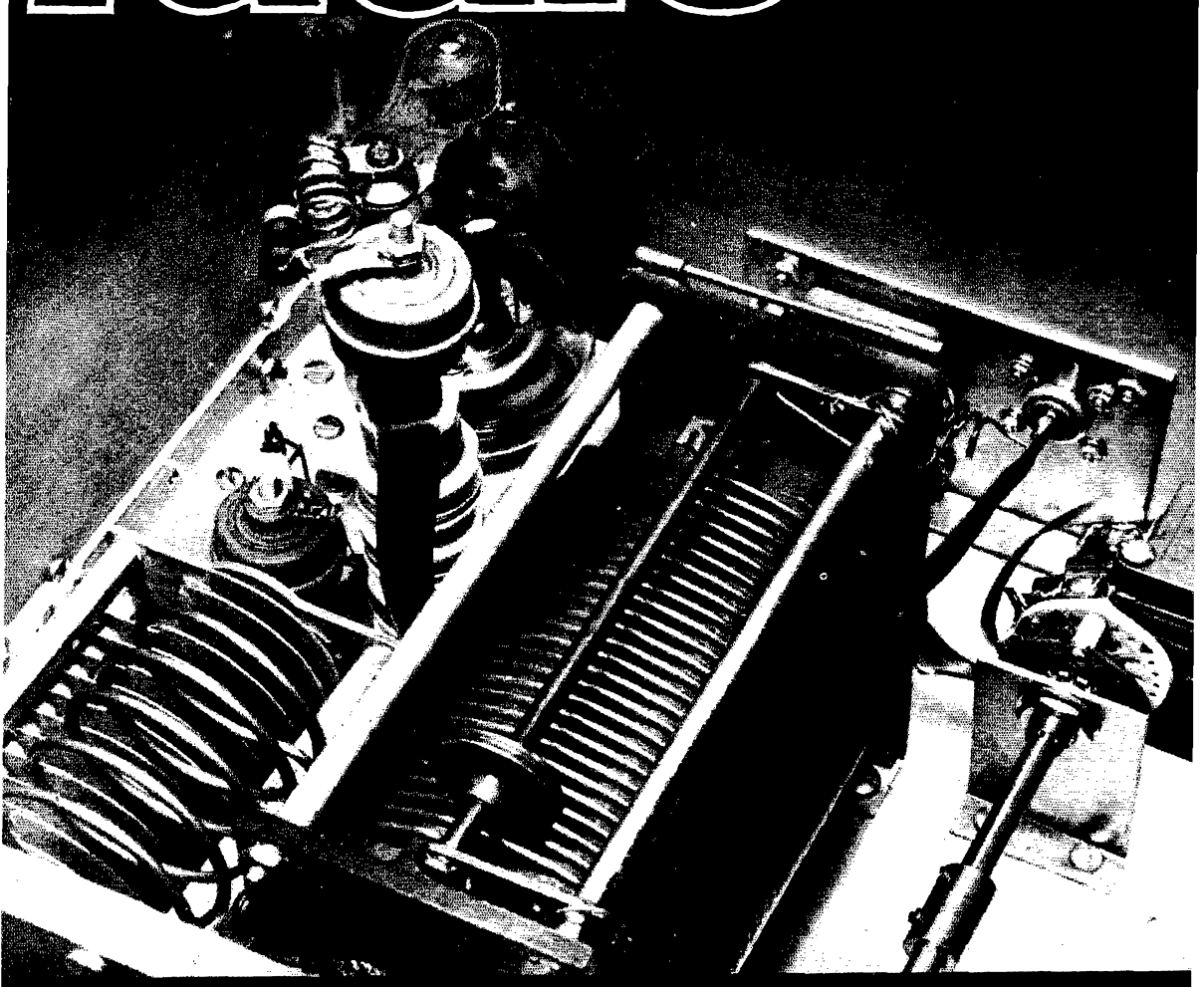
QST

October 1955
50 Cents
55c in Canada

devoted entirely to

amateur radio



PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

THE STANDARD OF COMPARISON FOR OVER 20 YEARS

HIGH FIDELITY TRANSFORMERS

FROM STOCK... ITEMS BELOW AND 650 OTHERS IN OUR CATALOGUE B.

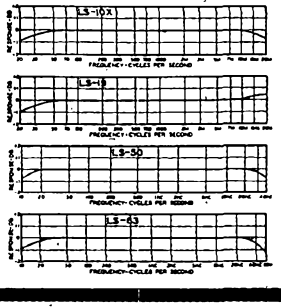
TYPICAL UNITS

LINEAR STANDARD series

Linear Standard units represent the acme from the standpoint of uniform frequency response, low wave form distortion, thorough shielding and dependability. LS units have a guaranteed response within 1db. from 20 to 20,000 cycles.

Hum balanced coil structures and multi-pole alloy shielding, where required, provide extremely low inductive pickup.

These are the finest high fidelity transformers in the world. 85 stock types from milliwatts to kilowatts.

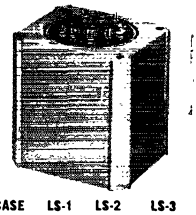


LS-10X Shielded Input
Multiple line (50, 200, 250, 500/600, etc.) to 50,000 ohms . . . multiple shielded.

LS-19 Plate to Two Grids
Primary 15,000 ohms.
Secondary 95,000 ohms C.T.

LS-50 Plate to Line
15,000 ohms to multiple line . . . +15 db. level.

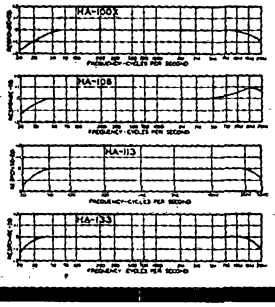
LS-63 P.P. Plates to Voice Coil
Primary 10,000 C.T. and 6,000 C.T. suited to Williamson, MLF, ul.-linear circuits. Secondary 1.2, 2.5, 5, 7.5, 10, 15, 20, 30 ohms. 20 watts.



CASE	LS-1	LS-2	LS-3
Length	3⅛"	4-7/16"	5-13/16
Width	2⅝"	3½"	5"
Height	3¼"	4-3/16"	4-11/16"
Unit Wt.	3 lbs.	7.5 lbs.	15 lbs.

HIPERMALLOY series

This series provides virtually all the characteristics of the Linear Standard group in a more compact and lighter structure. The frequency response is within 1 db. from 30 to 20,000 cycles. Hipermalloy nickel iron cores and hum balanced core structures provide minimum distortion and low hum pickup. Input transformers, maximum level +10db. Circular terminal layout and top and bottom mounting.

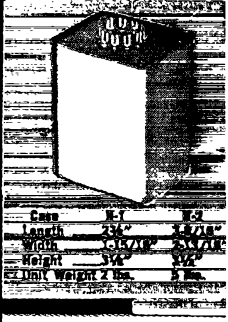


HA-100X Shielded Input
Multiple line to 60,000 ohm grid . . . tri-alloy shielding for low hum pickup.

HA-106 Plate to Two Grids
15,000 ohms to 135,000 ohms in two sections . . . +12 db. level.

HA-113 Plate to Line
15,000 ohms to multiple line . . . +12 db. level . . . 0 DC in primary.

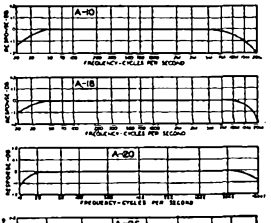
HA-133 Plate (DC) to Line
15,000 ohms to multiple line . . . +15 db. level . . . 8 Ma. DC in primary.



Case	H-1	H-2
Length	2¾"	4-7/16"
Width	2⅝"	3½"
Height	3⅛"	4¼"
Unit Weight	2 lbs.	8 lbs.

ULTRA COMPACT series

UTC Ultra Compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. The frequency response is within 2 db. from 30 to 20,000 cycles. Hum balanced coil structure plus high conductivity die cast case provides good inductive shielding. Maximum operating level is +7db. Top and bottom mounting as well as circular terminal layout are used in this series as well as the ones described above.

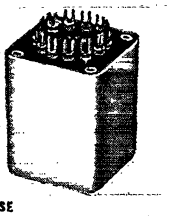


A-10 Line to Grid
Multiple line to 50,000 ohm grid.

A-18 Plate to Two Grids
15,000 ohms to 80,000 ohms, primary and secondary both split.

A-20 Mixing Transformer
Multiple line to multiple line for mixing mikes, lines, etc.

A-26 P.P. Plates to Line
30,000 ohms plate to plate, to multiple line.

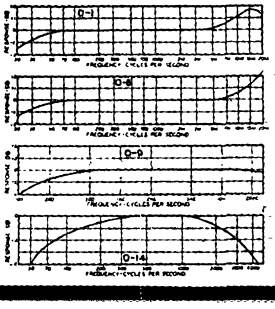


A CASE

Length	1½"
Width	1½"
Height	2"
Unit Weight	½ lb.

OUNCER series

UTC Ouncer units are ideal for portable, concealed service, and similar applications. These units are extremely compact, fully impregnated and sealed in a drawn housing. Most items provide frequency response within 1 db. from 30 to 10,000 cycles. Maximum operating level 0 db. These units are also available in our stock P series which provide plug-in base. The O-16 is a new line to grid transformer using two heavy weight hipermalloy shields for high hum shielding.

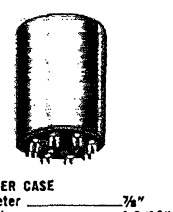


O-1 Line to Grid
Primary 50, 200/250, 500/600 ohms to 50,000 ohm grid.

O-6 Plate to Two Grids
15,000 ohms to 95,000 ohms C.T.

O-9 Plate (DC) to Line
Primary 15,000 ohms, Secondary 50, 200/250, 500/600.

O-14 50: 1 Line to Grid
Primary 200 ohms, Secondary .5 megohm for mike or line to grid.



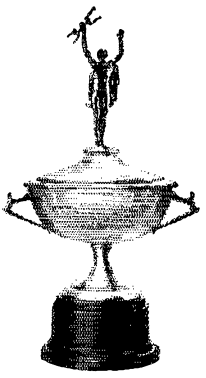
OUNCER CASE

Diameter	⅞"
Height	1-3/16"
Unit Weight	1 oz.

UNITED TRANSFORMER CO

150 Varick Street, New York 13, N. Y. EXPORT DIVISION: 13 E. 40th St., New York 16, N. Y. CABLES: "ARLAB

LAST YEAR'S WINNER. Benjamin S. Hamilton, W6VFT, is congratulated by Val Peterson, right, Administrator, Federal Civil Defense Administration. J. Milton Lang, general manager of the G-E Tube Department, looks on.



NOMINATIONS NOW OPEN FOR 1955 EDISON AWARD

The Fourth Annual Edison Radio Amateur Award will give you an opportunity to recommend for high honors an amateur who has rendered important public service.

Handsome trophy, a $500 check, and coast-to-coast recognition await the 1955 winner. The panel of judges will consider only candidates nominated by letters from you and others.

Start now to make your selection and assemble the facts for your nominating letter. Read the Award Rules at right!

Radio amateurs and their friends are generous in acclaiming accomplishment. No better means for this exists than for you to name . . . soon . . . a candidate for the Edison Award.

Send your letter to *Edison Award Committee, General Electric Company, Tube Department, Schenectady 5, N. Y.*

RULES OF THE AWARD

WHO IS ELIGIBLE. Any man or woman holding a radio amateur's license issued by the F.C.C., Washington, D.C., who in 1955 performed a meritorious public service in behalf of an individual or group. The service must have been performed while the candidate was pursuing his hobby as an amateur within the continental limits of the United States.

WINNER OF THE AWARD will receive the Edison trophy in a public ceremony in a centrally located metropolitan city. Expenses of his trip to that city will be paid.

$500 GIFT. Winner will be presented with a check for this amount in recognition of the public service he has rendered.

WHO CAN NOMINATE. Any individual, club, or association familiar with the service performed.

HOW TO NOMINATE. Include in a letter the candidate's name, address, call letters, and a full description of the service performed. Your letter must be postmarked not later than January 2, 1956.

BASIS FOR JUDGING. All entries will be reviewed by a group of distinguished and impartial judges. Their decisions will be based on (1) the greatest benefit to an individual or group, (2) the amount of ingenuity and sacrifice displayed in performing the service. The judges will be:

E. ROLAND HARRIMAN, President, The American Red Cross.

HERBERT HOOVER, JR., The Under Secretary, U. S. Department of State.

EDWARD M. WEBSTER, Commissioner, Federal Communications Commission.

GOODWIN L. DOSLAND, President, American Radio Relay League.

Winner of the Award will be announced on or before Thomas A. Edison's birthday, February 11, 1956.

Employees of the General Electric Company may nominate candidates for the Edison Radio Amateur Award, but are not permitted to receive the Award.

GENERAL ELECTRIC

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exclusive

in the Amateur Field . . .

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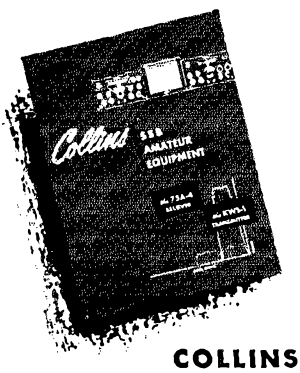
75A-4 RECEIVER

latest in the 75A series is *unmatched* in Amateur reception because of such outstanding features as these— *exclusive* with Collins:

- Q-MULTIPLIER for superior rejection of heterodyne interference
- PASSBAND TUNING for switching sidebands and dodging interfering signals
- AVC on SSB and CW as well as AM
- LINEAR OSCILLATOR provides 1 kc dial calibration on all Ham bands
- DUAL DETECTORS for low distortion sideband reception
- MECHANICAL FILTER for best skirt selectivity (three selectable filters available at slight extra cost)
- DUAL CONVERSION crystal controlled for excellent stability



Write or visit your nearest Collins distributor for complete information on Collins new SSB line, and ask for your copy of this latest brochure.

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

COLLINS

QST

OCTOBER 1955

VOLUME XXXIX • NUMBER 10

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

OFFICES

38 La Salle Road
West Hartford 7, Connecticut

TEL.: AD 3-6268 TWX: HF 88

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.25 in the Dominion of Canada, $5.00 in all other countries. Single copies, 50 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 1102, 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

Library of Congress Catalog
Card No.: 21-9421

—CONTENTS—

why is the SX-96 the most wanted receiver on the air?

The Hallicrafters double conversion selectable side band receiver offers major improvements in stability by the addition of temperature compensation in the high frequency oscillator circuits and the use of crystal controlled second conversion oscillators. Hallicrafters highly selective 50 kc i-f system is used in this new precision-built receiver.

Coverage: Standard Broadcast, 538-1580 kc; Three S/W Bands, 1720 kc–34 Mc, Band 1: 538 kc–1580 kc–Band 2; 1720 kc–4.9 Mc–Band 3: 4.6 mc–13 mc–Band 4: 12 mc–34 mc.

Type of Circuit: Double conversion superheterodyne over the entire frequency range.

Type of Signals: AM-CW-SSB.

Features: Precision gear drives are used on both main tuning and band spread dials. Double conversion with selectable crystal controlled second oscillators. Selectable side band reception of both suppressed carrier and full carrier transmissions by front panel switch, delayed AVC, CW operation with AVC on or off. Calibrated bandspread, "S" meter, low drift, double conversion superhet.

Controls: Sensitivity, band selector, volume, tuning, AVC on/off, noise limiter on/off, AM/CW-SSB, Bandspread, selectivity, pitch control, response (pwr on/off, LSB, USB–2 tone pos.), receive-standby.

Intermediate Frequencies: 1650 kc and 50 kc.

Tuning Assembly and Dial Drive Mechanism: Separate 3 section tuning capacitor assemblies for main tuning and bandspread tuning. Circular main tuning dial has 0-100 logging scale. Bandspread dial is calibrated for the 80, 40, 20, 15, and 11-10 meter amateur bands.

Selectivity: Five steps of bandwidth calibration at 6 db points; 5 kc, 3 kc, 2 kc, 1 kc, and .5 kc.

Antenna Input Impedance: Balanced/unbalanced.

Headphone Output Impedance: Nominal 500 ohms.

Audio Output Impedance: 3.2/500 ohms.

Automatic Noise Limiter: Series noise limiter operated by toggle switch on front panel.

Carrier Level Indicator: Calibrated in "S" units from 1 to 9, decibles to 90 db over S9, microvolts from 1 to 1000 k.

External Connections: 3.2/500 ohm speaker terminals, terminals for single wire or doublet antenna, phono jack, AC power cord, socket for DC operation and remote control, audio output terminals, "S" meter electrical adjustment and mounting hole for co-axial cable connector. Phones jack on front panel.

Audio Power Output: 1.5 watts with 10% or less distortion.

Power Supply: 105/125 V, 50/60 cycle AC.

Model SX-96–$249.95

Matching R-46B Speaker–$17.95

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A dependable secondary frequency standard is a MUST for today's amateur station . . . to determine band-edge . . . to keep the VFO and receiver properly calibrated. Now you can buy a really dependable, commercial-quality PR 100 Kc. Crystal at reasonable cost. The Type Z-6A is hermetically sealed, razor-accurate, unconditionally guaranteed. Get it at your jobber.

Z-6A
100 K.C.
$6.95 net

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Section Communications Managers of the ARRL Communications Department

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

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

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HALLICRAFTERS RAISES THE STANDARDS OF SSB TRANSMISSION

For almost a quarter of a century the constant goal of Hallicrafters engineers has been the improvement of receiving and transmitting equipment standards. This policy of continuous improvement is again reflected in the design and engineering of Hallicrafters amazing new HT-30 Transmitter/Exciter.

Here's a transmitter that's built to give you greater performance . . . greater dependability. And the HT-30 guarantees you greater enjoyment because it incorporates all these wanted features . . .

CHECK THEM AT YOUR JOBBER TODAY!

- BUILT IN V.F.O. READS DIRECTLY IN KILOCYCLES.
- V.F.O. STABILITY IS EQUAL TO MOST CRYSTALS—.009% There are also provisions for 1 crystal for fixed frequency operation.
- SELECTIVE FILTER SYSTEM IS USED FOR RELIABLE SIDEBAND SELECTION. The circuitry employs the proven r.f. selective filter system used by major commercial communications companies. This sytem assures continued suppression of unwanted side band energy and distortion products. Hum, noise and unwanted side band are down 40 db or more, while undesired beat frequency is down at least 60 db. New 60 db range meter for constant monitoring of r.f. output and carrier suppression. Voice control system built in with adjustable delay and anti-trip features.
- SSB, AM, AND CW ARE ALL PROVIDED FOR IN ONE COMPACT UNIT. Front of panel full function control allows selection of AM, CW and upper or lower side band. Only 18" x 9¾" x 12"; the unit is powerful—35 watts peak output on SSB.

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Band selector 80, 40, 20, 10 meters.
Driver tuning.
Finial tuning.
Speech level.
Carrier injection —0 to 100%.
Meter sensitivity.
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Power off, stand-by, warm-up, transmit.
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10 Meter tuning control.
V.F.O.—Crystal.

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AND 15 OTHER FEATURES IN MODEL HT-30 AT ONLY $495.00

THE AMERICAN RADIO RELAY LEAGUE, *INC.*,

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

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

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

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

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

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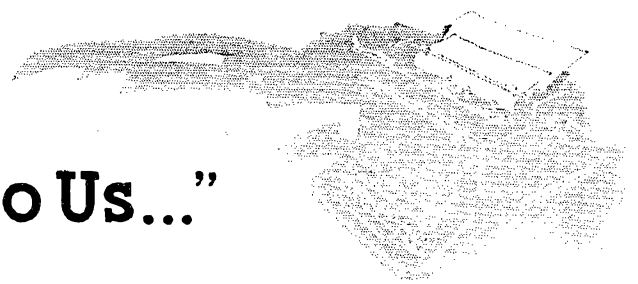


"It Seems to Us..."

"IN THE PUBLIC INTEREST . . ."

We write this just a week after a flood disaster ravaged our Northeast, still aghast at the tragedy of loss of life and property, yet with a growing feeling of pride in being a member of the body of amateur radio which did such a magnificent job of providing vital emergency communication.

This brief tribute will be woefully incomplete. In the true tradition of service, amateurs have been too busily engaged in disaster work to take time out to inform Hq. of their many accomplishments. Yet our own experience, even though limited almost entirely to the two spot frequencies housing the Connecticut 'phone and c.w. nets, makes it thoroughly evident that amateurs throughout the disaster areas banded together in the public interest, convenience and necessity, whether they wore c.d. armbands and manned the Radio Amateur Civil Emergency Service organization, or served strictly as amateurs in the various section and regional nets. A full week after the first alert, many are still at their posts, exhausted from endless hours at key or mike, hanging on because of the importance of the job being done.

In general amateur communications worked smoothly despite the confusion which Nature foisted on us all. Net discipline was good, station coöperation excellent. Amateurs by the hundreds, not in the immediate flooded areas, must have been standing by hour after hour to offer assistance if and when needed, and we'd like to observe that one good measure of the efficiency of disaster communication is the number of stations standing silently by. The key was teamwork, the aim to get the job done.

Teamwork and efficiency it was. In one instance W1AW had a circuit to a station in a hard-hit area for most of four days without knowing just where he was located, what kind of power he was using, or even his name, and when the press made inquiries for such information we were not ashamed to profess ignorance — there just wasn't time for such details. In another instance, few if any amateurs handling official disaster traffic to and from one civil-defense installation knew of the heroic performance of its operator — his house had been washed away and his mother drowned, yet as an amateur his first thought was to fight his way to c.d. headquarters to provide the town with urgently-needed communication.

QST wants to record the performance of the amateur body in the Great Flood of 1955, and we solicit your help in providing information to that end, whether it be an outstanding story of personal or group sacrifice and accomplishment, or the mere fact that you were standing by to help if needed. Then there is one more job to be done. We must all admit there were occasional foul-ups in our operations, just as there were in all flood-fighting activities. As will undoubtedly be done by other agencies wanting to profit by the tragedy of experience, we should examine our own performance to determine how next time — and there will be a next time — we can be even better prepared.

THE REASON WHY

From time to time most of us have occasion to explain amateur radio to BCLs. It isn't too hard to tell them how we establish contact with another ham, nor to answer the perennial question "How far can you talk with that thing?" — perhaps with a slight exaggeration! More difficult to explain is the fascination which keeps us active year after year, which makes us stay up all night calling "CQ SS" or chasing DX.

One of the best descriptions of our hobby was written not by an amateur but by a sociologist who had picked amateur radio as an example of an American institution which had gone from its earliest beginnings to a respected position in the Twentieth Century. In his doctorate thesis the sociologist, Dr. Raymond V. Bowers of Yale University, asked himself "What are the elements of this core complex in the amateur radio institution?", then proceeded to answer in this fashion:

> The central trait is the means of communication with others on equal terms, of finding friendship, adventure and prestige while seated at one's own fireside. In picking his human contacts out of the air the amateur is not seen by them. . . . He is not known by the company he keeps nor by the clothes

he wears but by the signals he emits. He enters a new world whose qualifications for success are within his reach. A good home-made set gives him more prestige than a commercially-manufactured one. There are no century-old class prejudices to impede his progress. He enters a thoroughly democratic world where he rises or falls by his own efforts. When he is W9XYZ, a beginner, the radio elders help him willingly, and when he becomes W9XYZ the record-breaker and efficient traffic handler, he willingly helps the younger generation. Without a pedigree, a chauffeur, or an old master decorating his living room he can become a prince — of the air. At the close of the day, filled with the monotonous routine of the machine age, he can find adventure, vicarious travel, prestige and friendship by throwing in the switch and pounding his signals into the air.

Though this was written over twenty years ago, it still expresses the attractions that call us to our hobby today. Though perhaps the game has become more complicated, a new and friendly world still opens its arms in welcome whenever the rig is fired up and a good fist or well-modulated voice sends out a CQ.

A.R.R.L. CONVENTIONS

CENTRAL DIVISION

South Bend, Ind. — Oct. 15th–16th

Typical "Hoosier Hospitality" will be extended to all amateurs and friends attending this Convention. The Hotel Oliver will be headquarters, although other fine hotels in the city will share in the accommodations for guests. Rates are moderate, and a special discount of 25 per cent is offered to conventioneers.

The program will be of interest to amateurs in every phase of operating, be it s.s.b., v.h.f., DX, MARS, or what have you. Even the Novice hasn't been forgotten. There will be lectures and demonstrations of general interest and again, these features will be headed by the top men in their fields. There will be a banquet on Saturday night, with a nationally-known speaker and headline entertainment. The mobile enthusiast will find plenty of activity to attract his attention, and of course there will be an initiation into the Royal Order of Wouff Hong at midnight on Saturday.

Has the XYL been forgotten? No, Sir! Plans for her entertainment are high in priority. XYL activities are being planned by XYLs, and many activities outside of ham radio will make her stay as pleasant as possible. A handsome gift will be presented to each lady registering.

The registration fee is $3.50 in advance and $4.00 at the door. Advance registrations close to October 7th, and the committee will take care of your housing arrangements, too!

Remember, the committee is determined to have good fellowship and fraternalism as the theme. The program is designed for you to have fun, with just the right balance of serious discussion, technical talks, and entertainment. You will have a complete program, and you can relax too!

Don't forget the address! It's Central Division Convention, Box 551, South Bend, Ind. Make all checks payable to the Central Division Convention. See you there?

MIDWEST DIVISION

Omaha, Nebr. — Oct. 22nd–23rd

The Ak-Sar-Ben Radio Club will be host this year to the Midwest Division at Omaha on October 22nd and 23rd. Those who have attended previous doings out this way know that every one is better than the last, and this one will be no exception. There will be an impressive array of speakers that you won't want to miss, and that "once-a-year" opportunity to visit with all of the old gang. A social hour and a 'teen party have been scheduled as well as YL and XYL activities. The most important part hasn't been forgotten either — the food will be good and there will be plenty of it. For reservation information write P. O. Box 626, Omaha, Nebr.

OUR COVER

This month's cover shows a close-up view of the 4–65A final and its tank assembly in "A Modern Medium-Power Transmitter." The rig was designed and built by Richard Egbert, ex-W2QMO, and features complete break-in with special attention paid to keying characteristics. Primarily a c. w. rig, its power output and ease of operation should make it a hit with the contest and traffic man. For further details, see this issue's lead article.

FEDERAL COMMUNICATIONS COMMISSION

Washington 25, D. C.

Editor, *QST*:

Because it concerns a rule which appears to have been widely misunderstood as to its correct application, we are requesting your coöperation in giving publicity to this letter.

Section 12.113 of Part 12, Rules Governing Amateur Radio Service, specifies that: "Sideband frequencies resulting from keying or modulating a carrier wave shall be confined within the authorized amateur band." This applies to all amateur frequency bands allocated for telephony emissions. Radiation of normal or spurious sideband frequencies, resulting from modulation, outside the amateur telephony bands is in violation of Section 12.113 regardless of whether such radiation is on frequencies allocated to the Amateur Service or to other radio services.

Questions as to what operating carrier frequency near the edge of a telephony band would assure that transmissions would be in compliance with Section 12.113 cannot be answered in terms of a specific carrier frequency. Obviously, the characteristics of the voice modulating the transmitter and the operational characteristics of the transmitter itself determine the bandwidth of emission. At the present time, it is believed that the exact specification of allowable bandwidths for amateur telephony together with the necessary specification of measuring equipment and techniques would introduce unnecessary and, therefore, undesirable complication of the Amateur Rules.

It is the responsibility of each operator of an amateur station to make sure that the operation of his station is within the requirements of Section 12.113. That part of Section 12.133 which states that "This spurious radiation shall not be of sufficient intensity to cause interference in receiving equipment of good engineering design including adequate selectivity characteristics, which is tuned to a frequency or frequencies outside the frequency band . . ." is considered applicable to the determination of compliance with Section 12.113.

If operation near either edge of an amateur telephony band is contemplated, all amateurs are cautioned that radiation of energy outside the band to the degree indicated in Section 12.133 will be considered to be in violation of Section 12.113, whether double-sideband full-carrier or single-sideband suppressed-carrier is used.

Very truly yours,

MARY JANE MORRIS
Secretary

A Modern Medium-Power Transmitter

The 4-65A in a Multiband VFO Rig

BY RICHARD A. EGBERT,* W8ETU, EX-W2QMO

• Built with an eye primarily on contest competition, this neat piece of construction combines features that will appeal to all types of operators. Designed around the versatile 4-65A, it will operate efficiently at any plate voltage from 600 to 2000 or more, at inputs from 90 watts or less up to 300 watts. Features include remote-tuning VFO, bandpass-coupled multiplier stages, multiband driver tuning, pi-section output, and differential keying for clean break-in operation. Covers all bands from 80 through 10.

