Installed a 0.2-megohm potentiometer to control the screen voltage on the i.f. amplifier stages. If 300-ohm or other balanced line is used for feeding the antenna, hairpin loops should replace the unbalanced coupling loops provided in the unit.

An even more drastic revision was made in a BC-645 by W2CEP. He sawed the unit in half, doing away with the transmitter section. The mixer and oscillator tubes were replaced by a single 6J6, one half of which is an oscillator on 230 Mc., using the second harmonic to beat with the signal in the other half of the tube, which is the mixer.

W6DSZ writes that the favored receiving set-up for 420 now is a BC-923 following an altimeter or similar front end. This is a 30-Mc. job having a very low noise figure, and a bandwidth of about 75 kc. Conversion includes installation of an a.c. supply, an r.f. gain control, and an a.m.-f.m. switch. The a.m. comes from the plate of the first limiter. Fred says that crystal control is now nearly standard equipment for 420-Mc. transmission, with f.m. coming to the fore. His new rig uses a 6AG5 crystal oscillator-doubler, 8-16 Mc., a 6J6 with its two sections as tandem triplers, a push-pull 6C4 on 144 Mc., an 832A tripler to 432 Mc., and a straight amplifier 832A in the final. Reactance modulation of the crystal oscillator can be used, as only a small deviation is needed to provide fairly wide-band f.m., when a frequency mutliplication of 54 is employed. W6QT has revamped an APT-5 to run as a straight-through amplifier at 100 watts input, giving efficiency and signal quality far ahead of that type of rig used as an oscillator.

What may be the first instance of use of 420-Mc. gear in emergency organization is reported by W7KWO, Phoenix, Ariz. He set up an emergency-powered rig at Red Cross Headquarters to provide a link to W7OAS, who put the traffic out on 75-meter 'phone. W7MIW handled this installation, and W7QNO provided a similar set-up at the office of the Highway Patrol. This was in connection with the Oct. 16th Simulated Emergency Test.

W7KWO has logged more than 400 QSOs on 420, with 16 different stations. W7QJL works into Phoenix from Mesa, some 20 miles away, over an indirect path. W7KFS has gear working in Tucson, and the gang are now working to break down this 100-mile hop on 420.

420-Mc. activity in the Los Angeles area is usually found going strong around 9 P.M. According to W6MVK the active group includes W6s VIX, NLZ, KKG, ABN, CON, QUK, UKX, EDJ, NQV, GTJ, EHN, BUT, ZW, FIX, CFL, NNN, VDE, GUE, EFE, CGF, WWP, ZRN, IFE, NOE and MVK. Crossband work has stimulated quite a bit of interest on the part of the gang working on other bands, and the ranks are growing, with more stations showing up in outlying sections.

Final Results — September V.H.F. Party

At the end of this section is a tabulation of the scores made in the Fall V.H.F. Party, held September 24th and 25th. Though conditions were reported as poor in practically all sections of the country, participation was good. The scores were not as high as those made in the June Party, when conditions were better; but the number of reports received and the enthusiasm indicated in the letters accompanying them show that plenty of fun can be had during a v.h.f. contest week end, whatever the band conditions.

As in the June contest the highest score in the entire country was made from the top of Blue Job Mountain, Farmington, N. H., and by the same team but under a different call. In two previous contests, W1FZ/1 has been a top scorer from this location, having been assisted in the heavy labor (but not in the operating) by W1DGV. This time Ralph handled the operating, and W1DGV/1 piled up 108 contacts on 50, 144, 220 and 420 Mc. A section multiplier of 19 gave him the country's high score, 2812 points, and the New Hampshire section award.

Other high scores were posted by W3KKN, Willow Grove, Pa., with 130 contacts and a multiplier of 15 for 1950 points, winner in Eastern Pennsylvania; and W2IQQ/2, North Caldwell, N. J., with 99 contacts on three bands for 1785 points, winner in Northern New Jersey. These two fellows were award winners in the June party also. W1CTW, Arlington, Mass., repeated as Eastern Massachusetts winner, with a 3-band total of 1584 points.

Highest inland score was posted by W8BFQ, Everett, Ohio. Margaret made 93 contacts on three bands with a multiplier of 13 for 1313 points. Our showings in many sections were put to shame by the turnout in VE3. The Toronto area, with its high v.h.f. interest, accounted for 10 reports, the top being the 88-contact 704-point total of VE3AIB. Some better-than-average scores were turned in by West Coast participants, but the number of reports from California sections was disappointingly low. If W6NLZ could make 101 contacts on four bands, for a score of 822 points, where were all the rest of the Los Angeles Section v.h.f. gang when it came to sending in reports?

How To Take Part in a V.H.F. Contest

Whenever we go over the reports that come in following a v.h.f. contest we are always struck with the fact that the final story, as it appears in *QST*, conveys almost nothing of the real scope of these parties. Seven reports from the entire Central Division, twelve from all of California, one from W5, and none at all from WØ or W7 — do these figures represent activity levels? Certainly not, and 130 reports in the final tabulation is equally misleading regarding activity in other sections. Why do hundreds of fellows take active part in a contest and then send in no report of their work? We think the main reason is that, while operating in a contest is fun, making out a report is not. Transcribing a log of two days of concentrated operating seems like just too much work!

There's a simple way out of this that takes the drudgery out of contest reporting. ARRL provides mimeographed forms for its contests; forms laid out in such a manner as to make it easy to fill them out as you go along. You keep your regular log, of course, but while the contacts are being made you have plenty of time to fill out the contest blank. In the leisurely pace of the v.h.f. parties, keeping the contest log simultaneously with the station log won't slow you up a bit. You record all the necessary information as you go along. When it's all over you add up your multipliers, and enter the result in the space provided on the form. That's all — no hours of work digging out the stuff from the log, and no necessity for messing up the regular station log with contest information. Just drop the contest log in the mail the next morning, and you're in!

The next v.h.f. contest is the Third Annual V.H.F. Sweepstakes, January 21st and 22nd. This is the big one on the v.h.f. contest schedule, with special inducements to promote club activity. The mimeographed forms are ready. Send for yours now, and reserve that week end! Note that final scores of contests are being reported in "The World

Standings as of October 25th

W9ZHB	48	W5AJG	47	W8QYD	44
WØZJB	**48**	W5VY	47	W8CMS	39
W9QUV	48	W5JTI	44	W8YLS	38
WØBJV	**48**	W5JLY	43	W8NQD	38
W9CJS	**48**	W5ML	42	W8WSE	36
		W5VV	42	W8LBH	36
W1CLS	45	W5ONS	41	W8RDZ	27
W1CGY	44	W5FSC	41	W8RFW	25
W1LLL	43	W5HLD	40		
W1HDQ	42	W5FRD	38	W9HGE	47
W1KHL	41	W5DXB	35	W9ZHL	47
W1LSN	40	W5ZZF	34	W9PK	47
W1HMS	38	W5GNQ	32	W9ALU	46
W1GJO	37	W5NHD	32	W9JMS	45
W1RO	36	W5JBW	32	W9QKM	45
W1ELP	36	W5IOP	30	W9RQM	44
W1DJ	36	W5LWG	26	W9UIA	43
W1JLK	35			W9UNS	42
W1EIO	35	W6UXN	47		
W1HIL	31	W6OVK	40	WØUSI	47
W1CGX	28	W6IWS	39	WØQIN	47
W1FZ	27	W6ANN	38	WØDZM	47
		W6BPT	35	WØNFM	47
W2RLV	45	W6AMD	35	WØINI	47
W2BYM	42	W6NAW	35	WØKYF	44
W2IDZ	40	W6FPV	34	WØJHS	44
W2AMJ	38	W6BWG	25	WØYKX	43
W2QVH	37	K6BF	14	WØTKX	43
W2FHJ	33			WØSV	42
		W7HEA	47	WØHXY	41
W3OJU	44	W7BQX	45	WØIPI	39
W3OR	35	W7DYD	45	WØPKD	36
W3RUE	34	W7ERA	43		
W3MKL	33	W7JRG	40	VE3ANY	38
		W7BOC	40	VE1QZ	31
W4EQM	44	W7JPA	40	VE1QY	28
W4FBH	44	W7FIV	40	VE3AET	27
W4QN	43	W7CAM	40	HC2OT	23
W4NLG	42	W7KFM	40	VE4GQ	20
W4GIY	40	W7FDG	36	XE1GE	19
W4EID	40	W7FFE	35	XE2C	14
W4EQR	40	W7KAD	35	VE2GT	14
W4CPZ	39	W7ACD	32	XE1QE	10
W4DRZ	38	W7QAP	32		
W4MS	38	W3CIR/7	32		
W4FQI	34				
W4GMP	34				
W4WMI	33				
W4FNR	33				

Calls in bold face indicate holders of special 50-Mc. WAS certificates, listed in the order of the award numbers.

Above 50 Mc." two months or less after the contest date, thanks to the efficient work of W1QIS of the Communications Dept. staff. Get those reports in promptly, and see the *full* story in *QST* soon after.

FINAL SCORES

V.H.F. QSO Party, Sept. 24th–25th

Scores are grouped by Divisions and Sections. The operator of the station first listed in each section is winner for that section. The number of contacts and sections worked by each participant are given following the score. Letters indicate band or bands used: A for 50 Mc., B 144 Mc., C 220 Mc., D 420 Mc.

ATLANTIC DIVISION

E. Pennsylvania

W3KKN....1950–130–15–A–B
W3MQU....1425– 95–15–A–B
W3UKI..... 264– 44– 6–A–B
W3KFK..... 250– 50– 5–B

Md.–Del.–D. C.

W3IZL.....105–21–5–A–B
W3LMC..... 96–24–4–B

So. New Jersey

W2MEU.....192–24–8–A
W2WGH.....144–36–4–B
W2ZEA..... 88–22–4–B
W2CEE..... 66–22–3–B
W2GFD/2..... 54– 9–6–B
W2UNT..... 30–10–3–B

W. New York

W2QNA.....312–52–6–A–B
W2RPO.....230–46–5–B
W2SXY[1].....170–34–5–B
W2WUX/2.....140–35–4–B
W2RUC.....124–31–4–B
W2BHN.....120–40–3–B
W2WFB.....105–21–5–B
W2UTH/2..... 76–38–2–B
W2KIJ..... 22–11–2–B
W2FCG..... 14–14–1–B
W2QXE/2[1]..... 10–10–1–B
W2UYS..... 7– 7–1–B
W2SHZ..... 5– 5–1–B

W. Pennsylvania

W3KWH[1].....330–33–10–A–B
W3MMV..... 60–20– 3–B
W3CJF..... 36–18– 2–B

CENTRAL DIVISION

Illinois

W9GLY ..434–50–7–A–B–C–D
W9CGR ..212–53–4–B
W9KCW.. 96–32–3–B
W9DRN .. 80–20–4–B

Indiana

W9MBL.....90–18–5–A–B
W9JMS.....60–15–4–A–B

Wisconsin

W9TQ.....69–23–3–B

DELTA DIVISION

Tennessee

W4HHK.....44–11–4–B

GREAT LAKES DIVISION

Michigan

W8RWW.....273–39–7–B
W8NNF.....186–31–6–B
W8DIV..... 95–19–5–B

Ohio

W8BFQ....1313–93–13–B–C–D
W8WSE... 744–62–12–A–B
W8WRN... 108–18– 6–B
W8EHU... 52–13– 4–B
W8LBH... 16– 8– 2–A
W8WAB .. 4– 4– 1–B

HUDSON DIVISION

E. New York

W2EFU.....105–21–5–B
W2PIP..... 88–22–4–B
W2BVU..... 45– 9–5–B

N. Y. C. & L. I.

W2DHB.....280–56– 5–B
W2AOD.....265–53– 5–B
W2FHJ.....260–26–10–A–B
W2RPZ.....124–31– 4–B
W2LGK..... 16–16– 1–B

No. New Jersey

W2IQQ/2 1785– 99–15–A–B–C
W2COT...1212–101–12–A–B
W2FOA... 672– 56–12–A–B
W2DZA... 315– 21– 7–A–B–C
W2IDZ... 140– 20– 7–A

NEW ENGLAND DIVISION

Connecticut

W1HDQ[2]
2266–79–22–A–B–C–D
W1HDF 806–38–13–A–B–C–D
W1REZ 315–45– 7–B
W1QVF[2] 222–17– 6–A–B–C–D
W1CGY 99–11– 9–A
W1AW[2] 27– 9– 3–A–B
W1CEG[2] 4– 4– 1–A

E. Massachusetts

W1CTW..1584–108–12–A–B–C
W1MHL/1[1]
470– 94– 5–B
W1QNJ .. 465– 77– 5–B–C
W1AQE... 420– 84– 5–B
W1OOP... 350– 46– 5–B–C
W1QMD/1
248– 62– 4–B
W1BJN .. 183– 61– 3–B
W1CTR... 174– 58– 3–B
W1MUD 156– 52– 3–B
W1QFO... 144– 48– 3–B
W1MCR.. 120– 40– 3–B
W1GAC... 112– 28– 4–B
W1FVD... 105– 35– 3–B
W1QZO .. 96– 32– 3–B
W1BIO... 90– 30– 3–B
W1QOI... 90– 30– 3–B
W1HLX . 66– 22– 3–B
W1SIX... 48– 16– 3–B
W1JSM .. 26– 13– 2–B
W1ALP .. 21– 21– 1–B
W1OTH .. 20– 20– 1–B
W1POB . 16– 8– 2–B

W. Massachusetts

W1GJO.....969–57–17–A–B
W1COI[1].....196–28– 7–B

New Hampshire

W1DGV
2812–108–19–A–B–C–D
W1OHS/1[1]
260– 52– 5–B

PACIFIC DIVISION

Santa Clara Valley

W6GCG.....657–73–9–A–B
W6ZBS 621–69–9–A–B
W6YHL.....110–22–5–B

(*Continued on page 114*)

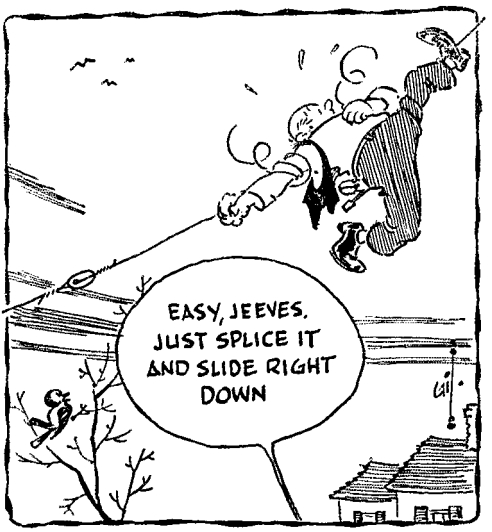
[1] Multioperator station—not eligible for award.
[2] Headquarters staff—not eligible for award.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

What:

The off-season on *eighty* didn't provide many new ones for W4BRB but Gene worked PY7WS, TG9RB, KV4AA, DL1FF and G2PL regularly through the static months and has been assured that OA4BV and ZP8BL will put in a 3.5-Mc. appearance at any time now. _._._ W2EQS commenced working G6OX and F9KH in October on the very low edge. _._._ An increase in line noise at W9AND is raising havoc on 80 but Wes managed G6GM and **GW8WJ** (3507) to reach a total of 29 countries on the band.



Forty has already had a few openings, with Europeans working as far west as WØ in broad daylight, Mountain Time. Caymans VP5s BD and BE operate on 7295 kc. occasionally and Caicos representative VP5BF has been reported readying for this frequency _._._ After 25 years of apartment dwelling, W9NN is preparing for a 7-Mc. vertical array at his new homesite in the hopes of augmenting his present total of eighty 40-meter countries worked _._._ A new CM prefix is reported by W9YDP in **CM4MH** (7030) which should be even tougher for Jeeves & Co. than CM2 _._._ **W2WWP** used some midnight oil on **FK8AB** (7007), **VP4TAQ** (7000) and sundry assorted VKs and Europeans. ZL4GA was putting in the most consistent 7-Mc. signal from Down Under during the VK/ZL Tests although conditions were nothing to yodel about _._._ A 110-volt d.c. line is the curse of W2IXZ but Dan's 25L6s at 15 watts cooked up SVØWH, KZ5PC, SM4AYJ and DL1ZU. He's still after **TA3GVU** (7030).

Super-short skip is back again to harass the followers of *twenty*. But with the local blocking comes some long-path stuff so you can't be sure what's liable to pop through. KH6PM's 807s found the going not too difficult with **AC4NC** (14,125), **CR9AG** (14,005), **CR1ØAA** (14,015), **FE8AB** (14,020), **KP6AH** (14,065), **KJ6AF** (14,035), **MD4GC** (14,140), **IS1AHK** (14,040), PZ1QM (VFO t7), **VP8AI** (14,100), **VS1DC** (14,085) and **ZS9J** (14,015). Fred is still gunning for **KC6WB** (14,100), **CT2GG** (14,065), **OY2G** (14,065 t5) and **MI3ZZ** (14,145 t7) _._._ W1APA made off with **GC4LI** (14,030), **TA3GVU** (14,100) and **CT3AV** (14,025) while W3QLW's list is topped with **ZE2KF** (14,085) _._._ W7JYZ reports 26 contacts with 17 different OK stations during recent routine DX operation. [His beam must really be working OK, huh, boss? —*Jeeves.*] Ouch! _._._ **ZB1AY** (14,070), **UI8KAA** (14,125), **UJ8AF** (14,130), **VU2LK** (14,040) and **AP2N** (14,150) were welcomed by W6EAY and W8NOH adds **VP7NR** (14,190) who works both 'phone and c.w. _._._ OY2AH told W2QHH his QTH was "Svalbard" and to QSL via VO6X. Howy's safer bets are **EA6EG** (14,037), **VP5BF** in the Caicos (14,041), **KM6AO** (14,021), **MD7DC** (14,083), **CT2AB** (14,075), **OY3IGO** (14,071) and **UO5KAA** (14,107) _._._ WØUOX dropped into the Windy City and almost dropped right out again when told that **ZD3D** (14,080 t2) was coming through. He got him three nights later, however. W4MR also caught this gamboling Gambian and nominates EQ3SAM and FI8AK for the Phoneys-of-the-Month Club _._._ Catching up with HE1EO as we had previously advertised, W1BOD also raised **VS1CW** (14,020), **3V8AJ** (14,025), **CR6AQ** (14,060), **XZ2FK** (14,100), **VR4AA** (14,090) and **MD2GO** (14,130) _._._ W2AIS reports that HP2MB, VP3YG, TF3ZM and DU1AP helped put ex-ZC8PM over the 100 mark and W2LXI has it from VP5BX that the VP5RS claiming to be in the Caymans is an out-and-out so-and-so _._._ VQ4CUR contemplates signing VQ1-CUR for a time, according to W5LVD. Dan's latest: **UJ8KAA** (14,040), **UA9CL** (14,055), **UAØKFD** (14,120), **UM8AA** (14,100), **VK1FE** (14,120), **HZ1KE** (14,001), **VS9AL** (14,080),

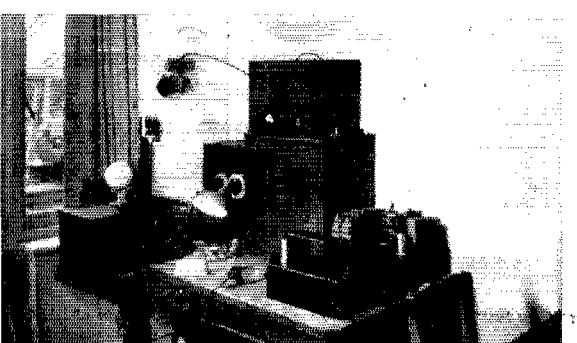
* DX Editor, *QST*. Please mail reports of DX activity to W9BRD's home QTH: 1517 Fargo Ave., Chicago 26, Ill.

• An up-to-date listing of QSL bureaus of the world is published in the "IARU News" section of this *QST*, page 61. To expedite the handling of your DX cards, make a note of the changes and additions contained therein.

ST2RF (14,035), **ZD2LMF** (14,050) and **AC4NC** ._._._ W7KWC happened upon **ZS7C** (14,160), **UL7AB** (14,055), **MP4BAD** (13,999), **FN8AD** (14,105) and **ZE2JN** (14,048) and we hear that **CR4AE** (14,060 QRH) has joined the growing Cape Verde representation. ._._._ W6ZZ recently raised his 119th country and his 1272nd Englishman and discovered that **EK1AO** (14,007) was old friend ex-EAR96 and EA4AO. Miles has his fingers doublecrossed in trust that he'll get Norfolk Island before VK9NR closes shop ._._._ Raising one of his rhombics a little higher, W4BPD managed **VU7AH** (14,020), **ZP6AB** (14,010 t8), **PK4KS** (14,100 t8), **VQ4AK** (14,065), **HE1EU** (14,040 t8) and **VS6AX** (14,040).

On 'phone, Gus ran across **VR4AC** (14,200), **XZ2KN** (14,325), **VK9NR** (14,360) and **VQ4AC** (14,060) ._._._ With his beam practically grounded, W8NOH vocalized for **VP3HAG** (14,385), **VP7NR** (14,190), **VP7NL** (14,350), **HH2X** (14,195), **HH2ES** (14,370) and **YS1MS** (14,345) ._._._ The band is still open down at HC2JR: **KB6AJ** (14,210), **CR5UP** (14,186), **PK6NQ** (14,362), **VK1ADS** (14,385), **VK9GW** (14,350), **VR2BK** (14,348), **HL1BJ** (14,312), **EA8CO** (14,312), **EA9AI** (14,308), **TA3BS** (14,378), **YK1AC** (14,317), **ZK2AA** (14,348) and **W5FYV/VR4** (14,199) ._._._ Additions at W5JUF were HA5BF, VU2s DY and MA, CR6AI, MI3US, AR8AB, ZS3Z and **VQ3AA** (14,345) while W3LTU welcomed **MP4BAC** (14,335) and **M1D** (14,358).

Ten still has a hold on some of the boys. W9WCE now has 100 'phone confirmations on the band and recent QSOs feature **SVØAJ** (28,600), FF8FP, ZS9J, ZD2S, GD3UB and KM6AN ._._._ HC2JR presents a juicy synopsis: **CR9AG** (28,250), **FQ8SN** (28,144), **MI3SC** (28,490), **VK9NR** (28,100), **VP1SJC** (28,311), **VQ2DH** (28,362), **VR2BL** (28,176), **TF3SF** (28,400), **W2EJV/PK3** (28,410), **ZE2JQ** (28,272), **ZK1BZ** (28,553), **ZS3Z** (28,294), **ZS8A** (28,215), **ZS9F** (28,157) and **PK5HL** (28,240) ._._._ W5HBM finds GC2s RS, FZC and ASO currently active on voice as well as **VS9AH** (28,680) in Aden ._._._ Returning to the band after a lengthy layoff, W1DYV was glad to grab 'phones GD3AGC, ZB2H, EL2A, HR1KV, IS1AEX, I1RC/Trieste, CP5FB and three SVØs while WØZXS adds OY3J, TF3GB, VQ4RF and VU2CQ ._._._ Dropping fancy rhombic plans for the time being, W1EKU went back to the 3-element job for the likes of DU1s AP, HR, FF8PJ, PK4DA, VS7PS, ST2AM, MI3NC, MP4BAE and HL1BJ ._._._ W2ZVS came up with ZS8B, VP1BOY, VQ5ALT, LX1DC, TA3FAS, CP5FA, ZB2A and a dozen others of choice quality in starting off the season with a bang.



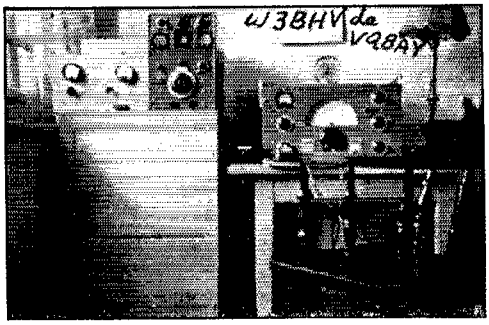
Where:

If you have any YO QSL chores to tidy up, W2TXB and W6AY advise that the bureau address is Box 95, Bucharest ._._._ The OX3BD operator listed below can only guarantee confirmation of contacts dating from July 23 through October 5, 1949.

AI1AI	APO 74, % Postmaster, San Francisco, Calif.
CM4MH	Mariano Herrera, Nueva Gerona, Isle of Pines, Cuba
CT3AF	(via CT3AV)
DK8CF	(via DARC)
DL7AN	P. O. Box 73, Berlin, Germany
EA1AB	Box 249, Santander, Spain
EA3MTM	Box 77, Gerona, Spain
EA4PV	Box 220, Madrid
EA8RB	Box 12, Laguna de Tenerife, Canary Islands
HH2ES	Edward L. Salmon, Port-au-Prince, Haiti
ex-JA2BQ	Manford C. Njust, 7814 SE 13th St., Portland 2, Ore.
ex-JA2KG	(K2CC) Maj. Lloyd D. Colvin, Officers Section, TSS, Ft. Monmouth, N. J.
KC6WB	Box 3, CG Depot, Guam, Navy 926, FPO San Francisco, Calif.
KH6OT/KJ6	APO 105, % Postmaster, San Francisco, Calif.
KP4KF/KP4	P. O. Box 3036, Santurce, Puerto Rico
KV4AM	% CAA, St. Croix, Virgin Islands
MD4GC	% Posts & Telegraphs, Mogadishu, Somalia, British East Africa
MD7DC	(via RSGB)
MI3SI	Radio Marina, Asmara, Eritrea
OA4DM	(ex-CE2BU) Alcimo de Meringo, Box 1088, Lima, Peru
OA4DV	Geo. Hickman, % American Embassy, Lima, Peru
ex-OX3BD	(W1VQG) E. Bernfeld, Bldg. T390, Westover Field, Mass.
TA3FAS	(via W5HBQ)
VK5AS	(ex-VK3AJE) Box 119, Darwin, N. T., Australia
VP2LA	Phil James, Castries, St. Lucia, B. W I.

♦

A glance at any DXCC listing will find G2PL right up near the top. Peter runs an 813 at 80 to 125 watts input, the unit being located at the center of the table. A modulator using p.p. 807s is at the right and the receiver, an RME-70, is at the left. Antennae range from an 80-meter half wave on 3.5 and 7 Mc. to 2-element beams on 14 and 28 Mc. As do many other top DXers, G2PL gives credit to a coöperative and tolerant family when it comes to burning that midnight oil!



Here is the compact arrangement at VQ8AY, operated by Ed Goldsmith on Mauritius. The unit at the far left is the transmitter which ends up in p.p. 807s and an Eddystone receiver is at the right. The center unit is a transceiver that also finds use as a VFO. VQ8AY prefers 14- and 28-Mc. c.w. (*Courtesy W3BHV*)

VP5BF	(via VP5AD)
ex-VP8AD	R. MacLaren, A/S Compania Int. de Radio, Balcarce 226, Piso 1°, Buenos Aires, Argentina
VP8AO	QSL to R. Lenton, 34 Lynwood, Luton, Beds., England
VR4AC	APO 709, % Postmaster, San Francisco, Calif.
W2EJV/PK3	(to home QTH)
YV5AR	Carlos A. Giffoni, P. O. Box 3263, Caracas, Venezuela
ZS7C	"Pikwan," Goedgegun Post Office, Swaziland, South Africa
3V8AJ	Box 155, Tunis, Tunisia

All hail donors W1s IKE, RUX, RWS; W2s CJX, HAZ, ZVS; W3s AFM, QLW; W4s BPD, IYT, MR; W6DBZ; W8s NOH, SYC; W9s CFT, WCE, YDP; KH6PM; Lou Geis; *The DXer*.

Tidbits:

VK9NR, having finished his Norfolk Island assignment, is hoping to sample conditions in Fiji during his next sojourn. Noel's activity was hampered by a lack of a.c. power which resulted in his being on the air for just an hour or so per day. Eighty-seven countries and a host of Ws were contacted with the 6V6-807 transmitter running 20 watts, battery-powered, while the receiving was handled by an HRO with vibrator supply. The favorite skywire was a bi-square, badly hemmed-in. We'll be watching for Noel from VR2 and, meanwhile, trust that VK9RH will keep Norfolk available on the Countries List ._._._ San Marino is a mere 70 miles from Bologna but is about as accessible as Mount Everest, according to I1SN. Hams contemplating portable operation there are faced with the necessity of packing their equipment up an infinite number of steep steps. Obviously, an autogyro or V-2 rocket is the answer but they're not easily come by. At any rate, Sandy has plans afoot for another session of ham activity in the mountain republic ._._._ You'll no doubt be interested in the present doings of Al Hill, W6JQB, formerly active as W1QMI and *chargé d'affaires* of DXCC matters at Hq. for some time. Right now he's the only ham in Mono County, California, and his DXing time has been curtailed by his helping the boys out with their WACCs. That's "Worked All California Counties"! (No, Jeeves, mobile tricks are taboo.) After W6JQB finishes homebrewing an elaborate superhet he'll be concentrating on the completion of his less-than-100-watt DXCC ._._._ We've received some queries regarding the propagation "bulletins" put out by EA6EG (ex-EA3EG) and W1FTX has pinned down the general details. We'll not vouch for the accuracy of EA6EG's observations and rather doubt that he can "scoop" the Bureau of Standards, but those possessing a propensity for propagational predetermination and prediction may try an inquiry concerning the deal to EA6EG direct ._._._ W8SYC is being haunted by a rather bizarre species of gremlin. It appears that when a good chunk of rare DX peeps up in Piqua the chances are that a broad a.c. carrier of varying amplitude will settle down upon it to queer things. Having eliminated his own gear as a source, Clint is curious as to whether anyone else ever experiences such an enigma. Sounds like somebody with a local regen receiver and yet he knows of nothing of the sort in his vicinity. [Boss, he should get a load of some of Chicago's DXing diathermy machines. — *Jeeves*] ._._._ EQ1RX is returning to Uncle Sugar after knocking off some 55 countries with an 807 final from Abadan, Persia, and ex-JA2KG is out after a new DXCC diploma as K2CC. Also, one of the OX3BD operators now resides in New Britain, Conn., as W1VQG, and is accepting mail at the listed address ._._._ W1IKE heard that G2MI is having little luck in communicating with AP2s D and H for QSL purposes. Art offsets these woes with word that AC4RF cards are now making the rounds ._._._ After 21 years of intermittent hamming, ZS6DZ still desires contacts with N. Mex., Ark., Wyo. and the Dakotas while W3MJB will settle for information concerning SM2ABH/Arctic ._._._ We now learn that JA3AA is home from the Orient and Tom had quite a time visiting W1APA. He'll be back in Monrovia behind the bug at W6ZQZ by the time you read this and celebrated his 21st birthday by tackling a 4000-card QSL backlog built up at the controls of JA3AA. Tom mentioned something that would have seemed incomprehensible in prewar days — 57 Japan-U. S. contacts in one hour of contest operation! Contrary to the usual formula when visitors are present, W1APA's layout really worked. Ex-JA3AA's buddy, JA2AB, was the first station called and worked! ._._._ "Pikwan" is not the birthname of ZS7C but all Europeans living in Swaziland are usually given Swazi titles by which they are much better known. W9WCE received word from ZS7C that many incoming W cards were returned because of their being addressed differently from the QTH now appearing in the "Where" section. Pikwan, which means "wings," will try 28-Mc. c.w. this season ._._._ A bit weary of answering negatively the question "Are you a new country?" VK5XK writes a note from Kangaroo Island. No, the isle isn't a new country but it does seem to be a good spot for DX. It's a seabound area of considerable dimension, as islands go, just southeast of Adelaide and is, unfortunately, firmly attached administratively to the rest of VK5. For VK5XK, a 6L6 modulates another 6L6 at 20 watts on 80, 40 and 20 meters ._._._ To quote W3DKT, F9QU/FM8 cards are only a matter of time. The fellow is really conscientious about the confirmation tradition and has had to rig up QSLs by hand while accumulating a substantial backlog. This is shortly to be remedied by an order from commercial printers ._._._ G3EIW and

(*Continued on page 114*)

Behold the elaborate installation at CT1CZ, operated at Coimbra, Portugal, by Antonio Neves da Costa. 'Phone on 14- and 28-Mc. is preferred.

December 1949

Lots of good dope this month on the single-sideband gang, so draw up a cracker barrel and have a look.

Major Jensen, **DL4PA**, sends a very nice letter giving some details of the rig in use there when he worked **W2TGO** and a lot of others. The basic transmitter is a filter job built as a classroom project by a group of Army enlisted men who were studying single-sideband operation. At DL4PA it drives a 250TH final that runs around 400 watts average under modulation. The receiver ends up in an exalted-carrier converter with an audio phase-shift network for sideband selection. Additional comment on the QSO with W2TGO: "The QSO was 100% both ways and the most satisfactory copy the writer [DL4PA] has ever experienced on a transatlantic QSO on any band at any time." On one occasion W3FRS retransmitted on 14-Mc. a.m. two 75-meter single-sideband stations who were copying DL4PA direct on 20-meter s.s.b., with 100% results in both directions. The German station can be found at around 14,375 kc., and so far has worked all W call areas and 22 states. His first CQ is with suppressed carrier, and he then inserts carrier if there was no answer to the first call. Most operators like to give the single sideband a try, but "many don't have any idea how to crank down the r.f. gain to give their feeble b.f.o. a chance." But they're learning.

Dave Hildyard, **VK7DH**, has been on since May with a rig patterned after that of **W6DHG** but using 807s instead of 6L6s and provision for carrier reinsertion. He runs about 100 to 150 watts on peaks, and uses a two-section W8JK aimed at New York. The usual frequency is 14,175 kc. He has worked around VK and a few Ws who weren't using s.s.b., and he has heard **W3MBY** and **W4INL**. The best QSO was with **KH6PP**, who didn't need any coaching on how to tune in the stuff and said he sounded "just like the boy down the road." Same as "like a local." Dave is very anxious to make schedules with any of the W single-sideband gang.

You first heard about **W4INL** last month, in connection with the three-way with **W2EB** and **DL4PA**. He is Bob Moren of Graham, N. C., and uses a filter job on 14 Mc., with 500 watts peak to a 250TH. No neophyte in the 'phone DX game, Bob has already collected Africa, Europe and Australia with the single-sideband rig. He has a quick-switching a.m./s.s.b. arrangement for comparison purposes, and so far only one station has defeated him in the single-sideband routine. That was an exuberant 'phone man who had taken the "no c.w." pledge and had disabled his b.f.o.! He'll be sorry.

Another W4 to join the ranks is Charlie Walker, **W4JMW**, of Jackson, Tenn. The rig is a filter job patterned after that of **WØMNN**, ending up on 75 with a pair of TZ40s running 300 watts on peaks. Charlie's rig cost him about $30 and a few junk-box parts. The filter on 20 kc. uses toroid coils, but the balanced transformers on the higher frequencies were wound on toroid forms made by enlarging the center hole in some iron slugs out of BC-458s and BC-696s. The converted 696 is used for a VFO, and the whole rig was built in a surplus APS-13 cabinet, using many of the same tubes, sockets and coil shields. Some 480-kc. transformers were made from the low-frequency coupling chokes of the APS-13 by separating the pies and tuning them to frequency. In a QSO with W4HXI, things were going solidly on s.s.b. when a "temporary" connection came loose and Charlie had to switch to 250 watts of a.m. W4HXI was barely able to pull the a.m. through the QRM!

Jim Dale, **W4KKX**, of Burlington, N. C., is also in there with a rig, using the filter system and 500 watts peak to a pair of 250THs. Right now he is rebuilding for a pair of 304TLs and some 20-meter operation.

That missing W8 call area showed up, represented by Bob Hall, W8ORD, of Powellton, W. Va. In fact, he first got on 75 back in September, with a rig patterned after the W2UNJ job. First work was with an 807 final running 60 watts peak, and later an 803 at 225 watts was used. Present inactivity is a result of rebuilding and moving the rig to another room, but Bob will soon be back on the air to supply the missing district.

Another new one is **W2NJR**, Bob Ehrlich, of West Orange, N. J. He is using a phasing job with miniature tubes, until he gets up to a 6V6 and a final pair of AB_2 807s. Peak power input runs around 100 watts on 75. He has a cute trick for VFO operation. A 5.2-Mc. crystal oscillator is used to drive the balanced modulators in the single-sideband generator, but some of this 5.2-Mc. energy is also fed into a mixer that beats against the regular 4-Mc. VFO. The output of this mixer (9.2 Mc.) then beats in another mixer against the single sideband at 5.2 Mc., giving an output signal at 4 Mc. Thus the output frequency is exactly equal to the VFO frequency, and he doesn't need a new frequency-control unit. The mixers are 6BE6s. In speaking of results, Bob says, "A series of seven solid contacts in succession on the same night with this relatively low power served to confirm the real communication efficiency of single sideband."

The **W9MO** mentioned last month is E. A. Beane of Oak Park, Ill. His rig is a phasing job, and it went on the air last April with an 807 in the output stage. The present final runs 200 watts peak input on 20, and WAS and WAC have been worked. Plans for the future include a little missionary work on 10.

Sid of **W2TBZ** reports that he has added a pair of Class AB_2 807s to the phasing job on 75, and now runs considerably more power than the original 6 or 7 watts he had. The linear amplifier almost took him for three out of three falls, but the thing was finally tamed. Sid is willing to go on record that for linear amplifiers, the screen supply must be constant, the bias supply must have low internal resistance, parasitic suppressors must be used, and the tubes must be shielded and neutralized! At least those are the details he found he couldn't do without. We'll buy the part about the power supplies, but some of the other sounds like Sid is one of the many victims of 807-itis. In any event, W2TBZ now operates any time he wants to, with his antenna and a TV antenna in a lover's embrace, and he swears that single sideband *and* linear amplifiers are easier to build than are some of the TVI preventatives he has seen and heard about. Right now he has the local quiet-hours gang reading up on single sideband!

Yoe of **W2EB** went to 20 from 75 after he heard about DL4PA being on, and he worked the DL a few weeks later. He also worked WAC and 14 countries on 20 using s.s.b., but none of the DX stations had it. But they did know how to tune in the stuff, mostly from having read about it in *QST* and their own publications, and that's a very encouraging sign. HC2OL was so enthused and amazed at the silence of the receiver (good signal-to-noise ratio) while copying W2EB that he called the XYL into the shack to demonstrate how to tune in s.s.b. in case she should hear another station using it. (Ecuador must be way ahead of the States — most of the XYLs here can't tune in a.m. on the broadcast band!) Among the other DX stations who know how to handle the carrierless stuff are ZS6DY, 4X4CZ, VK2AKW, ON4CC, JA4AG, OX3GG, PAØPB, VP5MU, DL4JU, OZ7SM, ON4DN and G8VK.

W2SHN doesn't have any DX to report outside of **WØMNN** on 75, but he says the more he uses s.s.b the more he likes it and the more he learns. He and **W2UNJ** would like to see a list of all known s.s.b. rigs and whether they are filter or phasing. That we can give them some month when we have more room, although we think almost everyone has been reported in this column at one time or another. If not, all it takes is a penny postcard.

As you know, one of the problems we haven't licked yet in this single-sideband field is rapid tuning-in of the signal. One of the ideas some of the gang out at Collins Radio have been kicking around is that the s.s.b. boys might set themselves up on exact kilocycles, like 3999, 3997, 3995, and so on. Then a receiver that "jumped" to each of these frequencies as it was tuned would always be right on the nose at each frequency, and it would be no trick at all to tune in the signals. Sure, we know there are a lot of nice problems connected with it, and it goes against some of our operating rights and practices, but on a voluntary basis it might do a lot for us. At least it's a thought that we pass along for your consideration.

W2KUJ and **W4OLL** appeared at the October FCC meeting to present the case for the s.s.b. gang. They had previously taken a poll of all known s.s.b. operators, to see if they favored any special frequency assignments for the stuff. Their presentation was an excellent one, and it brought out the fact that the large majority (80% of those replying) was not in favor of special frequency assignments but believed that more amateurs would become familiar with the technique and better tests could be made by working within the bands assigned to a.m. and n.f.m. We feel that the single-sideband gang owes them a large "Thank you" for their splendid work. — *B. G.*

Strays

On November 1, 1949, the services of WWV (full schedule on page 38, this *QST*) were expanded to include a third category of radio propagation disturbance notice, supplementing the use of the letters "W" and "N." The new signal — "U" for "unstable" conditions in the ionosphere — is transmitted when forecasters at the Bureau of Standards' Central Radio Propagation Laboratory expect satisfactory reception of short-wave communication or broadcast services employing high-power transmitting equipment operating on the recommended frequency, but poor results on less well-equipped services. The "U" warnings, broadcast in international Morse code at 19 and 49 minutes past each hour, apply primarily to North Atlantic radio circuits.

W1AW Christmas-New Year's Schedule

This supersedes previous notices. The Headquarters station will not be operated Saturday night, Christmas Eve, December 24th, or New Year's Eve, December 31st. W1AW will operate Sundays, December 25th and January 1st, 1600–2200 EST. On Mondays, December 26th and January 2nd, the station will operate its evening or central shift (1730–2400 EST), but attendants who have not had time off for the holiday will omit other shifts. See page 65 of November *QST* for full W1AW schedule.