THE urge to rebuild and improve the station equipment periodically hits us all. In the author's case, this urge was brought about by the trend in the local amateur radio club, The Order of Boiled Owls, toward the more serious amateur activities, such as Sweepstakes, DX contests, and a generally competitive program. Since the main transmitter at W2QMO was a far cry from what is needed in the way of a transmitter for contests and the like, several requirements for what we thought would make a truly modern rig were written down. It was felt that the new rig should be capable of the following:

1) Respectable power output by today's standards.
2) Full break-in operation.
3) Excellent keying characteristics.
4) Absolute freedom from TVI.
5) Safety from electrical shock in the course of normal operation.
6) Minimum fussing to get from one band to another.
7) Pleasing, commercial appearance.

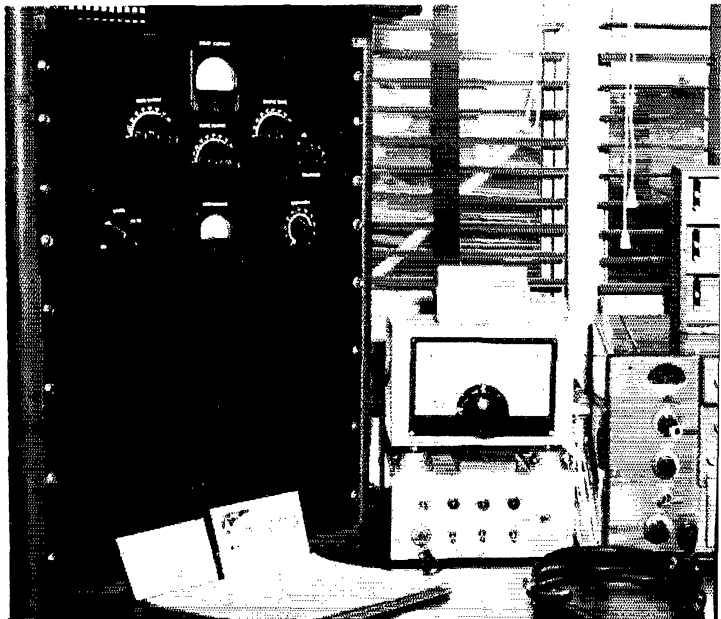
The usual perusal through recent issues of *QST* and other magazines failed to turn up a design that quite fitted the above, but many good features were noted, some of which have been incorporated in the transmitter to be described. The rig shown in the accompanying photographs has been in constant operation for more than a year, with results that have more than justified the time and effort expended in building it.

The Circuit

Fig. 1 shows the schematic circuit, beginning with the familiar Clapp oscillator. The oscillator tuned circuit, padders, and feed-back capacitors are mounted in a separate 5 × 6 × 9-inch aluminum utility box, and connected to the main transmitter chassis by a six-foot length of RG-22/U cable. This arrangement, as introduced and discussed in previous issues of *QST*,[1] has proved to be a sure-fire method of building an oscillator that "sits still" almost from the moment it is turned on. There is nothing more disconcerting than working in a net, or sweating out DX, with a VFO that wanders for a number of hours before settling down. With the VFO tuned circuit apart from the main portion of the transmitter, and kept a reasonable distance from other sources of heat, the oscillator frequency becomes stable very soon after the rig is turned on. As with all oscillators, the quality of the components in the frequency-determining circuits should be the highest possible, and the construction rigid.

* c/o Bell Sound Systems, Columbus, Ohio.

[1] Long, "Cutting Down VFO Drift," *QST*, August, 1952. Mix, "Simple Remote Tuning for the VFO," *QST*, January 1953.



The 4-65A transmitter in a rack cabinet with remote VFO and control unit to the right. Along the bottom of the main panel are the bandswitch, the grid meter and the excitation control. Above are the controls for the multiband tuner, the plate tank capacitor, the rotary inductor, and the output-capacitor switch. The plate milliammeter is at the top.

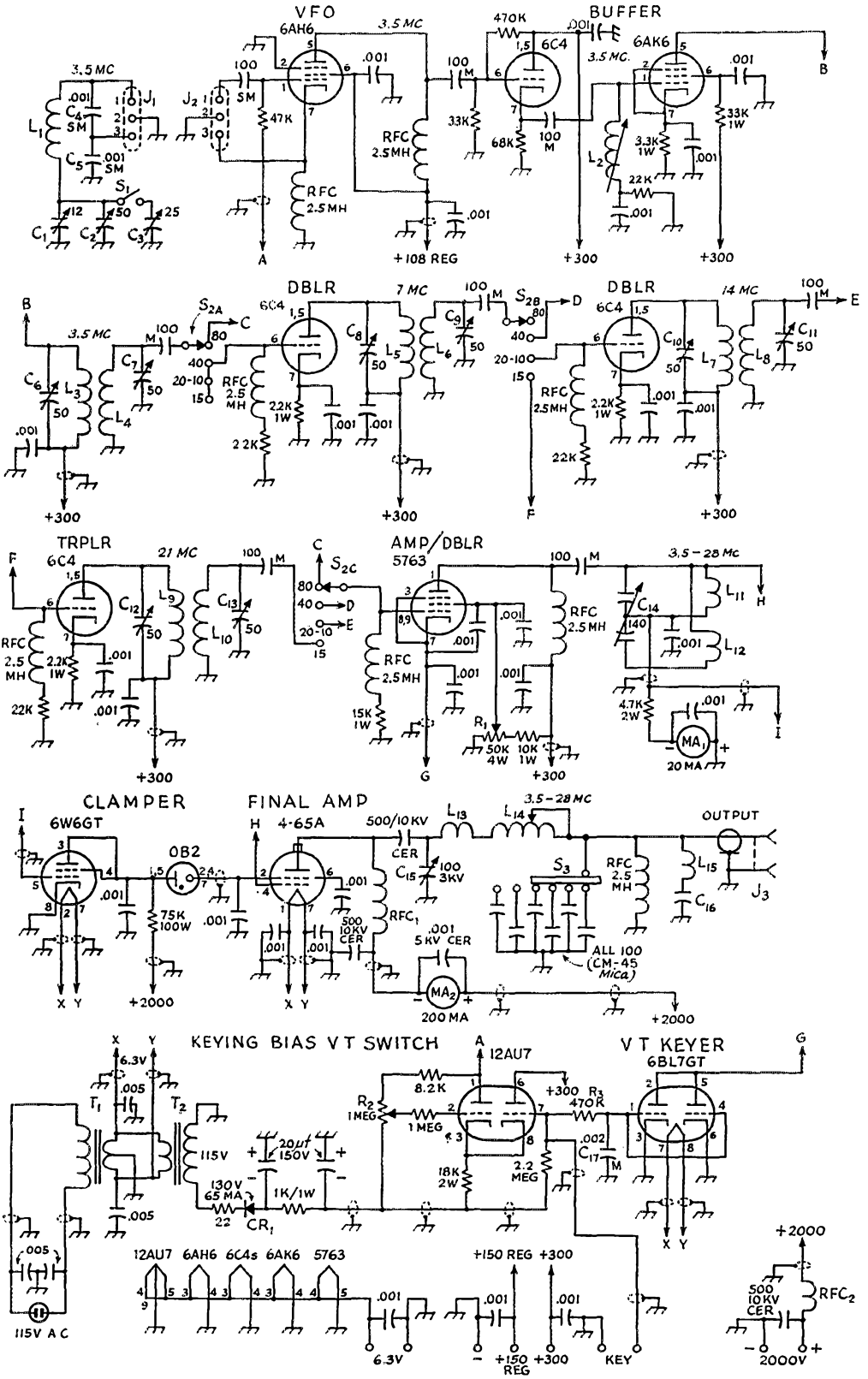

VFO
6AH6
3.5 MC
BUFFER
6AK6
6C4
470K
DBLR
7 MC
14 MC
6C4
TRPLR
6C4
21 MC
AMP/DBLR
5763
3.5-28 Mc
CLAMPER
6W6GT
0B2
FINAL AMP
4-65A
500/10 KV
3.5-28 MC
OUTPUT
KEYING BIAS VT SWITCH
12AU7
VT KEYER
6BL7GT
12AU7 6AH6 6C4s 6AK6 5763
+150 REG +300
+2000
115V A C
6.3V
KEY
+108 REG
+300
+2000V

Fig. 1 — Circuit of the modern medium-power transmitter. All capacitances less than 0.001 μf. are in μμf. All 0.001- and 0.005-μf. capacitors are disk ceramic.
M = Mica SM = Silver mica CER = Ceramic
C_1 — Midget variable.
C_2, C_3, C_6, C_7, C_8, C_9, C_{10}, C_{11}, C_{12}, C_{13} — Air trimmer.
C_{14} — Midget dual variable.
C_{15} — Voltage rating equal to plate voltage for c.w., twice plate voltage for plate modulations (see Footnote 6).
C_{16} — 100-μμf. mica (CM-45).
L_1 — 50 turns No. 14, 2 inches diam., 5 inches long (B & W No. 3907-1 coil stock).
L_2 — 90 turns No. 30 enam., on ½-inch iron-slug form.
L_3–L_{10} — See Table I.
L_{11} — 22 turns No. 18 enam., 1 inch diam., close-wound.
L_{12} — 8 turns No. 18 enam., 1 inch diam., 1 inch long.
L_{13} — 4 turns No. 14, 2 inches diam., 2½ inches long.
L_{14} — Rotary inductor — not less than 20 μh. maximum.
L_{15} — See text.
CR_1 — Selenium rectifier.
J_1, J_2 — Amphenol 83–22R connector.
J_3 — Amphenol 83-1R coax connector.
MA_1 — 2-inch square meter.
MA_2 — 3-inch square meter.
RFC_1 — National R-175A.
RFC_2 — Ohmite Z-50.
S_1 — S.p.s.t. toggle.
S_2 — Ceramic rotary switch: 3 sections, 1 circuit per section, 4 positions. Centralab P-121 index, PIS wafer. (Centralab 2545)
T_1 — 6.3-volt 6-amp. filament transformer.
T_2 — 6.3-volt 1.2-amp. filament transformer.

The oscillator tube, a 6AH6, was chosen after a struggle with the types that are more usually used in this service. One of the requirements for the keying circuit employed is that the oscillator start with as little delay as possible after the key is closed. Since the feed-back to the oscillator is low, due to the high values of C_4 and C_5 and the L/C ratio used, plus the capacitance of the length of RG-22/U, a tube with a high value of transconductance must be used. In the so-called electron-coupled type of circuit, the screen grid is used as the principal anode, instead of the plate, and the transconductance we're talking about is the grid-to-screen transconductance. Although the 6AG7 is the most frequently used oscillator tube these days, it did not perform well in this circuit. The 5763 was also tried but, with either tube, the oscillator did not start quickly enough, and the output signal was chirpy. All other things being equal, the 6AH6 seems to be the best of the bunch for the job, and further work along these lines is contemplated.

The oscillator operates in the 80-meter band, and is switched to either of two ranges by S_1. With S_1 closed, the oscillator tunes from 3.5 to 3.75 Mc. and when S_1 is open, the range is from about 3.75 to 4.0 Mc. This arrangement provides 180 degrees of bandspread on 80-meter c.w., nearly 135 degrees on 40 meters, 90 degrees on 20, and about 75 degrees on the 15-meter band. The 10-meter band is spread over most of the dial and, in the second-range position, the 75-meter 'phone band occupies almost all of the dial. With the 5-to-1 ratio of the National ACN dial, tuning is quite easy.

A 6C4 cathode follower isolates the oscillator from subsequent stages, and its output is more than adequate to drive the 6AK6 80-meter stage. L_2, in the grid circuit of the 6AK6, is tuned to a frequency slightly higher than 4.0 Mc. This adjustment provides fairly constant drive to the 6AK6, since the output from the Clapp oscillator falls off very seriously as the circuit is tuned higher in frequency.

Quick and easy frequency changing in a transmitter dictates the use of fixed-tuned circuits wherever possible. Having to search through piles of charts for the proper multiplier-control settings, and adjusting numerous controls is hardly easy operation. Loaded, broadband inductors eliminate the need for tuning, but result in wide variations in output from the stages using them when the frequency is shifted appreciably. In addition, self-oscillation sometimes occurs in the multiplier stages at some frequency between the center frequencies of two of the coils.

Although not new by any means, the bandpass coupler has been sadly neglected by the amateur fraternity as a means of having one's cake and eating it, too.[2] The bandpass coupler, if properly used, can be made to provide uniform output over an entire amateur band. Because the coupling is inductive, rather than capacitive, and since there are two tuned circuits, rather than one, a measure of protection against transfer of unwanted harmonics is provided. The bandpass couplers are adjusted as described later, and then switched in and out of the circuit, as needed, without further adjustment. As it turns out, the switching scheme of this transmitter is quite a bit more simple than one would expect, since it is accomplished with a 3-pole, 4-position switch.

Except for the bandpass couplers, the multiplier stages are conventional, with cathode bias to limit the plate dissipation of the tubes not in use at any given time. One of the 6C4s is a tripler, to provide output on 15 meters. The other two are doublers.

For the purist, a small ceramic trimmer capacitor could be connected from grid to ground in each of the multiplier stages, since the input capacitance of the 6C4s is somewhat lower than that of the pentode driver, and some change in the coupler secondary tuning occurs when switching from a multiplier grid to the driver grid.

The driver, a 5763, is driven on 80 meters by the 6AK6, and on all other bands by one of the multipliers. The screen voltage to the 5763 is supplied from a potentiometer, R_1, which controls the output of the driver stage, and consequently the drive to the final amplifier. The 5763 is shunt fed in its plate circuit, and its output is capacitively coupled to a multiband tuner[3] in the grid of the final amplifier.

The driver operates straight through on all bands except 10 meters. It is driven by the 20-meter multiplier, and doubles to 10 meters for output in the 10-meter band. Adequate output from the driver is available on all bands to drive the final amplifier to full output.

The pi-section tank circuit is a good choice in

[2] Chambers, "A Two-Control VFO Rig with Bandpass Exciter," *QST*, August, September, 1950.
[3] Chambers, "Single-Ended Multiband Tuners," *QST*, July, 1954.

any transmitter, but where the voltages are high enough to be extremely dangerous, it is literally a lifesaver. No need to put one's hands inside the transmitter during normal operation as with plug-in coils, and the additional harmonic attenuation and operating ease afforded by the pi network makes this type of final-amplifier tank circuit very desirable indeed.

The final amplifier shown in the schematic diagram and photographs is, with the exception of the tube type, almost an exact duplication of one described in an earlier issue of *QST*.[4] It was found unnecessary to neutralize the final in our particular layout, since the amplifier was stable on all bands. Although not shown in the schematic, a parasitic suppressor is used in the plate lead of the 4-65A, to rid the transmitter of the inevitable v.h.f. parasitic.

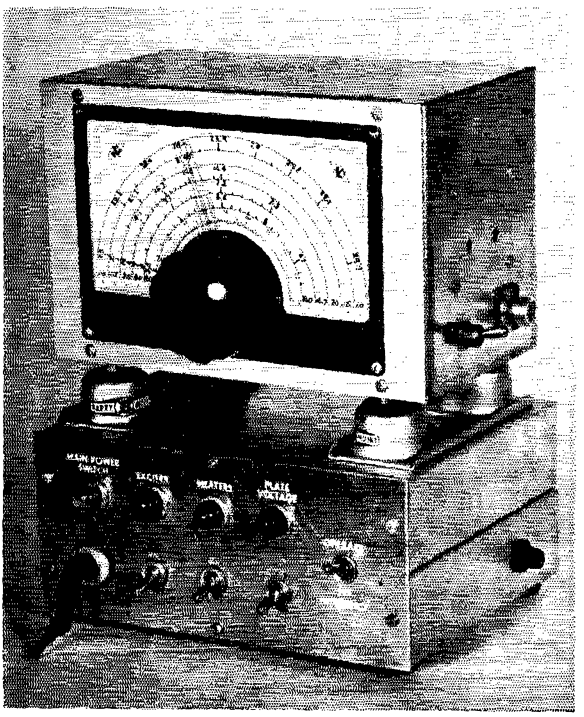
The final-amplifier tube, a 4-65A, was chosen because of its reputation for stability and ruggedness, and its ability to operate efficiently at plate voltages from 600 to 3000 volts. At a plate voltage of 2000 volts, it is possible to load the final to an input of 300 watts.

L_{14} is a rotary inductor whose origin is unknown, but whose inductance turned out to be just what was needed. It is considerably larger, physically, than is necessary in a transmitter of this size, and one of the smaller commercial units could be used instead. L_{13}, an air-wound inductor, constitutes nearly all of the tank inductance when the transmitter operates on 10 meters, and its inclusion shifts the shunt capacitance of the rotary inductor to the output side of the pi network, tending to keep the Q of the tank circuit down at 10 meters. This has been explained in QST.[4] The output capacitors are 100-$\mu\mu$f. Type CM-45 mica units, switched in and out of the circuit by S_3, a progressively-shorting rotary switch. RFC_1 is a National type R-175 choke which has been modified to be effective on all amateur bands from 3.5 to 30 Mc. Since this transmitter was built, the National Company has announced a new shunt-feed r.f. choke, the R-175A, that is free from "holes," and is usable in this type of rig without modification.

As one of the preventives against TVI, a series-resonant circuit, consisting of a 100-$\mu\mu$f. mica capacitor, C_{16}, and a few turns of wire, L_{15}, is connected across the output of the transmitter, at the output connector. This series-tuned circuit is adjusted to resonate at the frequency of the television channel most likely to be interfered with in a given locality, and is effectively a short circuit across the transmitter output at this frequency. Thus, any harmonics generated within the transmitter at, for example, 56 Mc., are prevented from reaching the antenna.

Screen voltage to the final amplifier tube is supplied through a dropping resistor, and the tube is protected in the usual manner with a 6W6GT clamp tube. Two clamp tubes in parallel would afford better protection, in the event of failure of one of them. The 0B2 voltage-regulator tube is connected in series with the screen lead of the 4-65A to reduce the input to minimum under key-up conditions. The 0B2 can be seen mounted on a bracket under the chassis. (It was an afterthought.)

[4] Grammer, "Pi-Network Tank Circuits for High Power," *QST*, October, 1952.



The VFO remote tuning unit and control box. The tuning unit is enclosed in a 5 × 6 × 9-inch aluminum box mounted on shock absorbers. The control-unit enclosure is made up of two 7 × 9 × 2-inch aluminum chassis, bottom to bottom. The range-control switch and remote cable connector are mounted on one end of the tuning unit. A fuse holder projects from the end of the control unit.

Keying

As shown in the schematic, the transmitter is equipped with a built-in differential keyer. For those who are not familiar with differential keying, it may seem to be excess baggage. This is not at all the case. Much of the break-in operation on the air today is accomplished by keying the

oscillator. Fortunately, the Clapp oscillator, which is now almost universally in use, keys better than its forerunners, but there aren't many keyed oscillators that can be boasted about when compared to a keyed amplifier. For the ham who takes pride in his signal, oscillator keying of any kind is pretty much out of the question. Of course, break-in operation can be had by using a well-shielded oscillator, left running while keying a later stage, or by using some form of heterodyne exciter. These two schemes are certainly workable, but present problems that are not easily overcome by the average ham. Many of the differential keying arrangements require high-voltage bias supplies and high-priced relays. Some time ago, an article, in *QST*,[5] described a keyer circuit that needs only 75 volts of negative bias, and no relays. It is this keyer that is incorporated into the rig being described. The extra components involved are few and inexpensive, and good amplifier keying can be had, with all the conveniences of the keyed oscillator.

The keyer circuit consists of a twin-triode oscillator-switching tube, and another twin triode in a standard vacuum-tube keyer circuit. With the key up, the 6BL7GT is cut off, and the current through the right-hand section of the 12AU7 is limited to a low value by the cathode resistor. R_2 is adjusted to provide a sufficiently negative potential at the plate of the left half of the 12AU7 to cut the oscillator off. When the key is closed, the grid of the right half of the 12AU7 is grounded immediately, the cathodes assume a low positive voltage, the grid of the left triode becomes negative, and the plate of the left half assumes ground potential. Thus, in a very short period of time, the oscillator is turned on. The resultant click generated by the oscillator coming on quickly is not heard in the output because the charge accumulated in C_{17} must leak off to ground through R_3 before the 6BL7GT conducts. By the time the 6BL7GT is conducting, and the signal is on the air, the click generated by the oscillator is over with.

When the key is released, the grids of the 6BLG7T and the right half of the 12AU7 will start falling to the bias-supply voltage. The 6BL7GT will cut off first, and some time later the voltage across the key will get to a sufficiently negative value for the left half of the 12AU7 to conduct, cutting the oscillator off. The oscillator, therefore, has been turned on before the amplifier (in this case, the driver) is keyed, and is turned off after the amplifier has stopped delivering power.

The keyer bias-supply transformer, T_2, is simply a low-current filament transformer, connected backwards, with its 6.3-volt winding excited from T_1, and its primary delivering 115 volts to a selenium rectifier, CR_1, and a conventional resistance-capacitance filter.

Metering is necessary only in the final-amplifier grid and plate circuits, since all other stages are fixed tuned. Two meters are employed — a 2-inch unit, MA_1, mounted under the chassis to measure grid current, and a 3-inch meter, MA_2, on the panel, reading plate current.

Connections to the transmitter are made via a barrier strip mounted on the rear skirt of the chassis, and a Millen safety terminal for the high voltage.

Construction

The r.f. section of the transmitter, with the exception of the oscillator tuned circuit, is built on a standard 13 × 17 × 3-inch aluminum chassis, with a 10½ × 19-inch rack panel. All

[5] Puckett, "De Luxe Keying without Relays," *QST*, September, 1953.

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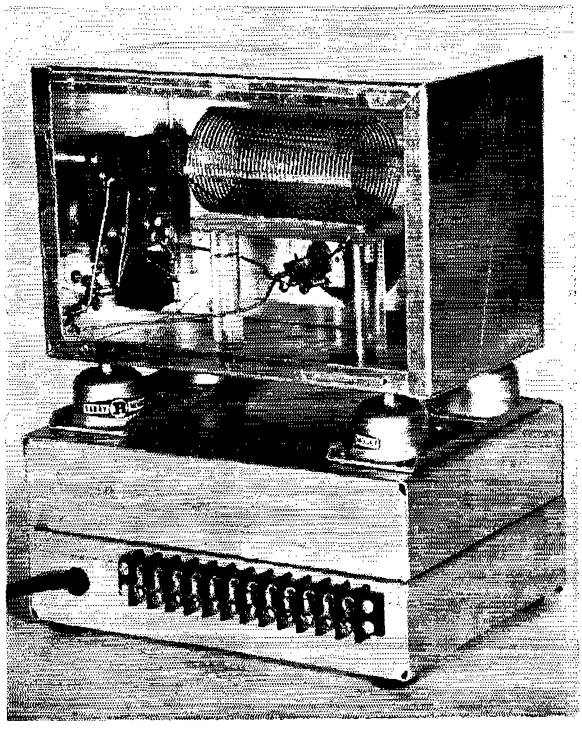


Rear view of the tuning unit showing the mounting of the inductor on polystyrene sheet and rods and the arrangement of other components. Ceramic trimmers, mounted on the insulating panel at the left, were later replaced with air trimmers (C_2 and C_3).

♦

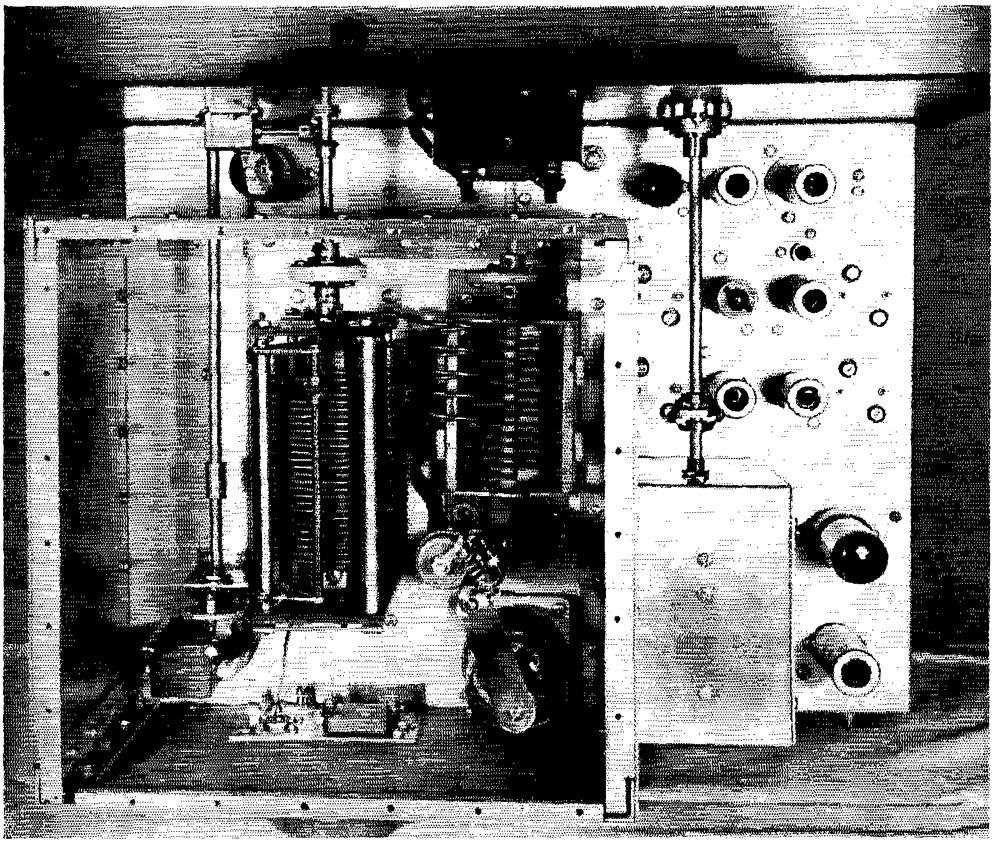
of the mechanical work was done at home, in the shack, using the common hand tools that most hams possess, and a couple of chassis punches. Most of the details are readily apparent from the photographs, and the layout is quite straightforward and conventional. About one-third of the main chassis is taken up by the exciter chassis. The remainder is enclosed in a "doghouse" constructed of aluminum sheet and angle, and fastened together with machine screws. The enclosure is approximately 10 by 10 by 7 inches.

The top-view photograph shows most of the chassis layout, with the 6AH6 oscillator tube located in the top right-hand corner and the cathode follower next to it at the left. Immediately to the left of the cathode follower is the 12AU7 keyer tube. Directly below the 6AH6 is the 6AK6 80-meter stage and, to its left, the 40-meter doubler. The 15-meter tripler is located behind the 40-meter stage, and the 20-meter doubler to its right. Arranged to the right and left of the associated tubes, the adjusting screws for the bandpass couplers can be seen.

The multiband tuner used in the grid circuit of the final amplifier is housed in a 3 × 4 × 5-inch aluminum utility box, bolted to the side of the final-amplifier enclosure. The dial drive to this unit is equipped with a 5-to-1 reduction mechanism for easier tuning. (A National AN or AVD driver may be used here.) To the right of the multiband-tuner box, the 5763 driver tube is mounted, with the 6BL7GT keyer tube directly above it.

The final-amplifier components are mounted inside the enclosure, and arranged for short leads and panel symmetry. The socket for the 4-65A is mounted above the chassis on short spacers, with holes for air circulation below it. By-pass capacitors for the screen and heater of the final tube are grounded directly below the respective socket terminals, with suitable ground lugs fastened to the chassis. A shielded lead from the multiband tuner to the grid terminal of the 4-65A socket is run through the bottom of the utility box and the chassis and up through a hole in the chassis directly below the tube socket.

Top view of W2QMO's transmitter. At the right, from left to right, progressing toward the bottom are the 12AU7, the 6C4 cathode follower and the 6AH6, the 40-meter 6C4 and the 80-meter 6AK6, the 15- and 20/10-meter 6C4s, the 6BL7GT, and the 5763. The 6W6GT clamper tube is at the upper left. The multiband tuner for the 5763 is enclosed in the box fastened against the final-amplifier enclosure. The tank capacitor is placed so that its shaft is central on the panel, and the rotary inductor is located so that its control and the control for the multiband tuner are symmetrical in respect to the tank-capacitor control. The turns counter for the rotary inductor is geared to the coil drive shaft. S_3 and the mica output capacitors are off the left rear corner of the inductor. The v.h.f. series-resonated circuit is mounted against the rear wall, adjacent to the output connect. A copper strap connects the top of *RFC*$_3$ to the plate cap of the tube.

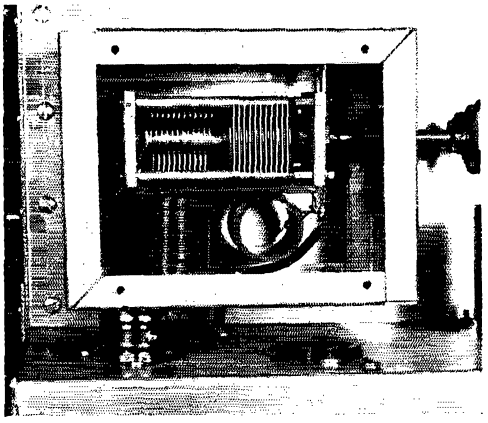


The 6W6GT clamp tube is mounted in front of the final-amplifier enclosure toward the right side of the chassis. Above the clamp tube, the Veeder Root counter can be seen. This was included to provide accurate resetting of the variable inductor. The counter is gear-driven from the rotary-induction shaft.

The bottom-view photograph shows the component layout, terminal strip and connectors. Since the photographs were made, a fan has been mounted below the final-amplifier tube socket, to aid in cooling.

Building the Bandpass Couplers

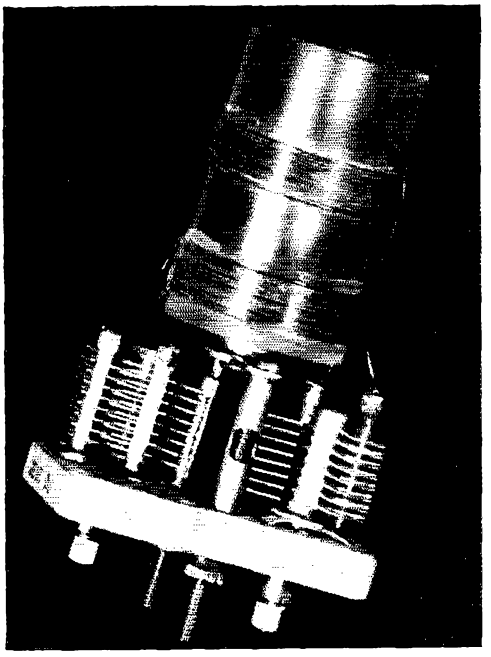
The bandpass couplers started life as i.f. transformers. The original windings, forms, and cans were removed and discarded, and polystyrene coil forms, 1 inch in diameter and 1½ inches long, were drilled through their bottoms to be mounted on the studs that project from between the air-padding capacitors. The primary windings of the 80- and 40-meter coils are wound at the bottom ends of the forms and cemented in place with coil



The multiband tuner used between the driver and final amplifier is housed in a 3 × 4 × 5-inch box fastened to the side wall of the amplifier enclosure. The 5763 and 6BL7 have been removed in this view.

dope. After the dope has dried, the rest of the coil form is sprinkled with talcum powder, and a layer of cellophane tape is wound around it, with the adhesive side out. On the sticky side, the secondary turns are wound firmly, but not so tightly that the winding can not be slid along the form for adjustment. The ends of the secondary windings are held in place with coil dope, applied carefully so that the whole thing doesn't become cemented to the form so that the secondary cannot be moved. The ends of the windings are now soldered to the capacitors, and the 80- and 40-meter couplers are complete.

The 20- and 15-meter couplers are made from Barker & Williamson Miniductors, lengths of which are slid inside the polystyrene coil forms. The forms are first slit with a fine saw to permit the ends of the windings to come out radially. The primary windings are inserted in the poly forms first, and the secondaries are slid in and out as needed for adjustment.



This photograph shows the method of assembling the bandpass couplers as described in the text.

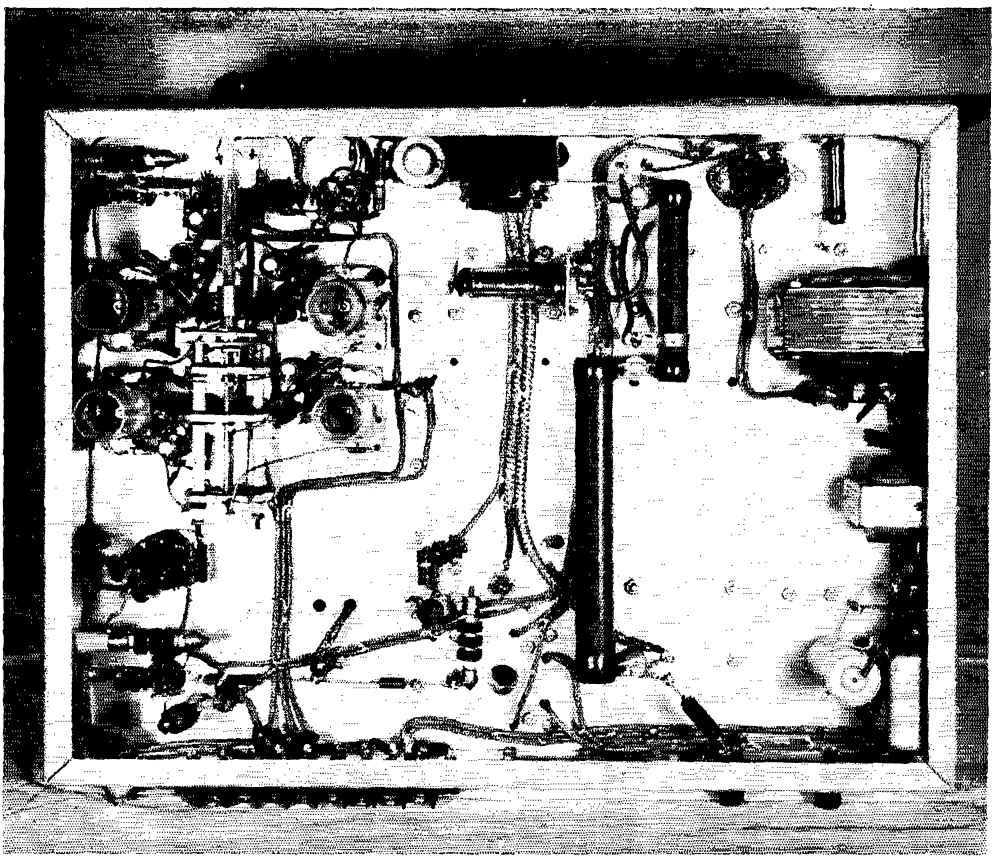
Power Requirements

Power supplies for the author's transmitter were built on a single 13 × 17 × 3-inch steel chassis. Although the 4-65A will operate satisfactorily at plate potentials from 600 to 3000 volts, at least 2000 volts is necessary for an input of 300 watts. T_1 supplies the final-amplifier, clamp-tube, the 6BL7 keyer-tube heaters, and T_2, the keyer bias transformer. The balance of the heaters are supplied from a replacement-type power transformer, rated at 750 volts, center-tapped, and 6.3 volts at 3.5 amperes.

It will be noticed that no power switches appear on the transmitter proper. All switching is done at a central control panel, located beneath the VFO tuning unit. As the schematic of Fig. 2 shows, 115 volts a.c. is brought into an automobile ignition switch, S_1, which allows the entire station to be shut off with a key. Since the key is carried in the author's pocket, there is little likelihood that the junior ops will get their little fingers across the high voltage. The switching is arranged so that it is necessary for the exciter, final heaters and high-

TABLE I
Bandpass Coupler Data

Coil	*Band*	*Turns*	*Wire*	*Spacing*	*B & W No.*
L^3	80	44	30 enam.	¼"	
L^4	80	37	30 enam.		
L^5	40	21	30 enam.	7/16"	
L^6	40	16	26 enam.		
L^7	20	15	24 tinned	9/16"	3012
L^8	20	10	24 tinned		3012
L^{14}	15	9	24 tinned	½"	3012
L^{15}	15	6	24 tinned		3012



Bottom view of the main chassis showing the grouping of the bandpass couplers around the bandswitch in the upper left-hand corner. R_2, the bias-adjusting potentiometer for the v.t. switch circuit, is to the left of the grid-current milliammeter, top center. The 0B2 in the 4-65A screen circuit is mounted on a bracket below the meter. Filament and bias transformers are to the right. All power wiring is done with shielded wire.

voltage-rectifier heaters to be turned on before the power can be applied to the plate transformer.

The switch, S_5, a d.p.d.t. toggle, is the usual spotting switch, which grounds the key lead and opens the primary circuit of the plate transformer.

The power-control panel is made from two $7 \times 9 \times 2$-inch aluminum chassis, bolted together with their bottoms facing, with most of the front skirts cut away to receive an aluminum panel. The VFO tuned-circuit box is mounted on this with shock mounts.

Tuning Up

After all wiring is checked, the oscillator tube and cathode follower are plugged into their sockets, and the exciter power turned on. If all is well, the signal will be heard in a receiver, in the vicinity of the 80-meter band. Next, S_1 is opened, C_1 set at minimum capacitance, and C_2 adjusted until the signal is heard slightly above 4 Mc. When C_1 is set at maximum capacitance, the signal should be found in the vicinity of 3.75 Mc. S_1 should now be closed, and C_3 adjusted until the signal is heard at slightly below 3.5 Mc. Some slight pruning of the tuned circuits may be necessary, but it should be possible to get the oscillator to operate from below 3.5 Mc. to over 4.0 Mc., with a slight overlap around 3.75 Mc.

Now the bandpass couplers can be tuned, and this takes a lot more time to tell about than it does to accomplish. Set the bandswitch in the 80-meter position, the excitation control at zero, and plug in the rest of the tubes in the exciter section. Temporarily ground the cathode of the 5763, and connect a high-resistance voltmeter across the 5763 grid-leak resistor. All bandpass-coupler secondary windings should be pulled as far away from the primaries as possible. The VFO is now set at 3.75 Mc., and C_6 and C_7 tuned for maximum indication on the voltmeter. The secondary winding, L_4, should now be moved toward L_3, until the spacing is that given in the coil table. This spacing should be set very carefully in all cases, since a small deviation will result in a change in the bandpass characteristic. It is also to be noted that the coupler tuning capacitors are to be adjusted only when the windings are at the maximum spacing.

Next, move the high-resistance voltmeter to read the drop across the 6AK6 grid-leak resistor and set the VFO frequency at 4 Mc. Now adjust

L_2 for maximum grid voltage, and swing the VFO through its entire range. If the grid voltage increases when the frequency is lowered, decrease the inductance of L_2. Correct adjustment of L_2 will result in nearly constant drive to the 6AK6 throughout the entire VFO range.

The rest of the bandpass couplers can now be adjusted, following the procedure described above for the 3.5-Mc. coupler, and with the voltmeter once again reading driver grid voltage. The 40-meter coupler should be adjusted with the VFO set at 3.6 Mc., the 20-meter coupler should be adjusted at 3.6 Mc., and the 15-meter coupler at 3.55 Mc. It should now be possible to tune through any of the bands with less than ten per cent variation in drive to the 5763.

The multiband tuner can now be checked, with the 4-65A in its socket, and heater voltage applied. It is suggested that a grid-dipper be used to ascertain that the grid circuit is tuning to the proper frequency and not to a harmonic. Grid tuning-dial settings should be logged for future reference, and note taken if two bands resonate at the same dial setting. If, for example, the 80- and 20-meter resonance points occur at or near the same dial setting, pruning of one of the coils will be necessary.

Adjustment of the keyer can now be made after removing the ground from the 5763 cathode. R_2 is advanced toward its positive end (ground) until the voltage at Pin 1 of the 12AU7 is −15 volts. The keying characteristic can be adjusted to individual taste later by adjusting the value of C_{17}.

Pi-Tank Adjustment

The final amplifier is best tested at reduced plate voltage. Either a 50-ohm dummy load or an antenna known to present a resistive load of 50 ohms should be used for initial tune-up. Adjustment of the excitation control, R_1, will provide the correct grid current of 15 ma. to the final. With the bandswitch set in its 80-meter position, and the grid tank resonated, the plate tank capacitor, C_{15}, should be set at about 90 per cent of its maximum value, and the rotary inductor set at near-maximum inductance. A grid-dipper could be used here to establish a near-resonance point. The plate voltage should be applied, and C_{15} quickly tuned for a plate-current dip. If an appreciable change in capacitance is necessary to establish resonance, a new setting of the variable inductor should be tried, until the plate circuit resonates at 3.5 Mc. with almost all of the capacitance of C_{15} in the circuit. Full plate voltage can now be applied, and loading adjusted for a plate current of 150 ma. Now is a good time to check the 4-65A screen voltage, which should be 250 volts.

Adjusting the final amplifier on the other bands is carried on in much the same manner, setting the final tank capacitor to approximately the correct value (see Table II), adjusting the rotary inductor for resonance with a grid dipper, and finally resonating the circuit with power on. All settings should be logged for future reference.

It must be borne in mind that the values of inductance and capacitance given in the tune-up

(Continued on page 120)

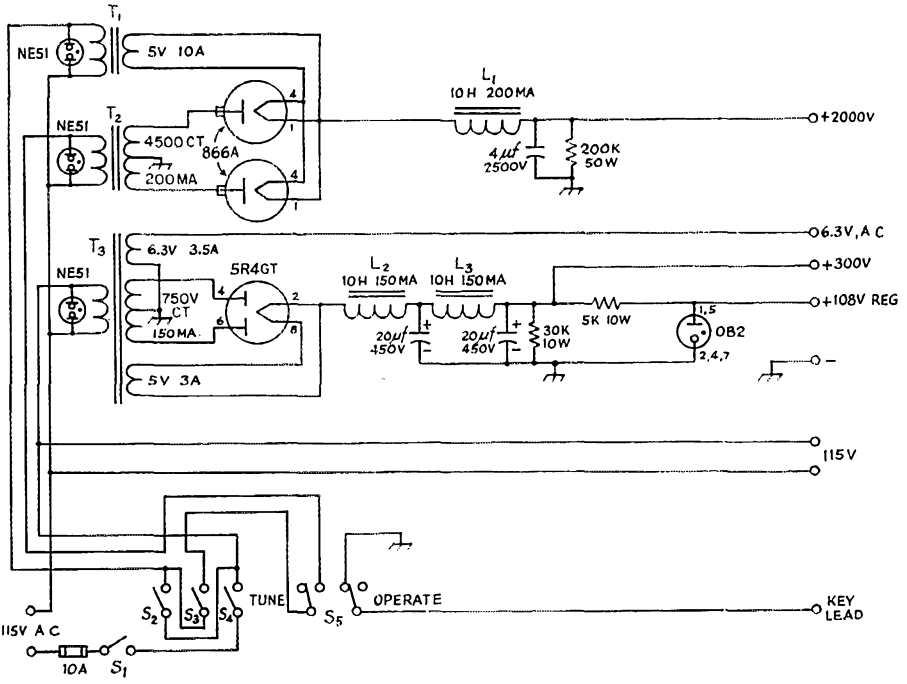


Fig. 2 — Power-supply circuit for the 4-65A transmitter. S_1 is an automobile ignition switch, controlling all primary power. S_4 turns on line voltage to the transmitter filament transformers and also turns on the low-voltage supply. S_2 turns on the 866 rectifier filaments, and S_3 controls the high-voltage transformer.

The "Extended Lazy H" Antenna

BY WALTER E. SALMON,* VK2SA

ROTARY BEAMS were unknown in the early days of amateur radio, and most hams contented themselves with horizontal or vertical wires from which, after much patient work, they obtained varying degrees of effectiveness. With the development of the Yagi antenna the 2-, 3- and 4-element rotary beam became commonplace, and it would appear that the trend in this direction is increasing, particularly with amateurs residing in thickly-populated areas where land space is limited. No comment will be included about V beams and rhombics, since this article is written for the amateur who, although he is interested in operating on several bands, is not prepared to erect a costly mast structure to support several beams and also does not have the relatively-unlimited space necessary for the usual "dream" antenna farm.

The antenna to be described is completely original and to the writer's knowledge has not been described in any local or overseas journal. We have "ZL Specials" and "G8PO antennas" and, for want of a name, this antenna might be called the "extended lazy H." Several years ago a conventional lazy H antenna was cut for 14 Mc. and installed at VK2SA. This aerial consisted of two horizontal collinear elements stacked and separated a half wavelength. The top of the array was supported by two 41-foot masts, thus leaving the bottom section only 9 feet above the ground. The effective height of this type of antenna is measured from the halfway point between top and bottom elements and thus, in this case, the effective height was about 25 feet. The observed effectiveness was only about equal to a full-wave Zepp 41 feet high.

Attention was then directed to the possibilities of the "extended double Zepp" described in *QST* for June, 1938. The height of one mast was increased to 45 feet, to compensate for ground slope, and the antenna was cut for 14 Mc. and erected for NE-SW directivity. Improved effectiveness by comparison with the full-wave antenna was apparent on 14-Mc. W contacts. In addition, some excellent 'phone contacts were made on 7 Mc. with W stations. Results on 21 Mc. indicated a number of major lobes that gave good DX contacts. From the results it would appear that this type of antenna possesses the desirable feature of good effectiveness on several amateur bands. The gain of the extended double Zepp is given in most textbooks as 3 db.

The theoretical gain of the conventional lazy H antenna is given as close to 6 db., but it was considered attainable only if it could be supported about 70 feet in the air, so that the bottom elements were at least a half wavelength above ground. This was impossible with the existing masts. Consideration was then given to the possibility of adding two additional extended half-wave lower elements to the extended double Zepp. The additional elements were connected

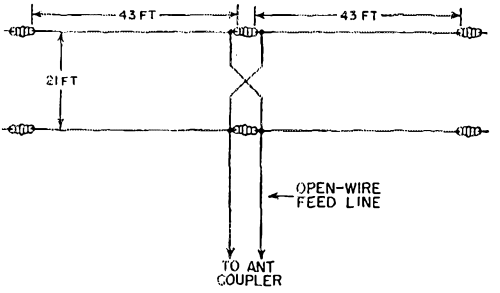


Fig. 1 — Dimensions of the "VK Special" 7-, 14- and 21-Mc. beam antenna of VK2SA. Whether the antenna coupler will be series- or parallel-tuned will depend upon the length of the feed line and the band in use. At VK2SA the upper wire is 40 feet above the ground.

21 feet down on the feed line,[1] as shown in Fig. 1, and the feed line was transposed to give the proper phasing.

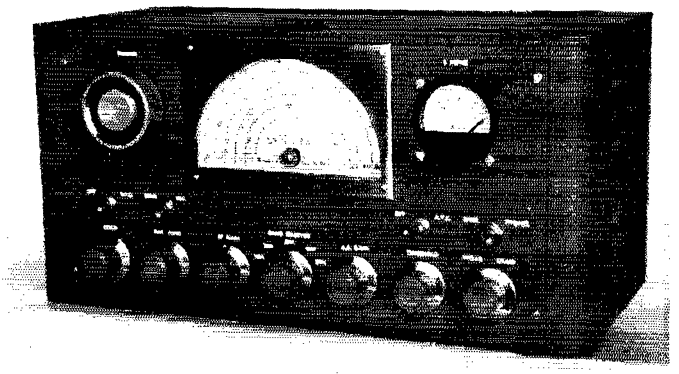
Results with the modified antenna were very gratifying, as was the ability to operate readily on three bands with the one antenna system. Although the directional characteristics on 21 Mc. are not yet known completely, the signal reports indicate the presence of major lobes giving good general coverage. On 7, 14 and 21 Mc. an antenna tuner is used, and an open-wire line with 4-inch spacing is used between tuner and antenna.

On 14 Mc. the antenna has outperformed all previous wire antennas tried out for W contacts on both long and short paths. The lower two elements were added to the extended double Zepp on December 19, 1954, and numerous W 'phone contacts have been made since that date. The majority of the signal reports are S8 and S9, and nothing below S6 from East Africa. The power input to the transmitter is 75 watts.

An analysis of all signal reports indicates equal if not better performance compared with rotary beams, and it would appear that the gain exceeds 6 db. Comparison reports have also been made by the simple expedient of removing the two lower elements — the antenna then becomes an extended double Zepp — and the signal was reported to drop 2 and sometimes 3 S points.

* 106 Flora St., Kirrawee, Sydney, N.S.W., Australia.

[1] The point 21 feet down the feed line is a voltage loop, and one would normally connect half-wavelength elements at this point for in-phase drive of all elements. The modification by VK2SA is not the simplest array to analyze, but in view of his excellent results it is thought to be of considerable interest. —ED.



This clean-looking homemade receiver includes such features as double conversion, bandswitching, and two choices of selectivity. The tuning knob is at the upper left — the bottom controls, *left to right*, are pitch, antenna tune, r.f. gain, band selector, a.f. gain, noise limiter threshold, and selectivity. The toggle switches, *l. to r.*, are b.f.o., send-receive, a.v.c. and speaker-'phones.

A De Luxe Amateur-Band Receiver

Double Conversion and Mechanical Filters

BY R. C. DENNISON,* W2HBE

• Here is a home-built receiver with most of the desirable features of a factory-built job and several of its own that can't be found in the manufactured products. If you have ever had the itch to put together your own receiver and experience the pleasure and pride that go with it, don't pass up this article.

THE PRINCIPAL FEATURES of this receiver are double conversion to eliminate r.f. images, switchable mechanical filters for choice of 'phone or c.w. reception with extreme skirt selectivity, and bandswitching to eliminate the nuisance of plug-in coils. It is strictly a ham-band receiver covering the amateur bands 80 through 10 meters.

A large illuminated dial, centered on the panel for best appearance, provides direct reading for each band. The tuning drive system is an economical string-and-drum arrangement affording smooth operation. A flywheel on the knob shaft permits rapid excursions up and down the band. Further alleviation of tuning fatigue is secured by means of a large tuning knob; its size nearly equals that of the S-meter and thus helps to balance the panel layout.

Other features include delayed a.v.c., a series-valve noise limiter with threshold control, speaker-'phones switch, an antenna trimmer, and a send-receive switch that disables the r.f. stage.

The Front End

As shown in Fig. 1, the r.f. stage uses a 6CB6 with both the grid and plate circuits tuned. Reduced a.v.c. voltage is applied to this stage to prevent cross-modulation which might otherwise occur on strong signals with the sharp-cut-off 6CB6 tube.[1] The cathode of the 6CB6 is not connected to the manual r.f. (i.f.) gain control, and thus the r.f. stage runs wide open when the a.v.c. is off. This results in maximum signal-to-noise ratio when hunting for weak DX signals. On the 80-meter band, the gain is held to a manageable level by increasing the cathode bias resistance.

The send-receive switch, S_2, is in the cathode of the r.f. stage. This allows using the receiver to monitor the transmitter. The second section of S_2 is connected to the auxiliary socket and may be used to turn on the transmitter simultaneously with the reduction in receiver gain.

The mixer stage and the h.f. oscillator are conventional and require little comment. Automatic volume control is not applied to the mixer as it might "pull" the oscillator. The familiar Hartley oscillator circuit is used because it simplifies the coil design and adjustment problems. Plate voltage on the oscillator is low and regulated to secure best stability and freedom from drift. The oscillator fixed capacitors are silver micas and the trimmer capacitors are NPO ceramics. The "zero-set," C_1, is mounted next to the oscillator tube.

The tuning capacitor is a small three-gang affair designed for application in f.m. receivers. Its compact size and wide plate spacing adapt it well to this job. The particular capacitor used has contoured plates which spread out the high ends of the bands. This is advantageous in tuning s.s.b. on 75. Tuning capacitors with semicircular plates are available in the event that a more nearly linear dial calibration is desired. One rotor plate was removed from each section of the

* 82 Virginia Ave., Westmont, N. J.

[1] Pappenfus, "A Discussion of Receiver Performance," *QST*, January, 1955, p. 24.

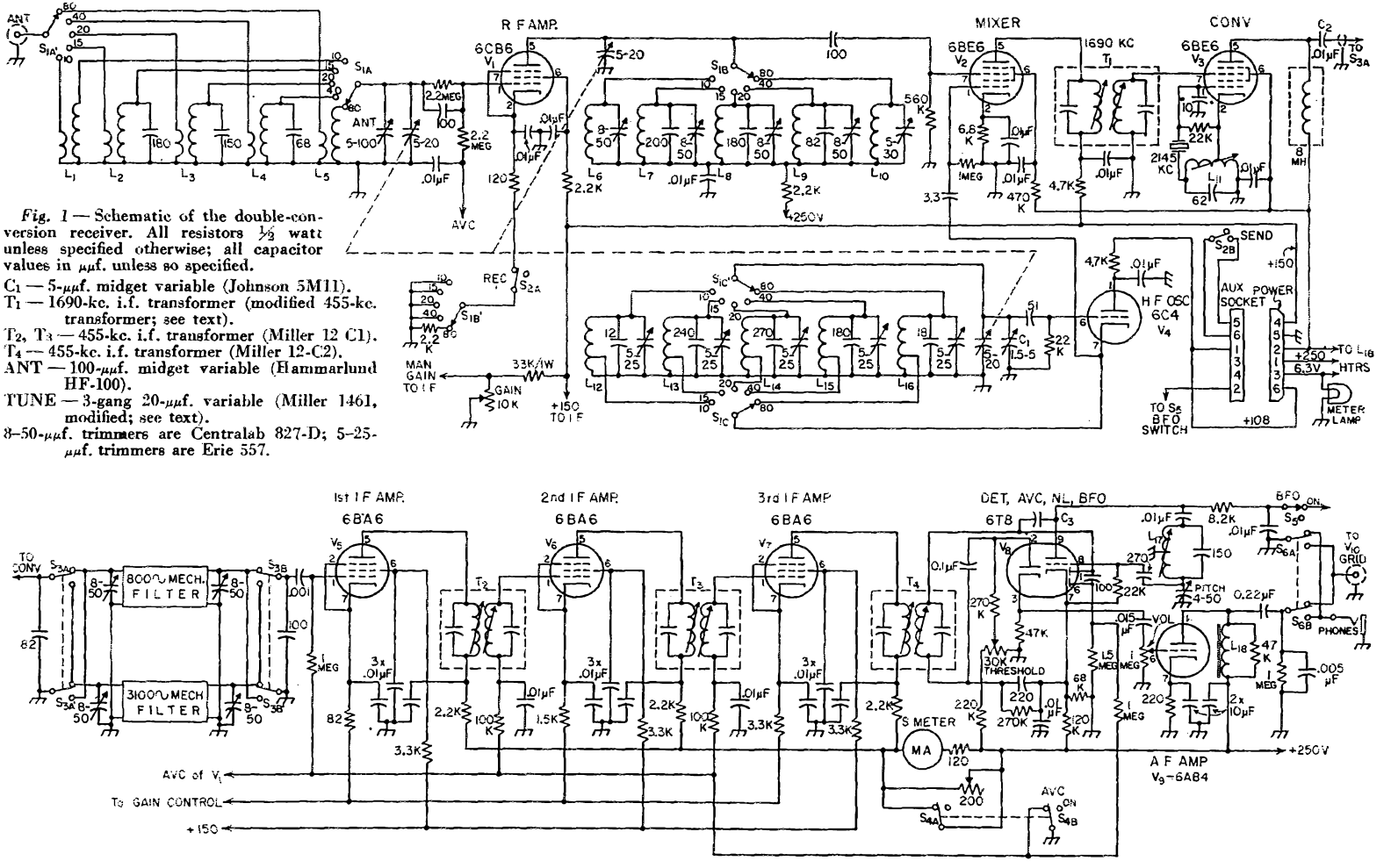


Fig. 1 — Schematic of the double-conversion receiver. All resistors ½ watt unless specified otherwise; all capacitor values in μμf. unless so specified.

C_1 — 5-μμf. midget variable (Johnson 5M11).
T_1 — 1690-kc. i.f. transformer (modified 455-kc. transformer; see text).
T_2, T_3 — 455-kc. i.f. transformer (Miller 12 C1).
T_4 — 455-kc. i.f. transformer (Miller 12-C2).
ANT — 100-μμf. midget variable (Hammarlund HF-100).
TUNE — 3-gang 20-μμf. variable (Miller 1461, modified; see text).
8–50-μμf. trimmers are Centralab 827-D; 5–25-μμf. trimmers are Erie 557.

capacitor to obtain the required capacitance range.

The I.F. Section

In a double-conversion receiver, it is necessary to choose the intermediate frequencies carefully in order to minimize spurious responses. Of especial importance is the converter oscillator frequency, harmonics of which must not fall in any of the ham bands. The converter oscillator frequency chosen for this receiver is 2145 kc. and is crystal-controlled in the interest of best stability. The tenth harmonic (21,450 kc.) marks the upper edge of the 15-meter band and serves as a check on the receiver calibration. The only spurious response occurring inside a ham band is the image of the fifteenth harmonic which comes in at 28,795 kc. The thirteenth harmonic (27,885 kc.) shows up between the 11- and 10-meter bands. To avoid confusion and to facilitate rapid calibration checking, these spurious responses are marked on the dial with red ink.

The i.f. transformers are the new miniature type, chosen for their small size. Selectivity is not needed; in fact, the response should be broad enough to allow the mechanical filters solely to determine the selectivity of the receiver. Selectivity curves show that this was achieved without requiring damping resistors across the transformers. The 1690-kc. i.f. transformer was made by removing turns from a 455-kc. unit. No change in coil spacing was necessary to maintain critical coupling.