Your QSL Manager

At a drug store across the street from Dallas High School, a bunch of radio amateurs looked up from their cherry phosphates late one afternoon in 1923 to see a frustrated-looking brother ham amble in. He wore a guilty expression, for he was the last of the Dallas hams still on spark and the boys had let him know in no uncertain terms and on many occasions what they thought of his QRMing rock-crusher. They didn't relent this time either; they started in again to tell him what he could do with his pet Murdock rotary. It's hard to say if his splattering signals or his powers of persuasion did the trick, but the fracas ended up with our hero being offered enough parts to get him on the air with c.w. From that time forward, Leroy W. May, W5AJG, lost his hangdog look and became one of the boys.

Leroy had all the fun of pioneering on eighty meters, then on forty, and later on twenty as amateur radio moved into new territory. When ten-meter operation was a new adventure, he was there, watching the band like a hawk and pouncing on any unwary signal that might show up. With that kind of pioneering spirit, it is small wonder that the new and untried very-high frequencies also appealed to Leroy, who expanded his station from time to time to accommodate new slices of frequencies. The present transmitter set-up at W5AJG is used enthusiastically on amateur bands from 3.5 to 1200 Mc.

Although Leroy was a busy amateur, he nevertheless found time to go courting and, in October, 1930, brought home a starry-eyed bride. Scarcely had the last grain of rice been brushed off when Leroy began what he thought would be a slow, hard-going campaign to sell Bernice on amateur radio. To his surprise and glee, however, the campaign was short-lived. Right from the very start, Bernice has been convinced that amateur radio is about the grandest hobby in the world. Within a few months, she was able to announce proudly that thenceforth the OM had no monopoly on amateur radio privileges in the May family now that she had W5JKM.

In 1933, when the ARRL QSL bureau in its present form was inaugurated, W5AJG volunteered for the post of QSL manager for W5. However, other W5s had the same idea a shade earlier and so Leroy heard no more of it until a vacancy in the post occurred at the end of World War II. ARRL headquarters dug up his earlier application, wrote Leroy to inquire if he was still willing and able to take over the duties and responsibilities of W5 QSL manager, and received a letter by return mail saying that he was all set to go. Leroy was convinced, when he received all of the stock of prewar cards from his predecessor, that he had never seen so many QSLs in his life. His idea of what constitutes a large volume of cards has had to be revised upward since, however; his starting stock would amount to about a couple of weeks' "take" in present times. As in everything else, the W5 QSL bureau was made a joint project by the Mays with Bernice stepping in and taking her share of the added responsibilities. As a matter of fact, the whole May family participates. Mike, who is 9 years of age, has the assignment of rubber-stamping the cards as they come in, a task that he performs enthusiastically. Suzie, who is just three, likes to help in a big way and sometimes she does!

The May history is pretty well summed up in the words of W5JKM who, as you will see, is something of a philosopher:

"It has always seemed unfair to me that most men don't have a corner of the house they can call their own. We certainly remedied that in this family. It has paid good dividends, too. Keep 'em happy at home, I always say, and that's where they will stay." — *L.T.W.*

Operation of the W5 QSL bureau is, like other May activities, a joint affair. . . .

I.A.R.U. News

QSL BUREAUS OF THE WORLD

For best service on delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below (bold-face type indicates a recent change from previous listings). *Do not send foreign cards to A.R.R.L. headquarters except those for which no bureau is here listed.*

For service on incoming foreign cards, see list of domestic QSL bureaus in previous issues of *QST* under the heading, "A.R.R.L. QSL Bureau" (page 54, Nov. *QST*).

Alaska: J. W. McKinley, Box 1533, Juneau
Algeria: Via France
Argentina: R.C A., Av. Alvear 2750, Buenos Aires
Australia: W.I.A., Box 2611W, G.P.O., Melbourne
Austria: Via ARRL
Azores: Via Portugal
Bahamas: **C. N. Albury, Telecommunications Dept., Nassau**
Barbados: VP6PX, Wood Goddard, Bromley, Welches, Christ Ch., Barbados, British West Indies
Belgian Congo: P.O. Box 271, Leopoldville
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: VP9D, James A. Mann, The Cut, St. Georges
Bolivia: R.C.B., Casilla 15, Cochabamba
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: Desmond Yong, 22 Sussex St., Charlestown, Georgetown #16
British Honduras: D. Hunter, Box 178, Belize
Burma: B.A.R.S., P.O. Box 611, Rangoon
Canal Zone: Canal Zone Amateur Radio Association, Box 407, Balboa
Canton Island: Francis T. Blatt, KB6AG, % C.A.A., Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: K. L. Koo, P.O. Box 409, Shanghai
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: F. Gonzalez, Box 365, San Jose
Cuba: James D. Bourne, Lealtad 660, Habana
Czechoslovakia: C.A.V., P.O. Box 69, Prague I.
Denmark: E.D.R., Box 79, Copenhagen, K.
Dominica: VP2DC, Roseau
East Africa: (VQ1, VQ3, VQ4, VQ5): **P.O. Box 1313, Nairobi, Kenya Colony**
Ecuador: Victoriano Salvador, P.O. Box 2536, Quito
Eire: R. Mooney, "Eyrefield," Killiney Co., Dublin
Ethiopia: ET3AF, P.O. Box 858, Addis Ababa
Fiji: S. H. Mayne, VR2AS, Victoria Parade, Suva
Finland: **OH2NT, Kasarminkatu 25C12, Helsinki**
France: Service QSL, R.E.F., 6 rue du Pont de Lodi, Paris 6
Germany: (DL2 calls only) E. G. Styles, PW/DP Branch, 120 Hq. CCG (BE), Brunswick BAOR (II)
Germany: (DL4 calls only) DL4 QSL Bureau, APO 757, % Postmaster, New York, N. Y.
Germany: (DL5 calls only) Via France
Germany: (other than above) D.A.R.C., Post box 99, Munich 27
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
Greece: C. Tavaniotis, 17-A Bucharest St., Athens
Greenland: 1385th AAF Base Unit, APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: **G.R.A.L., Box 100, Guam, Guam, Marianas Islands**
Guatemala: Manuel Gomez de Leon, P.O. Box 12, Guatemala City
Haiti: Roger Lanois, % RCA, P.O. Box A-153, Port-au-Prince
Hawaii: A. H. Fuchikami, 2543 Namauu Dr., Honolulu
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P. O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenzkir Radio Amatorar, P.O. Box 1080, Reykjavik
India: **Amateur Radio Club, India, P.O. Box 6666, Bombay 20**
Israel: See *Palestine*
Italy: A.R.I., Via San Paolo 10, Milano
Jamaica: Thomas Meyers, 122 Tower St., Kingston
Japan: F.E.A.R.L., APO 500, % Postmaster, San Francisco, Calif.
Luxembourg: G. Berger, 20 Louvigny St.
Macao: Via Hong Kong
Malta: Via Great Britain
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Apartado Postal 907, Mexico, D.F.
Montserrat: VP2MY, Plymouth
Morocco: C. Grangier, Box 50, Casablanca
Morocco: Tangier International Zone only: EK1MD, Box 57, British Postoffice, Tangier
Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands East Indies: Hr. C. Loze, PK1LZ, Burg. Kuhrweg, 47 Bandoeng, Java
Newfoundland: N.A.R.A., Box 660, St. Johns
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
Nicaragua: L. B. Satres, Bolivar Ave., 106 Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 199, Livingstone
Norway: N.R.R.L., P.O. Box 898, Oslo
Pakistan: Via India
Palestine: P.O. Box 4099, Tel-Aviv
Panama, Republic of: L.P.R.A., P.O. Box 1616, Panama
Paraguay: R.C.P., Palma 310, Asuncion
Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Amateur Radio Assn., 931 R. Hidalgo St., Quiapo, Manila
Puerto Rico: E. W. Mayer, P.O. Box 1061, San Juan
Portugal: R.E.P., Travessa Nova de S. Domingos, 34-1° Lisbon
Roumania: Vasilescu, Box 326, Bucharest
Salvador: J. F. Mejia, 7ª Calle Poniente No. 76, San Salvador
South Africa: S.A.R.L., P.O. Box 3037, Capetown
Southern Rhodesia: **ZE2JV, Plumtree**
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 8
Switzerland: U.S.K.A., Postbox 1203, St. Gallen
Syria: P.O. Box 35, Damascus
Trieste: A.R.A.T., P.O. Box 301
Trinidad: Edgar H. Borde, 52 Mucurapo Rd., Port-of-Spain
Uruguay: R.C.U., Casilla 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., Apartado 1247, Caracas
Virgin Islands: Richard Spenceley, KV4AA, Box 403, St. Thomas
Yugoslavia: Post Box 180, Ljubljana

(Continued on page 116)

Correspondence From Members-

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

BEGINNERS

1517 Fargo Ave., Chicago, Ill.

Editor, *QST:*

. . . You, too, note without a doubt the widened postwar gap between the high-speed c.w. men and the rank beginners. Experience assimilated in the services or with the commercials during wartime is probably responsible in the main (also the electronic-key boom) and the number of QRQ artists continues to run higher. Yet, according to what I hear, the percentage of 'phone specializers who forsake the code is on the increase, also.

After hearing the rough treatment some of the 13–15 w.p.m. boys receive when they tangle with certain chesty speed merchants, I don't wonder that the more sensitive of them switch to the oral route as soon as they can build a modulator. At least they will be accepted on 10 meters on almost equal terms with the old timers!

Yet these same speed demons who consider themselves A1 operators of c.w. and the backbone of ham radio are openly deploring the expansion of 'phone operation now evident in the ranks and wondering why. Answering a 45-w.p.m. CQ by some of these guys at 20 w.p.m. or less will only too often be answered by another zippy CQ. So, many of these swift birds are actually discouraging the growth and strengthening of their own particular phase of the hobby while at the same time they jump up and down cursing the "phoneys" on the A3 bands.

I'd like to see some pointed remarks that might enlighten the group of which I speak, bringing home the fact that if they expect c.w. to continue its strong position in the game they're going to have to get down off the clouds and help sell it. And they're certainly not doing it by remaining aloof or by scaring the daylights out of nervous newcomers by trying to ram umpty words per minute down their throats. QRS!

— *Rod Newkirk, W9BRD*

1771 Logan Ave., San Diego 2, Calif.

Editor, *QST:*

Am thirteen years old and I just received my ticket five days ago.

I would like to pay tribute to all the amateurs who QSOed with me and gave me a hearty welcome to ham radio. They are very considerate and patient with the beginner. Tnx, fellows!!!

— *Bob Eusebio, W6GTC*

Jones & Laughlin Bldg., Third Ave. and Ross St., Pittsburgh 30, Penna.

Editor, *QST:*

. . . After a long pull I got my ticket a little over a year ago, thanks to the inspiration of the ARRL and its staff, and although I am a hustling 63 years of "old age" ham radio has really knocked about ten of these years off. Have been a member of ARRL for close to twenty years. . . .

— *Ralph T. Rowles, W3OOP*

VP ML-7, NAS, Quonset Pt., R. I.

Editor, *QST:*

Recently I have been reading about these youngsters (I am one myself, age twenty) who have only a measly 500 watts. Output, that is. They only work fifty countries during the best conditions on 10 'phone, QSOs lasting on the average of from five to eight minutes at the most. They also roll up very high scores in all contests that they enter. They also operate with the finest receivers that money can buy, along with converters, preselectors, VFOs, and a small assortment of arrays, not counting the enormous amount of time in which to operate when the bands are open. Also most of them are fortunate enough to have old timers in the family.

Now we come to the poor penny-pinching ham, the guy with the homemade 6L6 oscillator, a six-tube superhet and a total of two rocks good only on forty and eighty. With his quarter-wave-long wire and this set-up, he can work WAC (all counties, that is) in his state.

Let's hear a little more about the beginner who works out with twenty or thirty watts, homemade. Let's see some pictures of the rigs of the boys who work ten to twenty countries with only six to twenty watts input. I think that they should get their pictures in *QST* before the *commercially*-equipped station.

— *R. C. Kaiser, W2YJF*

NONAMATEUR CALLS

53 Gulf St., Chickasaw, Ala.

Editor, *QST:*

. . . Reference to "Operating News" in the October issue and LOKO/MM. I heard LOKO/MM and tried to get him, but was unable to do so, and probably lucky at that since reading your article.

What I want to bring out is how is an operator to know if a station is illegal if he is using amateur frequencies and posing as an amateur station? Lacking up-to-the-minute information on each country's amateur prefixes, how can a person know? With some of the legal prefixes now on the air, a fellow can expect anything. Prefixes such as 4X4, 3VA, etc., don't sound like the normal run of amateur prefixes. Also, until recently, some commercial services had prefixes that sounded like amateur calls (in the U. S.), such as some of the v.h.f.-taxi, mobile-telephone, and the like.

— *Marc Molyneaux, jr., W4MVM*

[EDITOR'S NOTE: International regulations provide that an amateur call must be formed by one or two letters and a single digit followed by not more than three letters, except that some countries are permitted to replace the first letter with a digit. On that basis, such calls as LOKO are easily identifiable as nonamateur.]

P.T.M.

121½ South B. St., Oxnard, Calif.

Editor, *QST:*

I have read with considerable interest Mr Dana Griffin's article in the July issue of *QST* He presented therein a case for pulse techniques in amateur bands and I feel that he has a good point. There does seem to be an opportunity for us radio amateurs in the field of pulse transmission as will now be sketched out below. I gave this idea of transmission of intelligence by pulse techniques some thought, and I feel now that pulse-time modulation (p.t.m.) offers an avenue of approach to the problem of putting pulses to work in our amateur bands.

There may be some disadvantages in pulse transmission which may turn out to be relatively minor if and when proper methods are used, as sketched out by Mr. Griffin in

his article. Here we are referring to the spectrum bandwidth taken up by pulses transmitted on a given center radio frequency. Properly-shaped 50-microsecond pulses should not take up much more room than 50 or 100 kc. of bandwidth.

In the proposed p.t.m., the basic use would be telegraphy or teletype operation. Both of these uses are relatively slow-speed — about 65 or 75 w.p.m. maximum — and p.t.m. with a 100-cycle base repetition frequency appears to be feasible for these uses, according to certain calculations and preliminary circuit analyses I have made. In reality, p.t.m. is a double-pulse method, when one channel of intelligence transmission is desired. The pulses come in pairs, the first one being the initial pulse — and the second following pulse will be the *mark* or *space* pulse, according to one of two different fixed time delays after the initial pulse. Hence pulse-*time* modulation. This method appears to be promising enough to warrant trial.

C.w. telegraphy (type A1 emission) is really a form of pulse transmission. P.t.m. would be very similar, except that the time intervals between both pulses in pulse pairs indicate mark and space (or on and off) conditions.

The study is being continued. It appears to be a "new method" of transmission for c.w. and teletype fans to work out, like single sideband is for the 'phone group.

— *Robert H. Weitbrecht, W6NRM*

S.P.A.R.R.O.W. PLEASE NOTE

Arabian Trading Co. Ltd., P.O. Box 23
Addis Ababa, Ethiopia

Editor, *QST:*

I refer to a letter from the treasurer of the Society for Protection of Amateur Radio Rights Of the World published in *QST* September.

Here I give a chance to these people to show what they can do in protecting the amateur rights.

I call myself a ham since I was 8 when I built my first crystal set. I have never had a license, and lately I have applied to the authorities for one. As new regulations now exist that no more licenses will be issued unless applicants hold license from another country, it is now impossible for me to get one. This prevents me from being an active ham.

What does the Society for the Protection of the Amateur Radio Rights Of the World suggest? . . .

Leon Ferry

P.T.P.A., Elk River, Idaho

Editor, *QST:*

Three cheers for the newly-formed S.P.A.R.R.O.W. As a strictly 80-40 meter c.w. man, I insist that they agitate for complete abolition of all amateur frequency allocations above 7.3 Mc.

— *Hugh S. Pettis, W7MVA*

QST

15 Stoddard Rd., Hingham, Mass.

Editor, *QST:*

Mr. Berry's article on single sideband filter, June, 1949, *QST*, is a step in the right direction. More such "how to build it" data are desirable, particularly with regard to late developments in ham radio. No doubt there will be some who will classify this article as too technical but for my part I would like much more of the same!

— *J. O. Wood, W1AYG*

4018 Tholozan Avenue, St. Louis, Mo.

Editor, *QST:*

Now you have come down to earth. That article by A. F. Scotten, W6ZMZ, "The Invisible Antenna," was to me well worth the price of a year's membership. We all know the formulas for setting up an antenna properly, but to overcome conditions as they actually exist is what most of us are really interested in.

The writer recently changed his address and, not wishing to advertise to the neighbors that he was a ham, put out an "invisible" No. 28 wire, and it worked fine business. Many thanks for one of the most constructive articles published in *QST* in many years.

— *Alfred A. Simon, W0KIK*

DXCC

1426 Camden Ave., Los Angeles 25, Calif.

Editor, *QST:*

It was a great fight, Mom! W6SAI finally crashes thru with No. 200, to wit, ZD9AA. You may now count me out; and I swear over a stack of QSL cards that I am THRU with DX. You guys and your damned DXCC. You have given me more worries than Carter has pills! No kidding, the DXCC is the invention of the devil — just ask my XYL.

But I have taken the pledge! Sure, if the DX is there, I'll work it if I am on; no more of this 4 A.M. stuff and all those "hot deals" that happen at 2:30 A.M. and never come off! The beam is down, and I am relaxing on "80-meter fone," exchanging "handles" and giving "the dope on that" and acting like a gentleman again.

— *William Orr, W6SAI*

NEW BOOKLETS SUGGESTED

23404 Hatteras St., Woodland Hills, Rt. 1, Calif.

Editor, *QST:*

The new *Antenna Book* is sure a dandy — most complete. The following book line-up is suggested — 4 volumes of "meat."

Vol. 1 — Radio Fundamentals — 300 pages, covering a.c.-d.c. theory, tubes, tables, design of transformers, chokes, power supplies, etc. $1.00

Vol. 2 — Radio Receiving — 300 pages. Theory of reception and design including single sideband. $1.00

Vol. 3 — Radio Transmission — 300 pages. Theory and design including a thorough treatment of single sideband. $1.00

Vol. 4 — *Antenna Book* (very good as is) $1.00

This suggested line-up would have the gratitude of many of us now working for ham tickets.

— *George F. Sandstrom*

"WE"

1325 Green St., Salt Lake City, Utah

Editor, *QST:*

After working c.w. for twelve years, I'm at last ready to give the 'phone bands a try just to get some use out of my Class A ticket. But before I take the plunge perhaps some 'phone men can set me straight on one matter: Is it considered improper, un-Emily-Post-ish and egocentric to use the word "I" in 'phone transmission? To me, the use of "we" and "us" in referring to oneself sounds peculiar except when used editorially, by monarchs, or by persons weighing well over two hundred pounds!

— *Natalie Hunter, W7OOK*

MOBILE QSLs

Cambridge, N. Y.

Editor, *QST:*

Can I make a plea in behalf of the operators of mobile rigs?

If one of the fellows QSOs a mobile rig and if the mobile operator asks for a QSL, please, oh, please, mark the QSL "mobile."

I have operated a mobile rig on ten since Field Day. Occasionally I work a chap who is DX for the mobile, though "run-of-mine" for the home station. I ask for a QSL. He sends it. But there is nothing on it to indicate QSO was from my mobile! What a disappointment!

— *H. H. Hitchcock, W2VUE*

Hints and Kinks For the Experimenter

SOLDERING KINK

When soldering small parts, especially replacements, in crowded quarters, a useful gadget can be made from an alligator clip. Solder short lengths of heavy wire or brazing rod to the clip, and form them into a handle. The clip can then be used to hold the parts securely in places too small for ordinary tools while the solder is applied. — *Robert A. Vogt*

A VFO COUPLING AMPLIFIER

Shown in Fig. 1 is the circuit for a foolproof VFO coupling amplifier which utilizes the existing crystal oscillator, part of its circuits, and requires no extra coils nor tuned circuits, and no switching. It is about as simple a system as you could want, and it won't go into self-oscillation. About the only extra part required to install it in your transmitter is a ceramic octal socket.

While it isn't evident from the schematic diagram, the system uses a 6L6 connected as a high-μ triode in a grounded-grid amplifier circuit with the VFO input fed into the cathode. The connections shown in the diagram will result in this circuit. Note that a direct connection is made between the grid of the crystal-oscillator tube and Pin 6 of the added VFO coupling-tube socket. This pin is a blank for the 6L6 tube, and thus Pin 6 of the socket is used along with Pin 4 for the crystal socket. When crystal-controlled operation is desired, plug the crystal into Pins 4 and 6 of the VFO coupling-tube socket and tune in the normal fashion. For VFO operation, remove the 6L6 crystal oscillator tube from its socket, and the crystal from the VFO coupling-tube socket. Put the *6L6* in the VFO coupling-tube socket, fire up the VFO, and tune the plate circuit to resonance. It's as simple as that, and you need have no fear of the 6L6 oscillating, whether you work it straight through or as a doubler.

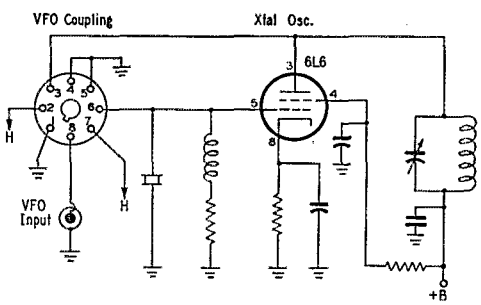


Fig. 1 — A VFO coupling stage that can be added to almost any crystal oscillator. A second octal socket, wired as shown, is used to convert the crystal-oscillator stage to a grounded-grid amplifier.

Note that the d.c. return for the cathode circuit of the VFO coupling tube must be completed through the coaxial link line used between the VFO and the rig. In other words, a low-impedance link with one side grounded is called for in the VFO unit. — *R. L. Tester, W6YVO, ex-W8WMP-W9FAI*

TUNING DEVICE FOR SURPLUS GEAR

If you own some surplus gear containing tuning elements that can be adjusted only by poking a small screwdriver through a hole in the panel, you'll be interested in this simple method of attaching a regular tuning knob and calibrated dial.

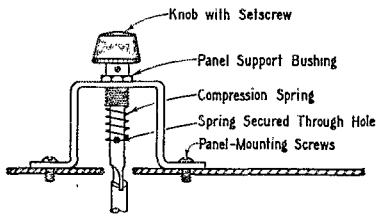


Fig. 2 — Novel tuning device for those screwdriver-adjusted condensers encountered in surplus gear.

A 1-inch strip of metal is formed into a bracket as shown in Fig. 2. It is drilled for mounting screws and for a standard panel bushing. A length of ¼-inch insulated shafting is then drilled through its diameter to take the ends of a small compression spring (available at most auto supply stores). Slip the ¼-inch shafting through the panel bushing, adjust the tension, and tighten the setscrew in the knob. The other end of the shaft is cut to proper length and filed to fit the slotted shaft of the condenser after the shaft is aligned properly on the panel.

To make a calibrated dial, slip a sheet of cardboard under the bushing and draw in whatever calibration you want. — *F. H. Maley, W1GZH*

SIMPLE UTILITY OSCILLATOR

Shown in Fig. 3 is a simple crystal oscillator that can be used in almost any ham shack for providing band-edge markers and for checking crystal activity.

The circuit is the familiar "hot-cathode" Pierce oscillator. The 100-$\mu\mu$fd. condenser C_1 between grid and cathode was found necessary for oscillation, although its size may be altered to suit individual needs. Output is taken from the cathode

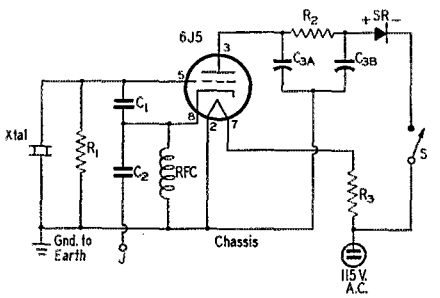


Fig. 3 — Schematic diagram of a simple crystal oscillator for general utility in the ham shack.
C_1 — 100-$\mu\mu$fd. mica.
C_2 — 50-$\mu\mu$fd. mica.
C_3 — Dual 40-μfd. 150-volt electrolytic.
R_1 — 47,000 ohms, 1 watt.
R_2 — 5000 ohms, 2 watts.
R_3 — Line-cord voltage-dropping resistor.
J — Pin jack.
RFC — 2.5-mh. r.f. choke.
S — S.p.s.t. toggle switch.
SR — Selenium rectifier (Federal 403D2625).
Xtal — 40-meter crystal.

through a 50-$\mu\mu$fd. condenser terminating in a small pin jack on the chassis. Sufficient output is obtained at the crystal fundamental with the little rig "as is," but a three-foot length of wire plugged into the output jack may be necessary if higher-order harmonics are to be heard. The addition of the wire causes the frequency to shift slightly, but since this was not intended to be a frequency calibrator, the difference is not objectionable.

An actual earth ground for the chassis is necessary, and if the line cord is plugged in the wrong way the rig will not operate. With the filter components specified, a T9x signal is obtained. — *S. S. Goddard, W6FBV*

BATTERY-SAVING HINTS

Much battery-powered gear obtains its "B" voltage from two batteries in series, using, for instance, two 45-volt units in series to get 90 volts, or, in the case of my own blooper, two 67½-volt units to get 135 volts. In many cases the full B voltage may not be required; for example, when a receiver is tuned to a strong signal which does not require full gain of the receiver, or in the case of a transmitter which is operating over a short distance with a strong signal. In these cases full plate voltage is unnecessary, but we usually adjust things by turning the volume control down. This does not reduce the battery drain in any way, and they go right on draining at the same rate whether conditions are good or bad. Battery power is expensive, and the simple switching circuit shown in Fig. 4 goes a long way toward conserving battery life under the conditions outlined above.

A d.p.d.t. switch is used to change the battery connections from series ("HI") to parallel ("LO"). This results in less current drain, and distributes the load over two batteries instead of concentrating it on one. The point in the diagram marked "B + Intermediate" remains at the same voltage regardless of the switch position, and can be used for circuits where constancy of voltage is important, such as for the local oscillator in the receiver or for the VFO in the transmitter.

—•••—

Another useful kink that will help save precious power in portable receivers is the use of germanium diodes, such as the 1N34, to replace a 6H6 or other dual-diode tube that requires filament power. The 1N34 diodes can be placed in the circuit without disturbing the wiring of the set by the following simple method:

Take an old tube base or an octal plug, and connect the anode lead of one of the diodes to Pin 3, the negative lead to Pin 4. The other diode is connected between Pins 5 (anode) and 6. The 6H6 may then be removed from its socket and the new diode gadget substituted in its place.

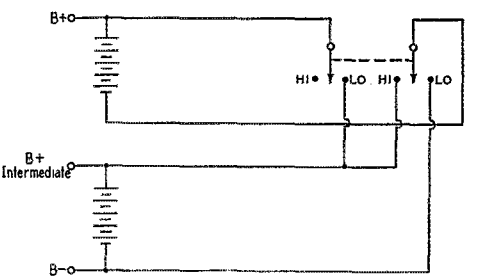


Fig. 4 — A novel power-saving system for battery-operated gear. Throwing the switch from "HI" to "LO" results in operation at half normal plate voltage.

This arrangement cannot be used in sets having series-parallel filament connections where the heater of the 6H6 is required to complete the circuit, but will be satisfactory in other sets. If the 6H6 is used with its two diode units in parallel, only one 1N34 will be required. — *Charles Erwin Cohn*

NONSKID MOUNTING FOR KEYS

Here's a method of obtaining a solid mounting for your key without having to bolt the thing to your good mahogany desk. Take a piece of ¼- to ½-inch boiler plate about 6 by 4 inches and drill the necessary hole for mounting the key. Counterbore the holes on the bottom surface to

(*Continued on page 102*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
JOHN E. CANN, W1RWS, Asst. Comm. Mgr., C.W.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator

J. A. MOSKEY, W1JMY, Deputy Comm. Mgr.
L. G. McCOY, W1ICP, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

The Simulated Emergency Test. Letters and radio messages from all over seem to agree that October's AEC Test once again was tops with Red Cross, clubs, and coördinators. A lot was learned! Community plans were tested, relations cemented with those we handle communications for in emergencies, mobiles and portables were deployed as in actual disaster, and unexpectedly and otherwise a great deal of newspaper and broadcasting time credited leading amateur groups that worked for this factor in the possible "100%" rating that was attained by many ECs. There was QTC galore! More dope on results when our new NEC digs out from under the pile of messages.

The Suffix "K." W2KTF writes, "W2UNS and I have been doing some signal checking. Incidentally, in general amateur work I very much like the use of the suffix 'K' on RST reports to denote clicks. Has this been publicized in *QST?* It is very useful." Perhaps we have overlooked giving this subject all the publicity deserved. However, the RST system, as reproduced in all ARRL publications, includes three provisos: (1) If a signal has the characteristic steadiness of crystal control add the letter X to the RST report. (2) If there is a chirp, the letter C may be added to indicate so. (3) For a click, add K.

Unnecessary clicks seem altogether too prevalent these days. Simple and inexpensive lag circuits ordinarily "do the necessary." A little time spent adjusting the size of chokes or capacitors to reach optimum values will help clean up the bands for everyone. To do a good job of checking clicks, those caused by a spark at the key should be eliminated independently of clicks generated by the keyed r.f. carrier. This is to suggest a more widespread use of K on the end of our RST exchanges (or C, as may be required) to assist in inviting attention to any signal heard that will stand improvement.

Progress in Automatic Relaying. From 200-meter spark techniques we have come a long way in relaying. With pride, ARRL points to a new accomplishment in personal coöperation and v.h.f. technique, the *instantaneous relaying* of signals through a chain of five amateur stations using radioteletype. A demonstration in practical amateur TT operating, such a circuit was maintained hours on end to a station at the Hudson Division Convention. W2BFD, W2QGH, W1RQ, W1JKC and W1AW took part, and three of these stations received on one channel in the 2-meter band, simultaneously retransmitting a signal beamed in the proper direction using a frequency near the opposite end of the band. The first 41-word message signalizing success of the link reached Hq. at 2030 October 5th. October 18th marks another first in two-way TT, an 11-meter contact between DU1HR (Clark Field, P.I.) and W6ITH (Moraga, Calif.). Readers are referred to page 16 of October, 1948, *QST* for review of "how it's done" on radioteletype.

CP Program Invitation. These days W1AW is getting lots of new-ham QSLs and "thank-yous" for assistance rendered to so many through the Mon.-to-Fri. code-practice program. All connected with our station are warmly appreciative of these tokens and hope to keep up the good work. Over 13,500 individuals have been certified to date! In the past year or more only two letters suggest that the monthly qualifying runs be extended to speeds above 35 w.p.m. Since the idea may have occurred to others, this is to say

The Milwaukee School of Engineering Amateur Radio Club celebrated the approval of its application for affiliation with ARRL by throwing a "Charter Party." Central Division Director John Doyle, W9GPI, was on hand to present the new charter of affiliation. Shown here in the shack of the club station, W9HHX, after the presentation are, *left to right:* Reid Burrows, W9JWT, trustee of W9HHX; Clarence Burke, W9KEU; Director Doyle; George C. Bowen, W9DWI; Jack Horth, W9YFT; Clarence Wahner, W9YYY; George Kirsten, W9WTL.

publicly that we don't intend to take the speeds beyond the practical manual ranges to the region where machines take over. This might temporarily make a few top guys shine as Code Kings. However, we intend to do *nothing* to take the shine off winning a certificate at 15 w.p.m., and will continue to start our practice at speeds as low as 9 w.p.m. on three of the five days of the week. At that speed even the chap who has just finished memorizing can begin to pick out some letters here and there. We (and you) have seen the unfavorable results of super competition . . . and we're not eager to run this highly-popular program into the ground in that particular way.

Are *you* going up for license soon? Can you prove to yourself and others that you are up to 15 w.p.m.? Why not continue until you have *all* our proficiency stickers in the 20-to-35 w.p.m. range? Nonlicensed persons as well as licensed members are welcome to use our Mon.-to-Fri. W1AW code-practice transmissions . . . and to try for the official ARRL CP certification! We urge *every* amateur to hold a 15-w.p.m. certificate. It's a handsome and meaningful award. See full CP schedule elsewhere in these columns and plan to try copy on the next monthly qualifying run.

10-Meter WAS, V.H.F. SS, and CD Parties. How many remember the prewar WAS Party always held in a band open to both Class A and B operators? Since our postwar Band-Warming Party we haven't had an activity that was *especially* for the benefit of the *10-meter operator*. But plans are in the works. Rules will be like those of the famous old WAS Parties! This is to invite every ham not "all set" to get his 10-meter rig on the ball for some January fun and a WAS workout. Dates? Jan. 7th–8th and 14th–15th.

V.h.f. workers should prepare now for the Third ARRL V.H.F. Sweepstakes, coming up January 21st and 22nd. Another gavel to the leading club entry and certificate awards in each section. The rules will appear in January *QST*.

All ARRL appointees on Jan. 29th–30th will have operating opportunity in the quarterly all-band CD Party, open to all station and leadership appointees. Every active League member is qualified for *one* such appointment. Whether your interest is in v.h.f. experimenting, operating a top-grade 'phone station, or handling traffic in a way to reflect credit on yourself and ARRL, your SCM has an appointment waiting for you, if you're active and will report activities to him. Drop him a line right away or get from us the booklet *Operating an Amateur Radio Station* to read about the several appointments. It's information sent gratis to ARRL members (10¢ to others) and there's time for all applying for SCM appointment now to get a January CD Bulletin which explains how to work in the late January activities. See you in the doings.

— *F.E.H.*

A.R.R.L. ACTIVITIES CALENDAR

Dec. 4th: CP Qualifying Run — W6OWP
Dec. 13th: CP Qualifying Run — W1AW, WØTQD
Jan. 7th: CP Qualifying Run — W6OWP
Jan. 7th–8th, 14th–15th: 10-Meter WAS Party
Jan. 19th: CP Qualifying Run — W1AW, WØTQD
Jan. 21st–22nd: V.H.F. Sweepstakes
Jan. 29th–30th: CD QSO Party
Feb. 3rd: CP Qualifying Run — W6OWP
Feb. 10th–13th: DX Competition (c.w.)
Feb. 13th: CP Qualifying Run — W1AW, WØTQD
Feb. 17th–20th: DX Competition ('phone)
Mar. 5th: CP Qualifying Run — W6OWP
Mar. 10th–14th: DX Competition (c.w.)
Mar. 17th–20th: DX Competition ('phone)
Mar. 17th: CP Qualifying Run
April 1st: CP Qualifying Run — W6OWP
April 19th: CP Qualifying Run — W1AW, WØTQD
April 22nd–23rd: CD QSO Party

BRIEF

Angela M. Combs, wife of P. C. Combs, KZ5PC, qualified June 12th as a licensed amateur radio operator, thus becoming the first woman in the Canal Zone to hold a ham ticket. Angie became interested in ham radio when her husband began studying several months ago for his ticket, and attended classes in code and theory at the CZARA shack aboard the *S. S. Barracuda* in Diablo with him. She will share the rig with the OM but will use her own call, KZ5AC. One of her projects will be to exchange cooking recipes with Central and South American YL ops.

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/WØTQD will be made on December 13th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7215, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 3534 kc. The next qualifying run *from W6OWP* only will be transmitted on December 4th at 2100 PST on 3590 and 7248 kc. These W6OWP-only runs will have different text from the runs sent by W1AW and WØTQD. For additional qualifying run dates see the ARRL Activities Calendar elsewhere on this page.

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, 15 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening, Monday through Friday, at 2130 EST. References to texts used on several of the transmissions are given below. These make it possible to check your copy.

Date	Subject of Practice Text from October *QST*
Dec. 2nd:	*A Cascode Converter for 144 Mc.*, p. 11
Dec. 4th:	Qualifying Run, 2100 PST, from W6OWP only
Dec. 5th:	*A "Built-In" 10-Meter Mobile*, p. 19
Dec. 8th:	*Painless Prediction of Two-Meter Band Openings*, p. 22
Dec. 13th:	Qualifying Run, 2130 EST, W1AW/WØTQD
Dec. 14th:	*A Crystal-Controlled Plug-In Converter for the Q5-er*, p. 29
Dec. 16th:	*The "Hum Bug,"* p. 40
Dec. 20th:	*Tailoring the Series-Tuned VFO to Your Needs*, p. 42
Dec. 22nd:	*Technical Topics*, p. 46
Dec. 26th:	*The World Above 50 Mc.*, p. 52
Dec. 28th:	*TVI Tips*, p. 55

From advance reports, it appears that the nationwide Simulated Emergency Test of October 15th–16th was a huge success, participated in by thousands of emergency-conscious amateurs, each of whom forwarded a message to ARRL reporting his activities. So far about 500 such messages have reached us, and many more are expected. Connecticut traffic-handlers in particular had a real traffic workout over the week end! In addition, dozens of messages from Red Cross chapter disaster chairmen went through us to the American National Red Cross in Washington. Emergency coördinator reports on the simulated test are already starting to come in. While complete tabulation of details will have to await completion of all returns, it is worth saying here that the degree of organization, enthusiasm and participation in AEC activities by amateurs in the field has been both encouraging and heartwarming. Our emergency and traffic-handling systems both had the benefit of a good test during the week end, and neither was found wanting.

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Brief personal note: Your new National Emergency Coördinator wishes to acknowledge with thanks many expressions of congratulation and support received during the past weeks. We'll do our best to be worthy of both.

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KP4KD reports that the Puerto Rico AEC Emergency Net was alerted three times during the fall storm season, and on the last occasion the net was credited with having obtained information which enabled the Weather Bureau to determine that the storm had not changed course as they suspected it had. During the evening of September 21st, when electric power was cut off at Ponce, KP4ES, operating on emergency power, supplied the only communication to the insular Red Cross Headquarters in San Juan.

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The policy of the American Red Cross when their mobile communications unit goes into a disaster area is always to recruit or request local amateur coöperation; in effect to place the radio equipment at the disposal of local groups under the control of a properly-licensed radio amateur. In line with this procedure A4ARC was operated at West Palm Beach, Fla., under the control of W4MVJ, and handled over 300 messages to K4AF in connection with the August hurricane operations reported on page 64 of November *QST*.

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The South Texas Emergency Net was alerted on October 3rd as a hurricane approached the Texas coast. Up-to-the-minute barometer readings and wind directions were relayed to the Weather Bureau at Austin throughout the day and night. As the storm passed inland and over Angleton, W5BD continued to report with battery power when the lines went out. W5FQI, acting net control, continued on duty until the center of the storm passed Houston and was headed up country, diminishing. The net was set free about 0230 CST. More than 100 stations stood watch, including members of emergency nets in adjoining states. Although no emergency was declared, the net was conducted in an orderly, efficient manner with but little QRM.

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The Washington (D.C.) Mobile Radio Club boasts an elaborate system of mobile emergency communication designed for handling any emergency situation which might arise in the D.C. area. Operated entirely on 28-Mc. 'phone, the system consists of a fixed central net control station to assign tasks to each of three fixed net control stations designated red, yellow and blue. Each of the fixed net control stations, upon receiving its instructions, dispatches mobile stations to accomplish the required mission within its area of control. Complete mimeographed instructions and operating procedure are made available to each member. The club conducts a drill once per month, usually in the form of a simulated emergency.

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Out of New Orleans comes a report of an organizational meeting of the Communications Committee of the American Red Cross Disaster Program in which amateur stations figured prominently. The plan evolved at the meeting includes all possible communications facilities in the area. EC W5KTE, representing his AEC organization in New Orleans, is a member of the Committee, and amateur facilities appear liberally on the functional diagram of the set-up. It appears that the New Orleans AEC organization, backed by experience and good leadership, is equipped to cope with any emergency situation which might arise, and that it has the full coöperation of the Red Cross and other agencies.

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Montana SCM W7EGN forwards information on amateur participation in the Mann Gulch forest fire in early August. Although communication was maintained on CAP or Forestry Service frequencies, amateurs were able to be of service when it developed that there were not enough qualified radio men to set up and operate Forest Service equipment at the fire camps. Over a period of four days, while the fire continued to burn out of control, these amateurs had little sleep and covered many miles over extremely rugged country. Those taking part in this emergency work were W7BIS, W7EAI, W7IKV and W7JKR.

HAM RADIO — AUREOMYCIN — A LIFE SAVED

On Wednesday morning, August 31st, Don Cummings, W8REU, was listening across the twenty-meter band when he heard Jack Pike, VK2JP, working W2PPS. VK2JP was seeking help for his daughter who was desperately ill with virus pneumonia. Her temperature had been 104 degrees for days and the use of such drugs as sulpha and penicillin had been to no avail. He was trying to obtain aureomycin, a new drug not yet available in Australia.

W8REU, who happened to be employed by a pharmaceutical corporation, broke into the QSO and offered his help in obtaining some of the drug. He contacted his employers and had them ship 12 grams of aureomycin via air mail to Australia from their branch office in San Francisco. Wanting to let VK2JP know that the drug was on the way, he tried to contact W2PPS and let him know so that the information could be passed along. Skip conditions were wrong and it seemed that he would not be able to work

♦

Connecticut's AEC organization, under the leadership of SEC Pete deBruyn, W1LKF, recently established itself in the good graces of the Connecticut State Police and the American Red Cross by its participation in the former's air-raid warning system known as "Operation Lookout." Reports of amateur participation in this test received statewide and national recognition and are being studied for possible implementation in adjoining states. In the photo SEC W1LKF explains the purpose and scope of "Operation Lookout" to Hartford EC W1CGD and key AEC members W1RFG and W1DAV (*left to right*).