The converter oscillator coil, L_{11}, consists of 66 turns of No. 38 s.s.e. wire tapped at 22 turns. This coil is a single-pi universal winding 1/16 inch thick with three crosses per turn. It is wound on

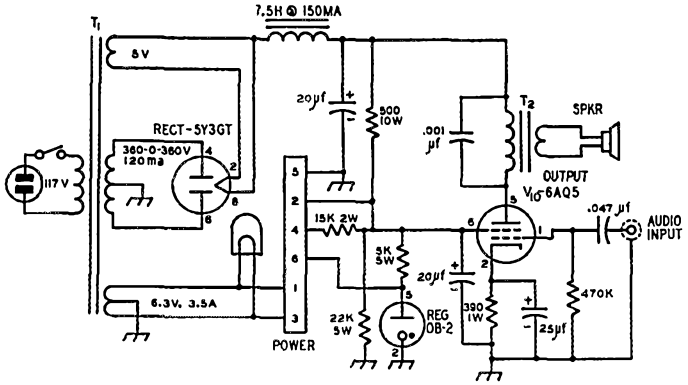


Fig. 2 — Schematic of the output amplifier and power supply.
T_1 — Stancor PM8410 or equivalent.
T_2 — Output transformer; 5000 ohms to voice coil.
Power socket is Cinch-Jones S-306-AB.

1/4-inch fiber tubing, slug-tuned, and mounted in a 7/8-inch diameter aluminum shield. Inductance can be varied over the range from 74 to 96 μh.

Best results with the new low insertion loss (10 db.) mechanical filters requires using shunt feed to keep d.c. out of the windings. A 1600-volt high-voltage coupling capacitor, C_2, was used because failure at this point might burn up $70 worth of filters. An alternative solution would be to connect a 15,000-ohm resistor in series with the 8-mh. r.f. choke to limit the short-circuit current to a safe value.

Three stages of i.f. amplification provide more than enough gain to overcome the insertion loss of the filter and to drive the a.v.c. rectifier at an effective level.

The S-meter is a surplus 5-ma. tuning meter with a reverse-set pointer. The pilot lamp in these meters is a 3-volt bulb so it is connected across only half of the filament transformer. The plate current of all three i.f. stages passes through the S-meter. Relatively large cathode degeneration in the last two stages helps to linearize the S-meter scale.

The A.V.C. and Audio System

The 6T8 tube, V_8, is assigned a multiplicity of duties and handles them well. It provides a diode detector, a diode for the delayed a.v.c. system, a third diode with separate cathode for the series-valve noise limiter and, finally, the triode for the beat oscillator.

Coil data for the b.f.o. inductor, L_{17}, are similar to those given previously for the conversion oscillator except that the winding consists of 240 turns tapped at 80. The inductance is adjustable from 600 to 850 μh.

Coupling between the b.f.o. and the detector is obtained through C_3 by soldering a wire from Pin 9 of the tube socket to the central shield terminal of the socket. The capacitance between the latter and Pin 1 provides the required injection. The d.c. plate lead from the b.f.o. is brought out to the auxiliary socket so that the b.f.o. can be turned off by means of a switch located on the VFO. This is a convenience when "zeroing" the VFO on a signal. If this feature isn't used, a jumper will be required between Pins 1 and 2 on the auxiliary socket.

The audio amplifier is a 6AB4. The speaker-'phones switch, S_6, connects the output either to the 'phone jack or to an RCA phono-type jack. Output from this jack is led through shielded wire to the 6AQ5 power amplifier located on the power-supply chassis.

Chassis Layout

The receiver housing is a standard 8 × 16 × 8-inch metal cabinet having a blue-gray wrinkle finish. The 7 × 13 × 3-inch cadmium-plated steel chassis is held to the panel by the bushings

of the controls and switches. It was necessary to raise the bottom of the chassis ½ inch above the bottom of the panel to clear the lower front lip of the cabinet. Two legs made of ¼-inch-square aluminum rod were attached to the back of the chassis to support it. The central 6¼ inches of the upper lip of the cabinet was filed away ¼ inch to clear the rear of the dial assembly.

The central portion of the chassis is reserved for the bandswitching r.f. section. All of the remaining circuits are strung out around the sides and back of the chassis. The mechanical filters are arranged near the front right side to simplify the switching problem. Each filter plugs into two Millen type 33302 crystal sockets and one 'phone tip jack (see photo of rear side). An aluminum shield measuring 2⅛ by 2⅞ inches with ¼-inch lips on all four sides is placed under the chassis midway between the filter input and output sockets. This shield fits snugly against the chassis and its right apron and carries the rear section of the selectivity switch. The front section and the indexing detent are mounted on the front chassis apron. These sections are coupled by a fiber shaft to minimize coupling around the filters. The completed assembly is covered by an L-shaped shield measuring 1⅝ by 3⅝ by 3 inches.

The output from the 6BE6 converter is led through shielded wire along the front chassis apron to the front section of the filter switch. Four trimmer capacitors are mounted inside the right chassis apron for tuning the filters. Since the tuning is quite broad, it would be possible to omit these and increase the fixed input and output capacitors to 120 $\mu\mu$f. A small shield is placed just behind the speaker-'phones switch to prevent feed-back into the filter in the event of inadequate i.f. filtering at the detector.

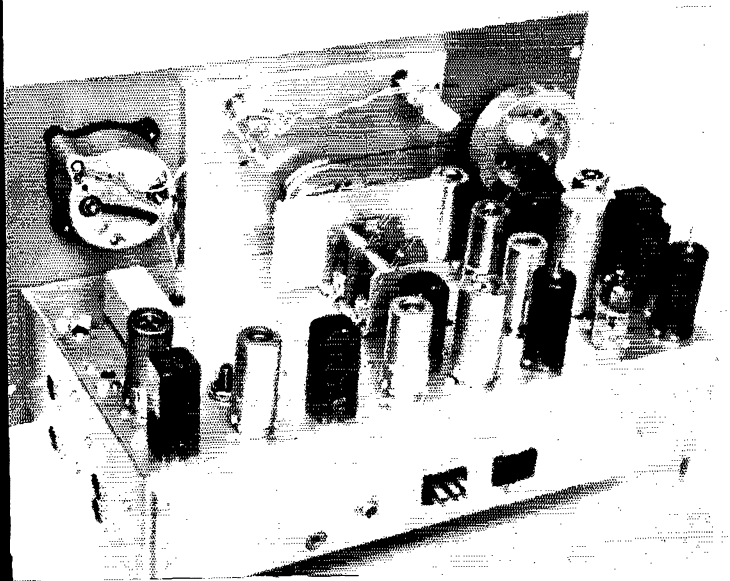
The Dial

The dial well is made of 1/16-inch aluminum and measures 4¼ by 6 by ⅜ inches. The lower edge of the well is bolted to the chassis. Placement of the tuning capacitor is such that its shaft projects into the dial well about ¼ inch. The end of the shaft is drilled and tapped for a 6-32 screw that holds the lucite dial pointer. A fine line was engraved into the rear side of the pointer and filled with red wax from a crayon. A thin sheet of lucite covers the dial scale to keep it from buckling in humid weather. This and the dial scale are held in place by four 4-40 screws tapped into the dial well. The pilot lamps mount on brackets attached to the rear of the dial well and project through the dial scale and its lucite cover. Holes in the lucite for the capacitor shaft and the dial lamps can be drilled by using a power wood bit with the lucite submerged in a pan of water. A better way is to use a counterbore, drilling quickly halfway through the material from each side.

The two screws passing through the lower edge of the dial scale also support a thin L-shaped strip of metal the width of the dial. This prevents one from seeing down into the bottom of the well and thus improves the appearance of the receiver. This strip and the inside walls of the well are painted black. The screw and washer holding the dial pointer are painted gold.

An opening was cut into the front panel large enough to permit removal of the dial scale for calibration purposes. This hole is covered by a thin piece of window glass held in place by a decorative escutcheon. The escutcheon is made from thin brass with its edges bent down to form a shallow pan just deep enough to cover the glass. A semi-circular window was cut in the escutcheon by drilling a series of small holes and then filing out to final size and shape. The corners of the escutcheon were filled with silver solder and then filed smooth. The completed escutcheon was given a satin chrome finish to get that commercial look. All four corners of the glass window were cut off diagonally to permit passage of escutcheon mounting screws which pass through holes in the panel and rest in tapped holes in the dial well.

The flywheel is a ring of bronze having a cross-section of ½ by ⅜ and an outside diameter of 3 inches. It is bolted to a disk which is swaged to a hub that fits a ¼-inch shaft. The latter assembly was salvaged from an old TV tuner. After the ring was mounted on the disk, they were turned down to the same diameter in a lathe. The complete flywheel was cadmium plated. The flywheel shaft is a piece of ¼-inch stainless steel rod



Removing the cabinet shows the homemade dial and drive mechanism and the general location of the tube and i.f. transformers. The two mechanical filters are located under the S-meter — one has been removed to show how they plug into crystal sockets. The antenna input connector, the headphones jack, the power plug, the auxiliary socket, and the phono jack for audio output to the power amplifier are located on the rear wall of the chassis.

COIL TABLE

Band	Coil	Tuning Range	No. Turns	Wire Size	Pri. or Tap	Coil Dia.	Inductance, μh.	Fixed Cap., μμf.	Trimmer Cap., μμf.
80	Ant., L_5	3.5-4.0	77	32	10	½	40	none	
	Mix., L_{10}	3.5-4.0	77	32		½	40	none	5-30
	Osc., L_{16}	5.19-5.69	44	28	8	½	13.2	18	5-25
40	Ant., L_4	7.0-7.3	22	22	6	½	3.4	68	
	Mix., L_9	7.0-7.3	22	22		½	3.4	82	8-50
	Osc., L_{15}	8.69-8.99	16	20	5	½	1.84	130	5-25
20	Ant., L_3	14.0-14.35	8	20	4	½	0.519	150	
	Mix., L_8	14.0-14.35	8	20		½	0.519	180	8-50
	Osc., L_{14}	15.69-16.04	6	20	2½	½	0.37	270	5-25
15	Ant., L_2	21.0-21.45	5	20	3	⅜	0.22	180	
	Mix., L_7	21.0-21.45	5	20		⅜	0.22	200	8-50
	Osc., L_{13}	22.69-23.14	5	20	1⅜	⅜	0.175	240	5-25
10	Ant., L_1	26.9-30	7	20	3	½	0.57	none	
	Mix., L_6	26.9-30	8	20		½	0.57	none	8-50
	Osc., L_{12}	28.59-31.69	7	20	2¾	½	0.4775	12	5-25

All coils, except antenna primaries, are ¾ inch long; see text. All wire is plain enamel in sizes shown. All primaries are close-wound near ground end of grid winding, using No. 32 enameled wire. Oscillator fixed capacitors are silver mica and trimmers are NPO ceramics.

which is turned down to 3/16 inch where the dial cord wraps around it. A bracket made of 1/16-inch sheet iron supports the flywheel and tuning shaft. Bearings were made by sawing regular panel bushings to shorter lengths. The bracket is protected from rust by two coats of gray enamel.

A nylon dial cord rubbed with resin winds twice around the shaft and then passes over the capacitor drum. Inside the drum is a spring to keep the cord taut. Tuning is much smoother and easier than that obtainable with any of the popular constructor's dials now in vogue. There is no danger of getting a glass arm even after several hours of operation.

The R.F. Coils

The design of the bandswitching assembly was inspired by a novel and economical arrangement described by WØURQ.[2] Reference to this article is recommended for additional pointers on the construction of the assembly.

Computation of the required coil inductances was made using the formula

$$L\ (\mu h.) = \frac{50{,}660\ \Delta F \mu h.}{F^3 \Delta C}$$

where F and ΔF are in Mc. and ΔC is in $\mu\mu f$. The term ΔF is the width of the band, F is the mean frequency, and ΔC is the change in tuning capacitance occurring with 85 to 90 per cent rotation of the tuning condenser. The required capacitance and the number of turns on the coils can then be found using either the ARRL type A Lightning Calculator or the Allied Radio coil calculator.

All of the r.f. coils are wound on 2-inch lengths of polystyrene rod. This was purchased in 12-inch lengths and sawed into the shorter lengths. After the ends were trued, one end of each form was drilled and tapped for a 4-40 screw. If these operations are all performed on a lathe, the complete set of coil forms can be made in less than an hour. Next, two No. 60 holes spaced ¾ inch apart were drilled through each form to anchor the ends of the windings. Complete coil data are given in the accompanying table.

Bandswitch Assembly

The bandswitch, S_1, consists of three Centralab type R steatite wafers and a P-123 index assembly. The lateral partitions of the r.f. assembly are in the form of shallow pans measuring 7 by 2¾ by ¼ inches. These are held 1¾ inches apart by the side shields. One of these (nearest to mixer tube socket) extends only part way down to the chassis in order to clear wiring entering the mixer chamber. The distance from the front chassis apron to the first partition is 2 inches.

The bandswitch index assembly is fastened to the chassis apron by means of its bushing and nut and the antenna switch wafer is mounted on the index with ½-inch spacers. The mixer (center) and oscillator (rear) wafers are mounted in line on the r.f. partitions by using ½-inch spacers and machine screws. The mixer and oscillator trimmer capacitors are fastened to the upper lips of the partition shields.

A long L-shaped strip of thin copper was placed under the foot of each partition pan so that one extends into the r.f. chamber and the other into the oscillator section. The ground leads from the antenna coils are soldered to the first of these and similarly the ground leads of the oscillator coils solder to the other strip. A ¼-inch-wide strip of copper joins the rotor terminals of the oscillator trimmer capacitors. Another strip runs from the center of this strip down to the chassis ground strip. In the mixer chamber, a heavy bus wire supported on stand-off tie points receives the B+ leads from the mixer coils. The mixer trimmer capacitors have their rotors tied together with a ¼-inch copper strap which in turn is strapped to the B+ bus wire.

Alignment and Tracking

Before installing the r.f. section, the i.f. and audio were checked and adjusted for proper operation. After the bandswitch assembly was completed, the r.f. coils were inserted and aligned one band at a time. When the receiver was mounted in its cabinet, a final touch-up was made. This required punching a hole in the bot-

[2] Johnson, "The Double-Con 6," *CQ*, January, 1954.

tom of the cabinet under each trimmer.

The 20-meter coils are located just to the left of the bandswitch, then come the 40- and 80-meter coils. On the other side of the switch are first the 15-meter and then the 10-meter coils. The order in which the coils were installed is 15, 10, 20, 40, and 80.

To illustrate the method of alignment, the procedure employed for the 20-meter band will be related. First, the tuning capacitor was set near the high-frequency end of the band. A signal generator (grid-dip oscillator) was set to 14.35 Mc. and the 20-meter oscillator trimmer capacitor was adjusted until the signal was heard. The receiver was then turned off and the oscillator tank circuit was checked with the grid-dip oscillator to insure that it was tuned to the high side of the incoming signal; i.e., 16,040 kc. rather than 12,660 kc. Then the receiver was turned on again and the test signal was set to 14.0 Mc. Next, the dial was turned toward the low end of the band to see how much bandspread there was. If there was too much, the turns on the oscillator coil were spread apart a little, whereas too little bandspread meant the turns had to be squeezed together. With the tuning range of the oscillator set, the antenna and mixer circuits were adjusted to track. The test signal was set to 14.35 Mc. and tuned in on the receiver. Then the antenna and mixer circuits were peaked using the S-meter as an indicator. Next, the test signal was set to 14.0 Mc. and tuned in on the receiver. The antenna and mixer circuits were then repeaked, while noting whether the trimmer capacitance had to be increased or decreased. If it had to be increased, the turns on the r.f. coil in question were squeezed together slightly, whereas if the capacitance had to be reduced the turns were spread apart a little. This process was repeated several times until there was no significant tracking error. After proper bandspread and tracking were achieved, the coil turns were secured in place with judicious touches of polystyrene cement.

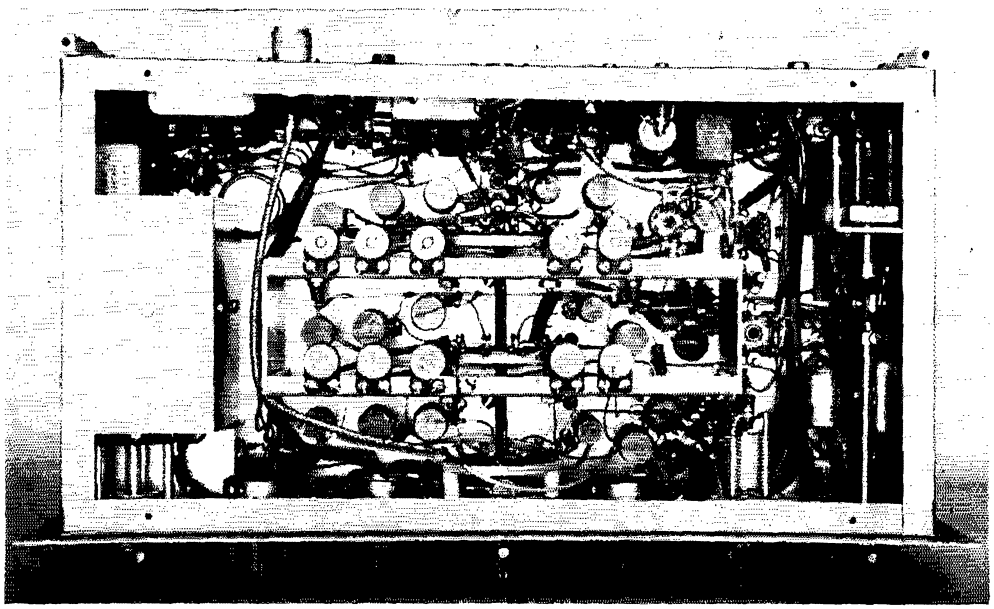
Dial Calibration

The dial was calibrated by using a 1000-kc. crystal oscillator provided with 100-kc. and 10-kc. multivibrators. A special dial pointer was made, to facilitate accurate positioning of the calibration marks. This consisted of two parallel brass strips soldered to a washer. Just enough space was provided between the strips to permit the passage of the sharpened end of a pencil. When all the bands were calibrated, the scale was removed and permanent marks were drawn with India ink.

Next to an attractive dial, nothing is as effective in achieving commercial appearance as neat labeling of the panel controls. Decals are economical and, if properly applied, look almost as good as silk-screen lettering. The decals used on this job are known as Tekni-Cals. After they have dried twenty-four hours the lacquer film support can be dissolved with acetone. This is done by applying the solvent sparingly with a fine brush. As a result, the painted characters appear as though they were stenciled onto the panel. The shiny reflection from the film support usually observed on most amateur decals is completely eliminated by this treatment.

(*Continued on page 122*)

The "front end" coils are shielded by the two strips of aluminum at the center of this photograph. Turned-over lips on the shields provide mounting space for the padding capacitors. The shield at the left encloses the output switch section, S_{3B}, of the mechanical filters. Note the partition at the upper right corner that mounts and shields the b.f.o. pitch control.



The Simplest Converter

A One-Tube Design for Reception on 15, 10, 6, 2 or 1 1/4 Meters

BY MASON P. SOUTHWORTH, W1VLH

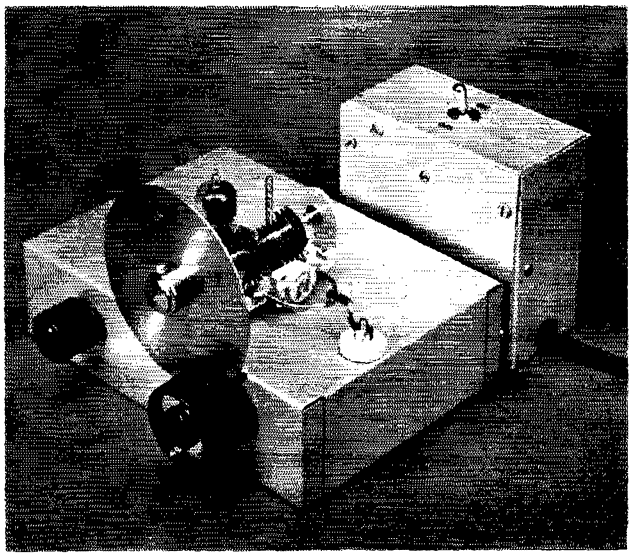
• A common request showing up in mail for the ARRL Technical Information Service in recent years has been, "Where can I find information on a simple converter for 21, 28, 50 or 144 Mc., not crystal-controlled?" Seems that there are plenty of beginners, and not a few old-timers too, who want to receive on one or more of these bands without going to something complicated or tough to build. Here's the answer, and then some — a one-tuber that provides usable reception on 21, 28, 50, 144 or 220 Mc. You can cover 15, 11 and 10 meters without changing coils.

To a fellow getting started in ham radio, or even some new phase of the game, life can seem pretty complicated at times. A lot of the gear described in the magazines looks very nice and undoubtedly works well, but is just too complicated or takes too many hard-earned parts for beginners to think about building it. Here's a converter that was designed with these fellows in mind. It uses as few parts as is practical and construction is simple and straightforward. It also covers a lot of territory. You can build it for 21, 28, 50, 144 or 220 Mc. You can use it to listen in on any v.h.f. band, or to improve your reception on 15 or 10 meters, where many of the lower-priced commercial receivers fall short. The output frequency can be anywhere in the 40-meter region, and almost any receiver that tunes this range will do for the i.f. system.

You may have noticed that we haven't referred to this design as a multiband converter. You just can't have all those bands at once and simplicity too. Wide frequency coverage by means of switching or plug-in coils nearly always involves performance compromises, even at 50 Mc., and it is practically out of the question for 144 or 220 Mc. Bandchanging in this case is accomplished by removing two coils and soldering in a new pair. This approach doesn't lend itself to hopping around the spectrum, but it's hard to beat for simplicity and performance on any one band. Four coil sets are shown. One pair covers 15, 11 and 10 meters while the other three sets are for 6, 2 and 1¼. If the thought of soldering and unsoldering worries you, the converter is so simple that you can always build another for a second favorite band.

Perhaps the best way to describe a piece of gear like this is to state what it will do and what it won't. It will give usable reception on all the above bands. The noise figure does not represent the ultimate by any means, but you will hear all but the weaker ones on 144 and 220 Mc., and sensitivity on the lower bands will equal that of all but the best communications receivers. Stability is satisfactory after a warm-up period; good enough for c.w. reception, even on 144 Mc. Image rejection is low on 144 and 220 Mc., of course, but this is not often troublesome in actual operation. If this sounds like something you could use, let's see how little it takes to do the job.

A glance at the circuit diagram, Fig. 1, shows that only one tube is used, a 6J6 dual triode. One



The "simplest converter" with its power supply attached. Latter may be eliminated if power is taken from the receiver with which the converter is to be used.

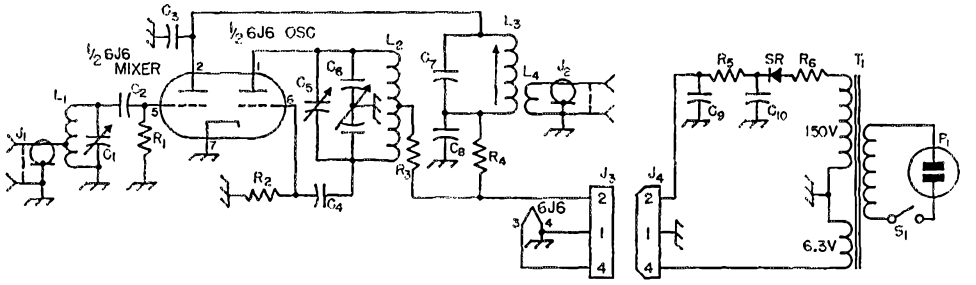


Fig. 1 — Schematic diagram and parts information for the simple converter.

C_1 — 15-$\mu\mu$f. variable (Hammarlund HF-15).
C_2, C_7 — 100-$\mu\mu$f. ceramic.
C_3 — 10-$\mu\mu$f. ceramic (connect close to plate pin).
C_4 — 47-$\mu\mu$f. ceramic.
C_5, C_7 — 45-$\mu\mu$f. ceramic trimmer (Mallory ST-557-N; one for each band required).
C_6 — Split-stator variable, about 12-$\mu\mu$f. per section (Hammarlund HFD-15X with 2 rotor plates and 1 stator plate removed from each section).
C_8 — 0.001-$\mu\mu$f. ceramic.
C_9, C_{10} — 16-μf. 250-v. electrolytic.
R_1 — 1 megohm ½ watt.
R_2 — 10,000 ohms, ½ watt.
R_3 — 1000 ohms, ½ watt.
R_4 — 33,000 ohms, ½ watt.
R_5 — 3300 ohms, ½ watt.
R_6 — 22 ohms, ½ watt.
L_1 — 21, 28 Mc. — 16 turns B & W 3011, tapped 4 turns from ground end.
50 Mc. — 7 turns B & W 3007, tapped 2 turns from ground end.
144 Mc. — 2 turns ½-inch diam. No. 12 tinned wire, spaced ¼ inch, tapped ¾ turn from ground end.
220 Mc. — 1 turn ¼-inch diam. No. 12 tinned wire, tapped near center.
L_2 — 21, 28 Mc. — 15 turns B & W 3011 c.t. Add C_5 as in photo.
50 Mc. — 7 turns B & W 3007 c.t. Add C_5 as in photo.
144 Mc. — Hairpin loop of No. 12 tinned wire 1 inch long, 1 inch wide, c.t. Connect C_5 to C_6 terminals.
220 Mc. — Hairpin loop of No. 12 tinned wire, ¾ inch long, ⅜ inch wide with ⅜-inch leads, c.t. Connect C_5 ⅝ inch from capacitor terminals; see photo.
L_3 — 24 turns No. 24 enamel on ⅜-inch iron-slug form (National XR-91).
L_4 — 4 turns No. 24 d.c.c. or enamel at cold end of L_3.
J_1, J_2 — Phono jacks (Cinch 81B or two Cinch 81A single jacks).
J_3 — 4-contact male chassis fitting (Amphenol 86RCP4).
J_4 — 4-contact female chassis fitting (Amphenol 78RS4).
P_1 — 115-volt line plug.
S_1 — S.p.s.t. toggle switch.
SR — 20-ma. selenium rectifier (Federal 1159).
T_1 — Power transformer, 150 volts at 25 ma.; 6.3 volts at 0.5 amp. (Merit P-3046).

half is the mixer, with its grid circuit, L_1C_1, tuned to the signal frequency. This circuit requires repeaking only with relatively wide shifts in frequency, once adjusted for the band in question. The mixer plate circuit L_3C_7 is tuned to the intermediate frequency, about 7 Mc., and once adjusted is left alone. The second half of the 6J6 is a tunable oscillator. Energy from it beats with the signal in the mixer to produce the intermediate frequency. Its frequency is determined by the $C_5C_6L_2$ combination. The split-stator capacitor C_6 is used for actual tuning; the trimmer C_5 is for band-setting and to increase the bandspread. That's all there is to it.

How much? The whole works will set you back less than $15.00 even if you buy all the components new. Power can be taken from the communications receiver in most cases or, for about $6.50 more, you can add a small selenium rectifier supply which could come in mighty handy around the shack to run various other small pieces of gear. This is shown at the right side of Fig. 1.

How To Build It

Construction of the converter is simplicity itself. Everything is mounted on a standard 5 × 7 × 2-inch aluminum chassis (Premier ACH-426) and there are no special brackets to bend or buy. Fig. 2 is a layout of the chassis showing the location and size of every hole. The front view photograph shows the tuning capacitor, C_6, on top of the chassis with the trimmer (C_5) and 144-Mc. coil soldered in place. The feed-through bushing near the edge of the chassis serves as a tie point for R_3 and holds the coil rigidly in position. Immediately behind C_6 the 6J6 and the tuning adjustment for L_3 are visible. The dial is a National type K. Note that a large knob (National type HRT-M) has been substituted for the one that comes with the dial to smooth out the tuning. The dial index has been mounted below on the front wall of the chassis instead of above, for obvious reasons, though you may prefer to add a panel in the usual manner. The 0 to 100 scale may be used for logging if you don't mind reading it upside down, or a calibration may be drawn on stiff white paper and cemented to the dial surface. The small knob to the left is the mixer grid circuit trimmer, C_1.

A power supply is shown plugged into the back of the converter. If the power plugs are positioned so that this is possible, it will save making up a connecting cable. This supply, built entirely within a 4 × 2 × 2-inch utility cabinet, was described in more detail in *QST* for June, 1955.[1] The layout is not important, and it can be built in some other form if desired. If your receiver has an accessory socket there is no reason to use a separate power supply, as the

[1] Tilton, "Six Meters for the Beginner, Part II," *QST*, June, 1955.

drain of the converter is very low. Check your receiver instruction book for the required plug connections.

The various components visible in the bottom view have been labeled for ease in identification. Most of the small parts are grouped around the tube socket near the center of the chassis. There is very little wiring to be done other than soldering in these resistors and capacitors by their leads. Below the tube socket are the slug-tuned L_3 and a two-terminal tie point supporting R_4. L_3 is held in place by passing its leads through holes in the plastic rings supplied with the XR-91 coil form. L_4 is wound around the by-passed end of L_3 and is cemented or doped in place. Its leads are then twisted and run over to the output connector on the back of the chassis. If the dual connector shown is not available, two standard phono jacks can, of course, be substituted.

The mixer grid circuit is visible above and to the left of the tube socket. C_1 is mounted on the front wall of the chassis and L_1 is soldered across its terminals. A short piece of coax (RG-58/U or RG-59/U) is run from the input connector to the grid circuit. Here the braid is grounded to the rotor of C_1 and the inner conductor is tapped onto L_1 in the proper place. Note the two $\frac{3}{8}$-inch holes drilled between the tube socket and the tuning capacitor. These are for the leads from C_4 and Pin 1 of the 6J6. These should pass through the chassis near the centers of the holes. The tube socket should be mounted as shown with Pin 1 adjacent to the large hole near the middle of the chassis.

The third photograph shows the coils for 15, 10, 6 and $1\frac{1}{4}$ meters, the 2-meter coils being on the converter when the pictures were made. The oscillator coils with their trimmers (C_5) and decoupling resistors (R_3) are in the back row, and the mixer grid coils are in the front row. It is not necessary to use separate trimmers for each oscillator coil, of course, but doing this eliminates the need for readjustment when changing coils. The use of separate decoupling resistors does away with repeated soldering to the coil center

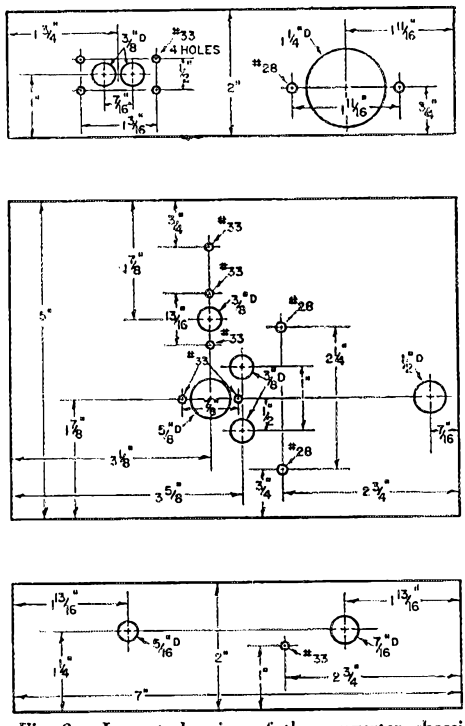
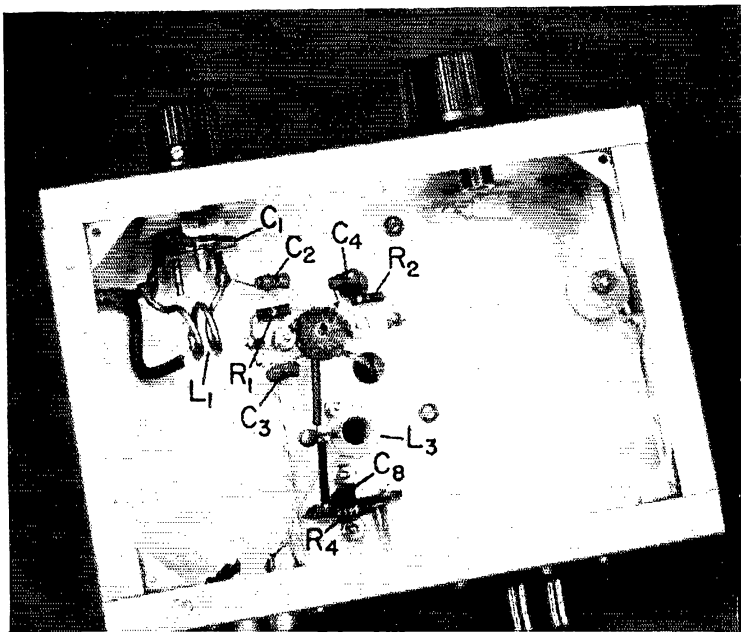


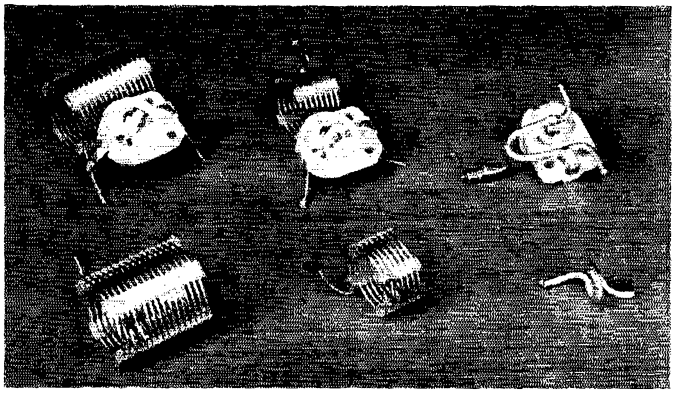
Fig. 2 — Layout drawing of the converter chassis, showing size and location of all holes.

tap. The coils for 50 Mc. and below are made of sections of B & W Miniductor. It will be easier to solder to these if the turns each side of the desired one are bent toward the center of the coil. The higher frequency coils are made from No. 14 wire as described in the parts list.

The oscillator capacitor, C_6, was modified slightly to secure more bandspread on the higher ranges. The end stator plate and the last two rotor plates of each section should be removed by twisting carefully with long-nosed pliers. This leaves four stator and three rotor plates in each section. If the converter is to be used on 144



Bottom view of the converter, showing the principal parts numbered as they appear on the schematic diagram.



Coils for the one-tube converter. Top row are the oscillator coils, with trimmers (C_5) attached. Corresponding mixer coils below. Left to right, sets for 21 to 28 Mc., 50 Mc. and 220 Mc. The 144-Mc. coils appear in the converter photographs.

or 220 Mc. only, the bandspread may be increased by removing more plates, but it is advisable to leave them on until the proper frequencies are found.

Making It Work

The first step in getting the converter going is to obtain suitable power for it. The requirements are 6.3 volts at 0.45 amp. and 75 to 100 volts at about 12 ma. These voltages should be borrowed from the receiver, if possible. Simply bring out leads from the filament circuit, some high voltage point, preferably regulated, and, of course, a connection to the chassis. This is easy if your receiver has an accessory socket. If you don't want to dig into the receiver, and no other suitable supply is available, the simple selenium rectifier unit described above will do the job. The output of this supply is about 125 volts.

The mixer was found to have the best noise figure with a plate voltage of about 75, so R_4 was made a suitable value to provide this drop. If a different supply voltage is used it may be necessary to change the value of R_4 to reduce the mixer voltage to about 75. This is not critical, though, and anything 20 volts or so either side is perfectly satisfactory. Even a 90-volt "B" battery will do the trick.

After settling the power supply question, apply filament voltage and see that the 6J6 heater lights up. Now apply plate voltage. The first check should be to see that the oscillator is working. If a milliammeter is available (10 to 100 ma. full scale will do) connect it in series with R_3 to measure oscillator plate current. This should be somewhere in the neighborhood of 6 ma. and should rise when the oscillator coil, L_2, is touched with a pencil lead. If it is much higher, and does not change, the tube is not oscillating. Recheck the oscillator wiring for a mistake, or try another 6J6.

The frequency of the oscillator may be checked in several ways depending on what is available in the way of test equipment. A calibrated receiver can be used to detect the oscillation and show its frequency. The surest system is to use a grid-dip meter operating as a wavemeter, or an absorption-type wavemeter with fairly accurate calibration. The grid-dip meter will show output when coupled to L_2 and tuned to the frequency of the oscillation. Tuning an absorption wavemeter coupled to L_2 to the oscillator frequency will cause a flicker in oscillator plate current. At 220 Mc. it is also possible to use a Lecher wire system to measure the frequency as outlined in the measurements chapter of all recent *Handbooks*.

The oscillator should be adjusted (by C_5) to tune below the desired signal frequency by the amount chosen as the i.f. For the 21-Mc. band the oscillator tunes at least 14 to 14.45 Mc. For 28 Mc. it should cover at least 21 to 22.7 Mc. For the 6-meter band it must tune 43 to 47 Mc., and so on. The trimmer capacitor, C_5, and, if necessary, the coil, L_2, are adjusted to set the oscillator to the proper range. Actually coverage will be somewhat more than the width of the band, and the desired range should be centered on the dial by varying C_5. The coverage mentioned above is obtained by rotating C_6, of course.

Now it's time to connect the converter output to the receiver antenna terminals. The converter is normally operated on top of the communications receiver, or close alongside it, in a convenient operating position. A coaxial cable is made up with a male phono-type coaxial fitting on one end, with enough cable to reach from the converter to the receiver antenna terminals. Most receivers have a three-terminal antenna connection block. One of these terminals is grounded. The middle one and the one at the opposite end from the grounded one are normally used for doublet antenna connections. Connect the middle one and the grounded terminal together, and make this combination the point of connection for the outer conductor of the coaxial cable. The inner conductor goes on the remaining antenna terminal.

The mixer plate coil, L_3, may be tuned to about 7 Mc. with a grid-dip meter, or it can be peaked on noise with the receiver set at this frequency and the converter running. The grid circuit, L_1C_1, may be checked with a grid-dip meter. It may also be peaked for maximum response to a signal generator connected to the

Continued on page 122

Wait and See

BY ROBERT D. REED,* W5KY

PEOPLE have a peculiar ability which probably is the world's best method for an adult to get his left foot into his right ear by way of his mouth. This ability combines the faculty of speech with the idea that firm opinions on subjects are not only necessary but must be defended to the last ditch, the last shell, and the last 807.

Genus Homo Sapiens (*sub-phylum Hammus Electronicii Radioicus*) is *particularly* adept at having opinions plus the ability to spray them loudly over the world by virtue of his super blaster-band ear buster running a jillion watts to a whang-doodler of an antenna which has major lobes in 360 directions. Defense of said ideas and opinions may be audible or by certain rhythmic undulations of the fingers in coöperation with a key.

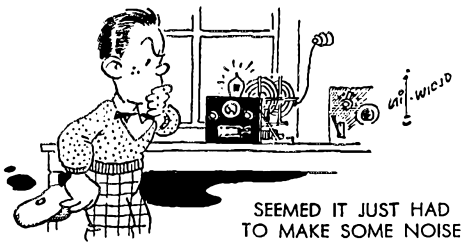
It is a brave man who approaches Hammus with the idea of changing his opinion on: (1) politics, (2) religion, (3) the peerless qualities of his children, (4) the fire-snorting dash and performance of his Detroit gasoline-burner eight, (5) the best way to enhance further the state of hamband QRM, and (6) either side of the *s.s.b. vs. a.m.* controversy. The amateurs doing the most and best with their hobby, we think, are those keeping clear of the fray. . . . It's best of all to wait and see.

He who ventures forth on any of the items from (1) through (5) is the victim of simple assault and can usually be patched up with some salve and a few bandages placed in strategic spots. But that number (6)! Murder and mayhem are mild in comparison with what happens to the innocent venturer forth on that subject. His antenna vanishes in a cloud of green smoke. His receiver melts into a blob of assorted steel, copper, glass and aluminum. The antenna relay breaks down and the surge into his transmitter completely discombobulates it back to the VFO.

Old Growler, licensed prior to 1920, sagely nods his head when he hears such goings on. Listen carefully as he mumbles softly to himself. Long, long ago he learned of the hazards of speaking loudly about differences of opinion.

Heh! Heh! Beats all how history repeats. Like in the early Twenties, just like 'em! When I think how brave those little 210s and VT1s and VT2s were as they looked the kilowatt sparks straight in the eye with their innocent little chirps, I'm surprised all over again. It took a whale of a lot of convincing for me to get it into my thick skull that a little five- or ten-watt chirp could run circles around my big old spark rig. It didn't seem possible that something that just sat there and glowed could work. Seemed as if it just had to make some noise. But I was young then, and pretty dad-burned stubborn. (Got my comeuppance though just as lots of young fellows now-a-days might get theirs.)

Never will forget the night that Old Joe called me on the land line to ask me to take a look at his new 210 rig. It was cold and clear and signals



SEEMED IT JUST HAD TO MAKE SOME NOISE

were rolling in like mad. Old Joe had moved his rig into the kitchen, now that the rotary gap didn't make so much household QRM. His XYL met me at the door and took me to the kitchen where Old Joe grinned at me over the coffee pot and waved me to a chair beside him as he threw the switch to the "transmit" position.

As he tapped out the call of the station he was working I nearly fell off of my chair! He was working more than 1800 miles with that quiet little fugitive from an electric light factory! I had thought Old Joe was kidding but I sure got convinced when he turned it over to his contact. By gum, he *was* in contact with him!

I had planned to stay just a little while and then get back to the home rig to stop fooling around and work some DX. Seems funny now but DX to me with my old kilowatt spark was about 1000 miles. This business of working 1800 miles needed looking into. So I looked, but did I catch it from the XYL when I got home in the wee small hours. She even smelled my breath to verify my story.

That night of DX in the pleasant warmth of the kitchen at Old Joe's made a cautious convert of me to the tune of a 210, some coils, condensers and such, which I tied to my antenna. My little chirp added to those already hunting for better and better DX. I had to learn to tune my receiver all over again and learn how to get away from pesky capacity effects which came as I reached for the dial to touch up the receiver. I learned! But in the meantime, dust began to gather on the old spark rig.

After a few weeks, Old Bill, who had a spark like mine across town, was having coffee with me at the local beanery. He was not as free and easy with me as he used to be. I found out what was wrong when I began to tell him about that innocent looking little 210 and the contacts I was

(*Continued on page 124*)

* 4339 S. Peoria, Tulsa 5, Okla.

Tuning the Mobile Antenna from the Driver's Seat

A Simple Remote Tuning System

BY FRANK T. MORGAN,* W7RFG

• Various items from military surplus units can be combined to provide a means of easily resonating the mobile whip antenna from the driver's seat.

THE writer has expended his share of time and energy in trying out the usual arrangements of mobile installation — transmitter under-dash mounting and trunk mounting, antenna with base loading and center loading, direct coupling and the tapped-coil method (shunt feed), and the usual array of tuning slugs and capacitive hats. The result was considerable frustration and a family gas buggy with enough holes in the body to make a car dealer shudder.

For ease of operation, it was finally decided that the transmitter had no place in the trunk, but belonged up front in constant range of the operator's hand and eye. Furthermore, after shattering an overhead fluorescent lamp in a filling station one night, with a cowl-mounted job, the antenna was transferred to the rear bumper as the only safe place for an 8-ft. whip.

The ability to QSY more than a few kilocycles on any band with such an arrangement was a hopeless dream, nursed in despair for a long time. The usual procedure is to tune up before the car is put in motion, and then stop a couple of times to adjust the antenna to compensate for the change in capacitance as the wind bows the whip backward. When it is desired to QSY, the procedure must be repeated. (This sort of stuff can lead to divorce if the XYL is along expecting an uninterrupted Sunday drive.)

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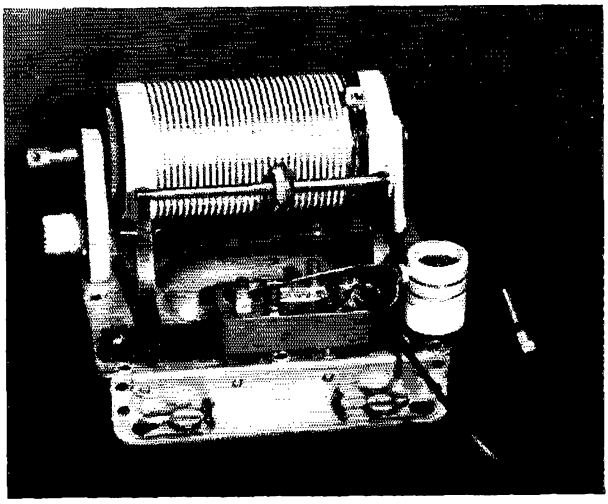
A Convenient Tuning System

The remote tuner described has solved this problem well, and the author is now at peace with himself and the family. No cross words from the XYL, even after miles of rag-chewing on 75 meters. The antenna is tuned by a variable inductor connected at the base of the antenna, and driven remotely from the driver's seat by means of a flexible shaft. The number of turns needed to cover the 75-meter band is so small that it has little effect on the performance of a center-loaded antenna. Some commercially manufactured tuners, similar in principle, employ reversible d.c. motors for rotating the coil. If a suitable motor and reduction gears are available, fine, but for economy and downright simplicity, the flexible shaft is hard to beat.

To facilitate accurate and easy tuning, a resonance indicator that may be placed within view of the operator is included.

The tuning mechanism consists of the rotocoil and associated rider, springs and a bakelite strip taken from the antenna circuit of a BC-696. Since only about 12 turns are required to cover the band, the coil from a BC-457 may also be used. The BC-696 is often converted for 75-meter components may be simply transferred from the BC-696 to the antenna tuning unit. A coaxial



The remote antenna-tuning unit, showing the mounting of the link coupling coil. The thermocouple for the r.f. ammeter and its pick-up transformer are in the foreground.

cable is then used between the antenna tuner and the output link of the BC-696.

The BC-442 Command antenna-relay unit (another available surplus item) offers a meter with an external thermocouple that can be used in the remote resonance indicator. If the mounting plate for the BC-442 can also be obtained, it makes an ideal mounting for the tuning unit that can be removed simply by releasing the four slip catches which clamp on the shock mounts.

Construction

To begin the construction, completely dismantle the BC-442, and remove the studs to which the cover is fastened, by twisting them out with pliers. The studs on the flanges under the base plate were left intact so that a cover could be mounted over the assembly in case trouble developed from dirt on the rider contact. So far this has not happened. It will be found that when the coil is mounted with one side flush with the edge of the base, and the bakelite mounting strip for the rider and springs is mounted about ¼ inch in from the opposite side, the rider will fit the coil with about the right amount of tension. The rider-spring mounting screws pass nearly through the bakelite strip. The chance of a short can be reduced by mounting the strip over a sheet of mica, fiber or pasteboard cut to size.

It will be observed that the ungrounded, or floating end of the coil has a pressed aluminum mount. This plate is large enough to accommodate a coax receptacle if one of the four corners is sawed off flush with the threads. It was feared that the plate would be twisted or weakened if the receptacle were mounted in the usual manner, so a 7/16-inch hole was drilled for a center, and the fitting mounted flush against this support.

To the coil hub at this end is soldered a short length of brass rod to which the flexible shafting can be connected with a small coupler. This hub looks something like aluminum or pot metal, but it is actually tinned brass and solders very easily if a heavy soldering iron is used.

The pick-up transformer, L_1-L_2, for the resonance indicator consists of one turn of wire on each coil, wound on a ceramic form around a powdered iron slug. This transformer is mounted at the end of the bakelite strip, near the ground end of the rotocoil, with a machine screw passed up from below the base. The thermocouple can be mounted directly over the rider-spring strip, between the two springs. The mounting screws will have to be slightly longer than the ones that originally mounted the thermocouple. One turn of the transformer is connected between the cold end of the rotocoil and ground. The other turn is connected to the thermocouple terminals marked "line." Use a small solder lug on the wire going to the rotocoil.

Matching

In matching the antenna to the line, several methods might be used. The author has tried paralleling two or three lengths of RG-8/U to reduce the line impedance. While a match can be obtained in this manner, difficulty is usually encountered in getting sufficient coupling from the transmitter output to such a low-impedance line, especially with the pi-section output circuits

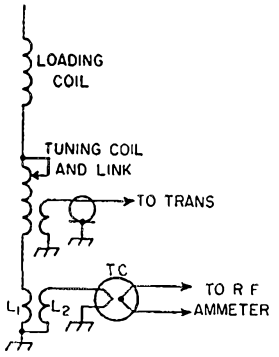


Fig. 1 — Schematic of the remote antenna tuning system. *TC* is an external thermocouple for the r.f. ammeter mounted on the instrument panel. L_1 and L_2 form the pick-up for the r.f. ammeter.

so popular in manufactured mobile rigs. Shunt feed with a separate matching coil at the base of the antenna is feasible, but the most simple and satisfactory arrangement tried consists of a link coil coupled to the ground end of the rotocoil.

In constructing the coupling link coil, it was found that 3 turns of No. 14 could be fashioned so that when one end is grounded, and the other end fastened to a ½-inch stand-off insulator, no other support was necessary. A more rugged and professional-looking job might be done by fastening the turns together at several points with sealing wax or poly spacers. The link is mounted so that it clears the rotocoil by about 1/16 inch, and the turns are spaced about the same distance. The link should overlap about 5 turns at the end of the rotocoil. It will be necessary to remove the solder lug and lead to the thermocouple transformer, and also the end mounting of the rotocoil in order to slip the link coil over the rotocoil. A short length of stranded wire is soldered to the lug on the end of one of the rider springs, and a small banana plug is soldered to the other end to connect to the antenna mount.

Installation

The unit described is small enough that it can be mounted in the trunk, close to the base of the antenna, without interfering with the use for which the compartment was intended. A ground should be made to the car body with a short length of copper braid.

The flexible shaft and tuning head from an SCR-183 were used to drive the coil. This was passed forward under the car and up through a hole under the front seat. The tuning head was mounted on the hump in the center of the floor,

(Continued on page 126)

"Little Oskey"—A Monitoring Oscillator and Keyer

A Simple C.W. Break-in Monitor and Code-Practice Oscillator

BY E. LAIRD CAMPBELL, W1CUT

• This is a versatile auxiliary unit that will be welcomed to many an amateur shack. Without modifying a receiver or cathode-keyed transmitter in any way, and without the need for extra r.f. pick-up, it blanks the receiver and injects a sidetone in the headphones when the key is down. It can also be used as a code-practice oscillator, on those occasions when you can't find anyone to QSO.

SEVERAL different methods of c.w. monitoring have been tried at W1CUT. The first, and most simple, involved lowering the gain control of the receiver to a comfortable level while transmitting. However, even with the gain turned down it was difficult to reach a pleasant listening point, and constant adjustment was required. If the station being worked happened to be off the transmitting frequency, it was impossible to monitor without retuning the receiver to the transmitted signal.

The second method for c.w. monitoring made use of a crystal diode to rectify r.f. from the transmitter. The rectified voltage keyed a neon bulb audio oscillator and produced a sidetone. This system proved unsatisfactory because severe TVI was produced by harmonic generation in the crystal diode.[1] Since the r.f. for the unit was obtained from a pick-up wire near the final amplifier there was the danger of high voltage, and when changing bands it was necessary to alter the position of the pick-up wire to obtain sufficient r.f. to operate the unit. Since none of the above monitoring systems proved satisfactory, it was decided to construct a break-in monitor which basically had two jobs to perform. When the key was down the receiver output would be completely squelched and a sidetone would appear in the headphones, and when the key was up receiver output would be fed through to the headphones. Provisions must also be made for:

1) No adjustment when changing frequency or bands.

2) Installation in station without revision of transmitter or receiver.

3) A sidetone that is keyed exactly as the transmitted signal.

4) Keying the transmitter and sidetone simultaneously.

5) Mixing the outputs of the receiver and sidetone oscillator.

6) Electronic switching from sidetone to receiver output.

7) Switching the monitor out for the purpose of zero-beating another signal.

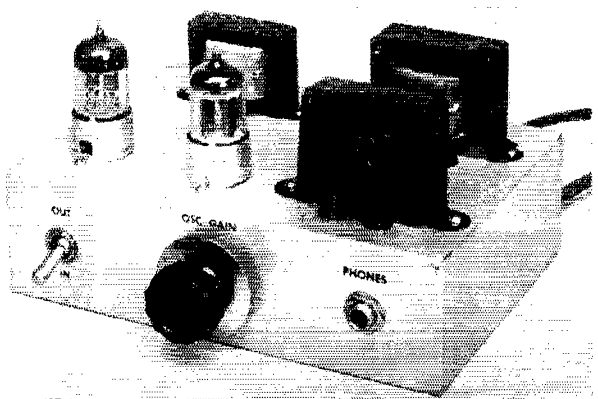
The monitor described here can perform all of the above jobs. Since the unit needs no external excitation, it can also be used as a code-practice oscillator.

Circuit and Construction

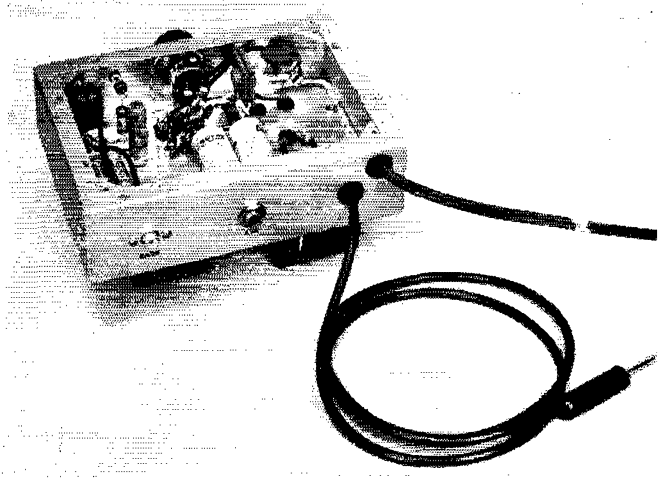
No special precautions are necessary in laying out the unit. In fact, the monitor may be built in a cabinet and placed alongside of the receiver. When wiring the unit, it is a good idea to keep the leads carrying a.c. away from the amplifier input to prevent hum. Care should also be taken when soldering the crystal diodes. Holding the diode leads with a pair of long-nose pliers while soldering is good insurance against ruining a crystal. Terminal strips can be used conveniently for mounting parts such as the selenium rectifier and to serve as tie points for resistors, capacitors, etc.

Two small 6-volt filament transformers connected "back to back" are used for obtaining

[1] "Harmonic Radiation from External Nonlinear Systems," *QST*, January, 1953.



C.w. monitor and code-practice oscillator.



Bottom view showing the connecting cable. The crystal diode voltage tripler can be seen in the upper left corner of the chassis.

the necessary operating voltages. A novel voltage tripler composed of one-half of the 12AU7 and two crystal diodes supplies the voltages for receiver squelching and the audio oscillator. This voltage is controlled by the transmitting key and is turned on when the key is closed. At this instant (when the key is closed) the sidetone is produced and the receiver is squelched by placing the negative voltage on the grid of the input amplifier tube. When the key is opened the received signal is amplified and heard in the 'phones, while the sidetone is off.

The frequency of the sidetone audio oscillator can be adjusted by changing the grid capacitor, C_1. If the audio oscillator fails to oscillate, the primary leads of the interstage transformer should be reversed.

High voltage is obtained from the 115-volt side of transformer T_1. This is followed by a selenium rectifier and RC filter which provides enough voltage for good amplification in the amplifier-mixer stage.

Operation

It is a very simple matter to insert the monitor into an existing station. The cable from the unit is plugged into the keyed circuit and the receiver output and head-phones are plugged into the unit. Switch S_1 is a s.p.s.t. switch on the volume control and is used to turn the unit off and on. If for some reason it is desired to operate temporarily without the unit (such as when zero-beating) the toggle switch, S_2, may be opened and

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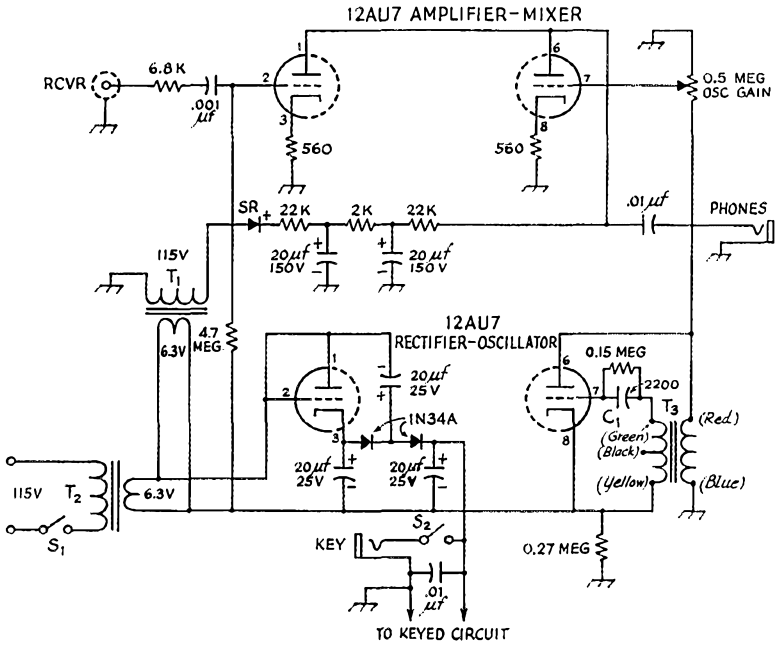


Fig. 1 — Schematic diagram of the c.w. monitor. All resistors ½ watt. All capacitors in μμf. unless specified otherwise. The tube heaters get their power from the 6.3-volt line between T_1 and T_2.