W2PPS, but, by use of the old relay system, he passed the dope along via W8EPN, W2ROR, W2BAT and W2YQV.

When Don finally contacted VK2JP again on Saturday morning he was informed that the drug had not arrived and was asked to find out when it would. After several attempts he raised W6CLS at San Mateo. W6CLS called Mr. George Hamrida, the manager of the branch office of pharmaceutical supplies that had shipped the drug to Australia. Mr. Hamrida passed the word back to W8REU that the drug would arrive in Australia at 5:30 P.M. Sunday (Sydney time). Don then tried to contact W4DSY, Charlotte, N.C., who had a schedule with VK2JP but without avail. Finally, just before the scheduled time of 5:15, W8REU picked up a reflected skip of W4DSY who was telling VK2JP that he had no information from W8REU. Don broke in and relayed the information of arrival time for the drug to VK2JP. This message proved to be one of the most vital in the entire series.

VK2JP went to Sydney to meet the Pan American Clipper, only to be told that the drug was not aboard. Refusing to believe what he didn't dare accept, he sought the help of postal authorities, custom officials and the plane's crew. After delaying the plane for a three-hour search, they finally located the tiny package of aureomycin, which had fallen into the farthest corner of a mail compartment.

The drug was rushed to his daughter in a near-by hospital. The following day her fever was down and she was hungry for the first time in days. On Tuesday morning, just six days after the call for help had gone out, the patient's temperature was normal and she was considered out of danger.

VK2JP and his family wish to express their most sincere thanks to the following amateurs who so kindly assisted in helping to relay messages: VE7OT, KL7PE, W1MKX, W4ANN, W4DSY, W2PPS, VK2QR, W2BAT, W2ROR, W2YQV, W6CLS, W8EPN and W8REU.

NATIONAL CALLING AND EMERGENCY FREQUENCIES

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

If clear of emergency utilization, and if any current amateur calling-and-answering has been completed, a directional CQ or a QSTed "traffic list" should bring results. If you get a reply, tell the station you hook up with what traffic you have and what frequency to go to in order to complete your QSO.

Use the above frequencies for making contact only. Do not tie them up with rag chewing or traffic transmission.

SEPTEMBER FMT RESULTS

The Second 1949 ARRL Frequency Measuring Test, open to both ARRL official observers and other amateurs, provided another convincing demonstration that hams can measure radio frequencies with extreme accuracy. Entries were received from 77 official observers and 97 non-observers. Each participant has received an individual report comparing the accuracy of his measurements of the W1AW FMT transmissions with those made during the test by a commercial frequency-measuring laboratory.

Leading entrant in the OO group was George K. Hickin, W2OUT, whose measurements averaged to an accuracy of 0.1 part per million. Lloyd W. Root, W8HB consistently a leader in previous tests, topped the non-OO group with a rating of 0.0 parts per million! Lloyd's measurements agreed *exactly* with the frequency-measuring laboratory which acts as the "umpire" in the FMTs. The standings of other leaders in the test are listed below. Since the official readings can be accredited only to 0.4 part per million the decimal is shown only to permit establishment of listing order. In accordance with the announced rules, no entry consisting of one measurement was considered eligible in the competition.

LEADERS

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W2OUT	0.1	W8HB	0.0
W8GXI	0.15	W3LOX	0.2
W2RYT	0.2	W5BDX	1.2
W9CIH	0.2	W3GEX	1.3
W2BF	0.3	W7LXT	1.5
W1MUN	0.6	W5LHZ	1.6
W3ASW	4.2	W8VZ	2.8
W2ZT	5.0	W4IPC	3.8
W3GEG	5.0	W4JUI	5.8
W1PXH	5.4	W9VFZ	7.2
W7WEN	8.5	W7CX	7.4
W2ATE	9.0	W5PIN	7.8
W9WJH	10.7	W8BVY	8.0
W8JRG	11.9	W8TDO	8.4
W4WO	12.0	W8PR	8.7
W9WEA	12.1	W6MNW	8.9
W6DFO	14.3	G6JJ	10.1
W5EM	14.9	W6YNM	10.5
W7GP	15.2	W5DDJ	10.7
W2CSO	15.3	W4AUT	12.5
WØIWE	16.7	W9JNU	12.7
W3ADE	18.5	W8OAJ	12.9
W6OTR	20.4	W4ZV	13.3
W3JDM	20.6	W3IGX	13.6
W6IWU	21.0	W4BAQ	13.6

The following ratings are based on a single measurement: OOs — W2PYC 10.2; non-OOs — W1IHI 0.5, W6AXV 1.2, W2CJI 1.9, W1MNK 8.2, W2PIU 13.0.

A.R.R.L.-AFFILIATED CLUB HONOR ROLL

It is a pleasure to present additional Honor Roll affiliated clubs in the following listing, supplementing that which appeared in July *QST*. These are the societies whose *entire membership consists of* members of the League. The listings of clubs with 100 per cent ARRL membership are in accord with the Board policy of such special recognition, which is determined from information supplied us in the affiliated-club questionnaire or Annual Information Survey conducted as required by the Board. In early 1950 a form will be sent to every active affiliate for filings on which the next Honor Roll will be based.

Blue Mountain Radio Club, La Grande, Ore.
Cahokia Amateur Radio Club, East St. Louis, Ill.
Central Illinois Radio Club, Bloomington, Ill.
Chattanooga Amateur Radio Club, Chattanooga, Tenn.
CQ Radio Club, Torrington, Conn.
East Bay Radio Club, El Cerrito, Calif.
Enid Amateur Radio Club, Enid, Okla.
Kingsport Amateur Radio Club, Kingsport, Tenn.
Merrimac Valley Amateur Radio Club, Andover, Mass.
Newington Amateur Radio League, Newington, Conn.
Northwest Amateur Radio Club, Mt. Prospect, Ill.
Sioux Falls Amateur Radio Club, Sioux Falls, Dak.
West Palm Beach Radio Club, West Palm Beach, Fla.
Wichita Amateur Radio Club, Wichita, Kans.

YL/OM CONTEST

Mark these dates on your calendar: January 21st–22nd and January 28th–29th. The first YL/OM contest sponsored by the Young Ladies Radio League will be held on those week ends with specified frequencies and times; one period each will be devoted to 80-, 40- and 20-meter c.w. and 'phone and 10-meter c.w. Prizes for both YL and OM high scores will be awarded. Watch for details in *QST* next month.

ELECTION NOTICE

(To All ARRL Members residing in the Sections listed below:)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Sections. This notice supersedes previous notices.

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

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

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

The following nomination form is suggested:

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

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

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

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

— F. E. Handy, Communications Manager

Section	*Closing Date*	*SCM*	*Present Term Ends*
Los Angeles	Dec. 1, 1949	Vincent J. Haggerty	Jan. 15, 1950
South Dakota	Dec. 1, 1949	J. S. Foasberg	Jan. 15, 1950
New Hampshire	Dec. 15, 1949	Gilman K. Crowell	Resigned
Yukon*	Dec. 15, 1949	W. R. Williamson	Mar. 17, 1949
Kentucky	Dec. 15, 1949	W. C. Alcock	Oct. 15, 1949
Quebec *	Dec. 15, 1949	Gordon Lynn	Oct. 15, 1949
San Francisco	Jan. 3, 1950	Samuel C. Van Liew	Feb. 15, 1950
Connecticut	Jan. 3, 1950	Walter L. Glover	Feb. 15, 1950
West Virginia	Jan. 3, 1950	Donald B. Morris	Feb. 15, 1950
Washington	Jan. 3, 1950	Clifford C. Cavanaugh	Feb. 16, 1950
Georgia	Feb. 1, 1950	Clay Griffin	Mar. 8, 1950
Tennessee	Feb. 1, 1950	Ward R. Buhrman	Mar. 15, 1950

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

ELECTION RESULTS

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

South Carolina	Wade H. Holland, W4AZT	Sept. 1, 1949
Nebraska	Scott E. Davison, WØOED	Sept. 1, 1949
Indiana	Wilber E. Monigan, W9RE	Oct. 14, 1949
Alabama	Leland W. Smith, W4YE	Oct. 15, 1949

In the British Columbia Section of the Vanalta Division, Mr. Ernest Savage, VE7FB, and Mr. Ralph O. Norman, VE7ID, were nominated. Mr. Savage received 62 votes and Mr. Norman received 54 votes. Mr. Savage's term of office began Aug. 22, 1949.

In the Southern New Jersey Section of the Atlantic Division, Dr. Luther M. Mkitarian, W2ASG, and Mr. Lester H. Allen, W2QOK, were nominated. Dr. Mkitarian received 116 votes and Mr. Allen received 111 votes. Dr. Mkitarian's term of office began Aug. 26, 1949.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....226	W3BES.....213	W3GAU.....209
W6VFR.....218	W2BXA.....212	W4BPD.....205
G2PL.....213	W8HGW....211	WØYXO.....203
	W6EBG.....210	

RADIOTELEPHONE

W1FH.....183	W1JCX.....156	G2PL.....153
XE1AC.....165	VQ4ERR....156	W2BXA.....153
W6DI.....163	W8HGW....155	W1NWO....151
W4CYU.....157		W2AFQ.....151

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

NEW MEMBERS

OK1SV.....129	W6WWQ....104	W8HSW.....101
W5JC 115	W6TS.....104	W1PDF.....101
G6XA.....112	VE1BV.....103	W3KQU.....101
W9DUR.....111	GM3CH.....103	G5LH.....101
ZL3CC.....110	WØRBA.....103	W3KAT.....101
W2AYJ.....109	G3RC.....103	W1BBN.....100
ON4GC.....108	W8HFE.....102	W3MLW....100
JA3AA.....107	W3FYS.....102	I1IT.....100
VE3AHV.....106	OK3DG.....102	G3CBN.....100
ZS5CU.....105	W6ATO.....101	W2PRN.....100
VE3AO.....105	W9FNR.....101	GW3UH.....100

RADIOTELEPHONE

W2VQM.....118	W9UUN.....104	W6AM.....100
WØEYR.....106	W1HX.....103	W6UZX.....100
GM3AVA....106	G2BXP.....101	I1VS.....100

ENDORSEMENTS

W2AQW.....202	G4CP.....167	W8LFE.....125
W6GRL.....201	W1HX.....166	W1IKE.....123
W6MEK.....201	W6WKU....161	W6UZX.....123
W2HHF.....201	W2UFT.....161	G3VB.....121
W3GHD.....201	W3OCU.....160	W1MUN....120
G6ZO.....200	W7GUV.....151	W3NOH.....120
W9KOK.....195	KH6MI.....151	ZS6FN.....120
W3IYE.....191	W2AGO.....151	W7KTN.....120
W3EVW.....191	G2FSR.....150	W7AC.....120
W3DPA.....191	W2DKF.....150	OK1WX.....120
W9ANT.....190	W8FJN.....150	W9TQL.....120
W2IOP.....184	W9PSR.....143	W7PGS.....120
W4MR.....181	W2CNT.....141	KH6CD.....120
W5KC.....180	G2AKQ.....140	W6CTL.....120
W6OMC.....180	W3BXE.....140	G6GH.....120
VK2DI.....177	W9IOD.....137	VE4XO.....119
WØDAE.....175	PY2CK.....136	W2PQJ.....117
W9RBI.....175	W4JFE.....134	W6CEO.....115
WØUOX.....174	W2WZ.....132	W2NFR.....115
VE7HC.....172	W3WU.....130	W6JK.....110
W5FNA.....170	W3FUF.....130	W5CGC.....110
W2QHH.....170	PY2OE.....130	ZS6A.....110
W6SYG.....170	W2GNQ.....130	G5CW.....110
W5ASG.....170	W8EYE.....128	W9ABA.....110
	W9VND.... 127	

RADIOTELEPHONE

G2ZB..... 141	W6WNH.....130	W4AZD..... 121
LU6AJ..... 141	PY2CK.....130	W6IKQ.....120
W1MCW.....141	W4HA.....123	W3BES.....112
	W7MBX.....122	

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for September traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W6CE	24	1385	1356	38	2803
W7CZY	42	1203	1026	90	2361
W2TYU	20	1159	1063	65	2307
W4PL	5	1129	970	125	2229
W1TY	9	578	541	23	1151
W9EBX	7	536	536	53	1132
W7JGM	1104	4	2	1	1111
W6ZRJ	26	514	507	5	1052
W5GZU	7	522	451	66	1046
W6YLZ	16	440	282	153	891
W6UW	823	4	3	0	830
W7CKT	0	0	375	375	750
W3CUL	54	355	243	96	748
W5CHA	10	375	361	0	746
K5NRJ	202	333	97	81	713
W7FIX	30	373	213	81	697
W8RJC	2	337	271	66	676
W1CRW	15	308	246	58	627
W8NOH	76	68	396	62	602
WØZJO	12	297	217	62	588
W7FRU	62	267	254	2	585
W2VNJ	20	288	182	60	550
W4IQV	258	142	107	26	533
WØQXO	3	249	197	52	501

The following made the BPL for deliveries:

W6IXH 144	W2NCY 60	W1NGV 54
W2RUF 124	W7ZU 56	W6DDE 51
W2BO 63	VE1BK 55	W1RWS 50

A message total of 500 or 50 or more *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.

TRAFFIC TOPICS

With this writing, we are in the middle of the first month of operation of the National Traffic System and are glad to report that progress so far has been good, with only a few rough spots to be ironed out. The amount of traffic flowing through the system has been moderate, with peaks resulting from fairs, expositions, hobby shows, etc., and the Simulated Emergency Test being handled with dispatch and efficiency, although some of the more active traffickers have, during these times, been required to extend themselves somewhat. In general, it can be said that the objectives of the new system are beginning to be realized. Many newcomers to traffic handling are making their appearances on section nets. Several old-time traffickers have reappeared to lend their support to the new system. Traffic is arriving at its destination in quicker time, as a rule, than formerly. A few sections, where c.w. interest is low, have established section traffic nets on 'phone.

This initial progress is encouraging, and as the season progresses we expect improving results and increased participation in the NTS by amateurs interested in traffic handling. Four regional nets have not yet been activated (in the Mountain Area, the two regional nets are not being activated at present because of lack of available personnel) and some of the other nets have had frequency difficulties which have necessitated changes often slightly inconvenient to their members. These little annoyances will soon be resolved and there is no need for anyone to be discouraged because of them. After all, we are just getting started.

Anyone interested in the National Traffic System who does not know what it is all about should drop a line to ARRL for a copy of the mimeograph on the subject. There are still plenty of copies available.

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Meanwhile, many of the old reliable traffic nets are still doing business at the same old stand. Among the ARRL trunk lines reactivated this year are TLC (W2LRW), TLI (VE4AM), TLJ (W4BAZ), TLL (WØHMM) and TLS (W8UKV, slow speed). ORSs interested in qualifying for positions on these lines should contact the managers listed in parentheses above. TLAP, Rebel, Hit & Bounce, Swing-Shift Net and Eastern Shuttle Net are also in operation as usual. These nets are managed by W2EC, W5KTE, W4PL, W2VNJ and W8DAE respectively. On 'phone, the Mission Trail Net and the Washington Amateur Radio Traffic System are among those outstanding. Traffic Outlet has been disbanded in order that its members might participate in the NTS. Pioneer Net, under the capable direction of W6FDR, has modified its set-up to become part of the NTS organization on the West Coast.

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We believe that this will be the most active traffic season since the war, and that there will be plenty of traffic for everybody. ARRL's Trunk Lines and the other trunks and nets not a part of the National Traffic System have, in most cases, offered their facilities to the NTS wherever their coverage can effect delivery quicker. NTS itself offers national coverage and participation to *all* amateurs interested in traffic handling. But regardless of where your traffic interests lie, regardless of what your outside traffic connections are, the key to delivery of messages lies in the organization and efficiency of *your section net*. Report into it whenever you can, for even your casual participation is often of service in effecting quick and impressing message deliveries.

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Obviously, we cannot have a good traffic organization without traffic; and if no one originates traffic, there will certainly be none. It seems, sometimes, that we depend too much on "fair" traffic to swell our totals and keep our traffic lanes humming, and that in between the great gobs of such traffic we have only dribblings.

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One of the League's primary functions is the coördination of all information on traffic and emergency nets. In the November issue of *QST* there appeared a net directory based on information available as of September 15th. If you have already sent us this information so that it probably arrived here *after* that date, chances are that it will appear in the supplement to be published in the next issue. If the information shown is incorrect, we would appreciate a correction. If no information is shown because it was not sent in, drop us a line so that we may register your net. In addition to the alphabetical listing we have a card file listing by frequencies and by states, and information from this file is available to anyone asking. Net registration card forms are available from ARRL.

♦

At a dinner in Fitchburg, Mass., representatives of his many amateur friends and business colleagues presented a Collins 32-V-2 transmitter to Nes Stolba, W1GZ. Completely blind for the last four years, Nes (formerly 1GY) has turned to amateur radio after a lapse of many years, and devotes much of his time to handling traffic, principally in the Swing-Shift Net. Pictured, *left to right*, are W1EAX, W1DMS, W1GZ, W1DTS and W1JE.

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Jerry Mathis, W3BES — CUL can operate during t.v. hours with low power and has a swell traffic total. The YRRL is sponsoring a YL-OM Contest for the month of January with prizes and contacts for YL WAS. EAN is training radio operators. He has one licensed and another on the way. The EPA Net will meet a second time at 2200 EDT for stations that cannot make the 1830 meeting. The members of the 3785-kc. net are ADE, AXA, DZ, EAN, ELI, OAQ, OML, QEW, QV, and WTS. AQN is QRL night school. He has his T.V.I. 98 per cent cured, as per page 111 Sept. '49 *QST*. NHI worked EA4BV and G6PJ with 60 watts on 7 Mc. PHP is giving code practice on 29.5 Mc. Fridays 5:30 to 6:30 P.M. and Saturdays 6:00 to 7:00 P.M. There is 15 to 20 minutes of code at 10 to 25 w.p.m. and the remainder of the time will be used for theory of accurate reception and sending. This part will be A2 and A3. Cooperation between the Philadelphia area radio clubs is at a new high. There is strong sentiment for a revival of the Council of Radio Clubs. BXE is resigning as SEC for business reasons. The Philadelphia Wireless Assn. now has 34 members and is growing by the minute. The York Road Radio Club and the Northeast Radio Club have interesting speakers at their meetings. GYV has a new 28-Mc. three-element plumber's delight beam atop his 14-Mc. beam. EKK has moved to his new QTH on a hill in Delaware County. JBC is now married and lives in Ridley Park. He has a new 813 rig on 3.5 to 28 Mc. CPV has a new Collins 310B and a new T.V.I.-proof p.p. 813s final. EVW broke down and put in 'phone. DOE has a new tower with a new NJE beam aloft. ISE has an automatic CQSS machine of which we expect to hear plenty. GHD has passed the double century mark in DXCC confirmations. The Frankford Radio Club was challenged by the Council of Radio Clubs of Southern California in the DX Contest and was winner by a sizeable margin. The weakness of the California group was in its lack of 'phone scores. Traffic: W3CUL 748, NHI 108, EAN 96, AXA 22, WTS 14, PMG 10, QEW 8, AQN 5, EU 2, OML 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Eppa W. Darne, W3BWT — Feature of the first fall meeting of the Washington Radio Club was a demonstration and talk on "Causes and Cure of Television Interference," by Phil Robinson, EUQ. The following new officers were installed for the 1949–1950 season: HHN, pres.; 4IPS, vice-pres.; LFG, rec. secy.; CDQ, corr. secy.; and LSX, treas. The second September meeting was "Auction Night" wherein much gear changed ownership. The Chesapeake Amateur Radio Club's first September meeting had an interesting discussion by AFM, the subject being "An Unusual C.W. Transmitter and V.F.O." At the second September meeting Rollo Baker talked on "Reduction of Spurious Emissions from Transmitters." The Washington Mobile Radio Club conducted its September meeting drill for testing net operations with a simulated emergency condition. It was very successful; sixteen Washington area stations participated, divided into three nets. The Potomac-Rappahannock Valley Emergency Net, in conjunction with the Weather Bureau, is endeavoring to secure new members and greater coverage. Results to date have been very gratifying; approximately 40 new stations have signified a desire to assist in any way possible. Summer drills have been informal operation on both 3935 kc. and 144 Mc. Members of the Baltimore Amateur Radio Communications Society at the September 19th meeting enjoyed a talk by Hendrick De Waard, PAØZX, a first-hand account of the progress of amateur radio in Holland, and of the first television station there, which he built. GRF is newly-appointed ORS. GEB is now on 14-Mc. c.w. with 25 watts and gets out well. PUE is new Washington station operating on 7- and 14-Mc. c.w. OPG is off temporarily while doing work away from his home station. MJQ has moved to Princeton, N. J. Because of school work MYM is not on much. GZH is working on his T.V.I. problem. EQK has been very active with OO work since his recent appointment. FPQ is attending the North American Regional Broadcasting Conference in Canada. JHW spent his vacation in Fredonia, N. Y. JE, HKY, BII, and NNX, with IZ, worked Great Britain and Ireland with their 28-Mc. mobile rigs. NNX worked NKS-HZ in Saudi Arabia and took a message to the latter's XYL, also with his 28-Mc. mobile rig. MHW and MSK have been putting up an antenna for 3.5-Mc work. BBU worked an "OX" station with his mobile rig. EQK is having trouble with the feeders for his beam, and is off the air temporarily. MCG is changing QTH. CDQ and LSX attended the Hudson Division Convention. Traffic: W3UF 440, ECP 24, FWP 13, QL 10, AKB 5, BWT 3, JHW 2, NNX 2.

SOUTHERN NEW JERSEY — SCM, Dr. Luther M. Mkitarian, W2ASG — IMA is EC for Hunterdon County. BAY is the proud papa of twins, a boy and a girl. PAU is moving his shack. Congrats to the SJRA for a grand picnic, attended by 260. ASG has his 10-20 beam up. YSP has new schedule for OBS, 1900 EST on 3717.5 kc. ZI returned from an FB visit to W4 Land. The Cumberland County Radio Club meets in its new QTH, Downtown Air Port, the second Monday. Say gang, let's have all the news. Traffic: W2RG 50, ASG 8, ZI 7, RPH 6.

WESTERN NEW YORK — SCM, Harding A. Clark, W2PGT — SEC: SJV. Net Mgr.: RUF. RUF has been appointed manager of New York State Traffic and Emergency Net. The Net opened its season with 19 stations reporting. The slow speed net got under way a week later under the direction of PHO, with several new stations interested in traffic-handling reporting. There are several sections of the State which are not represented and anybody interested is urged to report into either net on 3720 kc. at 7 P.M., 8:30 P.M., or 10 P.M. For further details contact PGT, PHO, or RUF. ZYO has been appointed EC. PZC has renewed ORS appointment. Which should remind you to renew your appointment — several have not been renewed. Check yours now. The Ithaca Mike and Key Club reelected all officers and QBZ has been named as activities manager. The Ithaca Red Cross has given a room to the club to install a station for emergency communications. The KBT Club has elected the following officers: PVL, pres.; OSK, vice-pres.; UGB, secy.; and SKN, treas. New calls heard around Buffalo on 144, 7, and 3.5 Mc. are CCR, CCZ, and CFP. OSK spoke at KBT meeting on 420 Mc. and demonstrated his receiver and transmitter. SSS spoke on cubical quad for 144 Mc. ZRW is using 832 final on 420 Mc. Radio amateurs employed by Niagara Hudson Power are forming a net. Those interested are requested to get in touch with IEP for details. Dick Baldwin, Assistant Secretary of ARRL, visited Elmira, Binghamton, Utica, Amsterdam, and Syracuse clubs during the month. The Elmira Club's annual "Kickoff" was a big success with 175 attending. QCF, MA, and CNT are new members of DXCC in the Rochester area. WZQ advises that the Northern Emergency Net is again operating on 3700 kc. at 11:45 A.M. each Sunday. AOR is using a new Zepp and getting out much better, as proven by the string of DX he has worked. SWC, who has been operating at VE8MA, is expected home soon. QHH is sporting a 170 endorsement on his DXCC certificate and 100 endorsement on his KP4 certificate. WUW and YQI are attending Syracuse University. Let's have those reports. Traffic: (Sept.) W2RUF 483, PGT 124, SJV 67, QHH 65, AOR 50, YRF 18. (Aug.) W2WZQ 314, RUF 129.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — The Western Penna. traffic net resumed operations Oct. 3rd, on 3750 kc. at 7 P.M. each evening Mon. through Fri. The Fort Necessity Amateur Radio Assn. election of officers produced MBI as pres.; RUW, vice-pres.; UUZ, secy.; RUC, treas. LAC's p.p. 810 on 28 Mc. is doing FB. UUZ has 813 final. UHC is knocking off DX on 144 Mc. The Horseshoe Radio Club secretary asks that all clubs exchange club papers with that of *Hamateur News*. POZ's 807 is snagging DX on 14 Mc. LIV is retiring his 807 after working his first VK. MYN is handling club publicity. RFM sneaks down to 14 Mc. occasionally. TXQ leads the Altoona tribe with 76 countries. POP has faith in long wire on 7 Mc. Down PGH way, the South Hills Brass Pounders and Modulators will set up a communications center at the national meeting of the American Institute of Chemical Engineers in Hotel Wm. Penn. The *ATA News* tells us that the Club is offering cash prizes to those with the three highest scores in the ARRL Sweepstakes Contest. LMM gives the boys something to shoot at with his DX. KSR and AVY receive the bouquet of roses for their FB job in the ARRL Member Party. The Steel City Radio Club reports that DNO will be editor-in-chief of *Kilo Watt Harmonics*. Election of officers show MPO as pres.; RXT, vice-pres.; MTP, secy.; DNO, corr. secy.; and OMJ, treas. LST and

(*Continued on page 74*)

LET'S take time out this month for musing and ragchewing — 14 Mc., that is. . . .

What DX! Old countries, new countries, countries never heard on the air before: get 'em now or maybe never; foreign signals galore; VFO swishing, frantic calling; more QRM and activity than ever. . . .

U. S. hams on military missions or manning overseas airway posts account for some of the rare ones. One never knows who will turn up behind the key, as we found out when QSO JA2BQ, ex-W9EFK, WØEFK. Joe told of having just completed the first 3.5-Mc. JA-LU QSO, with LU7AZ on the southern end — and that *is* DX. . . .

It's still hard for us to reconcile DU as Philippines' intermediate and not another German zone. . . .

What pile-ups! — The DX station could give relief by using the signal ML, LM, HM, MH to indicate the portion of the band tuning will start — as QRM built up the procedure would change. . . .

VP1AA nonchalantly describes his rig: "TRF rcvr single wire ant with 10 watts input" — and our face wasn't red as we carefully adjusted the Mims squirter on the nose and cranked a little more selectivity into our "hot" superhet — after all, it's 99% operator, we've been told. . . .

Seems only right to hear ex-K4AAN now signing KV4AA. . . .

The band practically explodes when a slice of rare DX spurns Ws to work DX himself, and the W brethren try to "do something" about it. . . .

Wonder why the old operating habit of including operator "sine" at beginning and windup of QSO is no longer in vogue — eliminates present procedure of "handle hr is Slim" stuff. It worked very simply. On the first call to a station it would go like this: VS6BA de W1KKP Tim AR. At end of the first transmission in reply VS6BA would sign: W1KKP de VS6BA Musty K.

Don't give up on UAØ if you miss the first one you call; experience indicates that one or two more will show up almost immediately and on about the same frequency. . . .

Amazing results are to be obtained from simple antennas with parasitic elements, and in these days of 8-element dual-channel TV arrays what's a simple 10- or 20-meter job? — though we must confess we had thought nothing could ever replace a rhombic except a larger rhombic. . . .

Don't brood over missing MI3ZZ after Frank Lucas, W3CRA, was heard sweating it out also, call by call. . . .

DX often comes back to W1, but the call attached seems to be "FH" more often than "SZ." Well, at least we *call* the same stuff as top DXer Charlie Mellen. . . .

There's nothing like DX contests to speed up QSOs and drag the rare ones out of hiding — still hoping for another crack at HS1SS. . . .

EK1AO turns out to be ex-EA4AO, EAR96 of years gone by, and reportedly missing during Spanish Civil War and never heard from since — but his old friends will be delighted to know Jess is back with a new transmitter — his excellent operating recalled our daily skeds at the time of the Madrid international conference getting dope from KBW. . . .

Even hear Art, WØCXX, and Karl, W8ZY, in swimming for DX — what a hobby! . . .

Yes, it's as much fun as ever but with keener competition; observation shows that there are smart operators — and smart operating pays off; taking advantage of technical progress in equipment — careful pruning of antennas — will improve both station efficiency and personal digestion. . . .

Over the horizon lurks the 21 Mc. assignment with its advantages of both 14 and 28 Mc. — when it arrives, more DX, requiring more room for antennas, final amplifiers and time to keep up with it — happy days! CLARK C. RODIMON, W1SZ

P.S.: By the way, Mike Villard's SELECT-O-JECT is a help.

MLG visited the Mercer County Radio Assn. recently with hopes of making 144-Mc. schedules. LFX is rebuilding his speech equipment. ORP now has Class A. AER is building new 14-Mc. beam. LSS spent a month on 3.85-Mc. 'phone for the first time in 20 years. LIW can be heard on W. Pa. ORS Net. PAB says his left-handed Vibroplex is FB. The Mercer County Radio Assn. is sponsoring another club contest to create activity on 144 Mc. Club frequency is 3610 kc. nightly at 9 P.M. PMB has an elegant home-built 40-ft. tower and 28-Mc. beam. PCK works 28-Mc. 'phone. CJF finally worked Michigan on 144 Mc. KQA hasn't proved his worth with his Millen h.f. transmitter. Traffic: W3LSS 35, AER 12, KWL 10.

CENTRAL DIVISION

ILLINOIS — SCM, Lloyd E. Hopkins, W9EVJ — Section nets: IEN, 3940 kc.; ILN, 3765 kc. SEC: QLZ. PAM: UQT. RMs: SXL and SYZ. New officers of the Sangamon Valley Radio Club are UQT, pres.; JSD, vice-pres.; KQL, secy.-treas. DTC is plugging away on new 200-watter. KMN has returned from a six-weeks vacation in the West. FKI has eleven states on 144-Mc. SXL reports new antenna pole and shack completed. FFD sends nice traffic total for 14 Mc. JMG joined the Tri-Town Radio Club. IKN is the call assigned to the Elgin Amateur Radio Society. YTV and his XYL flew to the West Coast for a vacation. 5OMK visited the Central Illinois Radio Club. CIRC is looking for a clubhouse location. AJJ is sporting a 400-watt rig. MRH and his XYL went to Minnesota to escape hay fever. BPU finally got his card from OQ5. NN is building a new ranch-type home with 8000 square feet of skywire space! KOK got new Collins 75A and worked AC4NC for 212 countries. PHE is battling feeder and selsyn troubles. JVI reports good DX in DL4 Land with locals like SVØ and DX like X22SY. FIF sports a star matched rotary on 28 Mc. HOD swears by his folded dipole. AND still is getting the lion's share of DX with his 32V-1, etc. TZL finds a little time for hamming now and then when work permits. HXE is working on his 28-Mc. 'phone DXCC. KPC fell from a pole but is reported in fair shape again. After 30 years on 14-Mc. c.w., DO switched to 28-Mc. n.f.m. You guessed it, T.V.I.! HKA reports again from Michigan where he is trying to escape hay fever and asthma. BRX is QRL painting the house during vacation. WEA has new QTH, and his landlord, who lives downstairs, is newly-licensed as IHD. GDI, back from vacation, is all pepped up for OO job. MYK has new cubical quad antenna. QMS sold his old rig and is getting a new Collins layout. JGS is the proud owner of an HRO. ZEN is going to school at Normal. CXT, who is in Japan, reports going through two typhoons and escaping with a bad cold. NIU returned from a trip to New York City. TLC was kept busy at the Tonica Fair. IDA snagged some sweet DX in the form of VK6, KG6, I1, VP9, and others. The Starved Rock Radio Club celebrated its fifteenth anniversary during October. UQT thought the world had forsaken him but found out it was only because he forgot to pay the rent for his post office box. IAJ has become adept at baby-sitting, according to the grapevine. Newcomers to ILN this year are AXF, CMU, and K9FAE. AEP has a new daughter. Your SCM has enjoyed his first year in office and hopes to be of service to you as usual during the second one. Traffic: (Sept.) W9EBX 1132, EVJ 213, EEK 115, KQL 68, JMG 66, CMC 43, SXL 39, FFD 25, FKI 21, MRQ 19, SYZ 12, CTZ 7, FRP 6, LIN 5, BUK 4, AQH 3, HKA 2, DTC 1. (Aug.) W9UQT 51, DUA 18.

INDIANA — Acting SCM, Wilber E. Monigan, W9RE — RCB and ØPTQ decided that after all one transmitter is cheaper than two, so they were married and now live in South Bend. CVN has a new receiver and also a 35-w.p.m. Code Proficiency endorsement. GFO visited in Indianapolis. DGA has worked 110 countries, has 30-w.p.m. Code Proficiency endorsement, and still likes vertical antennas. QLW has 30-w.p.m. Code Proficiency endorsement. UIA has multi-element 50-Mc. beam. GFS is set up in new QTH. UNT has a new shack. GFO has another Clapp oscillator in use. EHU has 8JK on 28 Mc. HQF hit the jackpot; he received 90 DX cards. New calls in Muncie are IFX and IGQ. KLG has a new harmonic. OMD has to push his patients to the hospital. DHJ was on 144 Mc. during the summer but traffic called and he now watches 3655 kc. A new station in Crown Point is GWA. CYC has returned to his home QTH at Kokomo. DKV has 35-w.p.m. endorsement on his Code Proficiency certificate. ESF got tired of mobile 28 Mc. and sold his set to PRO. IQZ is a new ham in Garrett on 7 and 28 Mc. MDC is on 160, 10, and 2-meter 'phone. NH has new masts and a better signal now. T.v. has 8TLX. Send your EC applications to PRO. UQT reports on his observations. Traffic: W9NH 256, BKJ 31, DHJ 21, RE 11, DKV 10, DOK 7, DGA 3, QLW 3.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — As part of the National Traffic System the net time of the c.w. net (WIN) has now been set at 7 P.M. CST., with the second period of operation at 10 P.M. CST. ESJ used emergency power to operate home rig for National Emergency Test. SZL is sporting a new receiver. In addition to OBS schedule, UIT also is handling traffic. HDZ built a new modulator. IQW reports progress in AEC organization. New hams at Port Edwards are IHW and IIB. DJV is rebuilding and will be all set for a big winter season of operating. FCF worked KS4, VK2, KH6, and G8 for his first taste of DX. NWRC held annual banquet at Chippewa Falls, with GPI as guest speaker. IWT reports the arrival of a new jr. operator. RBI worked his 200th country before moving to new QTH. Although busy at WMIL, SIZ is back on the BEN and WIN and has renewed ORS appointment. AFY is attending U. of W. IVE, Appleton EC, is a regular on the BEN. MNG is moving and has a new car. CWK is active on 7-Mc. c.w. with 829 rig. WEN is captain in Wisconsin National Guard and communications staff officer for the 127th Regiment. The call IJT is now official for the Milwaukee Emergency Corps station. LFK had to move and is bucking QRM with indoor antenna of #32 wire and flea power rig. At long last we find a modulator in RLB's shack. VHA, Wausau EC, reports 80 per cent of the active hams in the area signed up in the AEC. RG is new EC for Superior. CFT has been on 28 Mc. chasing DX, and soon will be sorting some of his own cards in the Bureau operation. JBF won WVRA 2-meter contest with a comfortable margin. SHZ was host at annual convention of Scroo Bawl Net in Minocqua. In attendance were ALG, HMX, SQJ, ØROE, ØZOB, and ØBGY. Traffic: W9ESJ 246, CBE 75, YCV 40, DND 38, SZL 32, UIT 30, HDZ 27, SFL 22, IQW 19, RQM 17, DJV 14, EIZ 14, MUM 13, FCF 12, DSP 9, CWZ 8.

DAKOTA DIVISION

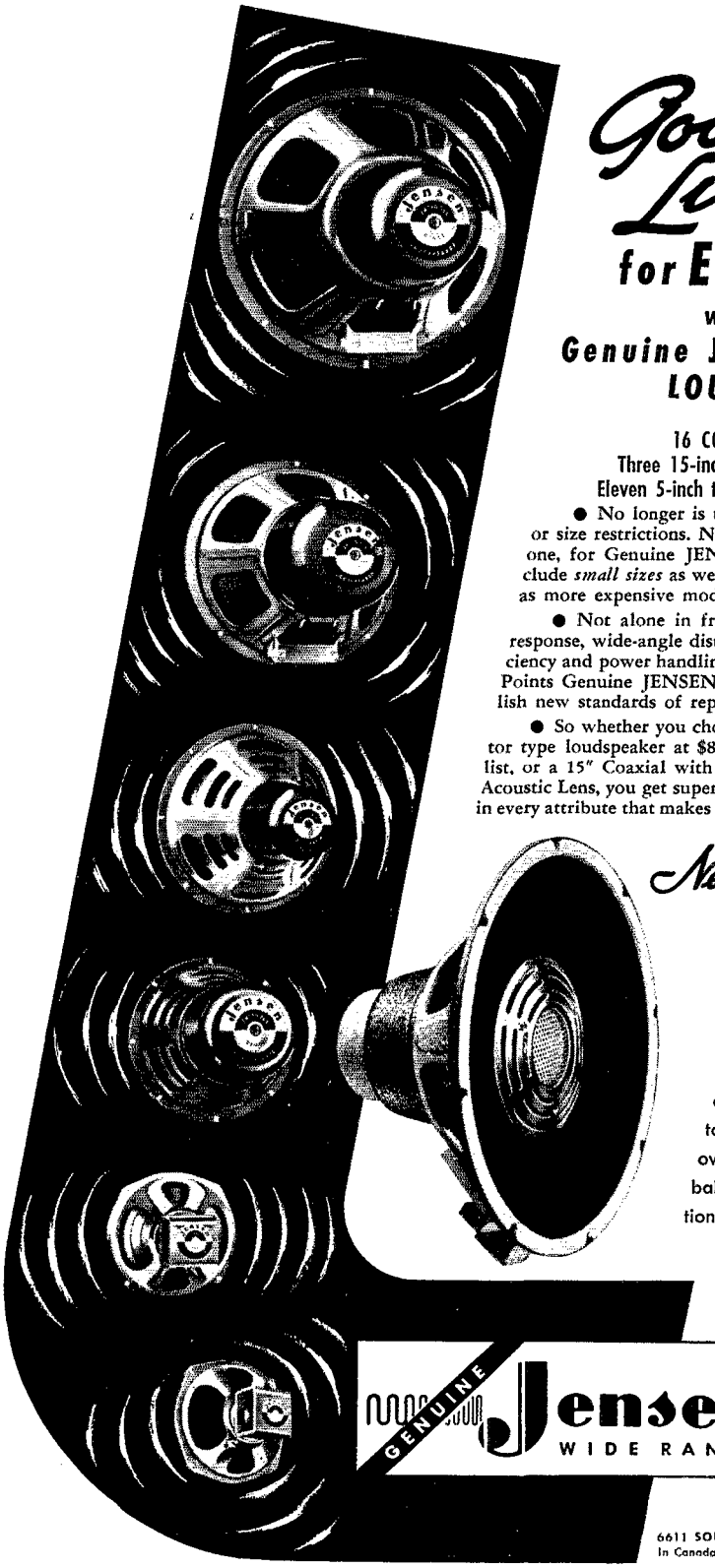
SOUTH DAKOTA — SCM, J. S. Foasberg, WØNGM — On Sept. 11th two picnics were held, one near Rapid City for the Black Hills gang, and one at Mitchell for the eastern half of the State. Towns represented at the Mitchell picnic were Conde, Bridgewater, Sioux Falls, Huron, Brookings, and Mitchell. About 60 attended at Mitchell, where a hidden transmitter hunt was staged which was won by PVE, ILL, and NGM. Among other events were rag-chewing, XYL and YL DX Contest, and a general prize drawing. A c.w. and 'phone net organization meeting was held. The first meeting of the c.w. net was held Sept. 16th with GCP as RM, at which there were talks on the AEC organization. On Sept. 22nd DBE joined Silent Keys. His passing is a great loss to not only the Mitchell Club but amateur radio in general. Herb, a very active c.w. man, was a member of AEC, an ORS, and held a 30-w.p.m. Code Proficiency certificate. Traffic: WØVQT 10.

MINNESOTA — SCM, John B. Morgan, WØRA — Asst. SCM, Jean E. Walter, ØKYE. RM: RJF. SEC: BOL. YBM and TSN found their QRP signals were due to broken solder joints between feeders and antennas — a possible lesson to many of us. 9HDR has moved to Minneapolis. On a hotel roof in Duluth, roofers absconded with RA's antenna wire, insulators, and rope guys, but left the more valuable amphenol feeder! BBN has a new HFS receiver. VOB is breaking in his jr. operator as station announcer. Bemidji is on the map again with EA reporting, using 300' wire along the lakeshore. The slow speed net is working nightly at 2000 on regular net frequency, 3795 kc. Newcomers are welcome; also any 'phone men who want to brush up their speed on some c.w. traffic. The regular net, MSN, meets at 1900 daily except Sunday on 3795 kc. The 'phone net meets week days at 1205 (noon) and 1800 on 3960 kc., and Sundays at 0900, same frequency. BGY and UCV connect with both nets. More c.w. men are needed; see page 50 of September *QST*. Write or radio KYE or RA for list of Net Q Signals. DSF has daily schedules with K4AF and K4USA in the Pentagon. Minnesota AEC now has 142 active members. BOL has plans set for fixed station equipment, emergency powered, for Red Cross use when needed, both 3.85 and 28 Mc. IXR had his 32-V1 de-T.V.I.ed (D.D.T.V.I. powder), and is picking up speed on his new 9DND-model electronic key. UCV was caught sending CQ on his trumpet during a St. Paul Pop Concert. The section mourns the loss of HFF, who died Sept. 30th. TOZ, a bridge-work specialist, is the section's bet on bridging the Atlantic on 50 Mc. this winter. YTL's new 28-Mc. beam is working well. The St. Paul Deppes seem to have some sort of a record; three brothers, TYN, RYX, and PNQ, and cousin RYW, all licensed over fifteen years and active DXers. CQY's receiver bfo wouldn't work so his VFO did the job. PSQ has a new 129-X. NOV has a new Millen grid-dip meter. VPP built a new super with all the modern fixings. FID's 28-Mc. beam works on the ground. Traffic: WØIXR 152, ANU 34, DSF 29, YBM 25, UCV 21, EPJ 20, RJF 10, BOL 6, RA 6, MQO 2.

DELTA DIVISION

LOUISIANA — SCM, W. J. Wilkinson, jr., W5VT — CEW has sent in for his 'phone DXCC and also for endorsement of ten new c.w. contacts. By the way, Al still is PAM and he wants to hear from you 'phone men regularly with suggestions for more 'phone activity in the old section. KTE is back on now and seems to be doing very well with the traffic these days. Jim is SEC and you Emergency Co-ordinators and others interested in emergency operation should contact Jim. KRX is active on the Rebel Net and needs an outlet in Shreveport. 6CHA/5CHA again has been

(Continued on page 76)



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transferred and soon may be on with a new W4 call. IHR has been appointed EC for Lake Charles and vicinity. LQO shows signs of activity on 28 Mc. NEL is on 7 and 14 Mc. with BC-459. K5NRS is building a 50-Mc. rig. NGN is keeping traffic schedules on 7 and 14 Mc. KK is on with BC-696A running about a hundred watts. PXW is on 27 Mc. when it's open. JFR has been appointed OBS in Lake Charles. QEG is the call of the Southwest Louisiana Radio Club. Recently PXW, via 28-Mc. 'phone, directed 6FRS mobile in Los Angeles to the home of PXW's mother. JA7AG, ex-W5MAD operator, sends word via ANA to be on the lookout for them on 14,108 kc. NGN and ØQXO are having a series of chess games on 7 Mc. Join them. VT will be active again in the very near future, I hope, so look for me boys on 7 and 14 Mc. Also I will be on 3.5 Mc. a little. Traffic: (Sept.) W5CHA 746, KTE 145, NGN 95. (Aug.) W5NGN 26.

MISSISSIPPI — SCM, J. C. Wallis, W5DLA — Congrats to HAV on completion of that new shack. DEJ will build a new shack for his big rig. In the meantime he is working 3.5 and 7 Mc. with 274Ns and temporary sky-wire. CUU is sporting a new Buick with mobile gear on 3.85 and 28 Mc. 1AGX visited JHS, ANP, and DLA. OMK was a recent visitor to 9BPU at Bloomington, Ill. RY reports v.h.f. work interesting. He sends a comprehensive report regularly, and we forward the dope to HDQ. He holds the only OES appointment in the section. If you do v.h.f. work, get in touch with me for one of those OES appointments. A Mississippi station is needed in Regional Net. For information contact WZ or 4NNJ. New appointments: QLT as EC, KYC as OPS, LAK as ORS and EC, HAV as OPS, ANP as OPS, LN as PAM. Thanks to RY, ANP, OKQ, WZ, DEJ, LAK, LN, JHS, KYC, and HAV for their cooperation. Traffic: W5WZ 33, JHS 12.

TENNESSEE — SCM, Ward Buhrman, W4QT — The Chattanooga AEC group staged an emergency drill, using a boat race over a 118-mile course as the operating feature. Participants were LNN, PHY, FLS, CZL, LWK, and ETN. LNN is regional outlet for the Tennessee c.w. net on the NT system. The Tennessee 'phone and c.w. nets are working together in the exchange of traffic between nets. NNJ keeps the traffic situation well in hand. He is section RM, and NCS for Tennessee c.w. net and also for the 5th Regional Net. PL has daily schedules with 24 individual stations, covering all W call areas. FDF, FQI, and LGG tried out their 144-Mc. gear on Sun Mountain Sept. 25th. They worked Richmond, Va., and Mt. Mitchell, N. C. Charlie Green, of Portland, is now PSN. Ed Lacy, of Cookeville, is PSB. XZ2SS visited several hams in Chattanooga and talked to some of the fellows on 3.85 Mc. HHQ finally got up a wire and is back in business at new QTH. The following answered LHQ, within 42 minutes, in an unscheduled WAC quickie: UA9DP, ZE1JS, UF6PA, ZL3DN, W6AUG, and CE3DZ. JMW is, as far as we know, the section's only s.s.s.c. man. IIY has a new band-switcher aimed at the SS Contest. DQH has new QTH complete with new beam and new DX. GD has new Collins receiver. ARZ, revived after ten years of silence, is active on 14- and 28-Mc. mobile. HHK has schedules on 144 Mc. with St. Louis and Jackson, Miss. Traffic: W4PL 2229, NNJ 116, ETN 40, APC 33, FDF 29, QT 10, NNH 5, NPS 1.

GREAT LAKES DIVISION

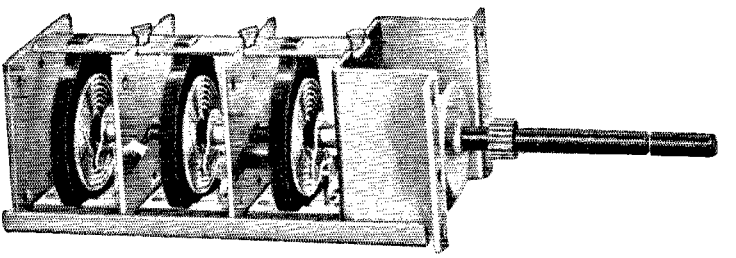
KENTUCKY — SCM, W. C. Alcock, W4CDA — Hats off to septuagenarian YPR, who leads the section in September traffic with a fat 66! The KYN Net seems to be picking up speed. No news from other nets — yet! BXU, another old-timer, made 100 per cent attendance on KYN Net in Sept. JCN is getting back in stride with a nice signal. VP moved to new location and is rebuilding for a 1-kw. all-band final. He attended Hudson Division Convention and also Quarter Century Wireless Club. FKM is busy but gets on net as much as possible. VD spent the month on traffic altogether. NNC, who lives up the street from the SCM, made WAS. KWO won a Millen exciter at Lexington Hamfest, so will have a rig for KYN Net as well as KYP Net. BXU is new Emergency Coördinator for Greenville. If he can do it, you young 'uns can, too! BAZ says a throat operation quieted him down somewhat, but we thought he was on c.w. mostly! Official Observer VP heard and reported four stations violating regulations. MWX is looking for OET, JRA, NIX, and NZH to report into KYN Net. Come on in, you fellows. The water's fine! Sprig says OGB, Henderson's Emergency Coördinator, is building 150-HP river cruiser. JQV is wearing the new off his t.v. receiver. All stations are asked to get their Red Cross chapters to originate traffic to other chapters, or to anyone! Traffic W4YPR 66, MWX 32, BAZ 21, FKM 19, VD 14, CDA 12, BXU 4.

MICHIGAN — SCM, Robert B. Cooper, W8AQA — SEC: GJH. Asst. SCM c.w., Joseph R. Beljan, 8SCW. Asst. SCM U.P., Arthur P. Kohn, 8TTY. RMs: GSJ, UKV. PAM: YNG. New appointment: OO Class III to CYU. RJC again makes BPL and is high traffic man. NOH also makes BPL. NML is busy with the new South Macomb Amateur Radio Assn. Best wishes for every success is extended to the new officers, SOE, pres.; BDF, vice-pres.; BGY, treas.; and BQE, in charge of Public Relations. QFF relates his problems with T.V.I. and is going to be missed as an OBS until he can solve his difficulties. The QMN nets are in full swing and UKV is doing his part on all the traffic outlets. CRH is lining up his station and is making contacts for full AEC coöperation. YMO has finished rebuilding his rig and from the sound of things on the air the job was well done. SCW is doing a yeoman job of NCSing QMN, 8RN, and EAN. WXO reports some very fine work on the part of the Flint Emergency Corps during an oil fire and resulting explosions. The work was of commendable nature while a real emergency existed. TQP is back in Detroit after spending the summer operating portable and is handling his share of traffic on the BR. YFI is running an emergency net in his area on Monday night at 2100. YAO makes his traffic report on the BR in c.w. EGI is slowly getting away from the 7-Mc. nets to keep schedules on QMN. EOS has flea power rig running 2 watts. MGQ expects to get his 28-Mc. beam whirling before the snow starts swirling. YCT is active as A8YCT in MARS but needs an Asian QSL for WAC. ZDF, a newcomer in QMN and BR, is a former operator of the 95th Division Signal Corps and operated at 2000 on approximately 7245 kc. BLR reports a meeting of the GLARC on 28.8 Mc. as the QMT on Saturday at 2200. ERN, a new operator in the NW Detroit section, joined the QMT and has a new 28-Mc. beam. TTY visited UGD on his way to New Jersey. Section Net certificates have been issued to the following members of the GREN: AKI, ALD, AQA, ASX, COF, CTC, DLZ, IV, RRT, UGM, and ZCH. DLZ, the EC, is doing a fine job organizing the net activities. TRN still is working an afternoon shift and must content himself with working DX. Traffic: W8RJC 676, NOH 602, CRH 120, YMO 97, DLZ 57, SCW 49, UKV 35, AQA 34, WXO 30, LU 21, TQP 18, ZBT 17, UGD 15, YFI 12, YAO 10, ZDF 10, EGI 9, MQU 5, UFH 5, AYV 3, EOS 2, MGQ 1.

OHIO — SCM, Dr. Harold E. Stricker, W8WZ — Asst. SCMs, Charles Lohner, 8RN, and C. D. Hall, 8PUN. SEC: UPB. RM: PMJ. PAM: PUN. This marks the end of one year as being your SCM. I want to thank one and all of you for your excellent coöperation in this section. The following reported 100 per cent for the year: CBI, DAE, DZO, EQ, HOX, QIE, RN, WAB, and WRN. The following reported 100 per cent from the time of their appointment: BIF, BZX, DXO, GXI, ICC, UDR, and YFJ. Quite a few of you missed only one month in reporting, and reports were very good throughout the year. From the *Carascope:* The new meeting place for the CARA is at Fort Hayes. The first meeting had as the principal speaker MEN, who spoke on communications activities of the Ohio State Highway Patrol. The meeting place is in the assembly hall and in general is more desirable than the previous place. MQG announced the WAS contest for October, results to be given in a later date. The Dayton Amateur Radio Association ran exactly the same type of a contest in October. BAJ has his Class A ticket. TUK took some very interesting pictures of Field Day and these were shown at the meeting. From the minutes of the meeting of the Cleveland Area Council of Amateur Radio Clubs: The clubs were all in favor of the possibility of a large hamfest in 1950 and plans were to be started. The groundwave results will be announced later. New officers are MXO, pres.; BAG, vice-pres.; KNP, secy.; OPC, treas. From the *Voice-Coil*, representing amateurs in Eastern Ohio: DXO has new Globe Champion transmitter with 812 in final with 150 watts. CQL put up a new windmill tower. JOV is running 800 watts n.f.m. on 14 and 28 Mc. BKP is back on the air after a vacation devoted to t.v. NYU has tried the new Gamma match and says it works FB. BYT has new windmill tower. UDR, JRG, EDX, BIF, JFC, GXI, EQ, and ICC sent in OO reports this month. DZO has new beam for 14 Mc. CBI is building new masts and still working on new shack. TRX is on 28 Mc. now with a new beam. The Piqua Club Net meets every Wednesday at 8 P.M. on 3570 kc. WYH has new rig for 3.5 and 7 Mc. EXI is on the air with 12-watt VFO, and is building new final for all bands. DAE got E.S.N. going with seven morning and five evening schedules. RN is all set to put up his 66-ft. vertical. EBJ is active in TLAP and BN. WAB states that in the Columbus area on 144 Mc. WRN has 13 states, CPA 12, BAX 10, and WAB 4. AQ has a problem — 5 t.v. sets within a radius of 200 feet. First meeting of the Ohio University Radio Club, located at Athens, was held Oct. 4th. ICC is chasing DX and states that instead of a beam he is using a doublet. My error. PR put out ten official bulletins on 3995 kc. IVC has new QTH in Worthington but the bakery business keeps him busy. LBH is after some 420-Mc. gear. KVF has new 304TL kw. rig. EPV is new ham in Portsmouth. CND has returned to W5 Land. RY, PAU, QUM, QAD, and JFC had a picnic in PAU's woods and worked several stations on 3.5-Mc. c.w. with emergency power from PE-103. JFC has a few antennas; 14-Mc. two-section 8JK; 14-Mc. extended double Zepp; 3.5- and 7-Mc. doublets; and a 28-Mc. three-element rotary. He says DX is good and he has 97 countries postwar on 28 Mc. The Southeast Radio Club of Cleveland is initiating a new slow-speed net on 3.5-Mc. c.w. on 3700 kc., Sundays at 10:30 A.M. This from WDQ. Don't forget to send in your certificates for endorsement. Traffic: W8UPB 161, DAE 90, FFK 36, WAB 29, OUR 25, YFJ 23, CBI 18,

(*Continued on page 78*)

MALLORY HAM BULLETIN



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With this edition of the Ham Bulletin we are announcing a brand new, completely redesigned Inductuner at a price well within the reach of Mr. Average Amateur's pocketbook. This new Inductuner, while similar in general electrical function to the previous model, has a number of mechanical and electrical improvements which make it a much superior unit.

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RN 17, EJX 16, EQN 16, PNY 12, EBJ 11, WYH 10, ZAU 10, DXO 8, DZO 7, TRX 6, IVC 5, EXI 4, AQ 2, LBH 2, WZ 2, YGH 2.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Fred Skinner, W2EQD, — SEC: CLL. Section traffic nets have opened again with NYS on at 1900 and 2200 EST Mon. through Sat., NYSS (slow speed net) at 2030 EST Mon. through Fri., both on 3.72 Mc. All stations are urged to participate, even if only once a week. Manager for NYS is RUF; for NYSS, PHO. New appointments: GTC, EC for City of Schenectady; PHO, RM. CJP helped BSH get clicks and chirp out of VFO. ESM is using an old Stancor 60N on 14 and 28 Mc. ITX is working portable from car at Jamestown, R. I. QTH is Box 234. GTC and BAV made contact on 144 Mc., over 100 miles. TYC is newcomer to 144 Mc. with an ARC-4. SOX gave a fine talk at SARA meeting. LKM got tangled with buzz saw and had to go to the hospital for thumb repairs. OMD is QRL commuting between Albany and Chicago. WIK now has break-in but also has antenna troubles. CLL, GM, IWI, RMM, and AAO attended Manchester Convention. FEN is working in MARS net. PKY now has XYL. Congrats, Dan. PV still is knocking them off on 144 Mc. LTQ has new plumber's delight on 28 Mc. CLL is an RM and assistant manager of EAN. Traffic: W2LRW 385, CLL 238, PHO 127, EQD 104, QGH 80, TYC 60, CJP 14, WIK 9, BSH 8.

NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, jr., W2OBU — SEC: BYF. RM: TYU. From all reports the Hudson Division Convention was the greatest ever held in the NYC-LI section. Most of the hams in the section were there, plus a few Gs, VEs, and KP4s. The ROWH was the greatest-attended function of any at the show. Many new members were initiated into the order, the first to be held here in sixteen years. FI's report on Nassau County AEC was five pages long. More than twenty stations actively engaged in weekly drills prove the good work out there. Brooklyn, under OHE, continues to progress and showed fine results in the Simulated Emergency Test, as did all the other counties with fewer operators. TYU keeps making BPL and under his direction the NLI Net, on 3710 kc. at 7:00 P.M., Mon. through Fri., continues the good start it made in September. Those interested in traffic-handling, contact your SCM or TYU. Slow-speed net activity is available for those desiring experience. LRI shoved off for New Mexico and will attempt to contact NYC-LI on 3710 kc. at 10 P.M. KPA, just returned from sea duty, is active on 7 Mc. LGS, still plying the airlanes from here to Europe, is on 7 and 14 Mc. NDQ found his way back from Seattle and is settling down to some good QSOing. LUX got the big rig ready for the SS and we're awaiting his boasted score. The Jamaica UHF Club's *Grid Leaks* sure is a snappy bit. Write to QPQ, 162-11 86th St., Jamaica, L. I., for information on the Club's activities. WDT finally made WAS. WHB is pushing the Manhattan and Bronx AEC group and seeking more stations, on 3600 kc., Wednesdays at 8:30 P.M. RWQ has changed from 2-813s to 2/4-125A p.p. BGO is new ORS and is working W6s and W7s with 25 watts. EC, manager of TLAP, lists 23 stations across the country with no competition from the NTS. YIR, new OO Class IV, is on 7 Mc. CEP, on 420-450 Mc., works 20 miles with twenty-element beam and about three miles with "Yagi." VNJ got stuck in the Azores with an airplane engine change but got home in time to make BPL. PRE graduated from Brooklyn Poly as B.E.E. DXCC bit him this fall. BXK, Brooklyn Poly station, is back on the air on 14 and 28 Mc. LPJ is active on ESN on 7240 kc. ZNM is new ORS and sure enjoys NLI traffic. LGK, after long layoff from traffic, is back on NLI and says it's working better than ever. AS is flying again, working 144 Mc. from the air, and hopes to break a few records at different heights with about 5 watts. VHS is looking for portable emergency activity on 7040 kc. The YLRL Net meets Tuesdays 8 to 9 A.M. and 1 to 3 P.M. on 28.9 Mc. PBJ made WAS, DXCC, and WAC and is working for BERTA and WBE. PVY got married. Nassau Radio Club's newly-elected officers are CB, pres.; ZYI, 1st vice-pres.; VL, 2nd vice-pres.; QBS, secy.; BWD, treas.; RPZ, one-year trustee. TZU asks why there isn't more activity on 225 Mc. John says conversion of Abbott TR-4 and TR-4B to 225 Mc. is pretty painless. MPL received OO Class IV. The Federation of Long Island Radio Clubs will hold member club party in January. Many appointments are open. Official Observers are needed for monitoring our bands to improve operating conditions. Official Phone Stations are needed to start a section net to complete coverage on all bands. All clubs in the NYC-LI section are requested to elect a communications officer to communicate all activities of the club to the SCM for an exchange of ideas, etc., with other clubs and groups. This position should be outside the regular duties of the club secretary. Traffic: W2TYU 2307, VNJ 550, OBU 381, BO 195, PRE 146, OUT 130, TUK 86, VOS 73, LPJ 51, SJC 34, EC 16, PF 14, YIR 14, ZNM 11, LGK 8, YDG 2.

NORTHERN NEW JERSEY — SCM, Thomas J. Lydon, W2ANW — SEC: IIN. The N.N.J. c.w. traffic net meets on 3630 kc. at 7 P.M. Mon. through Sat. Anyone with a message is invited to report regardless of his code speed. The new officers of UCARA are PIY, pres.; K2BC, vice-pres.; LTP, vice-pres. in charge of activities; BRC, treas.; SGV, secy.; Leonard N. Green, asst. secy.; and Edward N. Neafsey, sgt. at arms. LTP is on 14-Mc. 'phone trying to get those countries he missed on c.w. PIY is mobile with a 522 on 144 Mc. PIX's 522 rig was used in the Red Cross booth at the "Own Your Own Home Show" representing UCARA'S disaster set-up. CIU has moved to Los Angeles and soon will be a W6. GJC has moved to Raritan Township. Gordon is the proud father of a baby girl. The u.h.f. gang from UCARA attended the South Jersey picnic on Sept. 4th. K2BC is the new NCS of Union County AEC. CCY is the latest addition to the 144-Mc. Union County AEC Net. ZF is back on 75 running 500 watts. VJN is now VFO on 160 meters. The UCARA meets every Monday at 8:30 P.M. in Red Cross Headquarters in Elizabeth. EWZ visited 4AKN and 4NRO in Virginia. BZJ is reporting into Northern New Jersey after a long absence. ZEP is back in school. The Horsetraders, famous East Coast 50-Mc. gang, held a lobster dinner at Keyport on Oct. 29th. The Somerset Radio Club held its annual shindig at Sterling in November. COT reports that SWL cards are being received from Russia. NOZ again is in operation at 8 A.M. trying to contact other school and college stations. PXR and NIY are very active with OO work. VQL is back on 28 Mc. with three-element beam. K2CC, formerly J2USA, is at Ft. Monmouth. He and his XYL, who also is licensed, brought 11,000 lbs. of radio equipment back from Japan with them. ANG is back on 3.5-Mc. c.w. New appointments include AWY as ORS. Traffic: W2KUS 228, NCY 146, EWZ 114, NKD 68, AWY 33, ANG 12, LMB 7, NIY 6, ZEP 3, CJX 2, ABL 1.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — MCU is cleaning up fringe T.V.I. AXE has 75-ft. tower with new beam. KUX is thinking about an 813 final. HFT is going to high power. DYL has been changing antennas and adding prop-pitch motor so cold weather won't foul up his program. FZO worried about bad signal on 28 Mc. VPX has new ham shack. BZX has new super-rig on 28 Mc. New calls in Sioux City are WFP, WFB, and YMH. The Sioux City Club took part in Simulated Emergency Test. B.E.N. is planning new tower on roof for 28 Mc. HMM is manager of Central Area Net. AUL is manager of Regional Net 10. YXK is on 14- and 28-Mc. 'phone from junior college. ZNT is rebuilding 14-Mc. beam which was taken down by big wind. UL is looking over that T55 again. OQF is back from Iowa City. BGK has his new XYL helping on a new kw. rig. JDZ, a new ham in town, is chief operator of KØNAV. QVZ is on 14- and 28-Mc. 'phone with a kw. ACC and SFT are active on 7 Mc. PFT has new 250-watter on 14 and 28 Mc. RFE has new Collins 32-V2. TIH is about to become a W3. OTP is getting parts for T200s. ZFO is a new ham at Panora. 6FHQ now is fixed portable Ø. The Dubuque Club now is affiliated with ARRL. VRA held regular schedules with NYX while on vacation. PP took DEA's place at Midwest Division Convention. JRY is getting kw. finished. UTF lost his tower when it crashed during erection. The YLs and XYLs are forming an auxiliary of Council Bluffs Club. Traffic: WØHMM 431, QVA 25, SCA 16, VRA 12, NYX 9.

KANSAS — SCM, Earl N. Johnston, WØICV — WGM, Topeka, our new RM, is reporting in the National Traffic System, the Tenth Regional Net, frequency 3735 kc. The QKS boys no doubt will be lined up with this gang and you c.w. boys who work into the Kansas 75 'Phone Net can help out a lot. QQQ, the college station at Manhattan, is reporting into both the QKS and the 75 'Phone Net regularly, as is SOE, the Red Cross station in Wichita. KVRC has changed meeting place to Naval Armory in Masonic Building, Topeka. ECF, mobile, worked GM3SP with his 25-watt Stancor recently and JLZ, who lives near Topeka, worked into Guam with his mobile. UPU is new EC for Shawnee, Osage, Wabaunsee, and Lyon Counties. OUU has a new modulator and is on 3.85 Mc. again. JDX has new 813 and may put it on 3.85 Mc. soon. UKH, at Wilson, is working all districts with his 616 final on 7 Mc. FDJ has new Globe Trotter with 812A in final working all bands 10 to 160 meters and is active on QKS nets. FER is active on QKS nets and the Colorado IUN Net Mon., Wed., and Fri. on 3540 kc. IPI says the predicted period for Sporadic E Aug. 29th to Sept. 1st didn't pay off for him. SO, of Highway Patrol QTH at Silver Lake, has 550-ft. wire 80 ft. up at one end and 30 at the other and is working everything but Asia with 50 watts on 7 Mc. WBC is having fun on 7 Mc. since his modulator blew up. LIX intends to resume OBS schedules soon. Traffic: WØKXL 245, NIY 125, FER 12, FDJ 7, ICV 3.

MISSOURI — SCM, Ben H. Wendt, WØICD — In response to the many requests for names of traffic-handlers, emergency enthusiasts and v.h.f. and u.h.f. interests, we submit the list of present appointees in the Missouri section. SEC: VRF. ECs: BCD, IAC, BQL, CKK, EBE, OMG, PMI, PTG, QMF, QXO, SOM, VMI, WRD, TKR, ZZB. ORS: ARH, CGZ, CKS, DEA, DU, GBJ, GCL, JAP, KIK, NNH, OUD, QXO, SKA, WAP, YSM, YSS. OPS: ECA, GZR, OMG, PTG, QMF, VMI, ZZB. OBS: BCD, GNX, GZR, IAC, MZH. RMs: OUD, QXO. PAMs: AZL, OMG. OES: PLJ, QMF. Additional OO, OES, OPS, and

(Continued on page 80)

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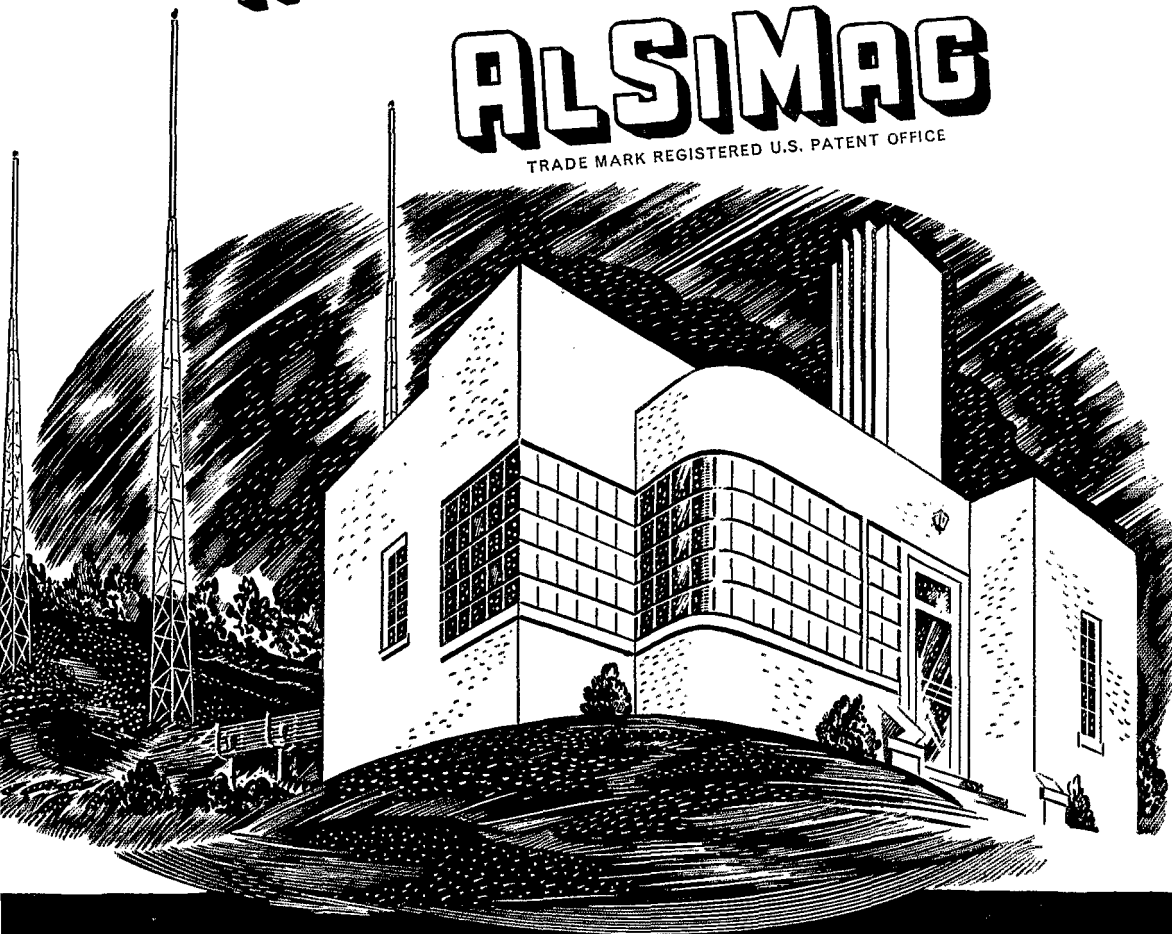

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EC appointees are needed. If interested, please contact your RM, PAM, SEC, or SCM. With the clubs: HARC reports MNQ, DVV, UI, RPE, EQW, MNN, OOT, EXE, WHK, SSG, DDX, MOX, FQE, HX, ZJB, JAP, VRF, NIY, VOF, PYS, OQN, and ICD attended the Midwest Division Convention at Omaha. The Washington U. Radio Club is conducting a membership drive to produce a strong AEC group aimed at traffic-handling and emergency preparedness. The club's transmitter, QEV, is powered by the University's plant independent of St. Louis power lines. Plans are being formulated for a new club in the southeast section of Missouri. The Missouri Net (MON) 3755 kc., an ARRL-affiliated net, finds itself looking in the face of real QRM since the Fifth Regional Net has chosen the same frequency. Eighteen stations report on the Joplin 10-meter net. WIS is substituting for WAP in the Show Me Net, 7272 kc. The Ozark Amateur Radio Club is in full swing for the winter season. YIH, another 28-Mc. mobile, is added in the section. CGZ has completed a double conversion receiver for all-band operation. OMG, LSA, and GNX were in attendance at the Cape Girardeau Hamfest. Traffic: WØQXO 501, WAP 35, CGZ 26, ICD 18, OUD 13, SOM 12, NNH 9, DEA 8, OMG 7, PTG 5, SKA 5, KIK 4, ARH 2, GCL 2, PMI 2.

NEBRASKA — SCM, Scott E. Davison, WØOED — Greetings, gang, from your new SCM! Haven't arrived in the swing of things as yet because of the transfer of files from RQK, who wishes to thank the gang for the help received while he served in this capacity. Please bear with us! FHA joins the net on c.w. KØNRG now has BC-610F on 14-Mc. 'phone. AYO is DXing on 28 Mc. QOU and EIE want 144-Mc. schedules. FMW has new 45-foot vertical and half-wave tuned doublet. UVU remodeled to 24G. UVQ has T.V.I. troubles. FAM reports the c.w. net in full swing, with HSO in charge and SAI assisting. DMY still is old steady Butch. AZC keeps regular schedule with his son, KZ5MB, in Canal Zone. GMZ and KJP really are holding up Omaha's end in the traffic lanes. TIA has new all-band antenna. LSS is attending National Guard radio school in the East. We want the news about your station, fellows, and want your help each month in preparing Nebraska news. Get your cards to us and we'll do the rest. Your SCM would like to arrange schedules with stations in all parts of the State, either 'phone or c.w. Want to thank all the gang who sent cards of congrats. We'll keep them handy when we are feeling low. CTQ is attending the University. JJA reports he is back on the air after a lapse of several months. Let's get organized for a swell winter season ahead. Traffic: WØGMZ 189, KJP 9, FMW 4.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Walter L. Glover, W1VB — New officers of the Manchester Club are MHF, pres.; QUJ, vice-pres.; QIX, secy.; SBK, treas. The Candlewood Club of Danbury held its annual banquet and election of officers on Oct. 14th with LKF, SEC, the principal speaker of the evening with a talk on emergency matters. Officers elected were PCH, pres.; KAY, vice-pres.; QI, secy.; MHT, treas. RVE is having trouble staying on the air because of his change of QTH twice in the past couple of months. QVF is all set up to work any band from 1.8 to 420 Mc. LV, QAK, and RFJ are new members of CN Net. ORP is building a 200-watt rig for traffic, which he hopes will be T.V.I.-proof. In accordance with the new ARRL traffic system the Connecticut Net now meets twice nightly at 7 and 10 P.M. Ed Roller, our RM, is in the process of working out a schedule for NCS stations for both sessions, and also representatives to 1RN, the regional net for the first call district. At this writing the list is incomplete, and any stations interested should get in touch with ORP. The Connecticut Net meets on 3640 kc., 1RN on 3610 kc., and EAN, the eastern area net, on 3705 kc. Your SCM appreciates the monthly dope from the "old faithfuls," and would like to get more news items from the various clubs in the section, and the rest of the gang who have not been heard for a long time. Traffic: W1RWS 186, AW 170, HYF 133, CTI 88, BIH 70, QAK 56, BVB 37, ORP 33, KV 25, EFW 19, HUM 18, KUO 13, QVF 12, BDI 8.

MAINE — SCM, Manley W. Haskell, W1VV — Pine Tree Net: RM NXX, 3550 kc., 1900, Mon. through Fri. Sea Gull Net: PAM FBJ, 3961 kc., 1700, Mon. through Fri. AEC Net: SEC QUA, 3588 kc., 2000, Mon. and Fri. New OPS is PTL, Russ Brackett, Bingham, one of the most active amateurs in the State. KP4IE/1, ex-W1QDO, "Stormy" Storms, South West Harbor, expects to regain the old call and become OPS again. Maine amateurs lost a well-beloved fellow operator this month; AUC is now a Silent Key. Chet Sprague was one of the first amateurs to receive a license in 1912 and remained an amateur throughout his life. He served with distinction in both the Signal Corps and the CAP, having the rank of lieutenant in the latter. He will be sorely missed in the roundup of Maine amateurs, especially on the SGN where his personality was outstanding. All nets are in full swing, with most of the old-timers there and plenty of new hands to help lighten the load. The new traffic layout has proved to be very effective. The outstanding station of the month is NGV, Lloyd Spiller, Richmond, who made BPL with 54 deliveries and a grand total of 253. Members of the PAWA visited the Oxford Amateur Radio Club in Norway, Oct. 6th. Fifty-three persons were present and enjoyed moving pictures and a buffet lunch. Traffic: W1NGV 253, LKP 91, NXX 81, KLH 36, YA 34, VV 29, AUC 14, KP4IE/1 11, W1QUA 10, JAS 8, NHT 6, KDE 5, PTL 4, TO 4, FV 2.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — The Eastern Mass. Net frequency is 3745 kc. and QMJ is the RM. AQE is RM for 7 Mc., AAL is RM for 14 and 28 Mc., IN is PAM for 50 Mc., LMB is PAM for 14 Mc. We need a PAM for 3.85 Mc. RBZ is the new EC for Chatham. MNK has applied for OO appointment. SJX is an ORS and has a new YL jr. operator. GDY and EHT renewed OBS appointment. JOJ renewed OES appointment. FL had his OO appointment endorsed. Skipper Hill, 1HUV/7, would like to hear from any of the gang. His QTH is Box 322, Wilcox, Ariz. Drop him a line. Quite a large number from this section attended the Manchester, N. H., Hamfest. George Bailey, Charlie Kolster, and Walter Butterworth were there. We have a new ham, RWT, Doc Lowcock of Arlington, who is 72 years old, and we understand he got his license all by himself. He is on 144 Mc. AME now is living in Chelmsford. USA is on 144 Mc. The recent VHF QSO Party was very active on 144 Mc. with the band being crowded at times and a lot of old-timers in on the fun. BNS is back in Quincy and on 28 Mc. OUZ, in Dedham, is on 144 Mc. NYO is moving to the West Coast and the Framingham Radio Club held a party with a good gang present. CTR is on 3.5-, 7-, and 14-Mc. c.w., as well as 144 Mc. EAB is activities manager for the Q.R.A. DPV, in Woburn, has a sixteen-element beam on 144 Mc. KPB, JTR, and QJF have KIM's converter. BIO is building one. EHT has a 1st-class telephone ticket. He is a director in the Q.R.A. and is on 50 Mc. AVY has worked 40 maritime mobile stations and has received QSLs from 50 per cent of them. Eastern Mass. A.R.A. held its first meeting with a talk on Germanium Crystals presented by Sylvania Co. The T-9 Radio Club met at ISX's QTH. The South Shore Radio Club had a T.V.I. demonstration by IVI, AKY, WK, and DDO. MRQ has his transmitter set up for winter and has schedule with 2NHM on 3.85 Mc. NF has a new QTH in Beverly. BGW is working DX on 3.5 Mc. LQQ has moved to South Hamilton. QMJ reports that the following have been on the Net: TY, LM, SJX, JCK, PYM, DWO, EMG, FGT, AHP, UE, BDU, ADL, QKM, and ILN. GDY is on 14 and 28 Mc. The Q.R.A. held a meeting in September. NBS has Q-5er. TY was outlet for Topsfield Fair where the Yankee Radio Club had a rig on the air. DMS has an elaborate key filter. OLP handled traffic from VE1TR on 3.85 Mc. BB is working on mobile antennas for all bands. MDU is building a 'scope and v.t. voltmeter. WU is on 28-Mc. c.w. PU is working DX on 3.5 Mc. The Newton Emergency Net held a drill with OMU, LMU, EK, HLX, PWV, JOW, and RM on. OMU was portable-mobile. FUR is back on 28 Mc. LMU is rebuilding for 28 Mc. IXI built a 30-ft. steel tower for beam for 14 and 28 Mc.; also has a 110-volt a.c. alternator for emergency power. NAA is working for Tropical Radio in Hingham. MKX won a 15-lb. ham at the Manchester Hamfest. Traffic: W1TY 1151, LM 124, DMS 76, QJB 63, OLP 36, EMG 31, BB 25, SJX 24, MDU 12, PU 9, WU 9, DHX 5.

WESTERN MASSACHUSETTS — SCM, Prentiss M. Bailey, W1AZW — SEC: UD. RM: BVR. Net frequency: 3725 kc., Mon. through Fri., 7 and 10 P.M. Net call: WMN. BVR did a wonderful job organizing First Regional Net. Perce attended the Manchester State Convention. GZ was presented a Collins 32V-2 by his former employees and Fitchburg hams at a dinner given in his honor at Fitchburg. RDB is attending Lawrence Academy. JE has his 500-watt p.p. 805s running for traffic nets. Hal attended the dinner given for GZ. RZG and LLN are new ORS. RHU has rig trouble but manages to snag the highest traffic total of the month for Western Massachusetts. EOB's 600 watts really put a hole in the ether. Vic is dead serious about traffic this season and is NCS for 1RN and EAN besides putting in plenty of time on WMN. BDV is doing a little shielding for the sake of T.V.I. Jim will be going "remote" when the WX gets colder. COI and IZN took part in the VHF Contest from Mt. Greylock. JGY is building a new exciter and power supply. RZG complains that school takes up a lot of time that could be used for building up a traffic total. ORV is the proud papa of a baby girl. OAZ has left WBEC and is now co-owner of a new b.c. station in Fitchburg. COI renewed OPS appointment. NLE and LUD renewed EC appointment. EFQ is new OO, and BKG renewed OO appointment. JE and JYH renewed ORS appointments. IBZ renewed OBS appointment. CH has moved to Phoenix, Ariz. APA was visited by ex-JA3AA. JYH was on vacation so missed seeing Tom. NLE has a classy 144-Mc. mobile unit. AVK has been pounding 14-Mc. c.w. lately. UD and CCH are experimenting with amateur t.v. RHU is traffic editor for *Zero Beat*. MNG is determining the advantages of the gamma match over the old T match. AZW visited BVR. Traffic: W1RHU 178, BVR 69, EOB 69, GZ 67, RZG 47, JE 33, AZW 20, BDV 10, JGY 7.

NEW HAMPSHIRE — Acting SCM, Clifton R. Wilkinson, W1CRW — Information on the New Hampshire Net: NCS stations, Monday, SAL; Tues., QJY; Wed., QYZ; Thurs., PFU; Fri., MXP. ANS reports in regularly. ATJ is a new member from Claremont. CRW is alternate for any of the NCS stations. EWF has new tower completed and

(*Continued on page 82*)

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DX QSLs still rolling in. KYG has new transmitter completed and has an occasional visitor on NHN. If you want to hear a nice signal take a listen. Besides radio, MXP is busy with clubs, etc., in Concord. PFU has an excellent radio location. QGU works 3.5 and 7 Mc. and has schedules with New York stations. QJX operates on the net regularly. QJY uses the OM's high power to keep interfering stations off frequency. RFP is back with us and will handle traffic to Hanover. RMY reports in. SAL has new VFO. The New Hampshire QSO Party was a bigger success than ever. Thanks to POK; he is a big help to us in the OO business. At this time I want to thank the gang on NHN for the splendid coöperation that we have received. The new traffic system is working out very good and NHN is open at 7 and 10 P.M. EST. Traffic: (Sept.) W1CRW 627, PFU 43, QJY 34, MXP 26, SAL 23, EWF 2. (Aug.) W1QGU 13.