SR — Low-current selenium rectifier (Federal 1002).
T_1, T_2 — 6.3-volt 1.2-amp. filament transformer (UTC FT-2).
T_3 — Interstage audio transformer, secondary-to-primary ratio 2:1 (Thordarson T-20A16).

More Power with the AT-1

Simple Modifications for Greater Output

BY LEWIS G. McCOY, W1ICP

• By a few simple modifications, the power output of the Heathkit AT-1 can be raised two to three times. Any Novice who has built the rig and used it long enough to become familiar with its operation should be ready for the slightly more complicated circuit. This article gives step-by-step directions.

LISTENING to the Novice bands for a short time will quickly convince anyone the Heathkit AT-1 transmitter is a very popular item. As it stands, the rig will handle approximately 30 watts input on all amateur bands, 80 through 10 meters. Its amplifier works straight through on 80, but having been designed for loads much higher than 100 milliamperes, will not deliver much more than 35 watts. The plate voltage drops as higher current is drawn and one runs into the law of diminishing returns.

In order to use the second stage as a straight-through amplifier it is necessary not only to install a neutralizing circuit but also to change the oscillator coil and switching circuit to permit tuning the amplifier grid and plate circuits to the same frequency. This should be done on all bands with the exception of 10 meters, where the change is not worth while because the oscillator cannot deliver sufficient grid drive on that band from a 7-Mc. crystal. If a 6BQ6 is to be substituted for the 6L6 — a change that is recommended, and

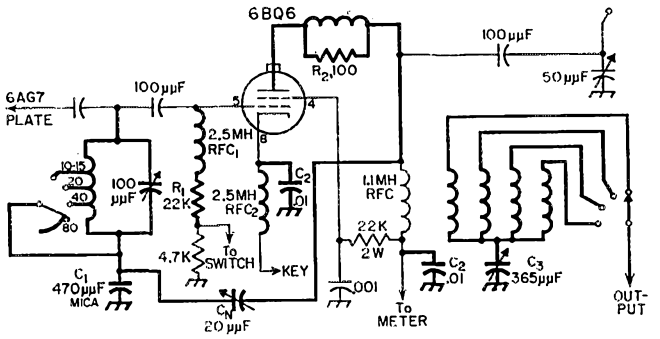


Fig. 1 — Circuit diagram of modifications for the AT-1. The changes are shown by the heavy lines.

on all other bands it acts as a frequency doubler, presumably to avoid the necessity for neutralizing the 6L6. Although this results in a simpler circuit, it also means that the power output is considerably less than could be obtained from the same 6L6 as a straight-through amplifier.

To operate the amplifier straight through, the 6L6 (and practically any tube that might be substituted for it) must be neutralized to prevent self-oscillation. Neutralizing is neither difficult nor expensive, and the additional power output is certainly worth the effort.

Just how much the power output can be increased by such a change is shown by Table I, which gives the results of measurements made on a modified AT-1 *vs.* the unmodified unit. The table also includes data on a 6BQ6 which was substituted for the 6L6, this tube having been tried because its characteristics indicated that it should be a better performer than the 6L6. A 6146 was also tried in the hope that its ability to draw large plate current with relatively low plate voltage would result in greater output but, unfortunately, the power supply in the AT-1, not is included in the instructions below — the amplifier socket also must be changed.

Other Modifications

In the original version of the AT-1, the output links are fixed, with no means provided for adjusting the coupling. According to the instruction manual, the links are designed to work into a 50-ohm load.

With certain types of antennas and antenna couplers, a fixed link may be OK for the job, but in many cases, it is well-nigh impossible to load the output stage to the normal input. A variable coupling circuit is therefore a very much worthwhile addition, and since it requires little more than adding an inexpensive variable capacitor, it is included in the modifications described below.

Another change that can easily be made consists of adding a resistor between the oscillator screen and chassis ground to help stabilize the voltage on the oscillator screen. This results in better keying characteristics.

The modifications described below are arranged in a series of steps, each numbered. The

component designations referred to are the same as those given in the original Heathkit instructions. The circuit diagram, Fig. 1, is the modified circuit showing only the information necessary for the changes. A list of material needed for the modifications is given elsewhere in the article.

Oscillator Modifications

1) Unsolder the leads from SB1, 2, 3, and 4.

2) Unsolder the lead from XC1 to CO1 and also the lead to CO2A. Unsolder the leads from XC1, 2, 3, and 4 and clean the solder from the terminals.

3) Remove CO from the panel.

NOTE: In some of the AT-1 units the oscillator capacitor is insulated from the panel while in other models the rotor shaft of the capacitor is mounted directly on the panel. If your unit is the type with the insulated mounting, you can omit Step 4 and the use of insulating washers described in Step 7. (Check parts list for correct type of capacitor needed.)

4) Enlarge the panel hole for capacitor CO to ½-inch diameter.

5) Drill a ⅛-inch diameter hole in the chassis top one inch in from the panel and one inch to the left of the large opening in the chassis.

6) Mount a one-lug terminal strip at this new hole.

7) Mount the new 100-$\mu\mu$f. variable in the position formerly occupied by CO using an insulating washer on each side of the panel.

8) Unsolder the end of the oscillator coil winding from terminal No. 1.

9) Unwind the top turns from the coil down to the first tap point but do not remove or cut the wire; then drill or punch a small hole in the coil form approximately ¼ inch below terminal No. 2.

10) Unsolder the 2-wire tap from terminal No. 2 and solder the two wires to terminal No. 1.

11) Wind three turns back on the form, and at the point where the third turn is opposite the new hole carefully scrape the enamel from the wire.

12) Using a 3-inch piece of No. 18 tinned wire, feed the end of the wire down through the top of the coil form and out the new hole. Solder the end of the wire to the point where the enamel was removed from the third turn.

13) Draw the other end of the wire through terminal No. 2 and solder to the terminal, trimming off any excess length.

14) Wind the remaining wire from the coil back on the form and bring the end through the hole immediately below terminal No. 3, then dress the end of the wire over to and through the hole opposite terminal No. 2. This point will be designated terminal No. 5. This completes the coil modifications.

TABLE I

Measured Input and Output Power of the AT-1 Before and After Modification

Band	*6L6 Amp. Unmodified**		*6L6 Amp. Modified*		*6BQ6 Amp. Modified*	
	Input, Watts	*Output, Watts*	*Input, Watts*	*Output, Watts*	*Input, Watts*	*Output, Watts*
80	26	9	27	18	35	25
40	27	9	27	15	35	25
20	27	9	27	15	35	23
15	34	5	31	10	35	22
10**	29	7	31	7	35	8

* Output coupling not adjustable.

** The amplifier is a frequency doubler in all three cases on this band.

R.f. measurements made with a Jones MicroMatch, 260 series, power with the transmitter coupled to a 50-ohm resistive load. Power input in each case by actual measurement of plate voltage and plate (not plate and screen) current.

Maximum plate current for the 6BQ6 is approximately 90 ma. With a plate voltage of approximately 400 volts, this gives an input of 35 watts. The screen current with this tube is very low so that the current registered by the AT-1 meter (which measures combined plate and screen current) is very nearly the same as the plate current alone.

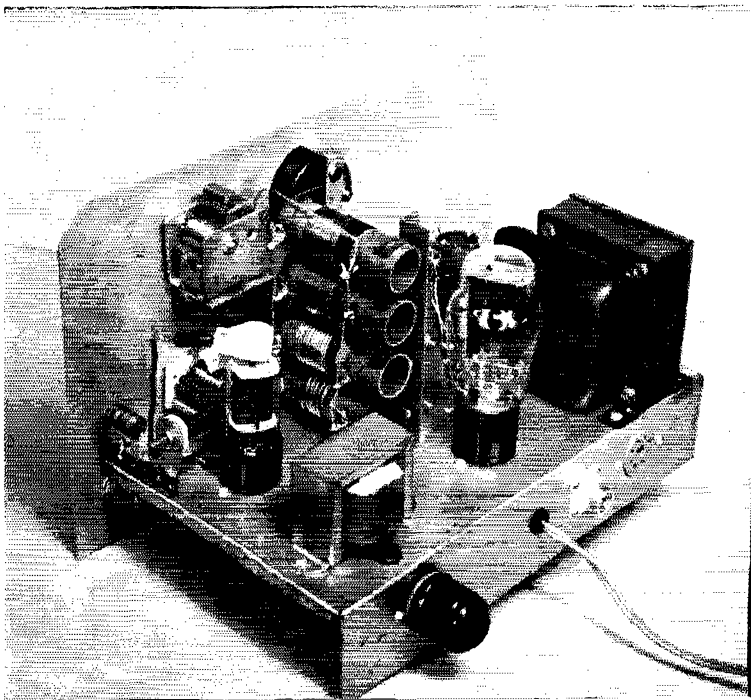
15) Mount the coil back in place.

16) In the original instructions, Pictorial 1 shows a lead connected from SB3 to the tinned wire between TB2 and TC1. Unsolder and remove this lead (not the lead between TB2 and TC1).

17) Cut an 8-inch length of No. 18 tinned wire and solder one end to the same point on the TB2-TC1 lead as the short piece formerly occupied.

18) Bring the wire up through the large opening in the chassis and bend it toward the oscillator capacitor. The wire should clear the top of the chassis by approximately 1½ inches. Dress the lead over to the stator terminal of the oscillator capacitor. Bend the wire at this point so that the end dresses up to XC5. Solder the wire at the stator terminal and to the end of the coil at XC5.

19) Feed the end of a 9-inch length of tinned wire through XC4 over to SB4 and solder the end to SB4. Draw the wire tight and solder at XC4. Feed the free end of the wire



View showing the modifications of the amplifier and output circuits. The neutralizing capacitor is visible just to the left of the 6BQ6. The output coupling capacitor is at the upper left-hand corner of the panel.

through the insulated lug on the one-lug terminal strip mounted in Step 6. This lug is designated TP2. Draw the wire through TP2 and bring the end up to the rotor side of the oscillator capacitor. Slip a piece of spaghetti insulation over the wire and make it long enough to cover the wire between the rotor terminal and TP2. Solder the connection at the rotor terminal but not at TP2. The length of the wire between XC4 and TP2 should be dressed so that it does not touch nearby objects.

20) Connect one lead of a 470-$\mu\mu$f. mica capacitor to TP2 and solder the other lead to chassis ground. The ground connection can be made at the screw which holds the TP2 terminal strip to the chassis.

21) Using short lengths of No. 18 tinned wire, connect one lead between SB3 and XC3, one lead from SB2 to XC1, and one lead between SB1 and XC2. Solder all connections and be sure that no lead touches another. This completes the oscillator modifications.

Amplifier Modifications

22) Remove the r.f. choke from between TC3 and Pin 3 of the 6L6 socket. Also unsolder the end of the 100-$\mu\mu$f. capacitor from Pin 3.

23) Drill a $\frac{1}{8}$-inch hole in the chassis top $\frac{1}{2}$ inch from the side and opposite the $\frac{1}{2}$-inch hole near the tube socket.

24) Mount a three-lug terminal strip at this new hole. The lug closest to the panel is designated TPA1, the middle lug TPA2, and the rear lug TPA3.

25) Unsolder the 47K resistor from B5 and TC2.

26) Unsolder the 0.001 capacitor from B8 and chassis ground. Also remove the lead from B8 to J1. Clean the solder from B8.

27) Cut the bare wire lead between B1 and B2 and clean the solder from B1. B2 is left connected to chassis ground.

28) Solder one end of a 22K $\frac{1}{2}$-watt resistor to TC2 and connect the other end to B1. Solder one end of a 2.5-mh. r.f. choke to B1 and solder the other end to B5.

29) Solder one end of a 2.5-mh. r.f. choke to J1 and connect the other end to B8. Solder one end of a 0.01 disk ceramic capacitor to B8 and solder the other lead to chassis ground.

30) Solder one end of a 0.01 disk ceramic capacitor to chassis ground and connect the other lead to TC3. Solder one end of a four-inch length of insulated wire to TC3. Feed the other end up through the $\frac{1}{4}$-inch hole near the tube socket and connect it to TPA1.

31) Solder one end of the 1.1-mh. r.f. choke to TPA1 and connect the other end to TPA2. Connect the free end of the 100-$\mu\mu$f. mica capacitor that is soldered to CA2A to TPA2.

32) Solder one end of a 13-inch length of No. 24 enameled wire to one lead of a 100-ohm 1-watt carbon resistor. Make the connection close to the body of the resistor. Be sure to scrape the enamel from the end of the wire before soldering.

33) Wind 14 close-spaced turns of the enameled wire on the body of the resistor and solder the end of the wire to other resistor lead. Cut one resistor lead to $\frac{3}{4}$ inch long and the other to $\frac{1}{2}$ inch.

34) Solder the $\frac{1}{2}$-inch resistor lead to the ceramic plate cap for the 6BQ6. Solder the other lead of the resistor to the end of a 3$\frac{1}{2}$-inch length of insulated wire (see photograph). Connect the other end of the 3$\frac{1}{2}$-inch length of wire to TPA2.

35) Cut a piece of tin $\frac{3}{4}$ inch wide by 1$\frac{3}{8}$ inches long from a tin can. This will serve as a mounting plate for the 20M11 neutralizing capacitor. See Fig. 2 for details of this plate.

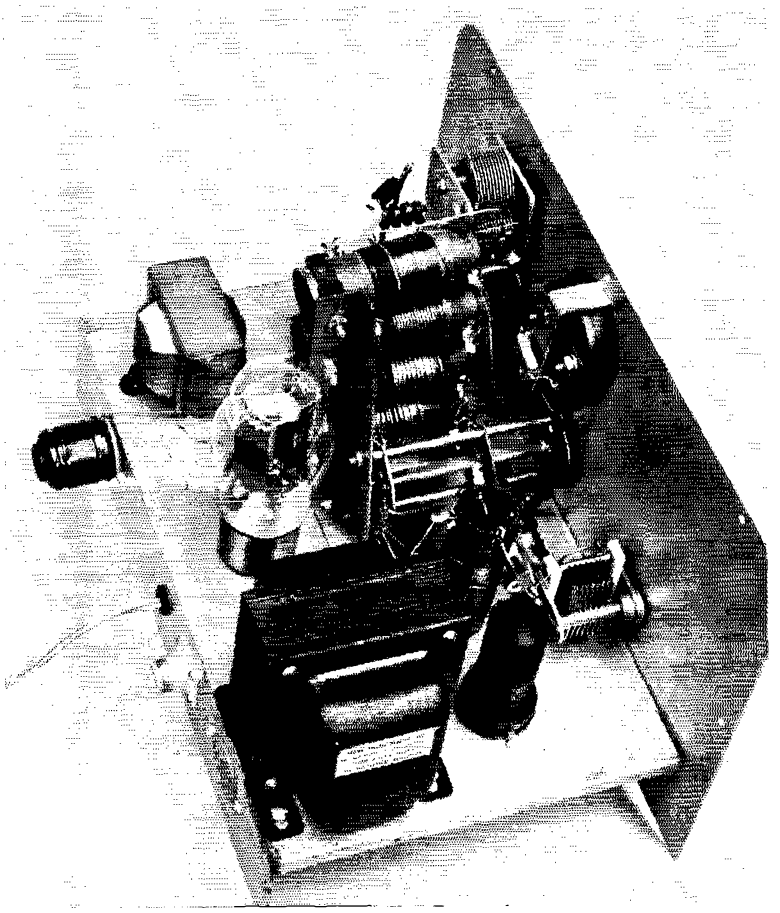
36) Mount the neutralizing capacitor on the plate using the shaft nut to hold the capacitor to the plate.

37) Cut a piece of No. 18 tinned wire 8$\frac{1}{2}$ inches long and also a piece of spaghetti 7$\frac{1}{2}$ inches long. Slip the spaghetti on the length of tinned wire.

38) Solder one end of the tinned wire to TP1, which is near the oscillator capacitor. Dress the wire above the chassis top and feed the end through TPA3 so that approximately $\frac{1}{2}$ inch of wire extends through TPA3.

39) Mount the neutralizing capacitor plate against TPA3 by feeding the end of the tinned wire lead through the small hole in the plate and then bending the lead back around TPA3. Heat the connection and flow solder around the joint to insure a good connection.

40) Take a short piece of No. 18 tinned wire and solder one end to the stator section of the neutralizing capacitor. Connect the other end to TPA2. This completes the amplifier modifications.



The AT-1 shown here was the model that had the rotor of the oscillator capacitor grounded to the panel. The rotor is insulated by enlarging the panel hole and using insulated washers at the rotor mounting. Just above the oscillator tube is the lead from the stator of the oscillator capacitor to the new terminal XC5 on the oscillator coil.

Output Link Changes

The variable capacitor, C_3 in Fig. 1, can be one of the inexpensive broadcast replacement types.

The maximum capacitance must be more than 300 $\mu\mu$f. Because of manufacturers' variations in construction, the method of installation may vary in each case. In the unit described here, a ½-inch hole was drilled in the panel 1¼ inches from the top of panel and directly over the amplifier capacitor CA. A small aluminum bracket was made to hold the capacitor in place. The frame of the capacitor was mounted on the bracket with two small screws and the bracket mounted to the panel. The important thing to remember when mounting the capacitor is that the frame or rotor is grounded to the chassis and the stator is insulated from the chassis.

After the capacitor is mounted in place, the amplifier coil assemblies — 80C, 40C, 20C, and 10C — must be removed from their holders. The easiest method of removing them is to unsolder the leads on the 80-meter coil at Terminals 2 and 4 and then 1 and 3, working down in this manner until all coils are removed. The coils are then ready for modification.

41) Unsolder the link ends from Terminals 3 and 4 on 10C and remove the link.

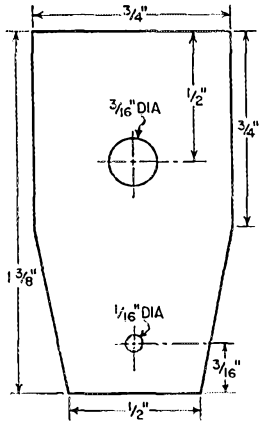


Fig. 2 — Details for making the tin plate for mounting the neutralizing capacitor.

42) Punch a small hole in the coil form between the second and third turns of the amplifier coil counting from the link end and on the same side of the coil form as terminal No. 4.

43) Using No. 24 enameled wire, insert one end of the wire through the new hole, bring the end up to terminal No. 4, and solder. Be sure to scrape the enamel from the end of the wire before soldering.

44) Wind 2½ turns of the No. 24 enameled wire on the coil form, the first 1½ turns being interwound with the amplifier coil in the same direction. Insert the end of the wire into the hole just at the end of the amplifier coil, feed the end up to terminal No. 3, and solder. Remount the coil in place but do not connect leads to terminals 1 and 3. Solder the leads from the switch to their original connections on terminals 2 and 4.

45) Unsolder and remove the link from terminals 3 and 4 of 20C. Wind on 7½ turns of No. 24 enameled wire using the same holes for the new link. Remount the coil, making connections to the switch leads but not terminals 1 and 3.

46) Using the same procedure outlined above, wind a new link on 40C consisting of 12½ turns of No. 24 enameled wire. Mount the coil back in place.

47) Do the same with 80C, the new link consisting of 16½ turns of No. 24 enameled wire. Remount.

PARTS LIST

1 470-$\mu\mu$f. mica capacitor (C_1)
2 0.01-μf. disk ceramic capacitors (C_2, C_4)
1 19.7-$\mu\mu$f. variable capacitor (C_N) (Johnson 20M11)
1 100-$\mu\mu$f. variable capacitor (For stud mounting use Millen 22100, Cardwell PL-6017, or Hammarlund HFA-100-A. If either of the latter two types is used, the spacers must be removed from CO and installed on the new capacitor. For shaft mounting, use Hammarlund MC-100-M or MC100-S, Cardwell PL-6017, Johnson 100R12, or Bud MC1855. If a shaft mounting is used, two ½-inch insulated washers with extruded shoulders will be needed for insulating the capacitor from the panel.)
1 365-$\mu\mu$f. single-section variable capacitor (C_3), broadcast replacement type
1 100-ohm 1-watt carbon resistor (R_2)
1 22,000-ohm ½-watt resistor (R_1)
1 69,000-ohm 1-watt resistor
2 2.5-mh. r.f. chokes (RFC_1, RFC_2)
1 6BQ6 tube
1 plate cap for 6BQ6
5 feet of No. 18 tinned wire
25 feet of No. 24 enameled wire
1 16-inch length of spaghetti insulation to cover No. 18 wire
1 one-lug bakelite tie point
1 three-lug bakelite tie point
2 ½-inch insulated washers with extruded shoulders (if needed for mounting the oscillator capacitor)

48) Using a length of No. 18 tinned wire, connect all the No. 3 terminals together and run the wire over to the stator of C_3, the series capacitor. Solder the end to the stator.

49) Connect all the No. 1 terminals together as originally wired.

50) Remove the lead that formerly connected 10C3 to chassis ground near the tube socket.

This completes the output link changes.

As the transmitter now stands, it can be operated straight through on all bands except 10 meters, where it is necessary to double the final.

Neutralization

As mentioned earlier, neutralization is necessary to prevent self-oscillation of the amplifier. A 40-watt light bulb connected to the output terminal of the transmitter will serve as a dummy load for testing purposes. Connect the metal screw-base portion of the bulb to the chassis and the base contact to the inner conductor of the coax output socket. Plug a key into the key jack, an 80-meter crystal into the crystal socket, and turn the bandswitch to the 80-meter band. It will be easier to familiarize oneself with neutralization procedure by starting with 80 meters. With the key open, turn the rig on and allow it to warm up for a minute or two. Switch the meter to read grid current and close the key. Tune the oscillator capacitor so that the grid current is about 3 ma. and then switch the meter to read plate current. Tune the amplifier capacitor for minimum plate current and the dummy load should light. It will probably be necessary to adjust the output capacitor for maximum output. Regardless of the setting of the output coupling capacitor, always check the final plate tuning to make sure it is in resonance, as indicated by minimum plate current.

Switch the meter to read grid current and press the key. Remove the crystal from its socket

(*Continued on page 130*)

• Recent Equipment —

The GPR-90 Communications Receiver

BE it automobiles or communications receivers, interest always runs high when a new one is announced. Each year the new models are carefully scanned to see if, at last, "they" have built our dream car or dream receiver. But, dreams being what they are and, we hear, so widely diversified, there never will be a dream job that will match up with everyone's reveries. To be practical about it, one should look for the refinements and new ideas that add up to the evolution of this and next year's models.

The GPR-90 will serve as a good example. It is a two-dial receiver and it has double conversion (above 3.2 Mc.), and in these two respects it might be considered not unlike a few contemporaries. But there is a lot more to it than that, as we found by digging around in the chassis and the wiring diagram.

The manufacturers of the receiver are new to the amateur field but not to the receiver-building game, since they have been building radio gear for the government and military for years. This experience is reflected in the GPR-90. There is a clean and refreshing look about the receiver and a quality about the finishes and wiring that one recognizes as the result of having to satisfy government inspectors and quality-control departments. The receiver looks as though it might stand some rough handling.

Electrically, you can get a fair idea in a hurry from the block diagram in Fig. 1. Hey! How about that 6AB4 r.f. amplifier — isn't its input circuit tuned?

The 6AB4 r.f. stage rates at least a separate paragraph. In the circuit, above 3.2 Mc., the grounded-grid 6AB4 amplifier is coupled to the antenna through a ferramic-core broadband transformer that provides two input impedance levels, 75 or 300 ohms. The sim-

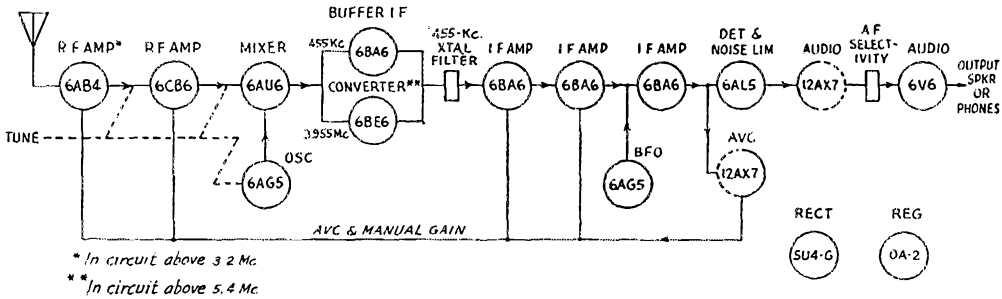
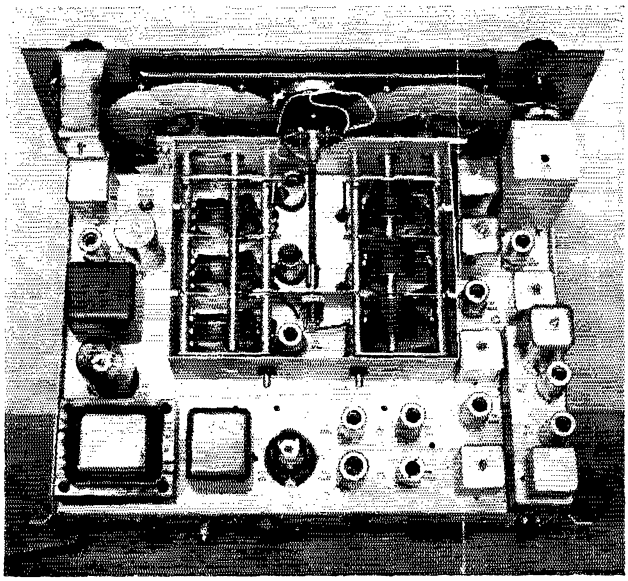
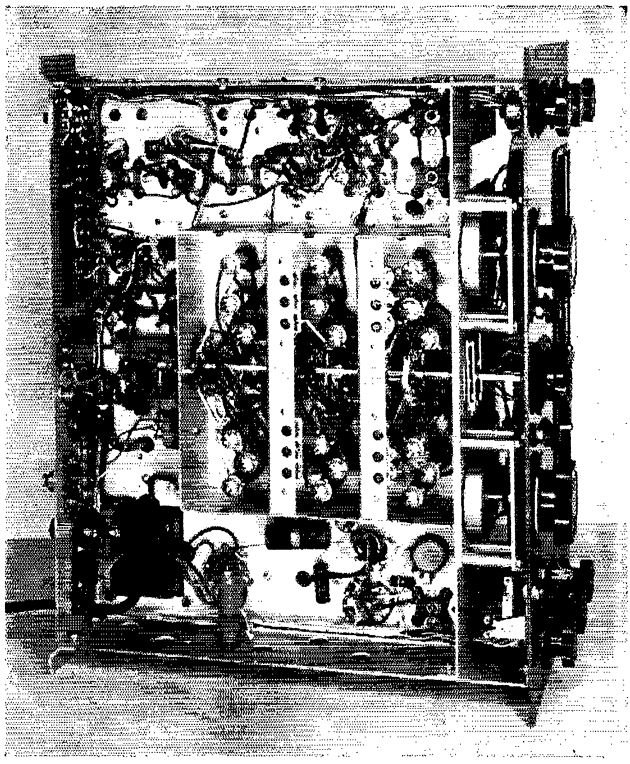


Fig. 1 — Block diagram of the GPR-90 communications receiver. Output impedance levels of 4, 8, 16 and 600 ohms are included.



Top view of the GPR-90 with the dust cover removed from the variable-capacitor housing.



The bottom cover over the r.f. section has been removed to show the coils and the bandswitch. The input circuit for the grounded-grid r.f. stage is mounted on the shield wall near the left-hand section of the bandswitch.

plified circuit is shown in Fig. 2. There will undoubtedly be some customers who will hook a random-length antenna on the receiver and not get as good signal transfer as they would with a proper antenna and feed line, but this is true with all short-wave receivers. The GPR-90 at least gives the knowing operator a choice of two popular impedance levels. On the lower-frequency bands the antenna couples to L_1 through a primary winding, and under these conditions the ANT TRIM panel control (a small variable across C_2) is truly an antenna trimmer. When the 6AB4 is in the circuit, the ANT TRIM becomes a trimmer control to bring the r.f. stages into alignment. Since the value of R_1 is increased on the higher-frequency ranges, the gain of the grounded-grid stage increases in these ranges.

Getting back to the over-all picture, the grounded-grid stage is followed by a more usual r.f. stage. The 6AG5 oscillator is coupled into the cathode circuit of the 6AU6 mixer. In the two lowest-frequency ranges the output of the 6AU6 mixer is switched into the 6BA6 buffer i.f. stage at 455 kc., but on the higher-frequency ranges it is switched into the 6BE6 converter stage. The grid circuit of the 6BE6 has three circuits tuned to 3.995 Mc., and its oscillator circuit is self-controlled. The manufacturer states that no appreciable improvement in stability could be gained by using crystal control at this point. With the 6BE6 converter active, the 6BA6 buffer i.f. is not used.

The crystal filter circuit is similar to that used in most receivers today, and has provision for five degrees of selectivity. The SELECTIVITY switch on the panel is marked in bandwidths at the -3 db. points, and these range from 200 to 2000 cycles. A sixth position on the switch cuts out the crystal filter and gives a 6-kc. bandwidth at -3 db. and an 18-kc. bandwidth at -40 db. The manufacturer's bandwidth curves show the -40 db. bandwidth in the sharpest position to be 5 kc.

Following the crystal filter there are three i.f. stages. The first two are included in the gain-control circuits (cathode control for manual, grid

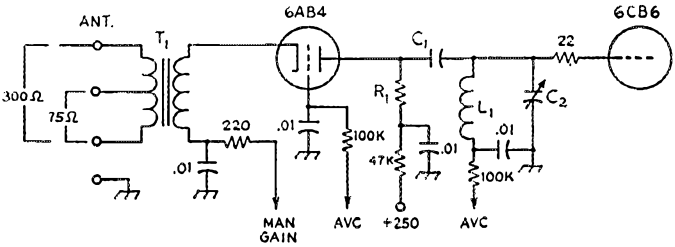


Fig. 2 — Simplified schematic diagram of the grounded-grid r.f. stage used above 3.2 Mc. R_1, C_1 and L_1 are switched for the various ranges and have different values on the various bands. T_1 is the same on all bands.

control for a.v.c.) and the last stage runs at constant gain. The b.f.o. is injected at the grid of the last i.f. stage, and there is also an i.f. take-off at this point for s.s.b. adapters and other accessories. The diode detector and automatic noise limiter (series diode) are conventional, but the use of variable audio selectivity is not. This consists of a parallel-tuned circuit peaked at around 1200 cycles. A variable resistor in series with the inductance allows the operator to change the *Q*, and consequently the selectivity of the circuit, from a sharp position that will separate the mark from the space signal of a teletype signal to a broad position that is useful for 'phone reception. The inductor is a toroid.

The receiver includes most of the auxiliary outlets found to be useful in present-day receivers: phono input, accessory socket, and even a utility a.c. outlet and a power plug for vibrator or battery operation.

The six tuning ranges of the receiver are 0.54 to 1.4 Mc., 1.4 to 3.3, 3.2 to 5.6, 5.4 to 9.7, 9.4 to 17.8 and 17.3 to 31.5 Mc. The band-set dial has an auxiliary scale that can be used for accurate logging of the settings necessary for ham-band operation or anything else, and for wide-range use following a 6- or 2-meter converter it was noted that it requires four knob rotations to cover 14.0 to 17.8 Mc. There are locks for both dials. Dial mechanisms are always interesting, we think — in the GPR-90 these consist of rim friction drive of the celluloid scales, from which a small gear drives a spring-loaded gear on the capacitor shaft. There are heavy flywheels on the knob shafts to furnish inertia for smooth tuning.

On the bandspread side, 5¾ turns are required to cover 3.5 to 4.0 Mc., 3¾ for the 40-meter band, 4½ for the 20-meter band, 2½ for 15, and 3½ for 10 meters.

Mechanically, there are a few things in the GPR-90 that you don't normally find in communications receivers. One of the photographs shows the tuning capacitors — these are securely tied at two points to the heavy front subpanel and at no other point. An extension at the rear of each capacitor floats in a rubber grommet, and consequently it is difficult for any chassis deformation to be transmitted to the capacitors. We have seen receivers with the tuning capacitors bolted to the chassis that were very sensitive to chassis deformation — apparently the GPR-90 engineers have too. Frequent use of tie points and terminal boards underneath the chassis, and tube locks on the 5U4G and 6V6, reflect the government-specification work mentioned earlier. The components appear to be high quality: A-B type variable resistors, and ceramic insulation and air trimmers throughout the oscillator section are examples.

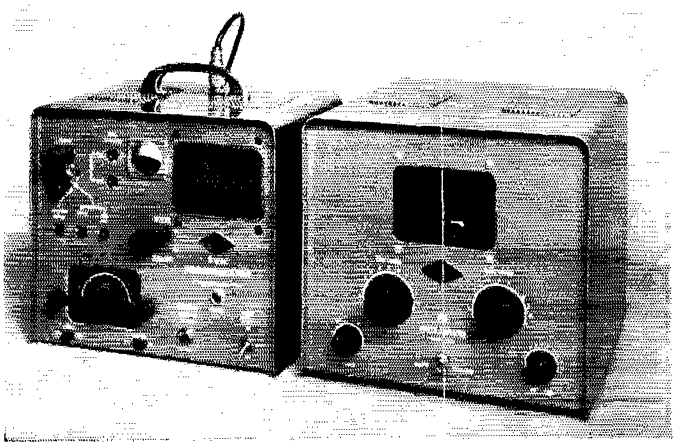
The GPR-90 is made by the Technical Materiél Corp., Mamaroneck, N. Y.

— *B. G*

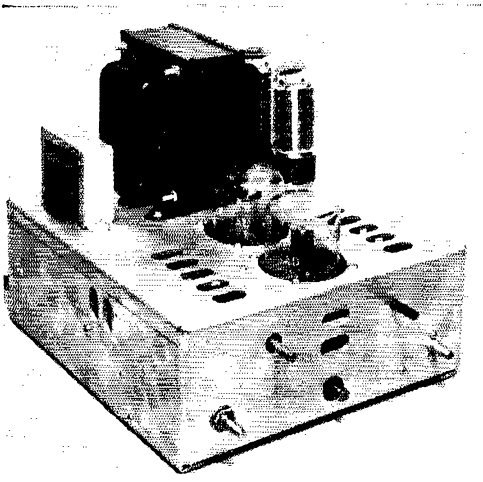
The Gonset V.H.F. Linear Power Amplifier

UNTIL the advent of single sideband, the linear amplifier was little known in amateur circles. Among v.h.f. men, particularly, the linear was almost unheard of, but here is a commercial product that seems bound to change all that.

The Gonset V.H.F. Linear Power Amplifier is designed as a matching unit for the popular Communicator, and it is available for either 50 or 144 Mc. When driven by the Communicator, or any amplitude-modulated rig of 3 to 6 watts output, the linear amplifier provides a power step-up of about 10 db., and it requires no additional accessories of any kind. It contains its own send-receive relay, so that the receiver of the Communicator can be used. Only two cables are required; one between the Communicator output and the amplifier input, and the other between the antenna relay and the receiver. These are furnished with the unit.



The Gonset V.H.F. Linear Power Amplifier, shown here with its companion unit, the Communicator, as a driver, is available for either 50 or 144 Mc.



The Gonset v.h.f. amplifier uses a pair of 826s, and has its own built-in high-voltage and bias supplies. Power output is about 50 watts, on voice, when drive is supplied by the Communicator or a similar modulated rig of 3 to 6 watts output.

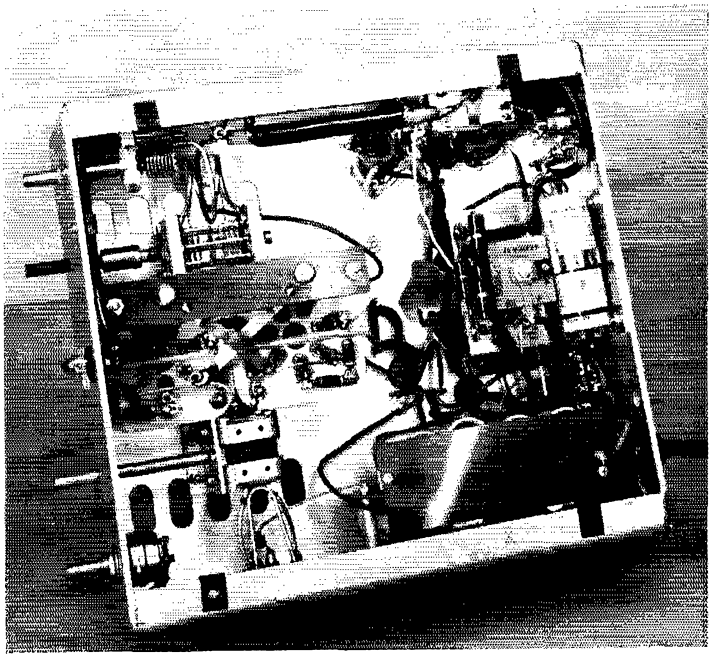
The amplifier uses two 826s in push-pull. Plate voltage, between 1050 to 1100 under normal load, is supplied by a pair of 5U4GB rectifiers in series. Grid bias is obtained from a selenium rectifier. The send-receive relay is connected in the negative high-voltage lead, and is adjusted to close when the plate current of the 826s is 100 ma. or more. In addition to switching the antenna, the relay also shorts out a section of bias supply bleeder, decreasing the effective operating bias when the amplifier is being driven. Closing of the relay at about 100 ma. plate current means that a minimum of about 3 watts of drive is required to operate the amplifier.

A meter jack is provided in the center tap of the 826 filaments, but a meter is not required for normal tuning or operation. A tuning lamp is coupled to the transmitter output, and the user merely tunes the various controls for the highest brilliance in the lamp that will allow upward modulation. This will be about 40 to 50 watts output, with the drive that is obtainable from the Communicator. If the amplifier is to be used for c.w. or f.m. service, it is merely adjusted for maximum tuning lamp brilliance as modulation capability is then of no importance.

The operator should also take note of the plate color of the 826s, and this is observed readily through a panel window. A tendency to run hotter than the normal cherry red is an indication of excessive grid drive. A 300-ma. meter should be plugged into the center-tap jack, and the drive adjusted until no more than about 225 ma. is indicated, corresponding to a driving power of about 6 watts.

Safety note: As soon as the operating switch is turned on, plate voltage is applied to the 826s. This makes operation of the unit outside the cabinet extremely dangerous, as the tubes themselves show no indication of plate voltage until drive is applied. There should be no occasion for operation of the amplifier with the cover removed. Neutralization, the only adjustment that is likely ever to be required, is accomplished through the bottom of the case, and no high-voltage circuits are exposed with the back cover removed. If you must look at "the works" be sure that the a.c. cord is removed from the outlet, and then short the plate coil to ground with an insulated screwdriver before touching any of the circuits.

— *E. P. T.*



Bottom view of the Gonset amplifier, 144-Mc. model. Grid and plate circuits may be seen at the left, top and bottom, respectively, of the tube sockets. Power-supply components are at the lower right, with the send-receive relay in the upper right corner.

Hints and Kinks For the Experimenter

WINDSHIELD-WIPER MOTOR FOR TUNING WHIP LOADING COILS

An electric windshield-wiper motor, mounted adjacent to the base of a mobile whip, provides a convenient and inexpensive means of tuning a roller-type base loading coil. It is very easy to arrange for reverse rotation of the motor because the field winding is brought out to a switch. Wiper motors can usually be obtained from an auto junk yard for a dollar or two.

— *Johnny Johnson, W2ZYX*

MOBILE ANTENNA MOUNTS FOR 144 MC.

The antenna mounting bracket shown in Fig. 1 is made from a piece of 0.064-inch aluminum strip. It permits vertical mounting of a quarter-wave 144-Mc. whip and can be easily fastened to the rain trough, above a car door, by self-tapping screws.

The 7/8-inch mounting hole at the top of the bracket will accommodate the base of a Master Mobile 2-meter whip. On the other hand, the bracket may be fitted with a Type 83-1J coax

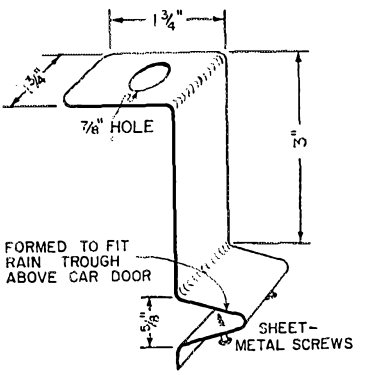


Fig. 1 — This simple homemade bracket mounts on the rain trough of a car and supports a 144-Mc. vertical whip.

adapter so that a homemade whip, based with a Type 83-1SP connector, can be quickly fastened to the assembly.

Fig. 2 shows a more complex but more efficient antenna mount. The base for the assembly, a rubber suction cup such as is used with car-top carriers, is fitted with a brass adapter (homemade) that mates with a Type 83-1T coax "Tee" adapter. The suction cup and the brass insert are fastened together with a flat-head machine screw. The head of the screw is covered with a fiber washer to prevent contact between the screw and the inner conductor of the Tee adapter. If the inner conductor of the Tee is drilled out at the bottom end, it will not be necessary to use the fiber washer.

R.f. power is fed to the center tap of the Tee adapter via a length of RG-58/U cable, a Type

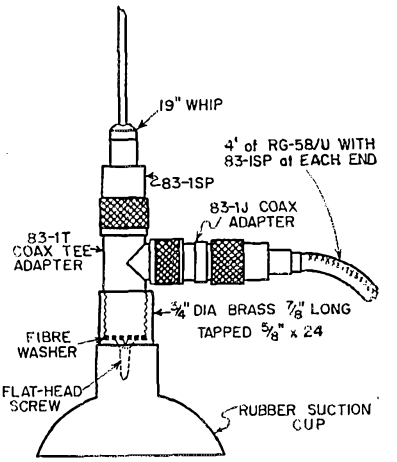


Fig. 2 — A simple but efficient method of mounting a 144-Mc. whip at the center of a car roof.

83-1P plug and a Type 83-1J "straight" adapter. The 19-inch whip, equipped with a 83-1SP connector, mates with the top end of the Tee adapter.

Both of the installations are neat in appearance, can be easily mounted on the car, and permit rapid removal of the antenna. When mounting the system shown in Fig. 2, it is advisable to apply a thin film of glycerine to the inside of the cup before the latter is fastened to the roof of the car.

Incidentally, a gain in signal strength is evident when changing over from the rain trough to the roof-center mounted antenna.

— *Gerald Bagdy, W2JUL*

OSCILLATOR MODIFICATION FOR THE "GLOBE SCOUT" TRANSMITTER

The 6V6 oscillator tube in the W.R.L. "Globe Scout" transmitter requires more drive than some of the small VFO units will deliver. This condition can be quickly remedied by changing the oscillator tube to a 6AG7, as suggested to me by W1DJC. The oscillator tube socket must be rewired to accommodate the new tube, but it is not necessary to alter the basic circuit.

After the modification, the transmitter can be driven by a small VFO such as the Heathkit VF-1, and will work as well with crystal control as it did before.

— *R. A. Laine, W1CDD*

600-1200-VOLT POWER SUPPLY COMBINATION

While building the "Final Rig" (that's the one that you think will be the last rig you'll ever build since it's going to have everything in it), I came up with the following gimmick which may be of interest to some rig builders.

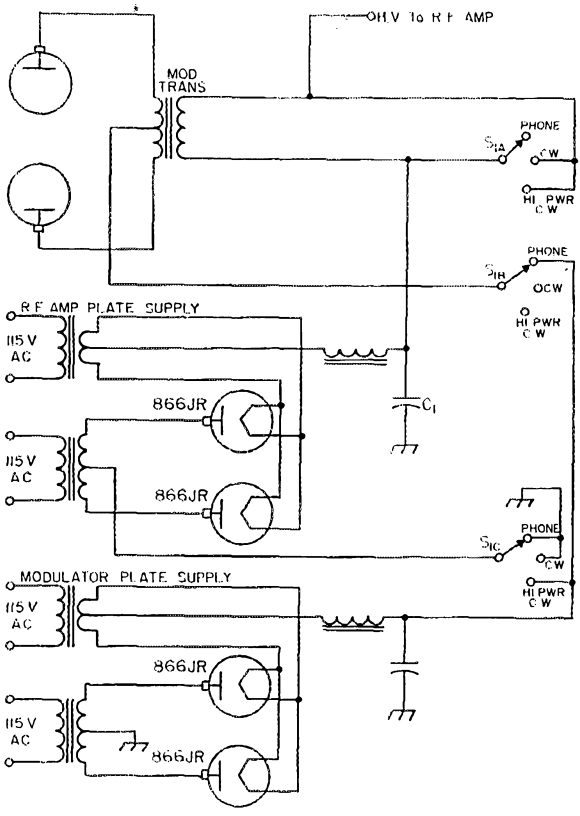


Fig. 3 — Circuit diagram of the 600–1200-volt power supply. C_1 should be rated at 1500 volts or more. S_1 is a 3-pole 3-position ceramic rotary switch. Power transformer ratings are discussed in the text.

Originally I planned to put a pair of 807s or equivalent tubes in the final, and so provided a 600-volt 250-ma. power supply for them. I also planned to use a pair of the same tubes as modulators, and provided a separate 600-volt 250-ma. power supply for them. After both power supplies were installed on the chassis and working, I considered the fact that half of my available d.c. power was unused on c.w. A little thought evolved the circuit shown in Fig. 3.

Basically, the control is a 3-pole 3-position switch. In the 'phone position it runs the r.f. section from one 600-volt supply, and the modulator from the other. In the c.w. position it removes plate power from the modulators and shorts out the secondary of the modulation transformer. In the third position, called hi-power c.w., it places the two 600-volt supplies in series, giving 1200 volts at 250 ma. for the final r.f. section. Ordinary 807s won't take that sort of power so I used a pair of 4-65As. These tubes draw practically the same plate current over a wide range of plate voltages — ratings being 150 ma. each through the 600–1500-volt range. Screen voltage comes from the 250-volt supply used for the exciter and speech-amplifier sections.

— *Howard J. Hanson, W7MRX*

A TRANSISTORIZED OSCILLATOR FOR 3.5 MC.

Hams have found many applications for junction transistors, even though many previous types have been limited to audio and intermediate frequencies. The most recent transistor is Raytheon's type 2N112 (formerly known as CK760). It has a cut-off at 5 Mc. and easily oscillates at 3.5 Mc. and above with only a 1.5-volt source of power.

The schematic in Fig. 4 is that of a simple oscillator useful at 3.5 Mc. and its harmonics. With a crystal inserted into the socket, C_1 tunes broadly to the desired frequency. For VFO output, remove the crystal and insert a dummy crystal holder with its *terminals shorted.* Then C_1 tunes the band with sufficient overlap at each end. The tone is T9 and remains steady as a rock after a minute or two drift.

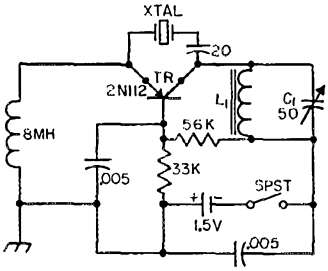


Fig. 4 — Circuit diagram of the transistorized oscillator. L_1 is the plate winding of a broadcast-oscillator coil (Meissner 14-1058 or equivalent).

This circuit may be used as a signal generator for ham frequencies, calibration purposes or as an external b.f.o. for a short-wave receiver having no beat oscillator of its own. Simply tune the transistor circuit approximately to that of a c.w. signal. This creates a beat with the incoming signal. No need to alter the receiver.

The oscillator uses less than 0.5 ma. at 1.5 volts, but it can be driven safely with up to 6 volts.

— *Nathaniel Queen, W2CPA*

ANOTHER SOURCE OF COIL FORMS

Two types of vials, used by druggists for packaging pills, make excellent coil forms of the inexpensive variety. Complete with plastic caps that may be used as mounting feet, the vials

come in two convenient sizes. One has a diameter of slightly less than ⅞ inch and the other is an even 1⅛ inches in diameter. Both types provide a winding length of 1½ inches. If a plug-in assembly is required, either form may be mounted on an old tube base or an octal plug. The caps can be pierced by a pin, scribe or other pointed object. A drill held by a pair of pliers may be used for drilling holes in the forms.

The vials are manufactured by Lermer of Garwood, N. J. My local drug store retails them at two for a nickel.

— *Frank Heinfling, W2KKL*

RTTY REGULATOR CIRCUIT

In the process of building an RTTY converter, I ran into trouble regulating the 60 ma. for the printer coils. The problem was solved by using the circuit shown in Fig. 5.

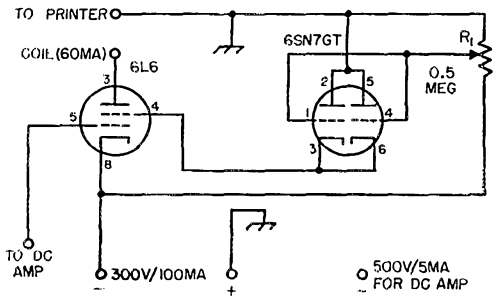


Fig. 5 — Circuit diagram of the RTTY regulator circuit. R_1 should have a linear taper.

In operation, the parallel 6SN7GT acts as a voltage regulator for the screen of the 6L6, holding the screen *voltage* to very close limits regardless of screen current. Under these conditions, the plate-current *vs.* plate-voltage curve of all beam power tubes comes into effect, thus holding the current in the plate circuit to the value selected by adjustment of the 0.5-megohm potentiometer. In practice, I found that the addition to the circuit of two more printing coils (1500 ohms each) plus 700 ohms of line dropped the printer current not more than 2 ma. The arrangement helped to straighten out the inductive lag in the build-up of the 60 ma. It almost completely removes the mark bias previously present.

The circuit works directly into the printer coil without using the polar relay. I did this because the only polar relay on hand was bad and couldn't be quieted down. However, after using this for keying, I will never use another polar relay. No filtering whatever is necessary, and there is just that much less equipment to give trouble. The polar relay was never intended to be used for RTTY or short-haul work in the first place. Its intended use is on long lines where the excessive capacity results in a delay in the mark without a corresponding delay in space. The polar normally works into a circuit where the line furnishes 25 ma. plus for mark and 25 ma. minus for space. Thus any delay or other distortion on mark will be matched by a corresponding distortion on space, which can be compensated for in the adjustments in the relay. All this is unnecessary for RTTY or short-haul work.

Notice that the power supply used with Fig. 5 is connected with the plus side grounded (for safety reasons) and that it also furnishes voltage for the d.c. amplifier.

— *Eugene Austin, WØLZL*

RE THE THREE-WAY SWITCH FOR THE SIMPLEST MODULATOR

Some time ago, one of my students installed a circuit similar to the one shown on page 36, *QST* for March, 1955. In doing so, the original cathode-to-ground lead, a short length of stout wire, was replaced by a pair of long leads running to and from the switch. His rig was thereby rendered inoperative because of instability. The problem was solved by connecting a 0.001-μf. disk ceramic directly between the cathode terminal of the tube socket and ground. A simple point to be sure, but one that may easily be overlooked by inexperienced amateurs.

— *John Dodge, W2MTQ*

HOMEMADE NEUTRALIZING CAPACITOR

A homemade neutralizing capacitor that has some advantages over commercially-made units is shown in Fig. 6. The method of construction permits bringing one terminal of the capacitor directly through a chassis, thus eliminating the extra feed-through insulator ordinarily required. The capacitor requires a minimum of

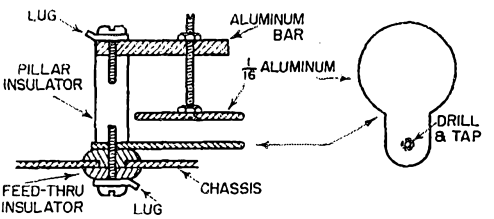


Fig. 6 — Drawing of the homemade neutralizing capacitor used by W1SIZ/6.

chassis area for mounting, and can be made to any desired maximum capacitance commensurate with high-voltage spacing requirements.

Capacitors of this type may be tailor-made for the popular capacitive neutralizing systems such as those described in Chapter Six of *The Radio Amateur's Handbook*.

— *Thomas F. Snyder, W1SIZ/6*

MORE OUTPUT FROM THE HT-18

The following may be of interest to those who use an HT-18 as an exciter. I have been able to boost the drive to an 813 by substituting a Type 6AK6 for the 6BA6 originally used in the VFO circuit. No change in the socket wiring is required. Also, the VR-105 voltage regulator has

(*Continued on page 150*)

Happenings of the Month

CONELRAD FOR AMATEURS

As previously reported in *QST* (p. 9, April, 1953; p. 46, August, 1954) the Federal Communications Commission has been in process of bringing the amateur radio service under a radio security system called "Conelrad" (for CONtrol of ELectromagnetic RADiation). Its purpose is to shut down amateur radio stations — except RACES stations — in the event of enemy attack, so that no navigational aid may be available to enemy aircraft. The system has already been put into effect in many other radio services. On August 31st FCC issued proposed rule-making to add the amateur service, the text of which appears below. Any comment must be filed by October 3rd.

As an inspection of the text will show, amateurs will be required to have some means of knowing whether a radio alert is in process. Since a principal means of dissemination of the alert is by standard broadcast stations (as well as FM and TV), monitoring a near-by b.c. station either aurally or with a simple visual indicator will undoubtedly be the simplest solution. *QST* will carry information on appropriate methods in future issues; see also p. 17, September, 1953.

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

In the Matter of Amendment to Part 12 of the Commission's Rules and Regulations to Effectuate the Commission's CONELRAD Plan for the Amateur Radio Service	Docket No. 11488

NOTICE OF PROPOSED RULE MAKING

1. The Commission has before it the approved CONELRAD Plan for the Amateur Radio Service. This plan was developed in coöperation with licensees, amateur radio organizations, the Department of Defense and the Office of Defense Mobilization. In order to put this plan into effect it is necessary to modify Part 12 of the Commission's Rules and Regulations as set forth in the attached Appendix.

2. These proposed amendments are promulgated by authority of Sections 303(r) and 606(c) of the Communications Act of 1934 as amended and Executive Order No. 10312 signed by the President December 10, 1951.

3. Any interested party who is of the opinion that the proposed amendment should not be adopted or should not be adopted in the form set forth herein may file on or before October 3, 1955, a written statement or brief setting forth his comments. Comments in support of the proposed amendment may also be filed on or before the same date. Comments or briefs in reply to the original comments may be filed within one week from the last day for filing said original comments or briefs. No additional comments may be filed unless (1) specifically requested by the Commission, or (2) good cause for the filing of such additional comments is established. The Commission will consider all such comments that are submitted before taking action in this matter, and, if any comments appear to warrant the holding of a hearing or oral argument, a notice of the time and place of such hearing or oral argument will be given.

4. In accordance with the provisions of Section 1.764 of the Commission's Rules and Regulations, an original and 14 copies of all statements, briefs, or comments shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION
MARY JANE MORRIS
Secretary

Adopted: August 31, 1955

APPENDIX

It is proposed to amend Part 12 of the Commission's Rules by adding the following new Sections:

CONELRAD

12.190 *Scope and Objective of CONELRAD.* CONtrol of ELectromagnetic RADiation applies to all radio stations in the Amateur Radio Service and is for the purpose of providing for the alerting and operation of radio stations in this service during periods of air attack or imminent threat thereof. The objective is to minimize the navigational aid that may be obtained by an enemy from the electromagnetic radiations emanating from radio stations in the Amateur Radio Service while simultaneously providing for a continued service under controlled conditions when such operation is essential to the public welfare.

12.191 *The CONELRAD RADIO ALERT* is the term applied to the Military Warning that an air attack is probable or imminent and which automatically orders the immediate implementation of CONELRAD procedures for all radio stations. The CONELRAD RADIO ALERT is distinct from the military or Civil Air Defense Warnings YELLOW or RED, but may be coincidental with such warnings.

12.192 *Reception of RADIO ALERT.* (a) The licensee of a station in the Amateur Radio Service is required to provide a means for reception of the CONELRAD RADIO ALERT or a means for the determination that such ALERT is in force.

(b) All operators of stations in the Amateur Radio Service will be responsible for the reception of the CONELRAD RADIO ALERT or indication that such ALERT is in force by:

(1) reception of a CONELRAD RADIO ALERT MESSAGE which will be broadcast by each standard, FM and TV broadcast station on its regular assigned frequency before they leave the air; or
(2) reception of standard broadcast stations operating under CONELRAD requirements during the period of the ALERT on 640 or 1240 kc; or
(3) determining that an ALERT is in force by lack of normal broadcast station operation (observations made before amateur station operation is begun and at least once every ten minutes during operation thereafter will be considered as sufficient for compliance with this Section); or
(4) other means if so authorized by the Federal Communications Commission.