RHODE ISLAND — SCM, Roy B. Fuller, W1CJH — The PRA is in high gear with its fall program. The Club is sponsoring a 28-Mc. mobile emergency net. Further details on this will be given later. The Club has gone on record as recommending a power input of 150 watts maximum for all amateurs. BTV has resigned as RM for this section and up to this time no new appointment has been made. LWA has been appointed Assistant SCM for this section. SKT is the assigned call for NAARO and we believe it will be quite active. NAARO held its annual picnic Sept. 20th at Goddard Park with a good attendance. MIJ is working DX, with 8 watts input on his 28-Mc. mobile rig.

VERMONT — SCM, Burtis W. Dean, W1NLO — Nearly 300 attended the annual Vermont Hamfest at the Hotel Bardwell in Rutland, Oct. 15th. Fifty-five turned out for the traffic and emergency meeting and heard FB advice given on traffic-handling and the AEC by KRV, PZX, JMY, JEN/K1NAG, ICP, and BVR. The Western Mass. boys ran away with the code contest with NY 1st, EOB 2nd, and BVR 3rd. BB won the two-meter treasure hunt. The Rutland gang is to be congratulated on the FB program put on during the evening. OHD supplied organ music during the banquet and evening. AEA is EC for Lamoille County. RNA is EC for Orleans County. AXN has Class A ticket and is on all bands with HT-19. AVP and 2FEU visited RHQ recently. AXN, JEN, NLO, OKH, PMH, QQN, QVS, QHT, RPR, John Baker, and Dick Stowe took part in the Simulated Emergency Test in the Burlington area Oct. 16th. NLO recently visited AXN, IDM, AC, ORO, RHQ, CGW, and BOH. Traffic: W1KRV 137.

NORTHWESTERN DIVISION

ALASKA — SCM, Charles M. Gray, KL7IG — BE is doing a fine job with the Alaska Emergency Net. SB is Net Control Station, with AH and EH filling in as alternates. There are about 50 members checking in, with the list growing nightly. The Net is connected to the States via the Mission Trail Net through W6BPT; also through the Oregon Trail Net. Any stations wishing to break please wait until the end of the call-up and the NCS will call QRZ. The frequency is 3920 kc. and either 'phone or c.w. may be used. The word from Headquarters is no 160 meters in Alaska. Too bad.

IDAHO — SCM, Alan K. Ross, W7IWU — Twin Falls: The Snake River Keys and Mikes election resulted as follows: KEK, pres.; MMO, vice-pres.; NMG, secy.; EYU, treas.; and CIG, act. mgr. Club project is the building of a Micromatch. KEK now is on 3.85-Mc. 'phone. MMO has new two-element beam. MFC is on 160 meters. MEJ and MHI are back in college. JPP is on vacation to the Bay area. Moscow: MVA acquired Valiant Auto-key from ZN via GHT via JMH. Downey: LQU moved to Cornish, Utah, as agent for the U.P.R.R. Boise: NVO, Ryman, is attending college at Boulder, Colo. Mobiles in town are KJ, AHS, APK, ALY, DOH, IWU, KJO, NPO, NJN, and SHN. Last month reports were practically nil, so no report was submitted.

MONTANA — SCM, Fred B. Tintinger, W7EGN — SMARA elected new officers as follows: GFV, pres.; KGJ, vice-pres.; KUH, secy.; KJS, treas.; JFA, sgt at arms; and Tom Hanlon, editor of *Thumps*. The Club plans a booth in downtown Billings to handle Christmas messages. CT is on vacation in Washington and is visiting TLA schedule stations. The miniature hamfest at Polson was a big success again this year and the general opinion is that the success is due to a minimum of planning, speeches, etc., and a maximum of just plain hamming. ELY, MAK, and JOI have new VFOs and finals. GFT is with KXLO, Lewistown. QB picked site for new home on a high hill. FTO has been visiting the Butte gang. HBM has started up District 6 CAP again. JOI suggests standardization of 30- and 144-Mc. mobile frequencies throughout the State. EQM has moved to Page, Idaho, but still contacts the Montana 'phone net. FGB is testing out super modulation. The Kalispell area gang is trying to build up a 50-Mc. net. NRZ and NMN are new calls in Billings. FIN is working on a new rig, and KGF is working on one for LCM. LIT is building 144-Mc. rig. KGF, FIN, and KUH plan to get on 160 meters. Traffic: W7CT 126, KGJ 74, EGN 62, FTO 7

OREGON — SCM, J. E. Roden, W7MQ — Astoria: COZ challenges any ham in Oregon to a game of pinochle. ALM worked New Zealand on 28-Mc. mobile rig. Bend:

(Continued on page 84)

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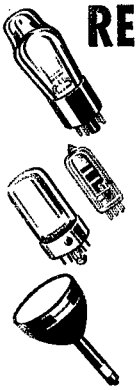
RECEIVING TUBES



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GNJ determined to make his 3.85-Mc. mobile work suit him. Eugene: LUZ is working as telegrapher for the S.P. R.R. KL is boring a hole through the ether with his new high-power rig. Klamath Falls: JRU reports that the Club is giving a trophy to the station checking in on the OEN the greatest number of times in ninety days. MYI and NOJ are new members of the new OSN (Oregon Slow Net). Medford: FRO is new vice-president of the Club. HLF, while on his California trip, failed to check in on OEN only one night. LaGrande: HBO is trying to get the boys AEC-minded. Portland: The Dipsey Net Party was a big success. KEG is having a rough time keeping track of all frequencies he has set up on his ART-13 so he can liaison between nets. ESJ is plenty busy getting Oregon Slow Net functioning. KM is back on the air and c.w. after eight years of inactivity. AXJ is Net Control for 3.6-Mc. OEN c.w. net. Salem: FRT is doing an FB job handling traffic for the State Capitol City. Tillamook: IDP and FKA are furnishing fishing information from Coastal streams. Scappoose: MVJ is a new ORS and also is one of the mainstays of OSN. Traffic: W7ESJ 262, FKS 232, AXJ 152, HDN 120, JRU 120, HLF 98, IIV 98, DZT 79, LT 58, APF 54, GNJ 44, MQ 41, FRT 34, BDN 28, FY 24, HVD 23, GXO 21, LWW 14, HVX 13, OU 13, MVJ 10, KZI 7, FPK 5.

WASHINGTON — SCM, Clifford Cavanaugh, W7ACF — RM: CZY. SEC: KAA. PAM: CKT. The following stations made the BPL: CZY, FRU, FIX, ZU, CKT, and JGM. KTL is busy rewiring his rig. AXT has moved back to Bremerton and again has his old job as OBS. JGM had his station set up at White Center Mardi Gras and handled piles of traffic. CWN was forced to give up radio for awhile as he had to prop up the house before it fell into the basement. AMZ is trying to make n.f.m. work on 3.85 Mc. APS is busy on WSNet. LVB is working 7 Mc. for a change. Admiral Exner, ZU, is rigging up his yacht with MM gear. BZR is wondering how long BAC's new 100-foot tower will stay up. KCU has added new keying monitor to her station. JZR is having a tough time with new net schedules. CKT says he is handling so much traffic that he would like to have a couple of the boys come over and count his traffic every month. Who wants the job? FIX is the new Pacific Area net manager. With his work as WSNet manager and of printing the Pacific area news, Vic's going to be a very busy man. DRA reports that he still is QRL in the canning business for Nalleys. FRU had a fine time at the Everett Hamfest and said he liked best the debate between CZY, for c.w., and CKT, for 'phone. It turned out a tie. ETO is doing a nice job with late WSNet schedule. But there is something missing, Al. DGN is checking into WSNet regularly. FWD sends his bulletins at 6:45 P.M. PST Mon. through Fri. on 3695 kc. DXF says copy for QRM sure it becoming tough to get. LIL is doing a fine job on WSNes as Tacoma outlet. GHI, Seattle EC, has resigned because of too much school work. He has done a fine job and deserves a vote of thanks all the way around. Who is the joker who has your SCM's radio station up for sale or trade in *Swap and Shop*. MVF and LJM enjoyed the Everett Hamfest a lot, as did all who attended. The Everett gang did a fine job. CZY is top man for Washington on the BPL list this month and is doing a fine job as seventh regional net manager. ETK, IJJ, and FIX sent in nice OO reports. We note some of our more popular stations received notices this month. Better clean up those harmonics, gang. Traffic: W7CZY 2361, JGM 1111, CKT 750, FIX 697, FRU 585, ZU 306, KCU 292, HWK 178, BZR 125, JZR 96, QGN 74, ETO 71, ACF 69, LIL 68, AMZ 66, FWD 51, DGN 17, LVB 14, APS 9, DXF 9, AXT 6, CWN 5, KTL 2.

PACIFIC DIVISION

HAWAII — SCM, Dr. Robert Katsuki, KH6HJ — AS reports increasing activity in AEC with 28-Mc. mobile gang. Emergency net operation is on 29.2 Mc. Tues., 7 P.M. This group, known as the Honolulu Amateur Radio Mobile Club, issues a certificate for working any 5 of its members. BW reports more activity on Pineapple Net (c.w.) on 3725 kc. Mon., Wed., and Fri. nights. BW, PX, UL, HJ, PL, and W6SAZ/KH6 were logged. MN is now PAM. ET was elected by Maui ARC to serve as EC for Maui. LB operates 7-Mc. c.w. and 3.85-Mc. 'phone. LB screen modulates an ARC-5. LG has received DX confirmations from ZB1AY, VU2AP, UF6AAF, UR9AG, and XZ2FK. LG uses a rotary on both 14 and 28 Mc. KH6YM (Coast Guard Auxiliary station) operates low power on 3.5 and 7 Mc. and runs 800 watts on 14 and 28 Mc.! PX has been making temporary OB transmissions on 3.85 Mc. Wed. nights at 8:30. Traffic: KH6UL 76, PL 44, BW 36, HJ 2, PX 1.

NEVADA — SCM, N. Arthur Sowle, W7CX — Asst. SCM, Carroll Short, jr., 7BVZ. SEC: JU. ECs: HJ, JVW, JLV, KSR, TJY, KOA, KWZ, ZT. RM: PST. PST reports activity building up on the Nevada State Net, 3660 kc., 7:15 P.M. PST nightly, in connection with the new National Traffic System. NRU is new in Ely; NSB is new in Gardnerville. TJY is traffic manager of the Mission Trail Net. ZT reports activity on 3.5- and 7-Mc. c.w. as well as Civil Air Patrol station, KDJM, on 2374 kc. NOH is on from Stewart and Owyhee alternately. JU reports the

(*Continued on page 86*)

Boulder City Emergency Corps supplied communications for the World's Championship Boat Races on Lake Mead. New officers of the Southern Nevada Amateur Radio Club are LBE, pres.; NCR and TFF, vice-pres.; LVP, rec. secy.; LUV, corr. secy.; LGS, treas.; KJQ, Boulder Activity; KTH, Las Vegas Activity. NNA is new in Boulder City. PWE, TJY, and KLK are active on 50 Mc. Traffic: W7TJY 84, CX 10.

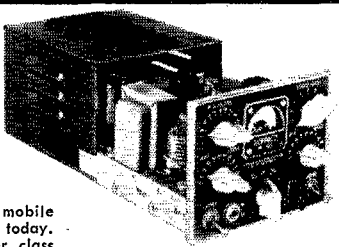
SANTA CLARA VALLEY — SCM, Roy E. Pinkham, W6BPT — SCCARA's exhibit at the Santa Clara County Fair was very successful. The transmitter used was the 3.5-Mc. rig of DAE; the receiver, an SX-28 of EEX. The station was in operation the full seven days of the Fair. The total number of messages handled during that time was 833, many going overseas to the GIs stationed in Guam, Germany, Japan, and Alaska. The operators were WGO, AVJ, YQN, DAE, ZRJ, and BPT. Traffic was cleared through the Mission Trail Net and CE. CXO, of the Mission Trail Net, gave very good service in taking relay traffic, as did many other stations. The SCCARA wishes to thank all those who gave so freely of their time to make the effort such a success. LZL sparked the committee in making all the arrangements. NW is now Net Control of the Valley Net on 3.628 Mc. Dick is looking for c.w. stations in the section who can check into the net at 1900 PST as many nights as possible to give good coverage of the Santa Clara Valley section. RFF worked two new countries on 14 Mc. to raise his total. BJS is back at Fort Monmouth, N. J. Roger visited 2OOP, as reported by SYW. WGO is building a new final using 304TL. Traffic: W6ZRJ 1052, UW 830, BPT 170, JSB 76, HC 48, NW 31, RFF 6, SYW 2.

EAST BAY — SCM, Horace R. Greer, W6TI — Asst. SCM, Charles P. Henry, 6EJA. SEC: OBJ.ECs: AKB, EHS, NNS, IT, IDY, QDE, WGM. Asst. EC u.h.f.: OJU. RMs: FDR, ZM. The Napa Valley Amateur Radio Assn. meets in the J.C. Shop Building on Lincoln Ave., Napa. YSD is changing QTH. CAN is now in the process of etching crystals. LXE is on and off the air spasmodically with new C.F. Zepp. ZM reports on how to "bust" up a radio club in ten easy lessons: Never come to meetings. Or, whenever you do decide to come, be sure to be late. Say to yourself, "What's the use of me being on time, the others are always late, and besides I can always pull the old gag about the long-winded boy who wouldn't sign off!" ZUI is playing around on 28-Mc. 'phone. BF is treasurer of the Mission Trail Net and reports organization coming along FB. OT has the time schedule all arranged for the winter season under YDP. ITH is spending 90 per cent of his time at present on radioteletype apparatus, and now has 97 two-way 'phone DX countries postwar. YDI still is plugging along. CDA still is QRL. FDR has been on a short vacation in Southern California and met his many ham friends. WII spends all his time on 7-Mc. c.w. CQZ is conducting a code and theory class at 7:30 P.M. each Tues. and Thurs. at the Army-Navy Y.M.C.A., Vallejo. HDD and FNS are newcomers to ham radio. WHA has new jr. operator. LL is playing with a BC-610. RRG has a new beam. YGU has a neat looking radio-controlled model boat. The heart of the control system is a selective relay which he built from an old headphone to eliminate complicated audio filters. KH6AM, KH6AW, and W7KYM visited Oakland for a few days. DL4YO is on his way back to the States. PB has new three-element 14-Mc. beam up. NZ returned from his European trip visiting many foreign hams. IKQ has new three-element 28-Mc. beam up. DYP needs new receiver so he can hear 'em. BUY is knocking off the DX. Wait until you see MHB's antenna farm. The SS gang is getting set for some keen competition. The Oakland Radio Club annual picnic held Sept. 24th was a great success. OBJ is getting back to his SEC work in great style after his serious mishap. The East Bay gang made a nice showing at the Pacific Division Convention in Reno Oct. 29–30. Traffic: (Sept.) W6IXH 381, OT 125, FDR 70, YDI 28, ZUI 19, BF 17, TI 4. (Aug.) W6OT 84.

SAN FRANCISCO — SCM, Samuel G. Van Liew, W6NL — Phone JU 7-6457. SEC: DOT. CECs: BYS, SLX, KNZ. OO: WB. The following news was received from the Eureka area: WYP is about ready to burst forth on the air waves. BBN and ZHE now can be found on 7 Mc. EQQ still is on 3.5-Mc. c.w. LE has completed his buffer stage — now bring on the heavy stuff. AEY says "the garden still calls CQ." It's getting time for the DX season again so let's hear you on, Jim. GXK is waiting for 3.5-Mc. coils so is now on 7 Mc. AUB still is working on his 813s in final. FBK completed his 28-Mc. rig but still is debugging it. He also has purchased 160-meter rig, 875 watts, with power supply, etc., complete for $30.00. Figure that out in watts per dollar. ZSZ just purchased ARC 5/T22 for 7-Mc. c.w. so give a look for him there. SLX met 9CRM again for the first time since 1932. 6FCL got his TA-12C on 3.5 and 7 Mc. and it works fine. RMH is busy with photography. CWR is on 28-Mc. 'phone for a change. BWV is QRT except for Sunday schedules. RJV, from Southgate, was a visitor at the Humboldt Radio Club. OUT is QRT with commercial job. CWR is trying out 28-Mc. 'phone. FCR is working DX on the 'phone bands with low power. YET now has a fine 900-watt 'phone rig.

(*Continued on page 88*)

HARVEY says Merry Christmas



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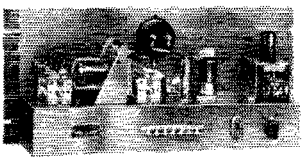
AC Supply for operation of any of above Subraco xmttrs indoors. Complete with rectifier and built-in control relay.....**$39.50**



Millen 90810 $69.75

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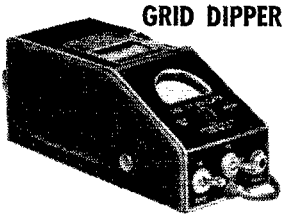
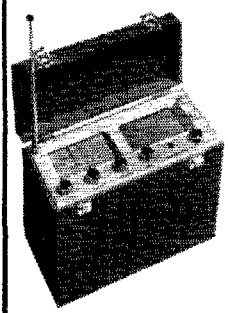
Versatile test and design unit. 1.5 to 270 mc. Transformer power supply plus battery operation. Frequency calibrated drum dial. Measures only 3⅛" x 3½" x 7" plus inductor length. Complete with tube and inductors. *Shpg. Wt. 5 lbs.***$55.00**





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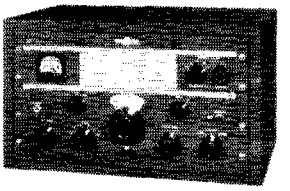

80, 40, 20, 15, 11 and 10 meter ham receiver. Automatic noise limiter, high sensitivity, double conversion. With speaker in matched cabinet. *Shpg. Wt. 93 lbs.*

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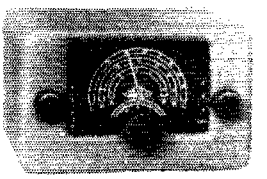

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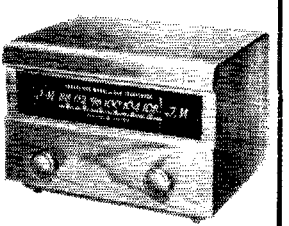

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The Humboldt Radio Club is backing up its EC. SLX does very fine in his emergency program. Five complete portable rigs and a fixed a.c.-powered rig have been purchased by the Club and installation is under way. This, coupled with the individual gear, will make a fine set-up, and the Club and EC SLX are to be congratulated on their showing. EC BYS and his assistants for the San Francisco community prepared a program for the National Emergency Test Oct. 15–16. Some difficulty in obtaining portable gear was encountered. Much of the portable gear was furnished by the Golden West High Frequency Club, who featured w.b.f.m. equipment. Lack of interest in this type of equipment has become prevalent because of the uncertainty of its status. A large program is under way for the N.R.C. station, CXO, over the drill period. The San Francisco Naval Shipyard Radio Club meeting was held Sept. 16th. The speaker for the evening was CTH, who gave an excellent talk. The usual refreshments and raffle wound up a very fine evening. The San Francisco Radio Club held its monthly meeting Sept. 23rd. Mr. Neilson, from the radio engineering staff of the Samuel Gompers School, gave us a very interesting talk on their f.m. station and equipment. The annual election was held and officers for the coming year will be CTH, pres.; URA, vice-pres.; Herman Witzke, treas. A raffle and coffee wound up a very busy evening. The Club held a swell picnic Oct. 2nd with a good attendance. Games, prizes, and eats made for a grand time. Please send in your reports early.

SACRAMENTO VALLEY — SCM, Ronald G. Martin, W6ZF — Asst. SCMs: Northern Area, Ray Jensen, 6REB; Central Area, Willie Van de Camp, 6CKV; Southern Area, Robert Metke, 6SUP, SEC: KME. ECs: Met. Sacramento, BVK; Walnut Grove, AYZ; Dunsmuir, JDN. RM: PIV. OES: PIV. OBS: BTY and AF. REB has been forced to resign from all activities because of illness. *Northern Area:* JDN is converting Command transmitters and handling traffic on Mission Trail Net, as well as forming emergency nets in the north country. Mt. Shasta Club met on Sept. 7th with approximately twenty-five members. *Central Area:* GERC met in Paradise in September for the benefit of the Oroville gang. HBM furnishes 144-Mc. relay contact from Chico area to Sacramento. ZUJ is arranging 28-Mc. schedule nightly with Sacramento. RHC is building new sixteen-element 144-Mc. beam. AF finished new 14-Mc. rig. CKV is building 3.85-Mc. 'phone mobile rig. *Southern Area:* The SARC met Sept. 21st to welcome ARRL Vice-Pres. EY, and Alternate Director CIS. Placer Radio Club with ZFD, GHP, CTH, ASE, and Mr. Amick deserve much credit for splendid exhibit at the Placer County Fair. UNT is working Chico, Sacramento, Lodi, San Mateo, Folsom, and Hayward on 144 Mc. with 522, three-element beam. KKL works MYL in Placerville regularly on 144 Mc. ASE and GHP run 20 watts to 522s on 144 Mc. ZFD is QRL 28-Mc. 'phone. RQN has new 3.85-Mc. full wave antenna 80 feet high. DL4DT is in Sacramento for good. BYB and AYZ have push-button control transmitters on all bands. MIW and PIV handled the bulk of State Fair Traffic. CKF has half-kw. on all bands. The Mission Trail C.W. Net meets nightly at 7:30 on 3804 kc. ZF put up new centerfed halfwave for 7 Mc. Traffic: W6PIV 91, JDN 62, ZF 11, GVM 2.

SAN JOAQUIN VALLEY — SCM, Ted R. Souza, W6FKL — Asst. SCM, James F. Wakefield, 6PSQ. SEC: JPS. ECs: VTZ, PHL, and WBZ. IEM, GRO, TO, and WPV are busy each night on the Legion Net. How about some traffic totals, fellows? JWK has a new final for 28 Mc. TO now has quarters in the Legion Building. PHL now is on 3.85 Mc. with 350 watts. YGZ is on the move again. BHI is building a portable for use at U.C. GJO has a new home and also a new shack. HIP, however, is shackless. AK was down visiting VKR and HIP. FRH is having power-supply trouble. WHB now is with one of the local parts stores. PRD is going to sell the rig and start building from scratch. BNW now is Class A. RLG has T.V.I. troubles. JGR is putting up a new beam. HIP deplores griping by club members. He suggests more work and less squawking. JPS is dickering for a windmill tower for his beams. FKL worked his first VK7 in 18 years of operation. LTO now is mobile on 3.85 Mc. and ZYR is planning on some of the same. QDT was down in Fresno on business. QON can be heard regularly on 3.85 Mc. PSQ is busy putting up his silvered-element beam for 144 Mc. SRU still is stalking the elusive DX. With OHB on the portable end and PHL at the home end schedules again were kept between the hunting party in Modoc County and home base in Merced. Traffic: W6IEM 24.

ROANOKE DIVISION

NORTH CAROLINA — SCM, W. J. Wortman, W4CYB — Because no news has been received from any of the gang, there have been no North Carolina reports for the past two months. EUS has been heard on 28 Mc. with a lot of "oomph." EGF lent his Meck T-60 for Field Day use of the Thomasville Club. ISP returned to school. MWN is pushing a cherry glow on an 813 for a half gallon on 28 Mc. OFO lost his equipment during bad weather — leaks and wind combined. HTG moved out where he could water-cool his 4-250A — right down on the lake. PAR, the club

(*Continued on page 90*)

station at Thomasville, is having a membership drive. Losing side feeds the winners. Thanks for all the dope, Pat. VB still is alive working 14-Mc. DX. FXY has been busy trying to get a new shack and home combined, but finds time for a bit of 7-Mc. c.w. Our thanks to an SWL, M. C. Brisson, jr., for some dope on some of you guys. Understand that a couple of fellows around Rocky Mount are working on a ticket. According to DSO, the Hickory Club is getting all steamed up, having lots of good meetings, etc. Our congrats to LPK and DSO for completing WAS. DSY used 14-Mc. 'phone and a transcontinental telephone call to expedite delivery of some badly-needed serum to VK Land. This statement has been made dozens of times, but will repeat it again. "If you don't send it in, it can't get to *QST*." Thanks, gang, for that news you meant to send in, but it can't be printed.

SOUTH CAROLINA — SCM, Wade H. Holland, W4AZT — BSS was visited by HP1FE. FM has a new 28-Mc. beam. Following are members of Clemson College Club: IMW, IZS, LCH, MAT, OAD, 2PPN, and KVF, president. AUT is on 3.85-Mc. 'phone. ANK has reactivated the SCN on 3525 kc. and is NCS, and also is manager of 4RN. KEC and KED has a two-hour QSO with EI6F, formerly of Greenville. JGM is on 28 Mc. SCN, c.w. net meets nightly on 3525 kc. with the following members: ANK, AUT, BJE, BR, DAW, FXH, IYA, HMG, HTR, MCY, MRJ, MTW, MYM, NRC. SCAN, 3.85-Mc. 'phone net, meets nightly at 7:30 P.M. and Sundays at 9:00 A.M. and 3:30 P.M. on 3940 kc. with the following members: ADE, ANK, AUT, AZT, BPD, BSS, BZX, CEL, CPZ, DBT, DPN, DX, EOO, EOZ, FM, FNC, FFO, GZO, HEV, HEY, HWZ, HXZ, ILQ, IYA, KEI, KMK, MTM, MRJ, and OBT. Officers of Greenville Amateur Radio Club are HCZ, pres.; KZ, vice-pres.; Virginia Tollison, secy. and scribe, KEC, treas.; and KMK, act. mgr. Members are KED, FNS, DBT, GZO, ILY, NVQ, MKN, MAF, OZL, IMW, EJH, HTT, LNI, AZT, ILQ. Rock Hill Radio Club members are CXO, MYM, NTD, ONJ, PBB, PHS. ANK is SEC and RM; ADE is PAM; NVQ and KMK are OPS. Traffic: W4ANK 68, AUT 10, AZT 10, DX 3, JGM 2.

VIRGINIA — SCM, Victor C. Clark, W4KFC — Asst. SCM, Elias Etheridge, jr., W4KYD. The more than 150 Virginia hams who turned out for the Richmond Radio Club's Oct. 9th Hamfest pronounced it a huge success. West Gulf Division Director 5NW, Southwestern Division Director 6KW, and ARRL's 1DF and 1HDQ were among the out-of-State guests present. CLD has been appointed PAM and will concentrate on VFN activities. IWA has been elected NCS of VFN. IA reports CFV, DTV, DWD, EBH, FF, FJ, FV, IA, IHN, II, IPC, IQR, IUU, IYR, JAD, JHK, JSR, JVG, KFC, KSW, KVM, LAP, LRL, LPP, MIZ, MLE, MLH, NQV, OEM, PAS, PED, and SU were active on VN during the first week of the fall season. NAD joined AEC and has applied for OPS appointment. IPC has antennas up at new QTH, and has IDX keying system. 1OJM, the big noise from New England, with all of northern Virginia to pick from, selected a QTH ¼ mile from KFC! FV worked two KH6s on 3.9-Mc. 'phone. YEJ, our new OBS, is reading bulletins to VFN gang. IQR is enclosing his rig in 6-ft. rack as a step towards avoiding T.V.I. VE has a clean bill of health from t.v. neighbors. The Navy is transferring OVK from Arlington to Norfolk. CJS is overhauling the rig to permit 3.5-Mc. operation. KYT, NEW, LXM, and K4USA participated in Simulated Emergency Tests conducted by Washington Mobile Radio Club. PAS is ex-5AUL. OSS has 50-ft. tower for his 14-28-Mc. rotary. RQR, faced with tough fringe-area t.v. problems, is finding solutions. KWY and OM are touching up equipment and antennas for another duel in the 1950 DX Tests. NRO is operator at MLE, club station. HPC has 500 watts on 28-Mc. 'phone. ODG and OLK are members of 144-Mc. Crab Net. OFF has a five-element beam on 14 Mc. JHK is DXing on 14 Mc. between VN schedules. NQV has new Meissner Signal Shifter. NNN was made a member of the First Class Operator's Club of England. KDV must relinquish SEC duties because of plans to leave the section. KYD is issuing those FB Virginia bulletins to all members of VN and VFN, as well as Virginia official appointees. Traffic: W4MLH 125, KFC 19, KVM 9, FV 8, CVO 6, OSB 5, CJS 4.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — New officers of the MARA are ESQ, pres.; NTV, vice-pres.; BOK, secy.; Rhodes, treas.; and OJI, act. mgr. DRU has RCC and 15-w.p.m. certificates and new NC-57. YPC is inactive because of burned-out plate transformer. BOK has 3.5-, 7-, 14-, and 28-Mc. doublets switched into his Collins 30K. DFC visited CSF while in Charleston and discussed WVN operation. WSL has changed from four-element to three on 28 Mc. to get wider band coverage. PQQ reports a long list of rare DX contacts and is nearing 200 mark. The Clarksburg gang has a 28-Mc. spot frequency net working swell with about six mobile stations. WNO plans a 3.85-Mc. mobile rig. AUJ handles traffic on the WVN and schedules his brother in Wildcat, Braxton County. UNS keeps morning schedule on 3.85-Mc. 'phone with Ohio and Pennsylvania stations. EP worked over 800 miles on 144 Mc. from his excellent home location in Terra Alta. OIC now has all the equipment to build high-power c.w. rig, with new HRO receiver. I would like to

(*Continued on page 92*)

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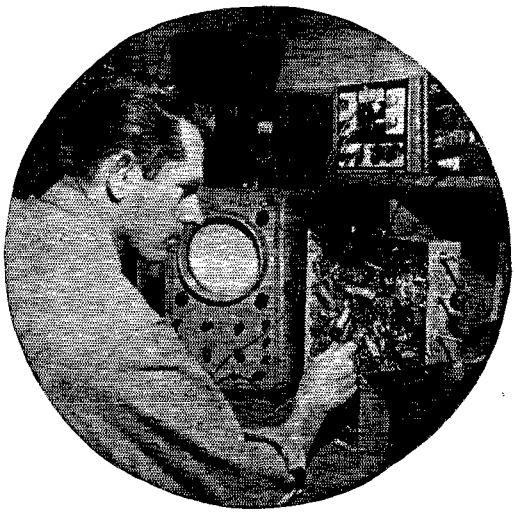

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hear from all West Virginia hams operating on 7 Mc. Amateur activity is needed in Putnam, Jefferson, Morgan, Wayne, and Lincoln Counties for WACWV. Traffic: W8GBF 44, AUJ 12, BOK 1.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, WØIQZ — SECs: KHQ ('phone), IC (c.w.). RM: IC. Interstate Utility Net (IUN) 7:30 P.M. Mon. through Fri., 3540 kc. Colorado Slow Speed Net (CSSN) 6:30 P.M. Mon. through Fri., 3540 kc. ZJO makes BPL third month in a row with total of 588. He has new end-fed on 3.5 Mc., a new Collins 31OB-1 exciter, and is running a separate power line to the shack to keep the blinkin' lights from blinkin'. IC reports that a station is badly needed in Pueblo for net operation. He also reports that in case of emergency the IUN and CSSN Nets are available at any time. DYS received his Class A ticket and we can expect to hear him on 3.85-Mc. 'phone any time. The Pikes Peak Amateur Radio Club furnished communications for the Pikes Peak Labor Day race. Those taking part were ANX, GFZ, BYW, CCG, JVR, NWQ, and CKJ. When regular channels failed to b.c. station KRDO, KVD patched in his Super Pro and completed the circuit from the top of the peak. This was broadcast over KRDO and the Columbine Network. Assistant ECs in the Colorado Springs area are LZY, HEM, and KVD. LZY would like representation from every town and city in Colorado on the CSSN. OWP installed an 8005 in final and is experimenting with a walkie-talkie running 1/10 watt! WVZ's new QTH is Alamosa, Colo. While on vacation yours truly drove to Hobbs, N. M., and South Dakota and met NGM, the SCM, and OXC, at Huron. Traffic: WØZJO 588, IC 125, DYS 19, SGG 19, LZY 9, OWP 7.

UTAH-WYOMING — SCM, Alvin M. Phillips, W7NPU — A write-up on our section has been missing for the past few issues because of the lack of sufficient reports submitted to the SCM. UTM built a "BlackBox" exciter and has his antenna back up, but his work restricts use of the new gear. LKM is pushing traffic on the Mission Trail Net and reports that the Farm Net started Oct. 30th on 3935 kc. at 1930 MST. JVA has been scheduling MYA tri-weekly on 7 Mc. By this time BED, interested in the Utah Net, will be looking for traffic. NAU is building a new four-element beam for 28-Mc. 'phone. LQE is T.V.I.-proofing his rig. LQE passes along the information that he and SYD, IWH, NPO, and KH6FG/7 are with the CAP. At the September meeting of the UARC, JPN and MFQ gave an interesting and informative T.V.I. demonstration. 5IRE/7 is with R.O.T.C. at U. of U. JYI is building a new beam and moving his tower. TVL is on 14-Mc. 'phone and CFF, LRP, JPN, and EWX are on 28 Mc. Here is the dope on the ARRL Mountain Area Net: Net call is "MAN," primary frequency is 3540 kc. Alternate L is 3530 kc. and alternate H is 3535 kc. Time: 8:30 P.M. MST, Mon. through Fri. Traffic: (Sept.) W7UTM 82, LKM 18, LQE 13, JVA 8. (Aug.) W7UTM 53. (June) W7UTM 36.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Leland W. Smith, W4YE — KVD is new EC for Etowah County. BA, ECI, HLG, and OLG all have new kw. finals. FSW has new secret 28-Mc. converter. JYB has a new car with mobile gear. MFA is back at Auburn, so is OEP and LZW. HFP and KIX are holding down RN5 schedules nightly. GJW has gone h.f. GLR is sporting his FB new shack. ELV lost his tower in recent high winds. NZZ is getting them all on 28-Mc. mobile. EBZ christened new home with new Collins 310-B. The Birmingham Club meets every Thursday night with meetings the 2nd and 4th Thursdays at DID's shack. Welcome back to 3.85 Mc., FPB. New officers of the Montgomery Club are: DPX, pres.; AP, vice-pres.; and CNQ, secy.-treas. EW has replaced 28-Mc. rotary beam with sixteen-element t.v. antenna. HVY is exclusively 28-Mc. mobile. PSS is new ham in Anniston. PRF is off to U. of A., but comes home week ends to pound brass. The Alabama Emergency 'Phone Net meets nightly on 3955 kc. Your new SCM promises his best during the next two years. Let him hear from you! Traffic: W4LEN 31, GJW 20, KIX 20, MFA 6, OAO 6.

EASTERN FLORIDA — SCM, John W. Hollister, W4FWZ — Clermont: MDV reports a two-wavelength 7-Mc. "V" beam which brought him such DX as PAØRC, SM6APC, F9ST, I1BSC and others for 12 countries in 3½ hours with 100 watts. Miami: IYT got his DXCC and WBE. New Port Richey: KJ has built a QRM-audio eliminator and new final with 5514s ready to go. Palatka: GZV is manager of 'phone traffic net with NAK, at Lakeland, as NCS. West Palm Beach: TH has 100-watt bandswitching emergency rig. IUJ is studying WX conditions in conjunction with v.h.f. openings. MVJ, a storm casualty, has new antennas on 3.5, 7 and 28 Mc. OBW reports nice QSOs on 28 Mc. while in "Gawja" with mobile rig. He reports that HDX worked 175 miles on 28 Mc. on top of Pikes Peak, Colo. Zephyrhills: KHY and NXA got a swell write-up in the paper on their emergency work during storm. General information: Want to do a better job as EC? Write IQV or

(Continued on page 94)

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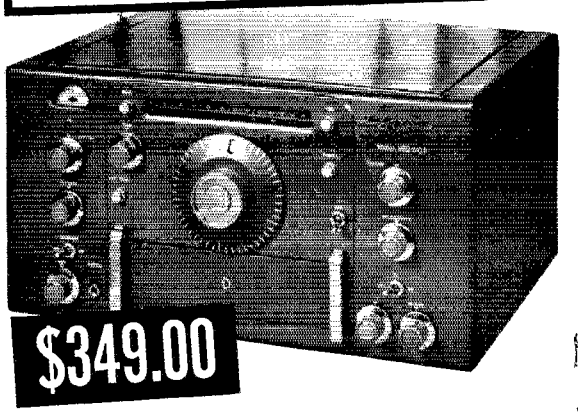
13. Phone jack across audio output.
14. Handles for ejecting or seating coil.
15. Three-position "operation" switch for CW, Phone, NFM or Phono.
16. Variable control of R.F. gain.
17. B-voltage disabling switch — except H.F. and C.W. oscillators.
18. Off and 5-position control of crystal selectivity.
19. AVC/MVC switch.
20. Variable phasing control for i. f. crystal.
21. Variable control for adjustment of "S"-meter and linear scale illumination.



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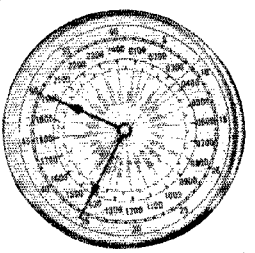

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NFY and get some good dope. NFY, Miami, signed up six new AEC members during the month. Here's the dope on NFY: A Millen exciter and final, also a final with V-70Ds on 3.5 and 7 Mc. with e.c.o. on all bands. The e.c.o. can kick the HT-18 n.f.m. for emergencies. He has added a 7-Mc. folded dipole for 7 Mc. and three-element CS beam for 28 Mc. Recent appointments: MNT and NFY as OPS, NFY as ORS, NAK as EC. Clubs: Please send the SCM your activity reports or bulletins. URGENT: The 3675-kc. net needs more members in order to support the National Traffic System (NTS). Can you make it one or more nights each week? It's 7:30 P.M. Mon. through Fri. The net is crying for traffic originations in Florida. National Guard operators: Please register with the SCM. All AEC members: Please send call and address to SCM. Traffic: W4IQV 533, ES 120, MNT 88, MVJ 40, DES 35, OAV 31, IYT 30, NAK 26, GZV 25, NFY 16, ZC 11, LMG 9.

GEORGIA — SCM, Clay Griffin, W4DXI — BOL won the Georgia QSO Party in September with 22 contacts. Here are the other reported scores: LYG 19, LEC 16, FD 14, HKA 14, DDQ 13, DXI 13, CBR 12, WB 8. MCM has been appointed OO and OPS. A post card from Germany to the SCM congratulated CCV on a good job of message-handling for DL4DE. Macon: PER will have 100T's on soon. POR cut down on his operating after a green ticket (for harmonics) from the FCC. PFA's beam fell again. PKT finds low power does as well as high power. NAR and DZK are active again. The Macon amateurs want everyone to look for their groundwave net every Sunday night at 8:00 on 28,650 kc. The Columbus hams have a 28-Mc. emergency net which meets at 8:00 every Tuesday night on 29,200 kc. with MBZ as Net Control. GGD is active again after a lay-off this summer. BOL visited in Florida and Alabama. Bremen has a new ham on 28 Mc., PUH. BIA moved to Atlanta. HDC got married and acquired a house. BQE, former SCM of South Carolina, is living in Atlanta. GOS, an M.D., is now in Cleveland, Georgia, running his own hospital. Traffic: W4MCM 56, KGI 21.

WEST INDIES — SCM, Everett Mayer, KP4KD-KP4KB — The AEC Net was activated on an emergency basis Sept. 21st when storm affected the Island. The Red Cross and Weather Bureau expressed appreciation for a good job. DJ's schedule with W2BYF is going strong. AEC Nets operate Mondays 8 P.M. AST, 3559 kc.; Tuesdays 8 P.M. AST, 29.1 Mc.; and Wednesdays 3925 kc. 8 P.M. AST. HZ is Asst. EC for San Juan district. IY is on 14-Mc. 'phone with supermodulation. HZ is on 3.5-Mc. c.w. for the first time with 4 watts. KQ, IQ's XYL, is on 14-Mc. c.w. JO, on 28-Mc. 'phone, plans 7-Mc. c.w. operation. KO is on 28-Mc. 'phone with 522 and 20 watts while awaiting new TBS-50. DJ is new ORS. KL is converting Collins 400-watter to 7- and 28-Mc. c.w. There are twelve hams at Ramey with seven active on 28-Mc. 'phone and one on c.w. QZ is on with new Collins rig and 75A receiver. This is KD's 25th year as KP4. Traffic: KP4HU 15, DJ 6, KD 3.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Vincent J. Haggerty, W6IOX — Phone Activities Manager MVK reports efforts afoot to increase 420-Mc. activity in the southern part of the section. Known to be active on 420 Mc. in that vicinity are ABN, BUT, CFL, CGF, CON, EDJ, EFE, FIX, GTJ, GTZ, GUE, KKG, MVK, NLZ, NNN, NOE, NQV, UKX, VDE, VIX, WKX, WWP, ZRN, and ZW. VIX operated portable 420 Mc. on several week ends putting a whopping signal into Los Angeles from the Gorman area. The Two Meter and Down Club held a QSO Party Sept. 25th and a picnic and hidden transmitter hunt on Oct. 2nd. OGF built up a 144-Mc. converter into a Cascade with good results; he has a 522 and sixteen-element beam. HX has a new 14/28-Mc. beam with slip rings on a 60-foot windmill tower. Rumor has it that t.v., not T.V.I., keeps some of the boys off the bands. A reliable source reports CTS is a recent benedict with an XYL favorably impressed by ham radio. DMJ is DXing on 28 Mc. with a new Twin 3 beam and 125 watts input. EAY made DXCC on c.w. PYN submerges a 4000-volt condenser in transformer oil to prevent arcing while running a 304TL at 1 kw. YHR is mobile on 3.85-Mc. 'phone and has worked several first district stations. Others reported active on mobile 3.85 Mc. are ESR, SEH, ICS, VSQ, and HCV. WKO, ZRU, YMS, and MU are busy on 28 Mc. WWP went into business for himself but finds time for v.h.f. operating when not QRL repairing meters. A copy of the *Long Beach Ham Oscillator* reports activity of the Long Beach Club; films on amateur radio subjects are planned as features for coming meetings of the Club. FGS gave a talk and demonstration on the subject of amateur radio teletype to the Pasadena Short Wave Club. Traffic men are busily engaged in developing the National Traffic Plan, which was inaugurated Oct. 3rd. CE, YLZ, and DDE made the BPL. ZUX is rebuilding his 50-Mc. antenna because the wind blew down his sixteen-element beam. IAL is starting with a 60-foot telephone pole at his new location. BHG continues code practice transmissions Mon., Tues., Thurs., and Fri., 1900 to 2000 P.S.T. on 147.5 Mc. FYW had a

(*Continued on page 96*)

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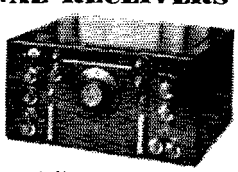

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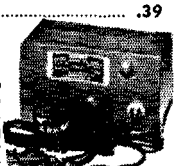
Mallory 6AC6 Battery Charger



We urge every ham who operates mobile to keep this handy battery charger in his garage! Long QSO's can run down your battery — and the Mallory 6AC6 is just the thing to restore that juice, particularly needed these nippy mornings! Price only **13.03**

R-655 Cigarette Lighter Plug, enables you to conveniently plug-in the battery charger through your cigarette lighter receptacle **1.18**

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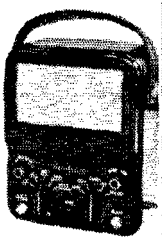

"Sensational!" is an apt description for this instrument! It's an electronic DC voltmeter, ohmmeter, AC voltmeter, AF voltmeter, RF voltmeter (with accessory probe), output meter and FM indicator. Same compact size as famous model 260, yet rugged and as accurate as similar types two to three times larger! Complete with DCV probe, ACV-Ohm probe and Ground lead **57.57**

Accessory RF Probe..... **7.35**
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SIMPSON 260 — One of the finest multimeter set testers made! Has DC sensitivity of 20,000 ohms per volt. Use for AC volts, DC volts, ohms, DC current, decibels. Complete with test leads and self-contained batteries **38.17**

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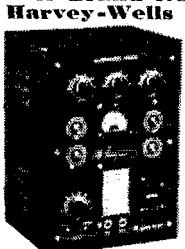

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MODULATION KIT for Bandmaster Jr.—add this kit anytime for phone operation with carbon mike. **15.50**

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BANDMASTER DELUXE — Has all the terrific features of the Bandmaster Jr. and Sr., *plus* a three tube crystal mike preamplifier. Complete with tubes, less power supply **137.50**

Accessories For Bandmaster Transmitters

APS-50 — Power supply for 110 volt AC operation. Delivers 425 volts at 275 ma. and 6.3 volts at 4 amps. 39.50

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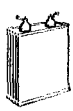

Here are real money-savers in oil filled condensers for amateur, broadcast, TV and laboratory requirements. All are standard rectangular size cans. Act quickly — we have plenty, but at these prices they'll sell fast!

1 Mfd.—1000 V	.45	1 Mfd.—3000 V	1.75
15 Mfd.—1000 V	1.95	.5 Mfd.—4000 V	1.75
1 Mfd.—2000 V	.95	2 Mfd.—4000 V	4.65
2 Mfd.—2000 V	1.75	3 Mfd.—4000 V	5.25
4 Mfd.—2000 V	2.95	1 Mfd.—5000 V	2.95
8 Mfd.—2000 V	3.45	2 Mfd.—5000 V	5.75
1 Mfd.—2500 V	1.45	1 Mfd.—7500 V	7.90
.25 Mfd.—3000 V	.95	.1 Mfd.—15000 V	8.75

Shpg. add 55c for first, 20c for each additional condenser.

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2X2/879	.55	809	1.55
4E27/257-B	4.95	811	1.75
24G	.75	813	4.95
304TH	2.75	814	2.45
304TL	1.10	866-A	.85
802	1.75	RK-34	.39
807	1.10	RK-60	.65
		TZ-40	1.75

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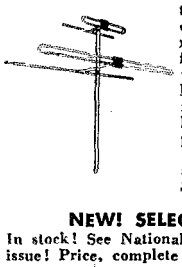

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visit from FDR and DDE. LKF met JQB while on a hunting trip. YCZ is having fun on 160-meter 'phone. AM says he is up to 194 countries worked and 183 confirmed and has DXCC on 'phone. WMQ received 25-w.p.m. CP endorsement and has overhauled his gear in preparation for traffic work. Traffic: W6CE 2803, YLZ 891, JQB 141, DDE 130, QAE 78, BHG 69, ZMZ 61, FYW 17, TFC 16, ZQV 11, AM 8, WMQ 5, DBY 4, MU 4, VG 4.

ARIZONA — SCM, Gladden C. Elliott, W7MLL — MDY has a new rig with a pair of 813s in the final. MJN has a new Meissner driving a new 829B final. MAL has a new rig, a Meissner S.S. to an 814 final. LBN has dressed up his layout with metal cabinets. LQB has a dual 20-10 beam. JFT has an emergency-powered all-band rig. MHP is on all bands 160 through 420 Mc. KZS has a kw. on at Tempee. MHP and MSL are on 3.85-Mc. 'phone. NUL has 500 watts on 28 Mc. with a 304TL at Clarkdale. SQN has an ACR-5 on 3.5-7-Mc. c.w., and a pair of 812s on 28 Mc. SNI has a pair of 807s on 7 Mc. and a pair of 812s on 28 Mc. RLC uses p.p. 75Ts for 400 watts on 28 Mc. 2OOH/7 has a TB50 on 28 Mc. and an ACR-5 on 7 Mc. at Sedonia. NFL won the Northern Arizona QSO Contest. Reflected skip contacts around the State on 28 Mc. are picking up — SDU, Phoenix, worked QNC, Safford. MHE worked MND in Prescott and LPK in Tucson. MII, at Eloy, worked MOB and PEY in Tucson. MES, at Fry, worked PEY. LIZ is on 160-meter 'phone in Tucson. NPL has a TB-50 on 28 Mc. NVN, Romer, is a new call in Tucson. NBZ, at Amphitheater High, wants to arrange schedules with other Arizona high schools. MAE has a new quarter kw. using 826s.

SAN DIEGO — SCM, Dale S. Bose, W6BWO — Asst. SCMs, Shelly E. Trotter, 6BAM, and Gorden W. Brown, 6APG. SEC: YXE. RM: BGF. DBZ is building a new VFO and scheduling KL7AAD every other Monday. YXE is the new SEC for San Diego, replacing DUP, who had to resign because of other activities. GC has qualified for Class 1 OO. YXE and VJQ visited the Orange County Club at its September meeting. RLQ has a new two-element beam for 14 Mc. HIN is a new Santa Ana station. BWO has returned from a 4700-mile vacation trip through W5 and WØ Land. Traffic: W6BAM 20, DBZ 4, AD 3.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Joe G. Buch, W5CDU — AW reports that extensive efforts to make the Big Spring Radio Club an ARRL affiliate are about completed. AJ has resumed activity on 7 Mc. from the vicinity of Longview. BPM is the call assigned to the East Texas Radio Club station. LGY is most unhappy because she has been kept off the air for the past sixty days because of delay in receiver service and return. PRN received his B.S. degree from East Texas State Teachers College. PAK has received his transmitter after completion of a factory T.V.I.-debugging operation. AAK can't understand why it should take four months to get his transmitter debugged and returned. It is quite apparent that T.V.I. problems in the Dallas-Fort Worth area are on the upgrade since a new Dallas station and the football season have greatly augmented t.v. sales. DHH, formerly of Gladewater, is active from DL4LX on 28.2 Mc. LSN has completed rebuilding and is busy working Rebel and TLAP Nets. ARK, Net Control for NTX, reports the meeting time has been changed from 2000 to 1900 so net operations will tie in with the new National Traffic Plan. The Net meets Mon., Wed., and Fri. The newly-formed EC c.w. net on 3830 kc. is rapidly gaining membership. GZU makes BPL for the eighth consecutive month. Forest has a new 183 receiver and 310-B exciter unit. Traffic: W5GZU 1046, ARK 111, CDU 54.

OKLAHOMA — SCM, Frank E. Fisher, W5AHT/AST — SEC: AGM. RM: MBV. PAM: ATJ. The new National Traffic Plan has indeed become a traffic system with everything seemingly working like a well-oiled clock. OWV took the first OLZ traffic to RN5, the Regional Net, which 4NNJ is directing so capably. Following through to the Central Area Net, ØAUL has the same efficient organization. With the coöperation of other trunk lines and big nets such as the Rebel Net, the new system should add materially to our ability to obtain quick delivery of traffic. K5NRJ makes BPL again. This is getting to be a habit with Jack. However, we like such habits. The Oklahoma County Emergency Net is supplementing its 75-meter stations with 144 Mc. and is doing a nice job. Interest in 144 Mc. is picking up. ATJ, CUH, HLD, HXI, HXK, IEQ, LGW, and NLZ are among those with consistent daily schedules. OOY has moved to Tahlequah. ATJ would like to see more interest on 50 Mc. for state-wide emergency work. How about more operation between 51 and 54 Mc.? EHC doubled the height of his antenna and hopes it is worth the effort. GPD and MEZ are welcome newcomers to OLZ. NHD has moved — with room for a number of rhombics. HGC still is tied up with his business but makes OLZ at intervals. We hear he's promoting t.v. in our town. PA is expected back on the 'phone net soon. Send your registration in AEC to your SEC if you have not done so. Traffic: K5NRJ 713, W5OWV 211, MBV 125, MEZ 57, FOM 49, ATJ 5.

SOUTHERN TEXAS — SCM, Ammon O. Young, W5BDI — MN is handling traffic on 7 Mc. ACL is spending his time rag-chewing on 14 Mc. AXI is operating MM in the

(*Continued on page 98*)

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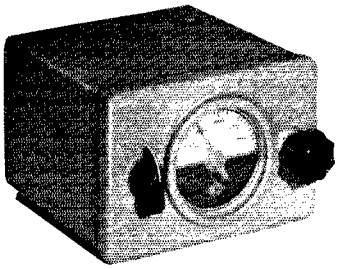

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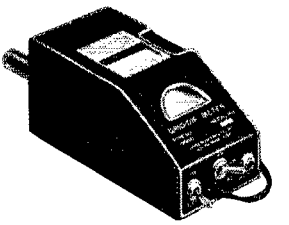

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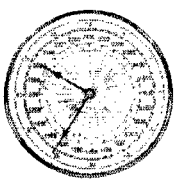

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Near East on 28.7-Mc. 'phone. Ex-3KGA is now QCS and is active on 14 and 28 Mc. AHW has new location which is large enough to let him put up some "V" beams. LHL has changed his 807s for 811s in his modulator. HZX is on 14-Mc. 'phone with 85 watts. KJ has 10-over-20 beam and new kw. rig. FGQ has 66-foot steel tower with a 20-meter beam on it and a new kw. rig. MIL again is active — from new QTH now. MTB will operate 3.85-Mc. 'phone from Rice Institute to work his father, AJD. MTA is now KG6GI and is looking for Texas QSOs on 14- and 28-Mc. 'phone. MLQ is on 27 Mc. UB and LBG are on 28 Mc. VY and JLY are high DX men for San Antonio on 50 Mc. Traffic: W5MN 73.

NEW MEXICO — SCM, Lawrence R. Walsh, W5SMA — SEC: ZU. PAM: FAG. The big event for October was the State Hamfest in Albuquerque held Oct. 1st. Congratulations are in order to the Sandia Radio Club, its officers and members, for putting on an FB hamfest. All the State ARRL officials were present. Our West Gulf Division Director, Soupy Groves, also was present. The program included a report on State activities by State ARRL officials and a report on ARRL activities by Soupy. PGY gave a very interesting talk on v.h.f. Mr. Burt Bittner gave a demonstration of how to obtain antenna patterns. All sections of the State were represented in the 135 amateurs present. BYX has been appointed OBS and OPS. BIW is spending his time in El Paso with his XYL, DRA, who is undergoing an operation. FAG is established in his QRA at Socorro and has 200 watts on 144 Mc. MYQ and PGY, of Los Alamos, worked UVA, of Sandia Park, on 144 Mc. PNQ and QKJ are now members of the 3.5-Mc. c.w. traffic net. NCS for c.w. net is as follows: Mon. ZU, Tues. NJR, Wed. NRX, Thurs. NXE, Fri. IGO or BYX. MSG now has a Clapp VFO. ELL is now in Denver. Traffic: A5ZU 48, W5ZU 19, NJR 18, JXO 8, AFU 5, BIW 4, SMA 2.

CANADA
MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. OBS: RR. BK is high traffic man again. Congratulations to the SSARC and the Lunenburg boys for the fine job done at the amateur radio booth at the Lunenburg Exhibition. We hear that HS now has a portable 3.8-Mc. rig in his car. UZ schedules her father nightly in Massachusetts. KS is working on a dual beam for 14 and 28 Mc. LY has new 28-Mc. beam working nicely. HD is putting finishing touches to his roof-top 28-Mc. array. DQ has one down on the ground for fall overhaul. RP, DB, and EK recently were heard snagging DX on 14-Mc. c.w. VE4QV has returned to his "home in the west" after a brief visit to the old home town and some of the local boys. Recent Convention thoughts: How many of those 200 814s are now "on the air?" Has VE2BE got that hard-won co-ax working yet? All nets, both c.w. and 'phone, in the section are being reorganized and plans are well advanced for an AFARS group in connection with "Search and Rescue" in the section with special frequencies. In addition, FQ, our EC, has maintained our contact with the local Red Cross. Traffic: VE1BK 401, LZ 115, MK 58, FQ 32, HT 30, KS 2.

ONTARIO DIVISION

ONTARIO — SCM, Thomas Hunter, jr., VE3CP — SEC: KM. RMs: ATR, AWE, BMG, BUR, DU, GI, TM, and WK. PAMs: FQ, DF, RG. The various exhibitions around the country sure helped the traffic scores and BUR leads the section. PH and DF are on 50 Mc. BL enjoyed his first LO Nite. BMG celebrated his 26th wedding anniversary with twelve hams and their XYLs present at the party. BPB and BUR have 50-Mc. rigs. AZN has new 14-Mc. beam. AWE is attending U. of T. ZO is trying hard for DXCC. PH has WAC on 'phone. BIW has Windsor organized for emergency work. BNQ has 28-Mc. mobile. ADN is back on with higher power. The Kirkland Lake Club has PA as pres.; BNI, vice-pres.; BJE, secy.-treas.; ANH, act. mgr. BPE is president of the Hamilton Radio Club. ALV, BUS, and AYO are mobile from Sudbury. BVH now is on 3.85-Mc. 'phone with 211 in final. VD is back on after a complete antenna overhaul. BSG reports for the Brantford club. AOK reports t.v. reception from Gore Bay. CP has had contact No. 10,000. NI is forced to relinquish OBS appointment. There still are vacancies for ECs, ORS, OPS, OBS, OES, and OOs. Anyone interested may drop a line to any of the above officials. AHR is EC for Cardinal area. BVR enjoyed the traffic emanating from CNE. BPB worked six sections in the last V.H.F. Contest. BGI has new modulator and shack. BNI swears by his Clapp oscillator. New officers of the Nortown Amateur Radio Club of Toronto are RU, pres.; Richard W. Roberts, vice-pres.; BVC, secy.; BSX, treas. This Club now has more than one hundred active members. Traffic: (Sept.) VE3BUR 271, ATR 116, BBM 92, WK 76, BVR 69, CP 64, BCZ 39, RG 33, IA 32, NI 32, BL 27, IL 27, BMG 26, BSA 21, DH 19, AWE 17, PH 17, AG 14, GI 13, KM 12, DU 11, BQL 10, BUS 9, DF 8, DDM 6, VD 6, HK 5, AOK 4, FQ 4, YS 4, AZH 2, BOQ 2. (Aug.) VE3CNE 340.

(Continued on page 100)

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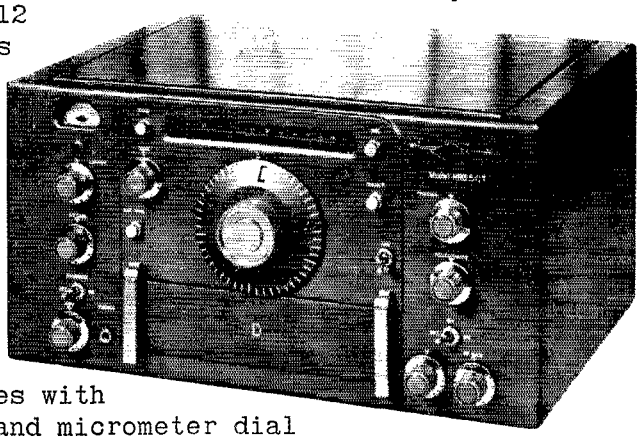

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QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — PQN is away to a good start, on schedule as planned, and QEN continues weekly drills Sunday mornings at 10:30 EST. AIE, of Sawyerville, is new on PQN. XR has installed a novel break-in system using a surplus relay. CG has been busy in the radio shack of "Rapids Prince" during the summer, and ham activity suffered. He plans on rebuilding his rig into a portable this winter so he can avoid interruptions. BB again is maintaining schedules with SSN and QON daily on 7 Mc. and with ESN when he is at home during the mornings. NR has changed QTH to Strathmore and is looking for a place for his sky-wire. NB has new two-element beam turning on 14 Mc. XB, who has been rebuilding most of the summer, is about ready to go. EC reports continued activity of Quebec 'phone net on 3812 kc. and 146.8 Mc. and invites all 144-Mc. enthusiasts to operate on this frequency with horizontal polarization. OF is now OPS. BV has a new beam. XX changed QTH early in October but expects to get new sky-wire in position quickly and be back on the air with a minimum of lost time. CA worked VK2ACX at 4:30 in the afternoon on 14-Mc. 'phone with good signals both ways. IN and JZ, with the assistance of other Three Rivers hams, are conducting radio classes for would-be amateurs. Please send station activity reports to the SCM. Traffic: (Sept.) VE2BB 65, EC 32. (Aug.) VE2BB 16. (July) VE2BB 54. (June) VE2BB 14.

VANALTA DIVISION

BRITISH COLUMBIA — SCM, Ernest Savage, VE7FB — ARS, age 14, at Cranbrook, is on 3.5-Mc. c.w. ZT has B.C.I. and still is trying to match the Bazooka. MC, the R.I., made him silent for a time, because of lack of carrier shift indicator. Capt. AEY is finishing his new 28-Mc. tower. ADZ has new jr. operator, and coolly worked seven DX countries on 28 Mc. AHQ worked LU2 on 28 Mc. to make WAC. About 20 from this section attended the hamfest at Everett, Wash., and had a real good time. Winners and prizes were BQ, side cutters; WM and TE, selenium rectifiers; ABY, soldering iron; AAA, socket punch. TF has plenty of traffic in but must use the post because there isn't any station in the right places. ID, your SEC, teaches at Tech. day and night. T.v. sets from surplus radar has been the students' main object of late. Promotion of a radar net around the West Coast takes lots of Ralph's time. XN and ALJ hold down Ashcroft as SL has moved to Vancouver and BLV has gone to Dog Creek. Hal asks that those who fly past on the highway and give their calls please QRS both the horn and the vehicle. The Nanaimo A.R.C. is away again with two licensed amateurs. US finished a 700-watt rig for a VE6 to cover 3.85, 7, 14, and 28 Mc. and worked G4-8, ZI, and VKs. Traffic: VE7TF 181, VG 150, OD 102, BJ 83, TF 75, AEU 21, AOQ 20, US 20, XA 19, YI 12, AKI 10, FB 10, SW 7, HL 6, UT 6, ID 4, ACP 2, MJ 2.

PRAIRIE DIVISION

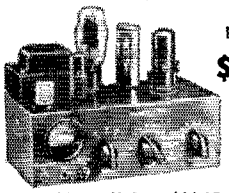
MANITOBA — SCM, A. W. Morley, VE4AM — The Manitoba 'phone net started with poor conditions but AR, AM, CE, CI, DN, GP, and JN are reporting in. Other stations still to report are GV and OS. OS is busy with other work and still needs one state for WAS. GV decided to rebuild. Interest has been shown in a 7-Mc. c.w. net and this is in the organization plan. Details of either net can be obtained from DN or AM. EH still is on 28 Mc. keeping contact with the GMs he visited last winter. SS is heard on testing the new all-band exciter. JO is at Kittykizuit and is heard signing VE8. LF has new antenna working on 3.8 Mc. IA is on 28 Mc. NN now is portable on 3.8, 14, and 28 Mc. while brother worker, GA, sticks to 28 Mc. RL, at Rivers, is using an AT3 and AR88. DN reports the Brandon district tested equipment during the simulated emergency. With the fall season here let's have more reports.

SASKATCHEWAN — SCM, J. H. Goodridge, VE5DW — CJ has worked Vancouver and W7s on 50 Mc. using three-element beam and 832 final. JF is on 50 Mc. also with a four-element beam and 80 watts to an 815. RJ and FL have moved shack to the front room. VB and IC portable-mobile worked RV. HI is building super modulated rig with 807s. PA will put up a 10-over-20 beam if the shack roof can handle it. The second operator at CKBI, SS, is new call at PA. 3AJR/5 is located at Porcupine Plains for the winter. 7AGK now is MN at Craik. BU is in the florist business. HR finally received QSL card from Asia. RC is attending the University and is continuing OBS activity. FY is building a transmitter in miniature to end all rebuilding. AJ keeps schedule with B.C. c.w. net on 3.5 Mc. at 8 P.M. daily. GG works 7- and 14-Mc. c.w. JH and DW are located in adjacent suites hence they plan to use the same antenna. DR has new 28-Mc. beam, works DX, and reports on 'phone net. SD has increased power. YF is getting out FB on 14 and 28 Mc. and works 3.8-Mc. 'phone net. DG is on 14-Mc. c.w. and is working on 19 set for portable. RL has new quad antenna which works well. Traffic: VE5HR 17.

Ideal Xmas Gifts

While They Last, you can get these fine new units at Real Bargain Prices...for yourself or for someone you like.

MICAMOLD XTR-1 TRANSMITTER KIT



REDUCED TO **$14.50**

Regularly $34.00

Cat. No. S-1132

New Shipment! Save $14.05 on this Brand New Micamold 45 Watt Telegraph Xmtr. Kit! Complete from power supply to antenna matching network. Puts you on 3.5, 7, or 14 mc with suitable crystal. No Coils to Plug In...No Extra Coils to Buy! Uses 6AG7 xtal oscillator circuit. Requires 83, 6AG7, and 6L6 tubes. Complete kit, less tubes, crystal, key. 10 lbs.

BLILEY CCO-1C Crystal Controlled OSCILLATOR

REDUCED TO **$29.50**

Regularly $69.50

Cat. No. S-1104

Save $40.00! This Bliley CCO-1C provides 7 crystal controlled frequencies: 175, 262, 370, 455, 465, plus 200 and 1000 Kc. Harmonics available up to 50 Mc. Can be used with external xtal. 5-step attenuator with max. output of 7 volts. Internal or external modulation. Incl. 7 Bliley xtals, tubes and coax cable.

HALLICRAFTERS HT-17 TRANSMITTER

REDUCED TO **$39.50**

Complete with ALL COILS

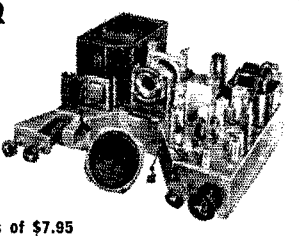
Regular $71.50 Value

Save $32.00 on this famous Hallicrafters 10 Watt Xmtr. and coils for 10, 15, 20, 40 and 80 meters! Also works beautifully on 160 meters with proper crystal and coil in final. Complete with 6V6GT, 5U4G, and 807, coils instructions. Less xtal and meter. 25 lbs....No. A2056.

B & W 160 JEL Coils, No. 11915....Ea. $1.38
Peterson Z-2 Crystal for 160 meters.
(Specify frequency).....Each $2.75

NEW TECH-MASTER *Blue Ribbon* TV KIT

for 10" or 12" Picture Tube
With New Keyed AGC Circuit



Complete Kit with Front End Tuner, All Parts (mtd. on chassis) Step-by-Step Wiring Instructions, Service Manual....No. A19778 **$99.95** LESS TUBES

Only $9.95 Down — 12 Monthly Payments of $7.95

A remarkable new TV Kit by Tech-Master that surpasses everything available at anywhere near this Amazing Low Price! Uses latest 9-pin miniature tubes in powerful advanced design. Highest quality components — 100% mounted and assembled on chassis — ready for easy wiring. 4-stage Video IF, 3-stage Sound IF. Keyed Automatic Gain Control Circuit compensates for variation in sync. pulse. New contrast and brilliance control circuits makes adjustment, once set, extremely rare! Full 4 mc bandwidth. Excellent FM sound. All-channel tuner wired, tested and aligned with 2 matched tubes in place. Uses 6J6, 5-6AG5, 2-6BA6, 2-6AU6, 2-6AL5, 2-6SN7, 6T8, 6K6, 6AC7, 12AU7, 6BG6, 1B3, 5U4, 6W4, and 10" or 12" Kine. Chassis fits any 630-type cabinet.

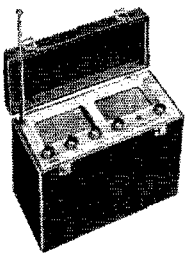
Tech-Master "Blue Ribbon" TV Kit complete as described, less tubes and kinescope. 58 lbs.
No. A19778.....Net **$99.95**

Kit of RCA Tubes, less Kine..Net $20.00

10BP4 Picture Tube	Net 26.00
12LP4 Picture Tube	Net 32.30
16AP4 (Metal) Tube	Net 55.88
16DP4 (Glass) Tube	Net 49.50
10" Cabinet, No. A19753	Net 42.50
12" Cabinet, No. A19773	Net 47.50
16" Cabinet, No. A19600	Net 42.50

NEWARK 16" 630-Type TV RECEIVER Completely Wired Chassis with Voltage Doubler, RCA Tuner, 30 RCA tubes, 16" Mtg. Brackets, Aligned and Tested. Less kine. No. A19770, 75 lbs..... **$174.50**

See our New NC-50 Catalog for Details on All Radio and TV Kits, Sets, Parts, Accessories, Ham Gear, Sound Equipment, etc. at Dealer-Low Prices!



HALLICRAFTERS S-72 PORTABLE All Wave RECEIVER

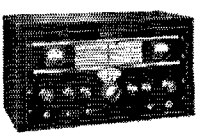
AC-DC or Battery! Broadcast and Short Wave. Covers 540 Kc to 31 Mc in 4 bands. Separate bandspread tuning. Loop and whip antennas. 8 tubes plus rectifier. Many deluxe features. Complete with tubes, less batteries.
No. A2079.....Net **$79.95**

Only $15.99 Down — 12 Months at $5.65

NEW HALLICRAFTERS SX-71

Continuous AM coverage from 538 Kc to 35 Mc and 46 to 56 Mc in 5 bands. Over 300 to 1 Image Rejection at 28 Mc! Hiss-free NBFM. 1 microvolt sensitivity. 12 tubes plus VR and rect. Complete with tubes and cabinet. Less speaker. 33 lbs. No. A2095.....Net **$179.50**

Only $17.95 Down — 12 Months at $14.27

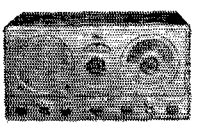


COLLINS 32V-2 TRANSMITTER

150 Watts CW, 120 watts Phone. Permeability tuned. Covers all amateur bands plus 1.6 to 2 Mc. Vernier tuning dial. Harmonic-attenuating L-Pad network. Low audio distortion. A superb transmitter!
No. A19087, 128 lbs.....Net **$575.00**

Only $57.50 Down — 12 Months at $45.71

Factory conversion of 32V-1 to 32V-2,.....$100.00



COLLINS 75A-1 RECEIVER. Complete with tubes, matching speaker, instructions. No. A19080.....Net $375.00

Only $37.50 Down — 12 Months at $29.81

NATIONAL NC-57 RECEIVER

Famous high quality, medium priced all-wave Communication and Broadcast Receiver. Includes 6 meter band, Voltage-stabilized oscillator Circuit. ANL and CW pitch controls. Built-in dynamic speaker. 9 tubes incl. rectifier and VR.
No. A19124.....Net **$89.50**

Only $8.95 Down — 12 Months at $7.12

NATIONAL NC-183 Professional Communication Receiver that will outperform any receiver in its class! Covers broadcast thru 10 and 6 meter bands. Complete with tubes, less speaker. No. A19130, 65 lbs.....Net **$268.00**

Only $26.80 Down — 12 Months at $21.31

NEW LOW CREDIT TERMS — Only 10% DOWN, Up to ONE YEAR TO PAY!

Choose Anything from our Tremendous Stock of Ham Gear, Radio, TV and Electronic Equipment, Sound Equipment, etc. and pay while you're enjoying it. Only 6% for Interest and Carrying Charge—No more! Send for Special Time Payment Order Blanks!

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Include Postage
All Prices F.O.B. New York or Chicago
Enclose 20% Deposit with C.O.D. Orders

Hints & Kinks

(*Continued from page 66*)

"sink" the heads of the mounting screws. Then round off and polish the edges by filing, grinding, and buffing. A piece of billiard cloth or felt glued to the bottom will keep it from scratching the desk. Your XYL will be much happier about things, and your key will stay put. — *James Gray, VE8CR*

—•••—

THE soft sponge rubber from the inside of an old automobile radio vibrator makes a nifty pad on which to place your key. It won't slip, and it will act as a "silencer" if you are a heavy-fisted brasspounder. — *Merritt Malvern, W2ORG*

Mobile Antennas

(*Continued from page 26*)

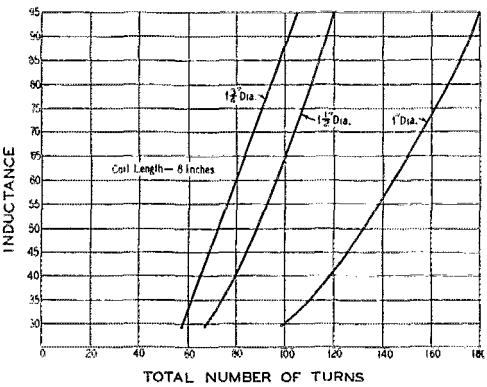


Fig. 4 — Curves showing the number of loading-coil turns to give the required inductance. All coils are based on a length of 8 inches.

loading coil and tuning arrangement. A capacitor, C_t, mounted in a weatherproof can at the base of the antenna, is used in series with the short piece of RG-8/U coaxial cable and the pick-up loop at the transmitter to tune out the reactance of the link. For the author's set-up, a value of 150 $\mu\mu$fd. proved sufficient. A small 200-$\mu\mu$fd. variable was used.

The tuning condenser may be mounted on the transmitter chassis as an alternative. The author's set-up was too compact to permit mounting in this manner.

In tuning up the mobile antenna, it will be noticed that near-by objects affect the adjustment. Therefore, be sure to load the radiator in the clear and with the trunk and doors closed.

This antenna has been used in communication between W2OZN in Clinton, N. Y., and the author's mobile unit in Remsen, N. Y., a distance of roughly 35 miles airline, with a power input of only 4 watts to a 6C4 on 3.9 Mc. The installation has been operated under all types of weather conditions except snow. There was no noticeable change in the performance even with heavy rain.

HOT RADIO VALUES at SUN RADIO!

CRYSTALS!

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

JUST ARRIVED! NEW FREQUENCY CRYSTALS FOR HAM AND GENERAL USE
—FT-243 Holders, ½" pin spacing
(Fractions Omitted)

GENERAL USE

6006	6208	7873
6025	6773	7906
6040	6840	7925
6073	6873	7950
6075	6906	7973
6100	6940	7975
6106	6973	8240
6140	7740	8273
6150	7773	8306
6173	7806	
6206	7840	

49c each
10 for $4.50

HAM USE
2, 6, 10, 11, 20, 40 METERS

5305	5775	5940	6473	6740	7540
5675	5806	5973	6475	6806	7573
5677	5825	5975	6506	7306	7606
5700	5840	6273	6540	7340	7640
5706	5850	6340	6573	7373	7673
5725	5873	6373	6606	7406	7706
5740	5875	6406	6640	7440	8173
5750	5900	6425	6673	7473	8175
5760	5906	6440	6706	7506	8340
5773	5925	6450			

99c each 10 for $9.00

CRYSTALS WITH A MILLION USES

Fractions Omitted

kc	kc	kc	kc	kc	kc	kc	kc	kc	kc	kc	kc
412	422	433	442	462	481	492	503	507	511	516	522
413	423	434	443	468	483	493	504	508	512	518	523
414	424	435	444	472	484	494	506	509	515	519	
415	425	436	445	473	485	495					
416	426	437	446	474	487	496					
418	427	438	447	475	488	497					
419	429	440	448	477	490	498					
420	431	441	451	479	491	502					

49c each

Xtal. Freq. Stan. 3-prong holder 98.356Kc

Easily altered for 100kc Standard. Mounted in low loss 3 prong holder.

$3.89 each

For Crystal Controlled Signal Generators Ft. 241-525Kc

526,388	533,333	537,500
527,777	536,111	538,888
529,166		
530,555		
531,944		

99c each

I.F. Frequency Standards

kc	kc
450	461,111
451,388	464,815
452,777	465,277

99c each

200 KC CRYSTALS

Without Holders
21/32" x 23/32". Each **69c**
3 for $2.00

Assorted Miscellaneous Crystals
Fractions Omitted

372kc	379kc	384kc	387kc
374	380	386	388
375	381		
376	383		
377			

39c Each

priced at a fraction of the cost of their holders alone.

For Ham and General Use
Fractions Omitted

390kc	396kc	403kc	408kc
391	397	404	409
392	400	405	411
393	401		
394	402		
395			

79c each

CRYSTALS FOR SCR 522

5910kc	7480	
6370	7580	
6450	7810	
6610	7930	
7350		

$1.29 each

CRYSTALS FOR HAM USE

FT-243 Holder ½" Spacing

ea.
3735 KC...69c
4190 KC...39c
5030 KC...39c
5485 KC...39c

Crystals from BC 610
¾" Spacing—2 Banana Plugs

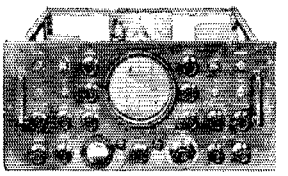
2045	2305	3202	3550
2105	2320	3215	3570
2125	2360	3237	3580
2145	2390	3250	3945
2155	2415	3322	3955
2220	2435	3510	3995
2258	2442	3520	
2260	2532		
2282	2545		
2300	2557		

$1.29 each

• Payments must accompany order. Enclose 20¢ for postage and handling. Minimum order — $2.00 plus postage.
Crystals are shipped packed in cloth bags inasmuch as they are shock mounted. All shipments guaranteed.

TERMS All items F.O.B., Washington, D. C. All orders $30.00 or less, cash with order. Above $30.00, 25 per cent with order, balance C.O.D. Foreign orders cash with orders, plus exchange rate.

SUN RADIO
OF WASHINGTON, D. C.
938 F STREET, N. W. WASH. 4, D. C.



MONITOR SCOPE UNIT

TS-121/CPN8 — Ideal for building a high quality, Precision, laboratory 5" oscilloscope, contains 115v–60cy power supply, high voltage power supply, C.R. tube shield condensers, resistors, controls, and almost everything else needed to make this conversion, with conversion diagrams, less tubes.... **$39.95**

TRANSFORMERS

Ham Transformers — Peerless (Altec Lansing) new, not surplus, priced below cost.
Modulation Trans. — 20 w. Universal No. M-4081Q. List $9.25. Only.....**$3.70**
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Fil. Trans. — 2.5 v. CT-20 Amp. 4500 v. ins. No. F-8513J. List $8.00. Only.....**$3.20**
Driver Trans. — Universal, 70 MA for 15 w. Audio No. A4237Q. List $10.75. Only.....**$4.30**
Grid Mod. Trans. — Kenyon...**99c**

PARTS ASSORTMENTS

100 Ass't Elec. and Tubular Cond.....**$3.49**
100 Ass't Resistors..... **1.00**
100 Ass't Mica Cond., unmarked..... **1.00**
25 Ass't Pots..... **4.95**
100 Octal Wafer Sockets..... **2.95**
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PHONO ARMS

American model No. 1-j with CR la 3.5 volt output cartridge. Unboxed. New.....**$1.65**
Astatic SL 8 and D 9 with L-26a cartridge. Standard replacement unit. Boxed. New.....**$1.89**
Phono arms less cartridge, but with all necessary hardware, straight or curved. Five (5) for.....**$1.95**

VARIABLE CONDENSERS

— as used in SCR-522 — brand new.
2-gang, 220 MMF per section..*..... **$1.29**
3-gang, 220 MMF per section..... **$1.59**
VARIABLE CONDENSER, 1-gang, capacity 14–600 MMF..... **$ .59**

HAMS

Sun Radio now has for immediate delivery full stocks of all popular ham parts and equipment; such as—NATIONAL, HAMMARLUND, HALLICRAFTERS, RME, BUD, MEISSNER, BARKER AND WILLIAMSON, HARVEY-WELLS and many others. Write us your requirements and problems. W3PPQ, W3MQD, and W3JYS always on hand to help a fellow ham.

FAMOUS MAKE BUTTERFLY TRANSMITTING CONDENSERS
SPLIT STATOR
All New—Boxed—Below Cost

.500 spacing Cap. per. sec.	Price	.375 spacing Cap. per. sec.	Price	.250 spacing Cap. per. sec.	Price
11 MMF	$8.35	11 MMF	$8.15	13 MMF	$7.95
30	11.85	22	9.95	30	9.80
68	17.80	34	11.30	45	11.20
87	20.65	58	14.35	95	15.40
96	22.15	70	15.90	111	16.80
105	23.80	82	17.20	159	21.00
115	25.20	94	18.75		
124	26.65	106	20.15		
		118	21.60		
		130	23.10		
		141	24.50		
		153	25.95		

TUBES

All New and guaranteed, some boxed, some bulk, at tremendous savings—stock up now for that fall or winter business.

1C5GT	$ .49	12A6	.99
1H6GT	1.10	12SA7GT	.49
1S5	.39	12SF5	.60
1T4	.43	12SH7GT	.72
2A6	.59	12SJ7GT	.60
2A7	.88	12SK7GT	.49
2B7	.59	12SQ7GT	.65
2S/4S	.49	12SR7	.72
5V4G	.88	14A7	
6A6	.88	12B7	.88
6AE6G	.72	31	.88
6B4G	1.06	32L7GT	.99
6B7	.59	35W4	.45
6C5	.60	38	.72
6C6	.72	39/44	.88
6C7	.59	46	.39
6D6	.60	55	.69
6K7GT	.60	80	.50
6N6G	1.28	89	.49
6SF5	.60	485	.49
6SH7	.72	954	.50
6SJ7GT	.49	955	.55
6V6GT	.72	957	.55
6VTG	.49	1619	.55
7A4	.72	*VR53	.19
7C5	.72		
7H7	.40	*Use to replace 12K7 or 12J7	
7Q7	.72		

Mixed quantities in lots of 100 10% discount from these prices.

HI-FIDELITY MUSIC LOVERS

Now in stock for immediate delivery all the components necessary to assemble the hi-quality-lo-cost radio phono combination as recommended by a well known consumer research organization.

MEISSNER 8C FM tuner with cabinet...	**$38.33**
MEISSNER 8C FM tuner less cabinet....	**34.33**
GENERAL ELECTRIC 1201 D. Speaker	**17.70**
UNIVERSITY 4401 Single Tweeter.....	**12.00**
UNIVERSITY 4402 Dual Tweeter.....	**24.00**
UNIVERSITY 4405 Filter Network.....	**6.00**
BELL 2122 Amplifier.....	**41.50**
BOGEN PH-10 Amplifier.....	**29.25**
G.E. Preamp, self powered.....	**9.57**
WEBSTER 356-27 Record Changer with GE Cartridges.....	**39.75**

We will do all the necessary adaptation so that all you have to do is plug in and play after installation in your own cabinet. There is no charge for adaptation, except for extra wire, plugs, etc., which amounts to very little. When ordering please include sketch of layout and length of wire needed on each item. Allow one week for adaptation.

Happenings of the Month

(*Continued from page 32*)

of the Board of Directors, any unexpended remainder of same to be restored to surplus.

21) On motion of Mr. Collett, VOTED, 9 votes in favor to 6 opposed, that there now be taken from the table a motion at the 1948 meeting directing the Secretary to make certain requests of FCC with respect to the amateur radio telephone subband at 14 Mc. Moved, by Mr. Collett, that the motion be amended to read as follows: that the Secretary be directed to request FCC, in the name of the League, to make available for Class A amateur radio telephone operation the frequencies 14,200–14,350 kilocycles. After extended discussion, the yeas and nays being ordered upon request, the said question was decided in the affirmative: whole number of votes cast, 15; necessary for adoption, 8; yeas, 9; nays, 6. Those who voted in the affirmative are Messrs. Collett, Dosland, Doyle, Griggs, Groves, Johnston, Key, Martin and Shelton. Those who voted opposed are Messrs. Bird, Hughes, Matejka, Noble, Roberts and McCargar. Mr. Reid and the President abstained. Moved, by Mr. Dosland, that the motion be amended to provide that action on this matter shall not be taken by the Secretary until the proceedings on Docket 9295 are completed. After discussion, moved, by Mr. McCargar, that the matter shall lie on the table; but the motion was lost, 7 in favor to 9 opposed. At this point the Board was in recess from 5:40 to 5:52 p.m. On motion of Mr. Shelton, VOTED, 11 votes in favor to 5 opposed, to amend the amendment by striking out the suggested text so that the original motion would read as follows: that, as of the time the 21-Mc. band becomes available to the amateurs of the United States under the Atlantic City regulations, the Secretary is directed to request the Federal Communications Commission, in the name of the League, to make available for Class A amateur radio telephone operation the frequencies 14,200–14,350 kc. Messrs. Collett and Groves requested to be recorded as voting opposed. The question then being on the motion as amended, the same was ADOPTED, 10 votes in favor to 6 opposed .

22) On motion of Mr. Griggs, unanimously VOTED that the editor of *QST* is directed to provide a maximum of one page per month in *QST* to record the activities of the ARRL Emergency Corps.

23) On motion of Mr. Groves, unanimously VOTED that Headquarters staff members and the General Counsel be requested to retire from the room in order that certain matters concerning the Headquarters establishment may be discussed. Whereupon, at the direction of the President, the Headquarters staff members and Messrs. Segal and Smith retired from the meeting, at 6:18 p.m., rejoining the meeting at the direction of the President at 8:04 p.m.

24) Whereupon, on motion of Mr. Johnston, the Board adjourned, *sine die*, at 8:12 p.m.

(Time in session, 8 hours, 26 minutes. Total appropriations, $6,000.)

A. L. Budlong,
Secretary

U.S.N.R.

(*Continued from page 39*)

Amateur radio stations are in operation at over 500 U. S. Naval Reserve training centers, Electronic Warfare facilities, and Electronic Warfare stations. In addition, approximately 1000 individual radio amateur members of the Reserve have been assigned Naval Reserve call signs for participation in drills on Naval Reserve frequencies. According to latest available statistics, the Eighth Naval District leads all others in number of individual stations, with 162 amateurs authorized to drill from their own stations. The Ninth District is second with 145.

Naval Reserve members are invited to send items suitable for these *QST* notes. Address them, *via official channels*, to the Chief of Naval Communications (Attention: Op-204V).

Our 27th Year

LEEDS
"The Home of RADIO"

QUALITY – PRICE
DEPENDABILITY

VFO for MOBILE RIGS

The new Lysco Model 381 mobile VFO. 6AK6 Buffer, Stable 6C4 "Clapp" Oscillator. 6AK6 Doubler supplies plenty of drive to replace 3.5 or 7 MC crystal. Direct reading, illuminated slide rule dial. Ideal size 2" x 6" x 5" deep. Operates on 200 to 400 @ 25 MA D.C.

Complete with tubes ready to go. **$21.95**

3AG Cartridge Type fuse holder	$ .20
Shielded phone plugs 2 & 3 way	.19
¼ watt 2 contact bayonet base neons	.20
3BP1 C.R. Tube	1.45
3C24 Triodes ..... Each .. $.39 ..... 10 for	3.50
2"-0-9 Amp. R.F.	2.45
RG/59U Coaxial cable ..... per 100 ft.	6.75
2 conductor RC Cable ..... per ft.	.02
300 ohm lead ..... per 100 ft.	1.95
829 and 832 sockets	.39
¼ to ¼ shaft coupling	.12
S.P.S.T. 3 Amp. toggle switch	.21
S.P.D.T. 3 Amp. toggle switch	.24
Large insulated Banana plugs	.09
6 Gang 3 pos. ceramic switch	.69
Jumbo plugs and jacks ..... set	.12
4 watt wire wound pot. 25,000 ohms	.37
RSS7 Sockets	.08
RS8 Sockets	.08
2x2/879	.49
100 Ft. coil #14 enamel	.83
100 Ft. coil #12 enamel	1.25
100 Ft. coil #10 enamel	1.75
110 volt Pilot Assembly	.39
110 volt-S6 6 watt bulbs	.18
Shure Crystal desk mike	5.00
100 Mmfd. split stator receiving condenser	3.82
National ACN Dial	3.23

GRID DIP METER
LYSCO "DIPMASTER"

3 Mc to 150 Mc frequency range; calibrated dial. Ideal for Signal generator, 3.4 to 300 Mc range phone monitor, F.S. meter, or absorption wavemeter. Complete power supply and tubes. Really a good buy at **$32.83**

CONVERTER MODEL 210

Mobile or Fixed. RF Gain control. Simple installation. Size 2" x 6" x 5"

27 to 30 Mc-10 meters $24.99
3 tubes for converter 3.49

Noise Limiter—Model NXL—adjustable threshold control. Power 6.3V—150 Ma. 100V.

6Ma. D.C. ..... $4.41 6AL5 tube $1.11

SELSYN MOTORS

115 V.A.C. 60 cycle #C-78248. Can be used to turn small antennas or as indicators. Size 3½" x 5½". Price per pair **$6.95**

RAYTHEON VOLTAGE STABILIZERS

Positive Stabilization ±½%

Input 95-130 volts, 60 cycles single phase; output 115 volts stabilized to ±½%. *Output 6.0 or 7.5 volts stabilized ±½%.

Catalog No.	Output Watts	Net wgt. lbs.	Net Price
VR-6110	15	4	$15.00
VR-6101*	30	5	$17.00
VR-6111	30	5	$17.00
VR-6112	60	8	$24.00
VR-6113	120	14	$31.00
VR-6114	250	25	$48.00
VR-6115	500	45	$75.00
VR-6116	1000	92	$125.00

PLATE TRANSFORMERS

For Small Transmitters. DC Voltage Ratings are Approx. Values Obtained at Output of a 2 section Choke input Filter, Using Mercury Vapor Rectifier Tubes Pri. is for 115 V. 60 cy.

Type No.	Sec. Rms. Volts	DC Volts	Sec. MA.	Dimensions H.	W.	D.	Price Each
P 57	660—660†	500	250	4⅝	3½	4⅜	$ 6.76
	550—550	400					
P 58	1080—1080	1000*	125	4⅝	3½	5	8.23
	500—500	400	150				
P 59	900—900	750	225	4⅝	3½	5⅛	7.94
	800—800	600					
P 67	1450—1450	1200	300	5¾	6⅛	4	19.84
	1175—1175	1000					
P 68	2100—2100	1750	300	5¾	6⅛	4¼	24.99
	1800—1800	1500					

* For dual operation with simultaneous use of both sec ratings. † Has 40-volt bias tap.

SUPERIOR POWERSTATS

Smooth, efficient voltage control. 0 to 135V. output from 115V. AC line.

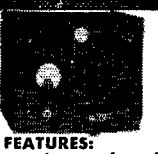
Type 20 (illustrated 3 amps $12.50
116 for table mtg 7.5 amps 23.00
116U for panel mtg 7.5 amps .. 18.00
1126 15 amps 46.00
1156 45 amps 118.00

Also available for 230 volt input. Write for descriptive literature.

CHOKES

SMOOTHING TYPE	Hy	SWINGING TYPE	Hy	PRICE EACH MA	Price
C-80	10	C-87	4—16	150	$3.09
C-81	10	C-88	4—16	200	$3.82
C-82	10	C-89	4—16	250	$5.29
C-83	8	C-90	3—14	300	$5.59

All above 3000 Volts Insulation



RAPID ELECTRIC SELENIUM RECTIFIER MODEL 507 SPECIFICATION

AC Input—110/120V AC 60 cycle single phase.
DC Output—5 Amperes 0-7 Volts
Duty—Continuous

FEATURES:

Accurately calibrated voltmeter — Output current and voltage tapered control affecting smooth variation from zero to maximum — Full wave rectification with capacitor filtering for extra smooth (low ripple) DC power.

SUGGESTED APPLICATIONS:

Battery charging—(from 2 volt to 6 volt cells) at any current up to 5 Amps. — Battery eliminator—substitute for dry or wet cells — Operate and control speed of model locomotive — DC power for hobby plating kits — Portable DC supply for Analytic Chemist to do "on the Spot" analyzing — Ideal for Physic and Chemistry teachers and School Laboratories. **$19.95**

FILAMENT TRANSFORMERS

Type 940	2.5VCT @ 10 Amps.	7500V Ins	$2.79
Type 040	5. VCT @ 3 Amps.	2500V Ins	$2.06
Type 941	5 VCT @ 6 Amps.	2500V Ins	$2.35
Type 943	5 VCT @ 20 Amps.	2500V Ins	$5.29
Type 946	6.3VCT @ 3 Amps.	2500V Ins	$1.91
Type 947	6.3VCT @ 6 Amps.	2500V Ins	$2.79
Type 948	6.3VCT @ 10 Amps.	2500V Ins	$3.67
Type 960	7.5VCT @ 4 Amps.	2500V Ins	$2.35
Type 143	7.5VCT @ 8 Amps.	2500V Ins	$4.12
Type 146	10 VCT @ 10 Amps.	3000V Ins	$4.99
Type 961	Dual 6.3VCT @ 3 Amps	2500V Ins	$3.38
Type 041	5VCT @ 3 Amps.	2500V Ins	$3.38
	6.3VCT @ 3.6 Amps.		

If not rated 25% with order, balance C.O.D. All prices F.O.B. our warehouse New York. No order under $2.00
We ship to any part of the globe.

LEEDS RADIO CO.

75 Vesey Street — Dept. QS12
COrtlandt 7-2612 — New York City 7

Field Day Scores

(*Continued from page 46*)

W8AW/8	Edison Radio Amateurs Assn.	421-	B-17-	2676
W7MAE/7	Radio Club of Arizona	248-	AB-16-	2623
W4PLB/4	Orlando Amateur Radio Club	358-	ABC-10-	2586
W9DUP/9	Du Page Radio Club	283-	A- -	2547
W9LZW/9	Kishwaukee Radio Club	301-	AB-15-	2454
W8ACW/8	Genessee County Radio Club	280-	AB-14-	2451
W2QH/2	Binghampton Amateur Radio Assn.	101-	ABC- -	2406
W9NET/9	Decatur Radio Club	225-	A-13-	2025
W1QM/1	Lowell Radio Operators Club	218-	A-15-	1962
W9NIV/9	Starved Rock Radio Club	206-	A- -	1854
W9MD/9	Illinois Ham Club	427-	-20-	1356
W9BBR/9	Lake County Radio Club	226-	BC-15-	1317
W6SF/6	Stockton Amateur Radio Club	336-	- -	1008
VE3YJ	London Amateur Radio Club	132-	AB- 6-	900
W4OLB/4	Smoky Mountain Amateur Radio Club	63-	AB- 6-	229
Six Transmitters Operated Simultaneously				
W2GSA/2	Jersey Shore Amateur Radio Assn.	1015-	A-23-	9270
W2HXM/2	Somerset Hills Radio Club	1015-	A-18-	9198
W2VDJ/2	Lakeland Amateur Radio Assn.	926-	A-16-	8559
W6CIS/6	The San Francisco Radio Club	583-	A-24-	8127
W1OC/1	Concord Brasspounders	843-	A-15-	7866
W0FDS/0	Minneapolis Radio Club	764-	A-33-	7029
W6MLZ/6	Bay Amateur Radio Assn.	488-	A-20-	6925
W3SM/3	Electric City Amateur Radio Club of Scranton Pa.	701-	A-15-	6444
W3PGA/3	Mars Amateur Radio Society	539-	A-25-	4986
W5KA/5	Austin Amateur Radio Club	460-	AB-20-	4581
W6COZ/6	Tri-County Amateur Radio Assn.	366-	AB- -	4329
W9BA/9	St. Clair Amateur Radio Club	589-	AB-27-	4176
W4PAY/4	Amateur Radio Club of Falls Church	407-	AB-24-	3774
W7LT/7	Portland Amateur Radio Club	263-	B-13-	2592
VE3HR	R.C.A.F. Trenton Amateur Radio Club, R.C.A.F. 6R.D. Amateur Radio Club	340-	B- -	2040
W3LMC/3	Chesapeake Amateur Radio Club	197-	A-15-	1773
W2GHK/2	Staten Island Amateur Radio Assn.	158-	A-18-	1422
Seven Transmitters Operated Simultaneously				
W6BYP/6	Amateur Radio Club of Hollywood	1206-	AB-60-14,693
W6VB/6	The Mike and Key Club of Santa Monica	865-	A-25-12,015
W2OM/2	Tri County Radio Assn.	1293-	A-30-11,862
W6AEX/6	Society of Amateur Radio Operators	790-	A-23-10,665
W6CG/6	Royal Order of Suds Club	948-	AB-21-	9693
W6ME/6	United Radio Amateur Club	660-	A-15-	9247
W6UW/6	Santa Clara County Amateur Radio Assn.	598-	A-27-	8437
W6DK/6	Pasadena Short Wave Club	575-	A-22-	7762
W6CUS/6	East Bay Radio Club	443-	A-11-	6318
K9NR/9	U. S. Naval Reserve	667-	A-25-	6228
W2GIZ/2	Union County Amateur Radio Assn.	653-	A-20-	6120
W1OMI/1	El-Ray Amateur Radio Club	763-	AB-11-	5151
W1NEM	Hartford County Amateur Radio Assn.	446-	A-46-	4629
W6NE/6	Ventura County Amateur Radio Club	309-	A-10-	4549
W2ZV/2	Suffolk County Radio Club	697-	B-16-	4188
W9OLM/9	Illinois Valley Radio Assn.	442-	A-14-	3978
W6FTW/6	San Francisco Naval Shipyard Amateur Radio Club	328-	ABC-11-	3834
W3PIQ/3	South Hills Brasspounders and Modulators	423-	A-18-	3807
W3SL/3	Delaware Amateur Radio Club	391-	A-21-	3762
WØRVG/0	Heart of America Radio Club	524-	AB-16-	3555
W5PEW/5	El Paso Amateur Radio Club	286-	B- -	2574
Eight Transmitters Operated Simultaneously				
W6QV/1	Los Angeles Fire Dept.	1159-	AB-30-15,214
W6UF/6	(nonclub group)	1127-	A-30-15,552
W9AP/9	North Suburban Radio Club	1430-	A-20-13,095
W9IT/9	Northwest Amateur Radio Club	1300-	A-45-11,925
W6MSO/6	Inglewood Amateur Radio Club	756-	A-34-10,206
W6MGJ/6	Helix Amateur Radio Club	722-	A-16-10,084
W2AF/2	Monmouth County Amateur Radio Assn.	1055-	A-35- 9495

(*Continued on page 108*)

S-T-R-E-T-C-H Christmas Dollars!

Most Sensational TRADE-IN DEAL ever Offered gives you Amazing Holiday Bargains in

National RECEIVERS

EST. 1914

RECORD-SMASHING 'SURPRISE' ALLOWANCES on Your Used Communication Equipment

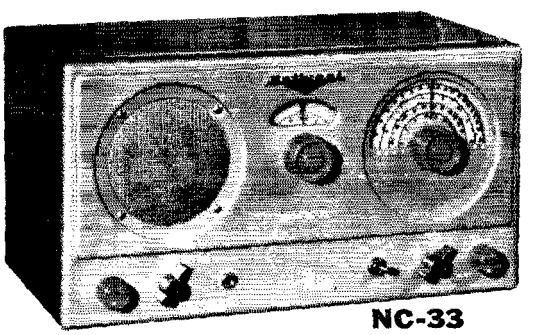
MAKE YOUR CHRISTMAS DOLLARS WORK MIRACLES! With the tremendous bargains made possible by a "SURPRISE" Trade-In Allowance on your used, (factory-built) Communication equipment you can be the money-saving owner of a fine new precision-built National Receiver. So don't delay. Get YOUR trade-in deal working today! Wire, write, or phone or use the handy coupon below.

NEW! HRO-50

The latest in the popular HRO series of receiving equipment. Shpg. Wt. 80 lbs. ONLY **$349.00**

Let Walter Ashe play Santa by applying his "Surprise" Trade-In Allowance against the purchase price. Tell us what you have to trade.

(For delivery after Jan. 1, 1950)



NC-33

Ideal for HAM or SWL. Shpg. Wt. 23 lbs. ONLY **$57.50**

Buy it at a sensational saving by trading in your used equipment. Wire, write or phone for our "Surprise" allowance.

Latest National Radio Products Catalog Free on Request

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TIME PAYMENTS

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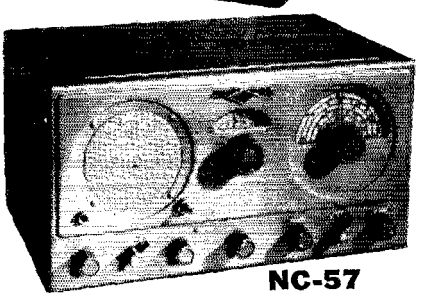


NC-57

A low-priced Communication receiver with high-priced performance. Shpg. Wt. 34 lbs. ONLY..... **$89.50**

A super value when you take advantage of our "Surprise" offer on your used equipment. What do you have to trade?

FREE! *New 1950 Walter Ashe Catalog. Send for Your Copy Today!*

All Prices F O B St. Louis **Phone CH. 1125**

Walter Ashe RADIO CO.

THE HOUSE OF "SURPRISE" TRADE-INS

1125 PINE ST. • ST. LOUIS 1, MO.

MAIL THIS COUPON TODAY

Walter Ashe Radio Co.
1125 Pine St., St. Louis 1, Missouri Q-49-12

☐ Rush Special "Surprise" Trade-in offer on my.....

(show make and model # of used communication equipment)

for NATIONAL Receiver.....

(indicate make and model #)

☐ Mail my Free copy of new 160 page Walter Ashe Catalog

☐ Send Free copy of National Radio Products Catalog

Name .....

Address .....

City ..... Zone..... State.....

W6GER/6	Soledad Amateur Radio Club	652-	A-23-	9139
W4KFC/4	Potomac Valley Radio Club	961-	A-23-	8928
VE3JJ	West Side Radio Club of Toronto	962-	A-33-	8883
VE3BNG	Hamilton Amateur Radio Club	687-	AB-40-	6270
W6BXN/6	Turlock Amateur Radio Club	307-	A-20-	4347
W6BHY/6	San Leandro Radio Club	297-	A-11-	4009
Nine Transmitters Operated Simultaneously				
W3FRY/2	Frankford Radio Club	1646-	A-30-	15,597
W6JN/6	Sacramento Amateur Radio Club	596-	AB-22-	7627
W4RO/4	Oak Ridge Radio Operators Club	548-	AB-21-	4647
W7CW/7	Amateur Radio Assn. of Bremerton	218-	A-17-	2943
Ten Transmitters Operated Simultaneously				
W6GAL/6	Mid Cities Amateur Radio Club	1362-	A-34-	18,777
Eleven Transmitters Operated Simultaneously				
W6OT/6	Oakland Radio Club	660-	A-16-	8810

CLASS 2

Grouped in this special listing are the scores of single-transmitter Field Day stations manned by one or two operators. Where two persons participated, the call of the assisting operator is given following that of the amateur whose call was used. Figures following the call listings indicate number of contacts, power, and final score.

W6EYH/6	304-	A-	6662	W7EOP/7	70- A- 945
W1HFO/1	281-	A-	4819	W7CWN	
W1ORP				W4MSC/4	125- B- 900
W2FBA/2	325-	A-	4725	W4MRT	
W2JBQ				W9JQT/9	66- A- 891
W5BAJ/5	203-	A-	4698	W9FZM	
W5KSW				W9OKQ/9	61- A- 891
W6GTM/6	174-	A-	4030	W9HHB	
W6HQM				W9BP/9	69- A- 846
W6BAM/6	208-	A-	3186	W5HCH/5	66- B- 819
W7RT/7	191-	A-	2578	W6CHP/6	40- A- 810
W6VIC	162-	A-	2525	W6VW	
W6WIR				W5NBG/5	133-AB- 807
W2SYG/2	244-	A-	2430	W1IIN/1	32- A- 770
W2SGK				VE3ABT	25- A- 769
W9SWI/9	130-	A-	2430	VE2NA	
W2WZQ/2	177-	A-	2389	W8DIS/8	53- A- 715
VE2CO	142-	A-	2254	W8SLF	
VE2BK				W8ZHP/8	53- A- 715
W9AEW/9	140-	A-	2227	W8YBP	
W9SKM				W9KOP/9	28- A- 715
W3LTR/4[1]				W9GHR	
W3RC	135-	A-	2160	W7GNJ/7	77- B- 693
W4KMG				W7JOP	
W9AGL/9	159-	A-	2146	W1QMJ/1	51- A- 688
W8OUR/8	185-	A-	1890	W1RXB	
W1NXX/1	100-	A-	1687	W2RHU/2	48- A- 648
W9BQM/9	100-	A-	1687	W7LNG/7	23- A- 648
W9HDZ				W5PRN/5	63-AB- 639
VE2CD	96-	A-	1660	W5OGS	
VE2KH				K5NBL/5	106- B- 636
W4BRB/4	269-	B-	1656	W5JYW/5	5- A- 607
W4MVJ				W3BWZ/3	44- A- 594
W9FID/9	183-	A-	1647	W3NAW	
W9NOD				W2MLX/2	26- A- 567
W6PJF/6	92-	A-	1579	W3GKP/3	11- A- 486
VE2CS	141-	B-	1404	W9UER/9	30- A- 405
W6NRM/6	43-	A-	1377	W9UXT	
W4ERN/4	127-	A-	1368	W8LME/8	28- A- 378
W1NI/1	151-	A-	1359	W8BXG	
W1DJC				W1DDC/1	24- A- 324
W9AWP/9	149-	A-	1341	W1QND	
W9DMF				W3NMA/3	24- A- 324
VE2AAV	91-	A-	1228	W9DB/9	34- B- 324
VE2ACN				W2HJS/2	10- A- 315
W4NEP/4	88-	A-	1188	VE2JN	21- A- 283
W6IAH/6	32-	A-	1154	VE2UW/2	31- A- 279
W6QNV				W8OMG/9	17- A- 229
W7NLL/7	57-	A-	1154	W9RQT/9	15- A- 202
W7LEV				W8HOX/8	53-AC- 201
VE1EK	51-	A-	1053	W3DJM	
W2CJZ/2	77-	A-	1039	W6VAQ/6	9- A- 182
W2LWE				W9SQN/9	19- A- 171
W1CVK/1	48-	A-	985	W5INL/5	17- A- 153
W1TA				W5JCC	
W2DOF/2	73-	A-	985	W6QYO/6	4- A- 81
W2YQM				W9ESM/2	18-BC- 57
W7BLN/6	46-	A-	958	W2SIJ/2	4- A- 54
W9CQY/9[2]	71-	A-	958	W9IJO/9	4- A- 54
W9s BLD DCL					

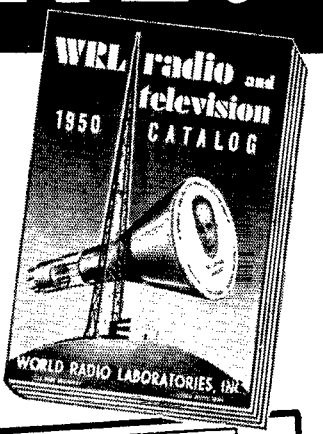
(Continued on page 110)

[1] Two operators. Licensee of W3LTR not operating.
[2] Two operators. Licensee of W9CQY not operating.

IT'S HERE!

LEO'S 1950 CATALOG

What every ham has been waiting for!



YOURS FOR THE ASKING

A brand new catalog containing the most complete listing of radio and television parts and accessories—everything for the radio man and the amateur. We feature well known nationally advertised brands at lowest prices. Get acquainted and save money dealing with WRL—"The World's Largest Distributor of Amateur Radio Transmitting Equipment".

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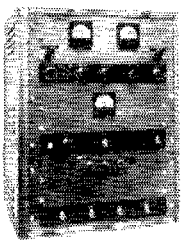
NEW WRL "400"

GLOBE KING

"More Watts Per Dollar"



A versatile, advance design transmitter that gives efficient performance on all bands—10 to 160 on phone and CW. 350 watt phone—400 watt CW. Provisions for ECO. Complete with one set of coils.

WIRED	KIT FORM
$399.45	**$379.45**

Low Down Payments

Write For Detailed Specification Sheet

GIANT RADIO REFERENCE MAPS

Just right for your control room walls. Approximately 28" X 36". Contains time zones, amateur zones, monitoring stations. Mail coupon today and **25c**

FAST SERVICE ON FOREIGN ORDERS

CU ON 10-20 & 75 METERS

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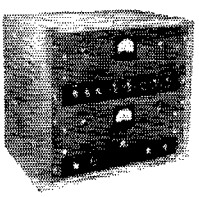
WRL 175 WATT GLOBE CHAMPION



R. F. Section a complete 175 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer.. Class B Speech Modulator. 175 watt input — 10 thru 160 meter bands. Complete with tubes, meters, and 1 set of coils.

$299.00 WIRED

Low Down Payments

KIT FORM **$279.00**

Write For Detailed Specification Sheet

WRITE - WIRE PHONE 7795

World Radio LABORATORIES INCORPORATED

EVERYTHING IN RADIO

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Council Bluffs, Iowa

Please send me:

- ☐ Radio Map
- ☐ New Catalog
- ☐ List of Used Equipment
- ☐ Globe King Info
- ☐ Globe Champion Info

Name_____

Address_____

City_____ State_____

CLASS 3

Grouped in this tabulation are the scores of entrants in the mobile class. Figures following the call listings indicate number of contacts, power, number of participants at each mobile station and final score.

W6YOJ/6	103- A-1-2086	WØGCP/Ø	1- A-1- 351
W6EXB/6	70- A-2-1923	W6UG/6	16- A-1- 324
W6BRC/6	85- A-1-1721	W6VVT/6	16- A-1- 324
W6SRT/6	48- A-1-1478	W6DAJ/6	14- A-1- 283
K2AIR/2	98- A-3-1323	W6NSX/6	39- A-1- 263
W6NSX/6	38- A-2-1316	W1BB/1	18- A-1- 243
W6AM/6	36- A-1- 870	W4JYB/4	26- C-1- 229
W8HHU/8	37- A-2- 837	W6LSO/6	11- A-1- 223
W6GKM/6	41- A-1- 830	WØLHT/Ø	52- C-1- 156
W6ZVD/6	38- A-1- 769	W6KEB/6	7- A-1- 142
W6FTG/6	12- A-1- 749	W6EPX/6	15- A-1- 101
W6CAZ/6	8- A-1- 668	W1QLD/1	6- A-1- 81
W2CVV/2	46- A-1- 621	WØHDO/Ø	3- A-1- 67
W6AGA/6	27- A-1- 547	W9AA/9	6- B-3- 54
W6SK/6	33-AB-3- 493	W6VAM/6	2- A-1- 40
W6CXZ/6	24- A-1- 486	W1QMJ/1	3- A-1- 27
W6FDE/6	23- A-1- 466	W2WLR/2	2- A-1- 27
W1FH/1	43-AB-2- 387	W5CVQ/5	2- A-1- 27
W6NGV/6	19- A-1- 385	W5IIK/5	2- A-1- 27
W1BDI/1	14- B-1- 351	W2VUE/2	2- -1- 13

HOME-STATION SCORES

W3JTK.....406	W3HVM.....33	W6TIP.....15
W3CHV[3].....284	W3UVD.....32	VE2XR.....15
W8YHE.....216	W9IWT.....32	W5POL.....14
W7GHT.....113	W2WC.....28	W8VDF.....14
W2PLH.....106	W8WVL.....27	W8PQB.....14
W4IA.....101	W3PEV.....26	W1MMN.....13
W2HY.....91	W2EWZ.....25	WØIA.....12
W9SPZ.....91	W1OAK.....25	VE6MZ.....12
WØBBM.....86	W6FKL.....24	W1HDQ.....10
W4NNJ.....76	W4OMW.....23	W2YOB.....10
W2TYC.....69	W6AM.....22	W2TIM.....8
W8DAE.....55	W7SXD.....20	W6JQB.....8
W4MCM.....53	W6WXG.....18	W1MGP.....5
W3HTK.....51	W8PS.....18	W2NIY.....5
W2HDT.....47	W1QMJ.....17	W7GVC.....4
W6EPQ.....35	WØSGG.....16	W9AQO.....3

[3] Two operators, W3CHV, W3EWR.

Silent Keys

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

W1AUC, Chester W. Sprague, Trenton, Maine

W1HZK, William E. Batchelder, Moodus, Conn.

Ex-W1LWD, Elmer Lamplugh

W2KYV, Henry J. Fank, Valley Stream, L. I., N. Y.

W2VV, Gus M. Robertson, Elmhurst, L. I., N. Y.

W3LEN, Chester C. Robison, Tyrone, Penna.

W3PQQ, H. Knowlton Trust, Easton, Penna.

W4AKP, Walter B. Herman, Tuscaloosa, Ala.

W4GI, L. C. Herndon, Assistant Chief, Field Engineering and Monitoring Division, FCC, Arlington, Va.

W5LFP, William B. Tapp, Baldwyn, Miss.

W9DBA, J. Insco Annear, Muscoda, Wis.

WØWJ, ex-WØEZX, Herman T. Van Aller, St. Louis, Mo.

VE3BIJ, Albert E. Yates, Toronto, Ont.

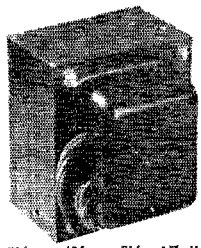
VE3KT, Russell N. Holmes, Toronto, Ont.

LOOK STEINBERGS LOOK

SUPER SPECIALS

THESE PRICES ARE LOW!

DUAL PLATE XFMR

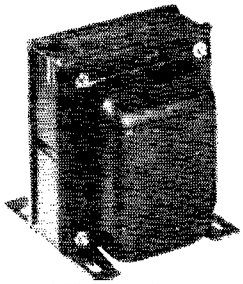


815–0–815 volts, 250 ma., PLUS 385–0–385 volts, 65 ma., 115 volt, 60 cycle primary, electro-static shield, upright mounting, fully shielded. A beautiful transformer with many applications.

$6.95

5¼ x 4⅜ x 5⅛, 17 lbs.

10 HENRY CHOKE



10 Henry, 250 Ma. choke, 100 ohms DC resistance, 3000 volt insulation, upright mounting, fully shielded. Check this price against ANY ad.

$2.95

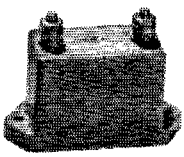
4⅜" x 4" x 4", 9 lbs.

2MFD 1000 VOLT

Oil-filled condenser, single mounting hole, negative can, with nut..... **59c**

10 for $5.00

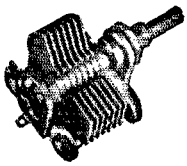
5000 VOLT MICA



The best bargain we have ever had— .0004, 5000 volt transmitting mica, Cornell-Dubilier, regular $14 value, lowest nationally advertised price $1.45, mtg. centers 2⅜", 1¾" high.

39c

CONDENSER SPECIAL



Famous make, 100 mmf. double-bearing condenser, regularly lists at $2.70, isolantite insulation, semi-circular plates (straight-line capacity) .024" air-gap.

50c

APC type, WITH SHAFT, 15 mmf.....**25c**
APC type, WITH SHAFT, 140 mmf.....**30c**

TUBE SOCKETS

Johnson 211-SB 4-prong socket, ultra-steatite, beryllium copper contacts, the finest, for 810, 250TH etc. Also Johnson 209-S, smaller size, for 811, 866 etc.

Either type, only..... **39c**

GRID BIAS CONTROL

Don't miss out on this! 2500 ohm, 25 watt Clarostat potentiometer, perfect grid-bias control for panel mounting, worth $4.95, brand new, boxed..... **40c**

HAND KEY

Built to professional standards. Coin silver contacts. Accurately machined bearing screws. Black crackle finish metal base. **95c**

IN LIMITED QUANTITIES ONLY

BC–221 Frequency Meters, like new, without modulation	**$ 69.50**
BC–348Q, BC–348R receivers, excellent condition	**109.50**
Mobile Power Supply, 300 volts, 100 ma., July QST	**9.95**
Heavy duty casters, July QST, set of 4	**1.80**
Leach DPDT 110 v. relay, 4 amp contacts, compact	**1.95**
Hammarlund N–10 neut. condx. disc type, 2–12 mmf., 3000 V	**1.75**
75,000 ohm, 200 watt, Ohmite bleeders, no mtg. brackets	**1.00**
GE Pyranol 1 mfd. 600 v. upright mtg. list $3.85	**.29**

MINIMUM ORDER $2.00. Send 20% deposit with COD orders. Please include sufficient postage or instruct us to ship by Express Collect. Overpayments will be refunded by check.

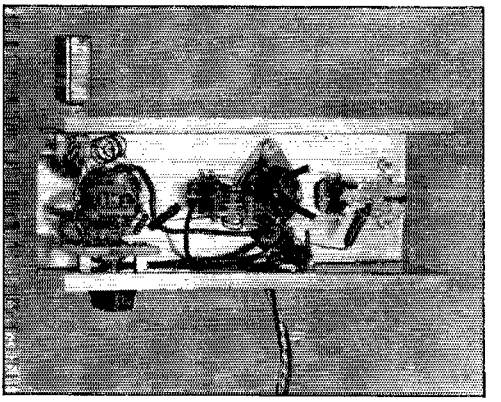
Steinbergs

633 WALNUT STREET - CINCINNATI 2, OHIO

Your order will receive my personal attention and will be shipped the same day order is received. We distribute all top-flight amateur lines . . . let us know what you need.
73 Jule Burnett, W8WHE

(*Continued from page 47*)

grid current is about 3 ma. Final grid current is 12 ma. Final plate current is about 15 ma. unloaded, rising to 25 ma. with an antenna or dummy load connected. Oscillator plate current is 10 ma.



Bottom view of the r.f. portion of the 144-Mc. transmitter.

and the doubler draws 15 ma. The drain of the complete rig is well within the capabilities of a small vibrator-type power supply. Output is slightly more than two watts.

[EDITOR'S NOTE — To give the circuit a trial the two-tube r.f. unit shown in the accompanying photographs was built and tested in the Headquarters lab. The circuit was left exactly as given by W6DSR in Fig. 1, but the cathode coil, L_2, was made air-wound and the grid coil, L_1, was slug-tuned. Adjustment of the grid coil had a considerable effect on the output, and it made the adjustment of L_2 somewhat easier. Our results indicate that though the oscillator does require somewhat more care in adjustment than the more conventional types, it has merit from the standpoint of simplicity, low cost, and economy of battery drain. It might also provide a solution to the TVI problem in cases where lower-frequency crystals and multiplier stages tend to radiate harmonics other than those used in multiplying to 144 Mc. The lowest frequency that can be radiated by this unit is 72 Mc. — *E. P. T.*]

HARRISON SAYS- "TVI ELIMINATED--- OR YOUR MONEY BACK!"

HARRISON'S TVI CHASER PACKAGE

Our special "TVI Chaser Package" has proven so spectacularly effective that we now confidently offer it with this unconditional warranty!

IF your transmitter:
1. Is in a metal cabinet, with metal panels.
2. Has low impedance output to coaxial transmission line, or to an external coupler.
3. Is on any frequency lower than 31 MC.
4. Is not more than 1 KW input.
5. Transmission line does not have excessively high standing wave ratio.

AND if the TV receiver has an outdoor antenna — *THEN*, we guarantee that this package, installed in accordance with the simple instructions, will eliminate your TVI to YOUR complete satisfaction or you may return it within 10 days for a cash refund of your $21.95.

Fair enough? **Let's go!!!**

Send for yours today!!

HERE'S WHAT YOU GET

1 — Improved Drake Low-Pass dual-section. M derived, sharp cut-off Filter to plug into the coaxial cable at your transmitter and greatly reduce antenna radiation of frequencies above 45 MC, with no loss in signal strength.
2 — Coaxial Plugs, PL259-A.
1 — Drake multiple section high-pass Filter to attach in the twin lead at the Television Receiver (Special model for coaxial cable on request) to provide high attennuation of all frequencies below 45 MC. Can actually improve picture by rejecting low frequency interference from ALL sources, in addition to ham.
2 — Sprague .1 Mfd "Hypasses" to insert in AC power line at transmitter to keep RF from getting into line, ("... doing a better job than any combinations of chokes and ordinary-type by-passes" QST, Oct. '49) Will carry 20 Amps.

Instruction sheet showing exactly how to attach these sensational TVI-freedom aids. Nothing to tune, adjust, or change when QSY'ing, even from band to band!

Complete package with *money-back* guarantee, for less than the regular price of the items alone!

TVI Package MX-9
(Add postage for 3 lbs) **Only $21.95**

If TV Receiver uses coaxial cable lead-in, specify Package MX-10

BIL SUGGESTS FOR A MERRY XMAS

VFO FOR MOBILE RIGS

New Lysco VFO, built for use with mobile transmitters, features 6J6 "Clapp" oscillator, 6AK6 buffer and 6AK6 doubler — replaces any 3.5 or 7 MC xtal. Calibrated, illuminated dial. Requires 200 to 400 volts at 25 MA DC. Provision for keying. (FB for home xmtrs, too!) Complete, ready to operate. Model 381 Only $21.95

SUBRACO MT-15X MOBILE TRANSMITTER

Best 10-11 meter mobile xmtr value!! Dash mounting for fingertip tuning, metering, and QSY'ing. Up to 30 watts to 2E26 high efficiency RF amplifier. (Not a doubler) Ultra-modern styling. Also makes compact home or portable rig with AC supply! MT-15X less tubes and connectors $79.95
MT-15X Complete with all tubes and connectors $87.50
Subraco DS-400 6V Dynamotor Supply for MT-15X $59.95
Compact AC Power Supply for MT-15X (115V-60Cy) $39.50

NEW COLLINS 51J-1 RECEIVER

A double conversion superhet, continuously tunable from 500 KC to 30.5 MC in 30 bands of 1000 KC each! We can supply this receiver from stock! Complete $875.00
Collins 75A-1 Covers amateur bands exclusively. Not displaced in any way by the new 51J-1 $375.00

SIMPSON 303 VT VOLT-OHMETER

Wide range and extreme accuracy makes the 303 a must for the ham technician — also indispensable for proper TV servicing. Measures DC Voltage (Up to 30 KV with Accessory HV Probe), AC Voltage, Ohms, AF Voltage, Output in DB, and RF Voltage. Features galvanometer for FM alinement, etc. Operates on 110 V, 60 cycle AC. $58.75
Simpson 260 — Popular Volt-Ohm-Milliammeter $38.17

SIDESWIPERS

Here's the Old Timer's favorite — the Bunnell Speed Sideswiper Key! Now, better than ever — adjustable spring tension, moveable contacts, solid brass base, nickel plated lever bar, etc., etc. Smooth effortless CW — fast or slow. Easy for beginners, too. Lasts a lifetime. No CW man should be without one. $9.00

HIGH VOLTAGE PLATE TRANSFORMERS

World's biggest transformer bargains! All brand new in factory sealed cartons. Primary is for 115V, 60 cycle AC. All ratings clearly marked. Conservatively rated at 400 MA Continuous Commercial Service. Guaranteed!
2600-0-2600 V AC AT 550 MA ICAS! — 50 lbs! TP-18 *$28.95*
1750-0-1750 V AC AT 550 MA ICAS! — 37 lbs. TP-17 *$19.95*
(Add 85¢ each for crating, if shipped)

BEAM ROTATOR MOTORS

Brand new, small prop pitch motors. Operate on 24 to 30 volts AC or DC. Complete instructions furnished.
Brand New PP Motor Unconverted Item RO-9 $15.95
Converted — Ready to use! Item RO-10 $19.95
(On items RO-9 and RO-10, add 90¢ for packing)

NATIONAL MULTI-BAND TANKS

MB-20 10 to 80 Meter Multi-Band Tank $9.92
MB-150 *Same, but handles up to 150 Watts!* $18.50

WHAT ABOUT THESE?

National HRO-50 with coils and speaker	$349.00
Collins 32V-2 TVI-suppressed transmitter	$575.00
Millen Grid Dip Meter	$ 55.00
Hallicrafters SX-71 Double Conversion Receiver	$179.00
Brand New Hallicrafters S-38A AC-DC Receiver	$ 39.95
Lambda MM-2 Modulation Monitor Kit	$ 14.95
Johnson Viking Transmitter Kit	$209.50
Hunter Cyclemaster 20A Bandswitching VFO-Exciter	$169.50
Hunter Band-It 20B Permeability Tuned Multiplier	$ 47.95

NEW National "SELECT-O-JECT"

Beat the QRM on the ham bands by using this unbelievably versatile, variable single frequency rejection filter and selective amplifier! The "Select-O-Ject" plus a moderately priced ham receiver will give "big" receiver performance. Used with the best receivers, gives the ultimate in selectivity! See National's big ad on the inside back cover describing their improved version, read the article in November QST, and rush your order to Harrison right away!

National "Select-O-Ject"
Complete with tubes
In Stock Now! **$24.95**

Drake TV RECEIVER FILTER

Super-effective multiple section high-pass filter attenuates all low frequencies more than 60 DB down at TV IF frequencies. Any layman can install in 30 seconds! Absolutely no insertion loss of TV signals. Be sure to specify type of receiver lead-in.
For 300-ohm Ribbon TV300-50HP
For Coaxial Cable TV-72-50HP
Choice $3.57

P.S. Santa suggests these as FB gifts for your TV Owner-Neighbors.

LOW PASS TRANSMITTER FILTER

Use on 10 to 160 meters — up to 1 KW input power.
TV-50-40LP Low Pass Transmitter Filter **$12.95**

BEAM ANTENNAS — DX CATCHERS

Hy-Lite "Sky-Lite", 10-11 3-element beam, complete with "T" match and mast section. Model PD3E10 $24.95
Premax Model RB-6309, 3-element, 10-meter array. A terrific buy! Was $50.00 list!! Special $26.46

BUILD THE SELECTOJECT!

Every part needed to build the SELECTOJECT as described in QST of November, 1949.
Includes all tubes, cabinet, precision matched pair resistors, knobs, cable, plugs, complete instructions, etc., etc.
Item MX-11 Everything for only $12.95

HARRISON

NEW YORK 7, N.Y.
225 GREENWICH STREET
(10 West Broadway, at Barclay St.)
BArclay 7-7777

50 Mc.

(*Continued from page 64*)

East Bay

W6AJF.....488-61-8-A-B

San Francisco

W6BUR.....336-48-7-A-B
W6VCG.....305-61-5-B
W6PSY.....188-47-4-B
W6RBQ.....140-35-4-B

San Joaquin Valley

W6GQZ.....232-29-8-A-B
W6FYM.....174-29-6-A-B
W6VKD..... 52-13-4-A-B

ROANOKE DIVISION

Virginia

W4AO.....205-41-5-B
W4LVA..... 72-18-4-A-B

West Virginia

W8TDJ.....78-13-6-A-B

SOUTHWESTERN DIVISION

Los Angeles

W6NLZ..822-101-6-A-B-C-D

WEST GULF DIVISION

So. Texas

W5JLY.....22-11-2-A-B

ONTARIO DIVISION

VE3AIB 704-88-8-A-B
VE3AXT.....306-51-6-A-B
VE3AHT.....288-72-4-B
VE3AQG.....236-59-4-B
VE3EAH.....192-48-4-B
VE3AZX.....168-42-4-B
VE3BUD.....160-40-4-B
VE3BOW.....160-40-4-B
VE3BPB.....125-25-5-B
VE3UT.....112-28-4-B

How's DX?

(*Continued from page 67*)

FA8BG are interested in 160-meter schedules with the W gang or, alternatively, cross-band 80 to 160. Saturday nights are suggested and conditions should be approaching a peak for such shenanigans right about now. The Gs have a 10-watt limit you know, so sharpen up those 14-Mc. ears! ._._._ W6SAI deduces that AC4RF's changed location no longer places him in Tibet. The QTH is Chiamdo, Sikang, on the Mekong River, or 31°30'N-97°35'E. Bill figures that's C5 territory, no less ._._._ Indicative of the turning wheel of progress is the fact that KL7s are now up in the three-letter calls, as noted by W6DBZ and W6SAI. KH6 should follow shortly and recent additions to this category are the prefixes ZL2, VE2, VE1 and VK3. W7NFT/KL7, by the way, is now KL7AAD ._._._ The curious AI station listed in the QTH section is the MARS call of ex-KA1AI and DU1AI, worked on 10 by W2ZVS. Egad, what next! ._._._ AC4YN is either a most remarkable fellow or a few of the fellows who have been calling him have engaged in some wishful thinking. W4MR says that W4GG heard *three* Ws conversing with him simultaneously one morning. Perhaps Einstein was right and those signals *are* coming back! ._._._ W2UWK's accurately-kept statistics on his QSL department may come in handy for the DXer just starting operations. After four months, Bill's returns were 66% in the different-stations classification and 88% in the different-countries division. This isn't bad at all, considering the time lag one must expect in mail to and from the more inaccessible rare areas ._._._ In the Northern California DX Club's *DXer* we see that W6ODD, whom many of us worked portable and maritime-mobile in various parts of the world, is going to settle down finally. He should be back soon with his old call, W3AG. The bulletin also points out that contest men can save themselves much possible grief by the installation of 100-kc. bar standards for band-edge operation ._._._ In case you were trying for a VK WAS, you'd have quite a time working the Northern Territory, now bearing the VK5 prefix jointly with South Australia but still a separate state. The prefix was originally VK8 and activity there was niller than nil. Nowadays, however, there are VK5s AE and CV holding forth on 28-Mc. 'phone while AY and SA prefer 14-Mc. c.w. Still, we'll bet there aren't many of us with a VK WAS ._._._ There has always been considerable discussion going on regarding the inequality of competition between East Coast and West Coast stations in contests and operation in general. There seems to be some belief that a "formula" could be devised as a miraculous equalizer to iron out the difference in the many factors involved, such as the selection of certain operating periods, variance of power levels permitted, the selection of certain frequency bands, etc., for contest work. Perhaps there is such a

(*Continued on page 116*)

formula that would provide an instantaneous interpolation of all the factors involving the difference of DX communication from the rockbound coasts of Maine to the sunny shores of California. It also follows then that this equation would vary extremely from year to year, day to day and, yes, even minute to minute. Competition, therefore, on a score-for-score basis of comparison must of necessity be between stations located in close geographic proximity. That's one of the basic reasons why the League offers parallel awards in each ARRL section. But even the sharpest handicappers at Pimlico or Arlington couldn't state fixed odds between two identical kilowatts situated at Bangor and San Diego.

— • • • —

Things will be in sad shape around here if we give Jeeves the soldering iron he wants for Christmas. He doesn't know it, but we're thinking of a switch to boxing gloves.

IARU News

(*Continued from page 61*)

I.A.R.U. CALENDAR

The recent IARU Calendar reminds all the member societies of the Union that this year is the 25th anniversary of the founding of the *International Amateur Radio Union*, there now being nearly twice as many members of the Union as were present at the meeting 25 years ago. To commemorate this event, the French and Belgian societies have proposed that a congress be held in Paris in the spring of 1950.

The Calendar reports at length on the Fourth Inter-American Radio Conference, recently concluded in Washington, D. C. (see page 27, March *QST*). Mention is made of the Voice of America international short-wave broadcasts which are presented weekly in coöperation with the A.R.R.L. These transmissions are made each Saturday at 2045 GCT, beamed to Europe and the near East, on the 11-, 15-, 17-, and 21-Mc. bands; and on Sundays at 1300 GCT are beamed to the far East and Latin America on the 9-, 11-, 15-, and 17-Mc. bands.

The *Union de Radioaficionados Espanoles*, formerly the member society of the Union for Spain, was inactive for several years because of unsettled internal conditions in Spain. The U.R.E. is now active, and has applied for reinstatement in I.A.R.U. Membership inquiries have been received from the *Amateur Radio Club, India; Radio Club Dominicano;* the *Guayaquil Radio Club* (Ecuador); *Radio Club d'Haiti;* the *Technical Institute of Radio* (Syria); and the *Israel Amateur Radio Club.*

NEW ZEALAND

In connection with the WAP award (Worked All Pacific), previously published rules have indicated that prewar contacts would count as

(*Continued on page 118*)

well as postwar contacts. This misunderstanding has recently been corrected by the *New Zealand Association of Radio Transmitters*, which issues the award. Please note that prewar contacts do *not* count. The original listing of the rules for this award (see page 102 of the October, 1948, issue of *QST*) is still correct, with the following other exceptions. The new address to which the applications should be sent is N.Z.A.R.T., P.O. Box 105, Wanganui, N. Z. If an applicant has moved from one call area to another, all contacts must have been made from within a 150 mile radius of the original location.

URUGUAY

The *Radio Club Uruguayo* is now offering an award entitled "19 Departamentos Communicados." This certificate will be awarded to any licensed amateur who submits written proof of having carried on two-way communication with a CX station in each of the 19 Uruguayan provinces or states. All such contacts must have been made on or after July 1, 1949. The application must consist not only of the necessary confirmations but also a check list which, in chronological order, lists the date, time, station, band, and mode of each QSO. A general award will be made for work which consists of contacts on various bands. However, special endorsements will also be made if work is all on one band, provided a statement is submitted testifying that both ends of such contacts were on the same band.

Submit applications to the *Radio Club Uruguayo*, Calle Rivera 2002, Montevideo, Uruguay.

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 takes 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.

Please note the 7¢ rate on hamads! available to ARRL members only.

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, $1.25 up. Stamp for samples. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore 29, Md.

AMATEUR radio licenses. Complete theory preparation for passing amateur radio examinations. Home study and resident courses. American Radio Institute, 101 West 63rd Street, New York City.

QSL's, SWL's. Finest stock. Fairest prices. Faster service. Dossett, W9BHV QSL Factory, 857 Burlington, Frankfort, Ind.

QSLS! Kromkote cards at a fair price. Dauphinee, W1KMP, Box 219, Cambridge 39, Mass.

QSL Quality cards priced right. Samples. Ferris, W9UTL, 1768 Fruitdale, Indianapolis, Ind.

SUBSCRIPTIONS. Radio publications a specialty. Earl Mead, Huntley, Montana, W7LCM.

DON's QSL's. "The finest". Samples. 2106 South Sixteenth Avenue, Maywood, Illinois.

CRYSTALS: Precision low drift units. Type 100A in 80, 40, and 20 meter bands. Two units plug in one octal socket. Plus or minus 5 Kc. One dollar each. Exact frequency. $1.95 ea. Rex Bassett, Inc., Ft. Lauderdale, Fla.

FOR Sale: TEMCO 500GA transmitter and Collins 75A1 receiver like new. Will sell together or separate. Best cash offer will take. B. O. Reynolds, Lake Geneva, Wisconsin.

QSLS, SWLS Those who want the best in QSLs. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS: Original designs priced to fit hams' pocketbooks. Stamps for samples. Leonard's Print Shop, 854 View, Hagerstown, Md.

QSL-SWL cards, personalized with photograph. The very best. Samples for addressed, stamped envelope. Bob Payne, W9OJC, Marshall, Missouri.

QSL's, high quality, fair prices. Samples? W7GPP R. D. Dawson, 1308 F Street, The Dalles, Oregon.

CHRISTMAS cards, "ham styled". 20 assorted, $1.00. Narvestad, Granite Falls, Minn.

BRING your Ninth Edition of Nilson & Hornung up-to-date with "Key and Answers to New Radiotelegraph Questions". $1.00 postpaid. McKenzie, W2SOU, 245 Poplar, Hackensack, N. J. Watch for announcement about Element Seven.

QSL's, Stationery, all kinds printing for the Ham. Samples free. W4HUD, Albertson Box 322, High Point, N. C.

QSL, SWL cards. Jaggi, W5FAY, 6118 Goliad, Dallas, Texas.

RECORD-changer parts for leading makes. We ship everywhere. Friend's Wholesale Distributors, 106 North Sixth St., Philadelphia 6, Penna.

HAVE: Super Pro BC779 in vy gud condx. Trade for HQ-129X or NC-173, or sell for $125.00. Also mikes, hearing aids, plate xfrmr, trade for other items. Bronislaw Holubiczko, W2RCH, 249 Rutledge St., Brooklyn 11, N. Y.

FOR Sale: Complete 28-30 Mc. Motorola Model T-69-20A portable transmitter, Cables, mounts, and antenna whip, tubes microphone. $65.00 F.o.b. Lawrence, Kansas. Fred Kloepper, WØFON, 649 W. 23rd.

QSLS? SWLS? Super-glossy stock! One-day service! Samples, 3¢. QSL-printer Sakkers, W8DED, Holland, Michigan. Made-to-order QSL cards!

SX-28 receiver, just realigned: $95.00. D. D. Andrews, 114 West 8th, Topeka, Kans.

EXCELLENT condition: SX-42 with speaker and base, for sale. Best offer takes it. F.o.b. Hartford. R. E. Morrison, Box 101, West Hartford, Conn.

WANTED: APS-3 radar sets complete or any parts. Frank Ambrose, 34-17 Lawrence St., Flushing, L. I., N. Y.

SELL: BC610 exciter tuning boxes, 2.0 to 18 Mc. ranges; exciter 3-scale milliammeters. Meissner signal calibrator and Telrad xtal secondary frequency standards. Walt Straesser, W8BLR, 15384 Birwood, Detroit 21, Mich.

NEW: Millen 500 watt coils 10, 20, 40, 80 and mounting, complete, $10; Millen No. 10000 worm drive unit, $2.00; new tubes 6, 810 ea. $5.00; 2, 804 each $6.00; 1, HF300, $9.00; 1, 4C35, $9.00; 2, used but perfect 5D21, each $11.00; new 300 to 600 Kc unit of Navy GO-9 transmitter. Has VFO, uses 803 final, with tubes, $28.00; Joe Harms, W2JME, 225 Maple Ave., North Plainfield, N. J.

CRYSTALS: Precision, low drift, mounted units; 3500 to 9000 kilocycles. ± 5 kilocycles, $1.00. Exact frequency, $1.50. Specify mounting. Quotations available other frequencies. Breon Laboratories, Williamsport, Penna.

NEW Crystals for all commercial services at economical prices, also regrinding. Over fourteen years of satisfaction and fast service! Eidson Electronic Co., phone 3901, 1802 North Third, Temple, Texas.

SWAP: Model 151M Deluxe Mossberg .22 automatic rifle with scope. Compact ten meter transmitter with power supply. Pair 100THs. Want: Wire recorder, 1800-2000v. transformer, television receiver. WØKEI, 1011 N. Lincoln, Liberal, Kansas.

SELL: Brand new E, F, and G coils for HRO-7T, $32.50. Ross B. Thorp, 313 Delia, Flint 5, Michigan.

SELL: BC348 receiver, like new, not converted, for first $50.00. Factory-built, 160, 80, 40 meter phone rig with ECO and xtal in gud condx. Only $35.00. Brieske, W5MAM, 6230 Clover Ridge, Houston 17, Texas.

WANTED: Hallicrafters Sky Champion (S-20) or Sky Buddy (S-19) vintage 1939-40. Mention price, condx, etc. R. S. Perkin, P. O. Box 331, Glenbrook, Conn.

SILENT key: Collins 32V1, $375; HRO5TA1 complete, $160.00. Add shipping charges. Mrs. H. F. Bowers, 7 Cambridge Drive, Belleville, Ill. XYL of Ex-W9QFF.

DISTINCTIVE SWLS-QSLS. McEachron, 1408 Brentwood, Austin, Texas.

SMALL enough to give you personal service, yet large enough to supply you with all top quality, nationally advertised and accepted lines of radio parts, tubes, and equipment. Evans Radio, Concord, N. H.

PIERSON KP-81 receiver, .540 to 40 MC, continuous $200; BC-221 freq. meter with power supply, $60; two 250TH Eimacs, both $20.00; Electronic keyer, $10.00; National CRU oscilloscope, $15; two BC659 transmitter receivers; one AC supply, two Vibrator supplies for same, 5 units, $40.00. W6YC, E. DeTurck, 4100 Fulton St., San Francisco 21, Calif.

ART-13: Brand new, complete with tubes, converted to AC on filaments with 110 to 28 VAC transformer, another 28V winding with husky Rectox rectifier and filter supplies DC to Autotune and relays complete with power plug, also 2 new 811's, T-17-B, lip and throat mikes and all operating and maintenance manuals, all for $200.00. F.o.b. Alexandria, Va., W4KWG, 49 Woodmont Rd., Belle Haven.

FOR sale: BC-221 frequency meter in metal cabinet, $60.00, in wood cabinet, $50.00; original calibration books, BC-348 receiver with built-in AC power supply excellent condition, $50.00, BC-545 receivers brand new, $5.00; BC-459 plus BC-696 mounted in rack, in excellent condition, no conversion, $25.00. JAN tubes 811s, $1.50. 813s, $5.00. Other surplus. Write me your needs. R. H. Sneed, W5RY, 643 Eagle Ave., Jackson, Miss.

SELL or trade: BC348-R untampered with dynamotor and manual BC221-J original calibration and crystal with audio cathode bias for a.c. heater supply, R9er with coils for ten plus connectors and instructions. All excellent condition and appearance. Want TBS-50, 12 volt DPS-50, Silver 906 signal generator, tube tester, stop watch. Must be excellent condition. Make offer any combination. F. C. Breeden, W2SIJ, 61-17244 St., Bayside, N. Y.

FOR sale: SCR-522 rcvr/xmttr, complete with power supplies. Beautiful conversion job, rack mounted in enclosed rack, controls, meters on front panel, calibrated rcvr, dial, pilot lights. Several months' work on conversion, $100.00. Also, HRO, Model W, 9 coils, spare parts, $150.00. WRL Globe Champion Modulator, $80.00. Box 104, Dyker Station, Brooklyn 28, N. Y.

QSLS, SWLS printed on beautiful Crystalion or regular stock. Stamp for samples. Franzen, W2DEE, Maple Shade, N. J.

ABSOLUTELY free! Senco's new 1950 condenser-resistor color code chart. It's our way of thanking old friends and making new ones. Just write on a post card — "Send me Senco's Color Code Chart" Please print your name and address clearly. Senco Radio, Inc. Dept. 1, 71 West Broadway, New York City 7, N. Y.

FOR sale: SP-400SX Super Pro with speaker, excellent condition, $260; Abbott TR4-B, like new, $12.00; 2 HY-75 tubes, brand new, $1.00; BC-453, Q-5er, $8.00; Gon-Set 10M converter, $21.00; Electronic Lab vibrapack, 110 AC, 6UD-C, $22.00; CML Broad Band 144 Mc converter, $14.00; RCA police mobile xmttr, rcvr and antenna; 28 Mc, $48.00. Barbara Lakey, W2TWJ, 83-47 Abingdon Road, Kew Gardens, N. Y.

SELL: 250-watt c.w. transmitter, practically new, complete with tubes, three meters, and 40 m. coils but less power supplies. $40.00. 40 m. VFO with power supply, $18.00. Ralph Queen, W4OSN, 169 Oakwood Ave., Spartanburg, S. C.

OSCILLOSCOPE, Heath 5", vertical input converted to 6AC7 for .06 volt RMS in vertical deflection, $35.00. RF signal generator, $25.00; television set, 12", $179.00. Meissner portable record player, recorder complete, $100.00. Charles Ritter, 531 Seventh, Niagara Falls, N. Y.

QUALITY QSLs. Fast service. Samples. Larry's QSL Shop, Opportunity, Wash.

LATE RME-45 rcvr and Hunter Cycle-Master, used very little, cost $369.00. Will sell for $225.00. E. J. Hoover. WØUUC, 223½ E. 2nd St., Muscatine, Iowa.

10 and 20 Meter Beams, $19.25 and up. Lists free. Willard Radcliff, Fostoria, Ohio.

SELL: 100 watt phone transmitter. Pair 807s final, pair 807s modulator, BC-459 VFO, 8 chassis, 21 tubes. Best offer. Arthur Sterman, W3KFS, 5862 Hobart, Pittsburgh, Penna.

COMPLETE Cw transmitter, PP TZ40 final, coils 80, 40, 20, bug, meters, crystals, antenna relay, rack, including KW power supply $50.00. Fred Bell, 1436 West Avenue, Burlington, Iowa.

NATIONAL NC-57, perfect alignment and condition. Packed in original carton with instruction book. $65.00. W5GTL, 209 Thompson, Kilgore, Texas.

WANTED: QST for February, March, July, 1916. Have January, September, October 1916; July 1917 and 200 other copies to sell or trade. WØMCX, 1022 N. Rock Hill Rd., Rock Hill 19, Mo.

FOR sale: BC-747, $50.00; ART-13, $125.00; BC-348, $75.00; Super Pro SP110LX, $95.00; HK257B, 813, $6.00 ea. 829B, 832A, $4.00 ea. Wanted: Panadaptor. 12–01 Ellis Ave., Fair Lawn, N. J., A. Livingstone, W2QPN.

FOR sale: RCA Model 155 3" scope, new, $60.00; Philco Model 821PV police auto set complete, 1.6 to 3.5 Mc, good condition, $20.00; Echophone EC-1 electrically good, physically fair, $15.00; F.M. Link 118X police set, no crystal, new, $60.00; Sprague ILD interference locator, *550–1600 Kc, 1600–4500 Kc*, with loop antenna direction-finder, vertical antenna, volume indicator, A.C./D.C., battery superhet, excellent condition, $60. Write: Communications Engineering Co., 8512 Georgia Avenue, Silver Spring, Maryland.

TEMCO transmitter for sale. Model 250-G converted for broadcasting operation. Uses 203-Hs final with 811 modulators. New UTC power supply and modulation transformers and chokes. Best offer takes. WTSB — Lumberton, N. C.

(1) Pole xfrmer 1.5 KVA, 4600V CT or 2300 CT, 115/220 AC, 60 cyc. Pri. $50.00; (2) Mod. trans. 500W, $20.00 ea. (2) 304TLs, new, $1.00 each; (2) 810s, new, $6.00 each or trade total for BC-342 or HRO with bandspread coils, C. W. Jackson, 61 Taft Ave., Portland, Maine.

MUST sell: RME-45 receiver with matching speaker; Turner S22X mike; Jones Micro-Match model MM1; Trans-Meter model 905. All like new; appearance perfect, circuit and components exactly as they left factory; ready to operate. Also Premax 10 meter beam set up; Premax Rotomount; small oscilloscope, QSTs since 1933. Make offer for any or all. Inspection and inquiries invited. W5DUW, J. G. Baker, Box 910, Lubbock, Texas.

QSLS-SWLS by W1HJI, Cushing. Samples. Box 32A, Manchester, N. H.

SURPLUS equipment. Trouble shooting manuals (includes Schematics). BC-348, BC-779 (Super-Pro). SCR-522, BC-610. Any book $1.00 each (add 10¢ postage). FL-8A filters, $1.37. Lectronic Research Labs, 1021-Q Callowhill St., Philadelphia 23, Penna.

SELL or trade: 100 watt phone/cw 814 final. Write for complete description. Also SX-42 with PM23 speaker. W5DA, 4425 Bordeaux, Dallas, Texas.

METERS repaired. Springfield Testing Laboratory, 815 North 12th, Springfield, Illinois.

FOR sale: BC-348-Q, new when purchased, converted to AC, with LS-3 speaker and instruction manual; best offer takes it. John T. Hoffman, W4MVN, Route 9, Box 571, Louisville 16, Ky.

SELL *QSTs*: 1930–1938. J. Traub, Henning, Minn.

WANTED: Collins 32V1 or 2, DB22A. Swap new complete commercial 30W 10 and 11 M. mobile outfit plus other items. Send for list. Edward M. Muska, W2WEE, Oak Tree Road, Iselin, N. J.

SALE: HRO7, in excellent condition. Can't tell from new; ABCD coils, also new 7AA 10 meter bandspread coil added punch ten meters, power supply, loudspeaker, tilt-base, make offer over $195.00. Irv Fishelberg, W2ZLD, 2427 Boardwalk, Atlantic City, N. J.

SELL: 450-watt cw xmttr PP 812 final, 1500 volt 500 mill supply 300v. osc. supply 700 volt buffer supply, 300v. bias supply, meters on all supplies. All housed in 72" enclosed cabinet on castors with remote control switches and cable. $300.00. F.o.b. Elkhart, Ind. Also BC348H converted to AC, built-in supply, $49.50. F.o.b. Elkhart, Ind J. P. Gilliam, W9SVH, 422 Goshen Ave.

BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, RME, Millen, Meissner, Meck, Sonar, etc. Reconditioned S-40, $55.00; SX-43, $129.00; NC-57, $59.00; NC173, $139.00; HQ-129-X, $129.00; SP400-X, $249.00; RME-45, $99.00; RME-84, VHF152A, HFS, NC200, BC240D, NC183, NC46, HRO, S-38, SX-25, SX-28A, SX-42, S-47, HT-9, BC-610, Collins 75A1, Collins 32V1, etc. Shipped on trial. Terms. List free. Write: Henry Radio, Butler, Missouri.

MOBILE equipment: ST-203A xmttr, PE-103 modified, mike, Gon-Set 10–11 and whip antenna, all used like new. All for $85.00. Ready to go. WØGZN, Madison, Minnesota.

SELL: 1000 watt code 500 watt phone transmitter. All bands 10–80 PP813s, pp 811s, modulator, in 6 foot Par-Metal enclosed relay rack. Completely metered, fused, switched, etc. 400 pounds. $500.00 or highest bid. Reason: need money for college. Write or call W6WZD, RFD 1, Box 322, Placerville, Calif.

BC-610 for sale. In good condition, complete with tubes and speech amplifier, $475.00. W6GS, C. C. Brown, 2037 Niles St., Bakersfield, Calif.

FOR sale: Hallicrafters HT-6 transmitter, 25 watts, 6–160 meters. Phone and cw. BC-348Q converted, with AC supply, S-meter noise limiter, separate RF and AF gain control, variable bandwidth and phasing xtal filter, $60.00. Norman S. Hime, WØDQV, 1834 1st Ave. East, Cedar Rapids, Iowa.

FOR Sale: Collins K.W., a beauty. Photos. Descriptive literature is available. W1CPI, "Skipper".

SELL: HQ-120X, $90.00; Hickok 288-X, $135.00; Superior CA-12; $20.00; Rider's 1-5, 6 through 17, $170.00; all like new. Carl Steavenson, WØDFO, 140 W. 4th, Junction City, Kansas.

TECHNICIANS! Engineers! Interested in a top-paying electronic position? Send post-card for information on How, Why, Where. Mid-Continent Research Bureau, P.O. Box 121, Wichita, Kansas.

DELUXE 600W. Compact 8005 pp. final amplifier; 115/230V. double filtered power supply; 4 Westinghouse meters; table rack mounted. Absolutely bugless. JAN or equivalent components exclusively. With 80–20 coils, less exciter. Best cash offer. Robert Rod, 161 West 16th, N. Y. C., Chelsea 3-2227 (AF2KVY).

SELL late SX-28A with matching speaker and 5" Heathscope. Make an offer. W4NJ.

TRADE: Meissner 150B, 300 watt phone/cw transmitter, brand new, complete with spares, for more compact, lower powered transmitter, or sell, $225.00. Allen Margolis, W2UPN, 3286 33rd St., Astoria, N. Y.

SAVE over 50 percent! Crystals, due to change in assigned frequency, we have the following used crystals which are in first class condition: Transmitting crystals, $10.00 each: 28 of type FMT-X5, Motorola Part 48-B-82527, 1239.375 KCS for 32nd. harmonic operation on 39.66 Mcs. 12 of type FMT-X7, same as above. 17 of type FMT, 5 Motorola Part 48A475808, calibrated to same frequency as above. Receiving crystals, $5.00 each. 41 of type 800, Motorola, Inc. 8840KCS for 4th harmonic operation on 39.66 Mcs. South Carolina Power Co., c/o Purchasing Agent, P. O. Box 952, Charleston, S. C.

CASH paid for KP-81 instruction book or manual. Write T. E. Lyon, 2117 SE. Cypress, Portland 14, Oregon.

SACRIFICE! Must sell. Not used; Sonar XE-10 NFM Exciter; good condition RME HF-10 receiver; $130.00 worth of parts, including xtal mike, headphones, transformers, condensers, resistors, meters, etc. All for $80.00. Write for details. Alan Stein, 552 Parkside Ave., Brooklyn 26, N. Y.

FOR sale: Eicor Twin Track recorder, practically new, with half-hour of tape with code recorded from 5 w.p.m. to 15 w.p.m. $95.00. Faust H. Boyd, Ashton, Ill.

WANTED: BC-221 freq. meter. New condx. untampered, steel case and cal. book. W8GWA, 9915 Cavell, Garden City, Michigan.

FOR Sale: HQ-129-X, complete with Hamilton matching speaker, in excellent condition. Used only six months. Price: $130, or best offer. I am selling because of financial difficulties. Lawrence F. Smith, Sta. W1OKI, 555 Worcester St., Natick, Mass.

ALL parts for 400-watt final and bias supply, partially completed, plus many more, including PR 35TGs, pair new 811s, BC-454, transformers, transmitting coils, two power supplies, over 18 pop. tubes. Write for the complete list. The works for only $40.00. W9DSV, Box 261, Webster, Wisconsin.

SELL: BC-348P. Converted 110 AC and 10 meter dial-less converter. Best offer over $100.00. TG-10-H tape keyer. Complete with tubes, one tape and manual. Best offer over $50.00. Fifty-five issues of *QST*, from January 1945 through October, 1949. Best offer. R. L. Martin, 1342 Dartmouth Ave., Baltimore 14, Md.

SELL: Used but tested OK AN/ART 13 transmitter only with tubes, $147.50 F.o.b. San Francisco. TBY transceiver set only with tubes and crystal, $27.50 postpaid. Cash or consider trade 5 x 7 view camera. Nielsen KH6CI, Kealakekua, T. H.

"TAB" senational 13.5KV/16" television HiVolt-Flybak transformer similar RCA 211T5, only $2.49; 6V Carter Dynamotors 400V/150 Ma, $8.98; 250V/100 Ma, $4.98; both $12.49. Guaranteed tested tube. Specials! 954, 14¢, 955, 16¢, WE215A, VR92, CK1005, 9006, ea. 18¢; 1R5, 1S5, 6AG5, 6BG6G, 6BH6, 6J6, 6SN7GT, 7Y4, 12AT7, 117Z3, ea. 37¢; 388A, 40¢. GE/2J1G1 Selsyns tested, perfect used pair, $1.49; 30Cm/12" UHF mobile Hamband Antenna, AT4/ARR1, 39¢/4 for $1.00; Tuning Meter, 5 Ma, 98¢; circular slide rule, 98¢; excellent fidelity dynamic microphone plus matching hi-gain transformer, both for $1.49. Write for bargain "Tabogram", "TAB", 109 Liberty St., N. Y. C., N. Y.

BC-221-B frequency meter with xtal and calibration tables, good condition, $40.00. PE-103-A generator 6 or 12 volt input, 500 VDC, *160 Ma output, hardly used, $10.00.* J. Armstrong, *2 Bloomfield* Ave., Apt. 8, Drexel Hill, Penna.

SELL new T47 ART/13 with transformer and new tuner rect. tubes for filament and relays, $160.00. New BC-348N converted AC, $60.00. H. Hoffman, WØQMA, Box 1445, Durango, Colo.

COLLINS Autotune Transmitter (Navy ATC-1, identical to Army ART-13) brand new, slightly shelfworn, $150.00. Good used $115.00. BC 459 (7–9 Mc) Transmitter, VFO, excellent, used, $8.75. Al Williams, W7HVA, 12015, 75th St., Seattle, Wash.

1200-0-1200 V. @ 1500 ma. Brand new post-war Westinghouse transformers with magic Hypersil core. Open construction. Operates from 115 v. or 230 v. 50–60 cycle a.c. Sufficient power for both your Class C and B stages, yet measures only 8" x 8" x 12" and weighs only 42 lbs. gross. The best transformer value available, $16.00 F.o.b. The Overbrook Company, Overbrook 81, Mass.

BC-457s. Condition good, used. Including tubes and xtal. $3.00 F.O.B. Prefer to ship collect. R. L. Kalmbach, W4IW, Lykesland, S. C.

FOR sale: BC-457A, Arc-5-80 and 40 meters, power supply and spare tubes, complete, $27.00. Jack Udseth, WØZTU, Summit, South Dakota.

SELL: BC-348Q converted, $60. NC-44 in good shape, $30.00; QSTs from 1928, tubes, transformers, variables, etc. Write for complete list. B. W. Looney, W5JFV, 126 N. West St., Stillwater, Okla. TG10 code machine, spares, new 15-reel box tapes, $39.00. Vomax, $33.00. New BC-221, complete, $59.00. J. Pinero, W1QWX, 178 L St., South Boston, Mass.

SELL: RME-69 receiver, $45; Webster Wire Recorder, $65; Altec 400B Diacone speaker, $15. D. G. Brower, Route 1, Box 125, Zion, Ill.

TRADE: XE-10 FM Sonar exciter with 420 xmittr and JT-30 mike, all for Gon-Set 10-meter mobile converter or for similar converter. Will deliver in N. Y. C. or vicinity. M. W. Hans, 352 7th Ave., N. Y. C. PE 6-1485, 8 A.M. to 6 P.M.

QSLS lithographed, individual designs, with cartoon, sketch or photo. Yours copied beautifully, 500 for $5.00. R. Land, W4JVL, P.O. *Box No. 311, Charlotte*, N. C.

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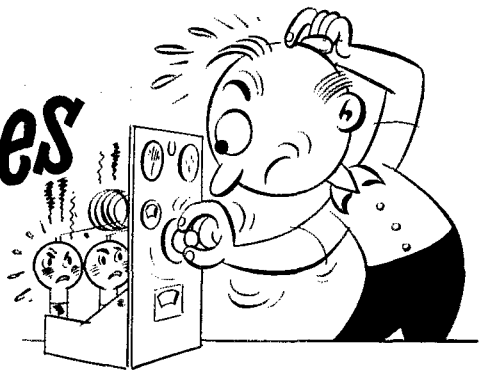
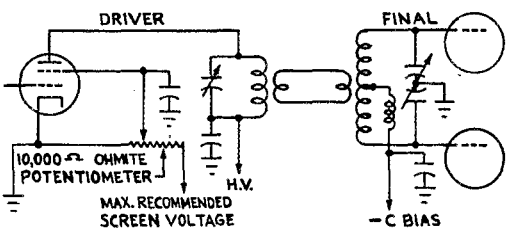
How To Protect Your Tubes while tuning to resonance



For a number of years, hams have been using various methods to tune the final of their rigs to resonance. Some of these methods have proved disastrous when the resonant point could not be found before the plate structure of the final tubes developed large holes. Using an Ohmite wire-wound potentiometer to vary the output of a tetrode or pentode driver stage by varying the applied screen voltage has proved to be the most effective and economical means of tuning the final with complete safety for the tubes. The circuit is shown below. *(Must use fixed bias.)*

This circuit has three obvious advantages: (1) The drive to the final amplifier may be reduced to the point where the plate dissipation is not excessive when full plate voltage is applied. The final tank may then be tuned without danger to the tubes; (2) The grid drive in the final amplifier can be adjusted easily for any band of operation; (3) By reducing the screen voltage to the point where the plate current of the driver is within safe limits, the driver tank circuit can be tuned without causing excessive plate dissipation.



For the smaller screen grid tubes of the 807 type, a 10,000-ohm, 50-watt potentiometer is recommended (Ohmite Stock No. 0332). The larger screen grid tubes of the 813 size require a larger potentiometer, and the 10,000-ohm, 100-watt (Ohmite Stock No. 0463) is recommended.

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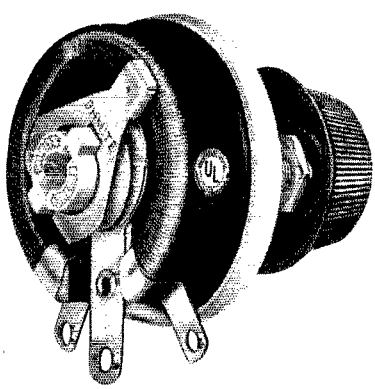

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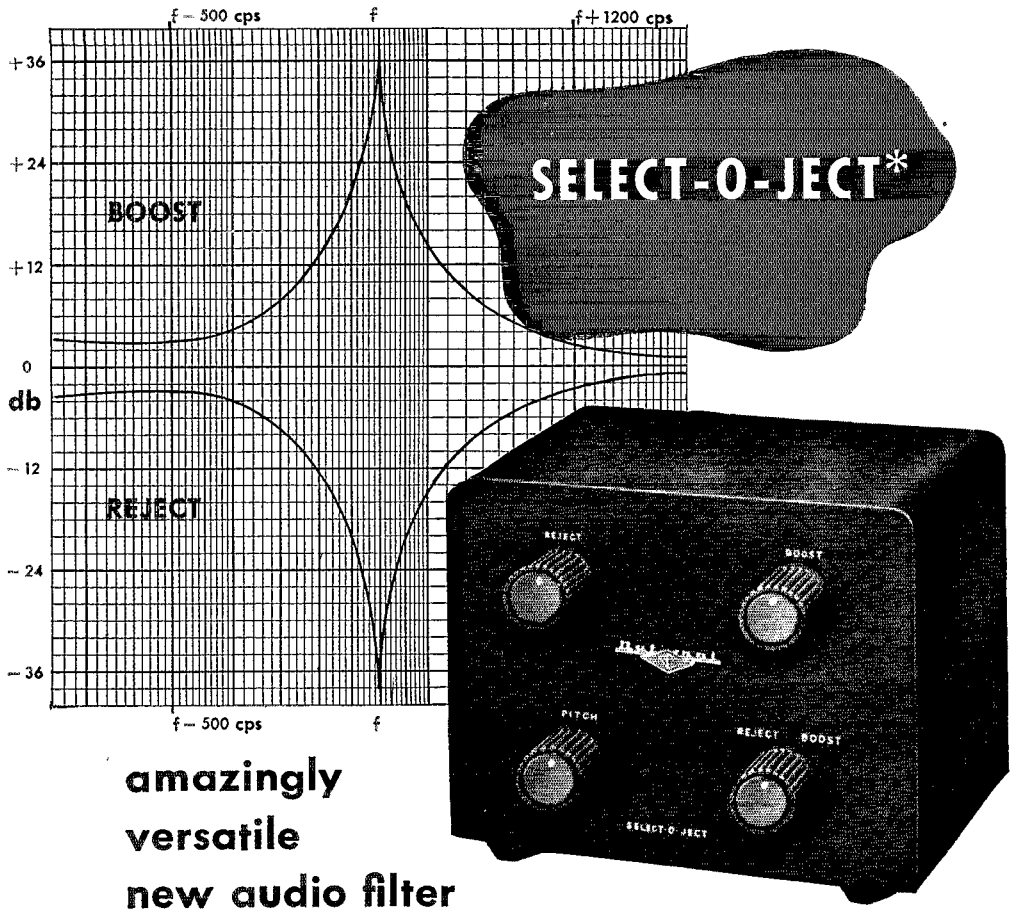

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Remarks: a 599 Xmas es 7B New Year... **Hr on:** 12/25 1949

73 — RCA TUBES

W1OFS/9—Wally Pond...**K2AH**—George Rose...**W2ADY**—Bob Lord...**W2AYY**—Horace Hamthon...**W2BRP**—Joe Eron ...**W2CBL**—George Jones...**W2CDP**—Ken Bucklin...**W2CYR**—Ted Dawson...**W2DGN**—Russ Humington...**W2FTW**—Jim Owens...**W2FZV**—Ed Smith....**W2GQK**—John Steiner....**W2HEA**—A. G. Perrasek....**W2IAR**—Charles Poskonka ...**W2IOP**—Larry LeKashman....**W2IYG**—Clarence West....**W2JSX**—Marne Bell....**W2LHP**—Bob Bolten...**W2QJV**—Larry Freeman....**W2QLB**—Syl Walczak....**W2RBO**—Don Power...**W2RVV**—Tony Sarnie...**W2RYL**—Mack Seybold ...**W2SDO**—Tony Maugeri...**W2TQS**—Herb McCord....**W2UIJ**—Dave Koch...**W2VBL**—Pat Patterson...**W2WCT**—Hal Stamm....**W2WDR**—Jack Wasserman....**W2YM**—George Hanchett...**W2YQM**—Bill Kern...**W2YXL**—Bob Klein... **W2ZPD**—Frank Neyner...**W2ZXL**—George Flenner...**W3CHV**—LeRoy Wenger...**W3EJN**—Charles Cramer...**W3EOB** —Fred Koenig...**W3EWR**—Rick Wenger...**W3FEI**—George Shenberger...**W3FIE**—Jim Stone...**W3FX**—Charles Eisner... **W3KBZ**—Andy Rau...**W3KKX**—Ted Schreiber...**W3KRA**—Jim Rill...**W3LIL**—Andy Neiur...**W3MNX**—Harry Bolly... **W3NFF**—Hideo Takeuchi...**W3NOI**—Bob Carvell....**W3NOK**—Charles Nesslage....**W3OXG**—Merrald Shrader.... **W3PAX**—Jim Weaver...**W3PGL**—Gene Duckworth...**W3PSK**—Henry Kazanowski...**W3PTD**—Dave Ballard...**W3TLH**—Merle Hoover....**W3VRR**—Paul Klinko....**KL7BV/W3**—Frank Arams...**W4AYT**—Randy Frisbee...**W4MUR**—Bill Jackson .....**W8BPD**—John Driver.....**W9GZE**—Steve Johnson...**W9HYF**—John Spooner... **WØMKU**—Norm Graham...

QTH:

RCA **RADIO CORPORATION of AMERICA**

ELECTRON TUBES **HARRISON, N.J.**