12.193 *Operation During an ALERT.* During a CONELRAD RADIO ALERT the operation of all amateur radio stations, except stations in the Radio Amateur Civil Emergency Service (RACES) and stations specifically authorized otherwise, will be immediately discontinued until the RADIO ALL CLEAR is issued. Stations in the RACES and such others as are specifically authorized to operate during the ALERT will conduct operation under the following restrictions.

(a) No transmission shall be made unless it is of extreme emergency affecting the national safety or the safety of life and property.
(b) Transmissions shall be as short as possible.
(c) No station identification shall be given, either by transmission of call letters or by announce-

(Continued on page 148)

Correspondence From Members-

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

AMATEUR'S CODE

P. O. Box 26
Chauvin, La.

Editor, *QST:*

Paul M. Segal's Amateur's Code is worth-while. Here's another way of putting it:

Amiable
Moderate
Alert
True to ARRL (high fidelity)
Energetic
Useful for self, church, community, country
Refined — pure in taste, mind and morals.

— *Rev. M. Finnegan*

SAYING IT WITH WORDS

7528 Tripp St.
Skokie, Ill.

Editor, *QST:*

Aren't you guys getting a little stuffy in that rarified West Hartford atmosphere? While I agree with your Q-R-Mary editorial in the August issue of *QST* on the abuse of phonetics, I'm out of phase with you when you criticize the use of Q signs in 'phone conversation.

Every profession, racket, sport or hobby has its own lingo, including Hamdom. Verbal use of the Q code is no more reprehensible than a doctor referring to an "OB" case; a policeman mentioning a "B of I" record; or a soldier talking about his "ID" card.

What's wrong with a 'phone man saying: "Sorry, buddy, but the QRM got you that time. If you can QSY up a kaycee or two, maybe we can continue this QSO. If I don't hear you again, don't forget that QSL. My QTH is okay in the callbook." What's so bad about that?

Assuming the other guy has been a ham for at least a week, I'm sure he would know what I was talking about. And if he didn't, he'd look up those Q signals in a hurry. How would he ever use them on c.w. if he didn't know what they mean on 'phone?

If you're really serious about this, you'd better start revising your own *Handbook*. The terms BCI, TVI, VFO, r.f., i.f., and so on, are used rather profusely. To quote your own editorial: "Say it with words."

— *Spencer Allen, W9JGL*

P. O. Box 188
Chester, Vt.

Editor, *QST:*

. . . I think that misuse and excessive use of phonetics in the 'phone bands may be due to several factors.

Most of us began as SWLs, and when we got our tickets we fell into the habits of those we listened to. Once we were on the air we tended to perpetuate the habits because those with whom we talked had themselves been "trained" and in turn passed along their methods of operating, which we aped.

Most important is the tendency of any group of persons engaged in a specialized operation to develop a "lingo" of "trade talk" for intercommunication. But whereas such specialized speech often serves continuing needs in trades, in ham radio time-saving c.w. abbreviations have been adopted by 'phone men as a sort of badge of the amateur. In using phonetics they feel more like their conception of what a ham should sound like; it makes them feel that they now belong to the fraternity. This tendency can be heard by listening to those hams newly bitten by the "traffic bug" who phonetisize all over the place and adopt a clipped, terse, snappy delivery in imitation of what they believe to be the "best" communications style. These hams, in turn, are heard by SWLs who, admiring the "professional" technique, become conditioned and thus perpetuate the system when they become hams.

In this manner the cycle continues. At worst, excessive phonetics annoy those who abhor wasted time and inefficiency. At best, they satisfy those using them that they are "real" hams.

The least that all of us can do in any contact is to size up the situation quickly at the beginning, use phonetics where confusion might arise, and speak normally and distinctly throughout the contact. . . .

— *Jerome S. Miller, W8IDP/1*

1130 Martin
San Jose, Calif.

Editor, *QST:*

So you do not go for "Queen-Roger-Mary", etc. Don't blame you. My pet peeve is the guy that says "hi hi" and then laughs out loud! It really sounds silly.

— *Robert F. Davis, W6HAN*

SHADES OF THE WOUFF HONG

P. O. Box 59
Beverly Hills, Calif.

Editor, *QST:*

In the August issue of the *American Heritage* there is an article on the early days of radio as told by several of the men who were in at the beginning, including former President Hoover who, as Secretary of Commerce, had much to do with formulating the laws and regulations governing communications.

I quote the following from this article:

"The small boys in radio were a constant interest to me. Having their own wave band they had established an association of radio amateurs with whom we dealt constantly.

"One day I asked them how they were going to deal with enforcing the assignments of their wave band to prevent interference.

"The president of the association said, 'Well, I don't think you'd like to know what we do.'

" 'Oh, yes,' I said, 'I would.'

"He said, 'Well, we just take the fellow out and beat him up.' "

The mystery of the Wouff Hong finally solved!

— *John I. Wright, W6JPA*

25 YEARS OF ENJOYMENT

D.O.T. Radio Range
Graham, Ont.

Editor, *QST:*

I am a Full Member of the American Radio Relay League having had my first subscription to *QST* about 1930. Thank you for all the enjoyment that I have received from your magazine in the past, and for what the ARRL stands for. I doubt very much whether we would have been able to enjoy the finest of hobbies throughout the years had it not been for the loyal stand for the amateur's best interests which the League has always taken.

— *G. E. Taylor, VE3BNJ*

MORE ON SYMBOLS

67 Broad St.
New York 4, N. Y.

Editor, *QST:*

The several letters published in *QST* regarding the new standard graphical symbols are most encouraging for

although they object to a change they find little fault with the symbols themselves.

It is curiously human that while we all insist on being proponents of progress, we view with great suspicion any new proposal that will make us act or think differently than in the past. We are all too willing to declare such proposals to be the act of some hidden despot for certainly it cannot be progress if we must change. Fortunately, time heals all wounds, even those inflicted by standardization.

Ever since the first cave man selected those stones that fitted most comfortably into his hand and consequently made the best weapons, we have had standards. His hand became a rough "go – no go" gauge. Since then, standards, both written and unwritten, have provided us with simple routine answers to questions that are met frequently. They are, in effect, a set of habits that we purposely set about to learn because we know we will benefit from them.

The whole structure of amateur radio is based on standards, some of which are purely legal but most of which are arbitrary. The frequency bands in which we operate, types of emission, maximum power, the telegraph code, abbreviations and Q signals, operating procedures, and a host of other everyday things are carefully planned standards, seldom of the amateurs' making and changed as time and conditions dictate. . . .

— *Harold P. Westman*

903 Derrer Road
Columbus 4, Ohio

Editor, *QST:*

. . . MIL-STD-122 obligates those of us who earn our dough in making electronic equipment for the services to use the new and "distasteful" symbols. Most of us don't draw enough schematics as hams in this era of store-bought equipment to become rapidly accustomed to any change. I personally allowed myself one frightful grimace and then got busy getting used to them. I don't believe the majority of guys would seriously want to stick with the old symbols if they knew that the commercial designers are switching over. How do the "die-hards" propose to convert to ham use the dandy BC-1099785 they'll buy surplus in 1960 if it's diagram is expressed in symbols used only by the commercials? . . .

— *Charles C. Miller, W8JSU*

A KIND OF PLAGUE

504 N. Michigan
Glendora, Calif.

Editor, *QST:*

Not long ago I became aware of a special type of operating that couldn't be blamed entirely on lid operators. After much research into the matter I found that this person was a sufferer of that dreaded disease, Vacume Cranium Callites, which is especially contagious to new operators.

I have mentioned below some of the easily recogn.zable symptoms and simple cures.

The symptoms are:

1) Spasmodic sending often bearing a resemblance to CQ.
2) A jumble of dits and dahs (his call) interspersed once every 1½ to 2 minutes.
3) A break for listening every 5 to 7 minutes at which time the sufferer of this terrible malady sometimes musters the strength to tune 2 kc. each side of wherever his receiver happens to be set.
4) If he does happen to hook up he never sends each call less than 5 times at the beginning and end of each transmission.

Cure:

1) Sending in step with an ARRL practice tape.
2) Get a free copy of *Operating an Amateur Radio Station* from the ARRL.
3) Examine *your* operating practice.
4) Use your head.

— *John McHann, KN6KNF*

DX-CURED HAM

APO 102
San Francisco, Calif.

Editor, *QST:*

Greetings from Korea, "the land of the morning calm." In my visit to this lonely far eastern peninsula I have discovered a cure for the despised DX hog which, I believe, surpasses even the wrath of the Old Man or the fearsome Rettysnitch.

The picture: The QTH here is within shouting distance of such prefixes as VS1, 2, 4, and 6, VKs, KL7s, KAs, KRs, JAs, VU2, AC4, and Europeans and South Americans by the dozens along with many others. Most of these are heard regularly on 20- and 40-meter 'phone and c.w. with S9-plus signals and no, repeat *no*, QRM from W stations.

The rig here is a BC-610 with 500 cool watts, and the receivers are a pair of Collins 51Js. Antennas are your choice of doublets cut to frequency, long wires, or verticals. There are also plenty of high mountains for those who dream of stacked rhombics, etc. The emission is on 'phone, c.w., or RTTY for those guys who like to have a big TFC count. In addition, the entire rig is mobile on a large truck with a 10-kw a.c. generator if you like a change of scenery from time to time.

The qualifications: All you need is a hoggish interest in working DX and a Signal Corps high-speed radio operator's MOS, plus overseas orders for Korea. The orders are all too easy to get, hi.

The catch: Amateur radio operation with the Army equipment I just described is strictly illegal in Korea. So all you can do night after long, long night is just sit and listen while the rare DX booms in. (Unless you want to take a good chance of losing your rank, ham ticket, and about 10 years of your freedom by turning pirate.) They have monitor stations over here, too.

The cure: After 16 months of just listening like this and tearing your hair out you will become either: (1) a reformed man and honest DX chaser, (2) a drunken derelict, or (3) a babbling idiot. In my own sad case I already lean dangerously toward this third alternative after only a few months of exposure to this horrible cure. However, if I manage to survive these next crucial months I shall see you on 20-meter c.w. from the good old Stateside QTH. In the meantime, I can only hope that my poor miserable replacement will be the fellow that *QST* has voted as Mr. DX Hog of 1955.

— *Ken Stewart, W4SMK*

BOOK BANTER

P. O. Box 662
Nairobi, Kenya

Editor, *QST:*

Some little time ago I came across a copy of your *Radio Amateur's Handbook* — it was being used as a building block by a very young acquaintance. I rescued this somewhat tattered copy and at once realized that it was a masterpiece of ingenuity, organization and clarity. Being somewhat of an enthusiast at that time it became a sort of bible of radio to me. I can honestly say that I learned more from your book than from a collection of others costing some 30 pounds or so.

I have today, at great inconvenience, managed to secure your latest copy, an absolute gold mine, for 40 shillings. It seems to me that with the general run of such texts the author is at great pains to point out his own magnificent intelligence and learning. Teaching seems to be of secondary importance in spite of five or six pages in the introduction enlivened with persuasion to the contrary.

Why is it that American texts, I find, are so clear and concise, with an invaluable knack of guiding the seeker after knowledge painlessly on through the pitfalls of learning.

However, I have now donated the old copy to my African assistant who also aspires to be a radioman. The new copy could not be torn from me with wild horses.

. . . I wish you all the strength in the world and hope you will continue your work for many decades to come.

— *N. G. A. Boreham*

22 Green Acres Road
St. Louis 15, Mo.

Editor, *QST:*

During the last few years I have collected and read, cover to cover, most of the League's major publications. The *Handbook*, for instance, is the bible of the amateur and those even mildly interested in amateur radio. But your v.h.f. section has been somewhat ignored in view of the recent swing to the higher bands.

It is my suggestion that the League publish an "ARRL

V.H.F. Handbook" and include in it the many articles that have been written about v.h.f. equipment in the last few years. I started to prepare a representative list of things that could be included, but gave up as it could really get to be monstrous. But sections on v.h.f. propagation, receivers, transmitters and antennae could certainly round out a good publication to say nothing of the advertising you could get from the many makers of v.h.f. equipment.

In short, I'd say that a v.h.f. handbook would be a worth-while addition to the League's fine line of publications.

I would appreciate any comment on my idea although I doubt if it is original with me.

— *David Keler*

AW, SHUCKS

P. O. Box 776
Dunedin, New Zealand

Editor, *QST*:

I have just read your editorial "Best Sellers" in April *QST* and it seems to me that you are too modest.

Can you think of any hobby other than ham radio, where that hobby's publication has become the "bible."

Go to any Air Force station, Army or Navy station, government radio station, or any government-owned communications department the world over; and there sits the "bible" known otherwise as the *ARRL Radio Amateur's Handbook*. No wonder you are nearing 3,000,000 copies with such recommendations. . . .

— *William L. Shiel, ZL4AK*

LISTENER'S ADVICE

3127 N. 17 Dr.
Phoenix, Arizona

Editor, *QST*:

Re: SWL Davis' letter in July *QST*. Mr. David can get a 100% return to his SWL cards if he can perform only one feat — tell the amateurs just *one* good reason why they should waste their time and money! I agree wholeheartedly with VO2AW, having been deluged with SWLs myself. I think we hams should write SWL Davis saying, "I collect money. Please send me some." I wonder how many replies we'd get.

— *Robert Fenwick, W7VMQ*

P. O. Box 634
Espanola, Ontario

Editor, *QST*:

The two letters headed "Listener Reports" on p. 142 of the July issue of *QST* merit thoughtful consideration by all SWLs.

Since going to high power, a VO is deluged with SWL cards — worthless to him.

Meanwhile, an SWL on Guam says he doesn't have too much trouble hearing stations all over the world.

Now a little bit of evidence from me. I run a 30-watt Heathkit, and for the past few months have run an unsuccessful sked with a G. (I have had many W and VE QSOs, naturally.) I would like some evidence that my signal is going somewhere off this continent. In other words, SWL cards would be useful to me. Do I ever get any? Not on your life!

The moral, Mr. SWL, is that if you can "hear him without too much trouble," you won't get a card. Instead, learn code (10 w.p.m. is ample for this kind of thing) and dig down through the QRM and QRN to find the lower-power station who is calling CQ without success. He has a haunting feeling that, despite the tests he has made, and the winking of the neon bulb on the antenna tuner, he is not getting out. He will send you a grateful QSL — International Reply Coupon or not.

So, Mr. Davis, 14.02, Saturdays and Sundays, 1500-2000 GMT, for the first 4 minutes of the hour, if you really would like a VE card.

— *F. P. Hughes, VE3DQB*

QSL PERCENTAGE

530 W. 10 St.
Juneau, Alaska

Editor, *QST*:

I have heard quite a few Ws complaining about DX stations not QSLing 100 per cent so I have made a list of percentages of W QSLs received here at KL7AQU. Here it is: W1 — 30%, W2 — 45, W3 — 75, W4 — 4, W5 — 25, W6 — 65, W7 — 60, W8 — 65, W9 — 30, WØ — 90.

This is from 2000 QSOs over a period of 2 years. I wonder how this compares with DX station QSL percentages. What say, Ws?

— *Dennis O'Day, KL7AQU*

SKY'S THE LIMIT

Orchard Lane & Ellicott Rd.
Philadelphia 14, Penna.

Editor, *QST*:

We have always read with considerable stimulation your extracurricula articles on the aurora borealis, meteor scattering and "Project Moonbeam" to mention a few. For those scientifically and experimentally minded we recommend Prof. Kraus' article on "Radio Telescopes" in the March issue of *Scientific American*. For those who like to build complex arrays, here they can build an array of dipoles 1500 feet long or a parabolic dish reflector 250 feet in diameter if they wish.

The fact that there are many stars emitting tremendous quantities of radio energy should open up a new field for the amateur experimenter, and as for one who feels like Colossus with his 1 kw., let him contemplate one of the objects in the sky called Cygnus A which astronomers estimate radiates in a single second enough radio energy to supply the earth's requirements of heat and power for the next trillion years if converted and translated to heat.

— *F. M. Majewski, W3SQK*

[EDITOR'S NOTE — Prof. Kraus is the W8JK of beam fame.]

22nd ARRL Sweepstakes — 12th–13th and 19th–20th

How many ARRL sections and how many stations in those sections can you work in two week ends? If you are located anywhere in the League's field-organization territory (see page 6), you are cordially invited to take part in this popular annual operating activity. Any amateur bands, 'phone or c.w., may be used. The total operating time allowed each contestant is 40 hours. 'Phone entries are compared only with other 'phone entries — c.w. scores only with other c.w. scores — in your particular section, in the competition for awards. The week-end periods starting Saturday afternoon (1500 PST or 1800 EST) on the 12th and 19th of November mark the open season for SS contacts.

A complete announcement of the contest, including the rules governing participation, will appear in November QST. The rules will be the same as those of the 1954 SS. Amateurs in remote ARRL sections who do not receive the November issue before the Sweepstakes may refer to November, 1954, *QST* for contest details.

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 prescribed in November 1954 or in the next issue of *QST* is followed.

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

YLRL Anniversary Party

The YLRL Sixteenth Anniversary Party is scheduled for Dec. 7th and 8th ('phone) and Dec. 14th and 15th (c.w.). The contest will be held on week days this year instead of on week ends as in the past. New rules voted upon since last year's party will be followed. Watch for complete details next issue — but reserve the dates now!

Field Day

Where were *you* on Field Day? Adding to the statistics and having a fine time doing it? A number of us did just that. There could have been more girls participating though — many more. Let's see what kind of Field Day story we *did* make in '55.

Headquarters YLs W1s YYM, Ellen, ZIB, Ann, and ZID, Anne, boosted the score of the Laurel Amateur Radio Assn. (W1ICP/1) at Hartland Mt., Granby, Conn. Twelve-year-old WN1CDE, Marsha, was on hand to assist. . . . Working 20 meters under the call K4ACC/4 for her first FD, W4DBP, Jaunita, exclaimed, "Believe me! I will be back in there again next year. Didn't know anyone could have such fun." . . . President of the Elkhart ARC, W9MLE, Peggy, worked 80 and 40 c.w. with her outfit at a site near Bristol, Ind. . . . W9UXL, Lois, says she got in on FD by loaning her half of a generator, along with the OM's half, to the local radio club. . . . Fourteen-year-old K2DSL, Merceda, concluded after a stint of operating with the Delaware Valley Radio Assn. that Field Day was so much fun that she wished "it were held every week instead of every year!" . . . OM K6DV reports that K6BGM, Caroline, operated with the Santa Clara County ARA, W6UW/6, atop 4400-ft. Mt. Hamilton, 50 miles south of San Francisco. . . . W9AQB, Norma, recovering from a recent illness, did some logging and made a few calls for the Michigan ARC. . . . W9LOY, Cris, operated 40 'phone using one of the North Suburban (Ill.) Radio Club's ten transmitters. . . . The XYLs of the Tri-State Amateur Radio Society, TARS Auxiliary, devoted the week end to keeping their OMs well-nourished. From noon Saturday to finish time Sunday, the girls worked in shifts and served quantities of tasty home-style fare. Auxiliary President Dorothy McGuyer, XYL of W9DGA, remarked: "Besides being glad to help, this event is enjoyed by all. We do make a little profit and use it for entertaining our OMs."

Other YL FDers we've heard about were W1BCU, K4BNG, W5s KQG, WXT, W9s GME, JUJ, SYX, and W1QON. And credit is surely due that scores of loyal XYLs who packed box lunches for their OMs or who actually en-

New officers of the San Diego YLRL are (*l. to r.*): President Mary Poe, W6MWU; V. P. Kathy Kreysler, K6AWP; Secy. Isabell McKenney, K6CAL; and Treas. "Billie" MacDonald, K6EOG.

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

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Installed as new officers of the Chicago unit of the YLRL are (*seated, l. to r.*): Vice-Pres. Betty Dorsch, WN9YJC; Pres. Jean Essory, W9RPC; Secy. Betty Sandberg, WN9STR; Treas. Helen Kennedy, WN9MXI. (*Standing*): Publicity Chairman Grace Ryden, W9GME; Sergeant at Arms Dorothy Galitz; Board Director Eleanor Engebretsen, W9SEZ. Several members have received their tickets as a result of the club's training classes.

♦

camped with their spouses and braved the rigors of cooking in the field alfresco. Reports of the usual W6 activity are missing this year, for an understandable reason. The YLRL's first International Convention was held in Santa Monica June 24th-27th. Plans for the affair had gone too far before the convention committee realized that it coincided with FD. If you were in there pitching and don't see your call in this account, send us the details. We'd like them for future reference.

Starting right now we're going to stump for more YLs working Field Day. From the standpoint of experience and sheer enjoyment, we just can't afford not to take part in Hamdom's most interesting annual activity.

See December *QST* for the complete tabulation of results and CU next FD for sure!

New YLRL Net Schedule

Here is the schedule of nets registered with the YLRL for the 1955–56 term, as received from the YLRL Vice-President. Please address inquiries direct to Gloria Matuska, W9YBC, 2322 South Second Ave., North Riverside, Ill.

'Phone

Freq. (kc)	*Day*	*Time*	*NCS*
3900	Mon.	3:00 P.M. PST	W7HHH; Alt.: W7NJ8
3900	Wed.	8:00 A.M. EST	W1YPT
3900	Wed.	9:30 A.M. EST	W8ATB
3915	Wed.	9:00 A.M. PST	W6PJF; Alt.: W6GQZ
3970	Mon.	10:00 A.M. CST	WØUDU; Alts.: WØBFW & WØPIK
7215	Thurs.	9:00 A.M. EST	K2IWO
14,240	Thurs.	11:00 A.M. PST	W6UHA; Alt.: W1TRE
28,900	1st Tues. of month	9:00 P.M. EST	(not announced)

1955 AWTAR

For the fourth year the pilots who flew in the 1955 All-Women Transcontinental Air Race had the assistance of amateurs throughout the country. Race information, such as take-off and arrival times, weather conditions, progress reports, etc., was relayed by a network of more than one hundred amateur stations from the start on July 2nd at Long Beach, Calif., to the finish on July 6th at Springfield, Mass. Serving for the third consecutive term, Betty Gillies, W6QPI, was Air Chairman for the Ninth Annual Powder-Puff Derby. Eunice Gordon, W1UKR, headed amateur operations, with Viola Grossman, W2JZX, assisting her. Evelyn Scott, W6NZP, was again in charge of radio operations at Long Beach. Other Radio Chairmen at each stop-over city were as follows:

Blythe, Calif., W6FLD; *Phoenix, Ariz.*, YL Janis Kennedy, W7PWU *Tucson, Ariz.*, W7LAD; *El Paso, Tex.*, W5KBP and W5IAF *Midland, Tex.*, W5GGC and W5GOS; *Wichita Falls, Tex.*, YL Garlena Powell, W5QJZ; *Tulsa, Okla.*, W5PA: *Springfield, Mo.*, WØHUI; *St. Louis, Mo.* W9YWL and WØMSX; *Terre Haute, Ind.*, W9ZHL; *Dayton, Ohio*, W8FPZ and KL7PIV/W8; *Wheeling, W. Va.*, W8PHY and W8KXD; *Reading, Pa.*, W3PFT.

Others who assisted the various chairmen were W1KUL, W3BN, W5UUR, W8DWT, W8YFX, WØDLS, WØVZC, WØPUS and YLs W2KEB, K6CPX and W6LMQ. Copy deadline prevents a complete list of participating amateurs in this issue.

Ninety-two participants flew in 54 300-horsepower-or-less aircraft. Flying a Cessna 180, Mrs. Frances Bera of Los Angeles, with her sister Mrs. Edna Bower of Long Beach as copilot, placed first in the handicap. The plane that placed third was piloted by W1YUO, Jerry Gardiner, of Waterford, Connecticut.

Portable or mobile stations operated directly from the airport at each stopover city. Conditions on 75 and 20, the two bands used, were reported very good by W1UKR, who actually lived at the Barnes-Westfield Airport for six days. Operators at Springfield monitored on 20 meters the take-off at three-minute intervals of the planes from Long Beach.

At a post-race banquet, members of The Ninety-Nines, Inc., sponsors of the race, expressed their appreciation to Eunice for the valuable assistance that the amateurs had given to them. The husband of one of the flyers remarked: "I used to have to sweat it out, not knowing where my wife was, nor how she was progressing. Now, thanks to you hams, I can literally follow her every mile of the course."

Miscellany

Emergency Coördinator W5LGY, Helen Douglas, wonders how many other YLs are ECs too. A provocative query! Drop us a card and let us know it you hold the appointment — and if you don't, why not consider the job? Here's another chance to render amateur radio and your community valuable service.

—•••—

Yes, she is — a licensed YL, that is. Her call — W5IOZ; her age — ten young years. Paula Bettis of McAlester, Okla., passed her Novice exam last November and received her Conditional Class license in June. A member of the Texas YL Round-up Net, her small voice can be heard on 75 regularly.

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The office of secretary-treasurer in the YLRL has been split. W3VLX, Lolly Keller, 3316 Unionville Pike, Hatfield, Penna., is now secretary; WØMMT, Marie Ellis, 531 Cowan St., Ft. Collins, Colo., is Treasurer.

—•••—

YLRL President W9LOY announces that W4SGD, Katherine Johnson, Box 414, Fuquay Springs, N. C., succeeds W7GLK as YL Century Certificate Custodian. (Complete rules for the YLCC award were in August, 1955, *QST*.)

—•••—

WAC/YL Certificate No. 2 has been issued by the YLRL to ZL1BY, William A. Wilson. Certificate No. 1 is held by

(Continued on page 144)

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Rosita will never get her own ticket but occasionally she transmits a yelp or two during her mistress' QSOs. In the photo W8HUX is persuading her Mexican chihuahua to display her ability for W8RZN and W8MBI. Marvel, seated, Dorothy, left, and Marie, right, are three well-known Toledo YLs.

♦

QST for

• Technical Correspondence—

TRANSISTOR TRANSMITTER DX

4815 S.W. Patton Road
Portland 1, Ore.

Technical Editor, *QST:*

From the standpoint of interest in the use of transistors on the amateur frequencies, I submit the following for whatever value it may have.

Using a transistor and running 1.8 mw. I worked the following stations:

August 22nd — W7DIS, Portland, Ore., approximately 2 miles air line.

August 23rd — WN7AAV, Salem, Ore., approximately 45 miles air line.

August 24th — W7TNF, Astoria, Ore., approximately 85 miles air line.

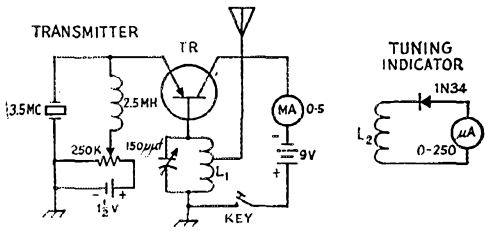
The transistor transmitter is crystal controlled on 3701 kc. The W7DIS and W7TNF QSOs were arranged, but the WN7AAV QSO was not. The reports were W7DIS, 339; W7TNF, 449; WN7AAV, 369.

On August 25th, contact was made with W7WPR, using the transistor, running 2.5 mw. input. W7WPR is in Seattle, Washington, approximately 200 miles away, and a 459 report was received. He was receiving me on an SX-25 receiver and a folded-dipole antenna.

The transistor used in this circuit is a Motorola type XN-2 PNP junction transistor. It is primarily designed to operate at frequencies around 455 kc., but experiments have shown that it operates very satisfactorily at frequencies in the 80-meter band.

Maximum (absolute) ratings of this transistor are:

Collector volts	minus 10
Collector current	minus 2 ma.
Collector dissipation	20 mw. at 25 degrees C



The transistor transmitter at W7UUZ uses a Motorola type XN-2 PNP transistor. L_1 tunes to 3.5 Mc. with the capacitor fully meshed. L_2 in the tuning indicator is a 6- to 8-turn pick-up loop.

Tuning the transistor transmitter is relatively easy, and the only precaution worth mentioning is that the collector current must not exceed the maximum ratings of the transistor used. To preclude this possibility, the arm of the potentiometer should initially be at the ground end.

The tuning procedure then is first to turn the receiver to the frequency of the crystal used. Apply the collector voltage (make sure that the arm of the potentiometer is turned to the grounded end). Turn the potentiometer up until the milliammeter reads approximately 1½ ma. Then tune the tank condenser until maximum current is indicated (do not exceed 2 ma.). If it starts to go over 2 ma. return the arm of the potentiometer closer to the ground end (this much will indicate that the circuit is oscillating). Connect the antenna and go through the same procedure, always being careful not to exceed the maximum ratings of the transistor (tests have shown that in c.w. service currents of up to 4 ma. will not harm a transistor of this type).

Because of the small available output I found that it was very difficult to tune the antenna to resonance. Using a few turns of coil with a 1N34 diode and a 0–250 microammeter makes for a very sensitive tuning indicator. Loading of the tuning network with this gimmick will cause the circuit to go off resonance, and when the instrument is removed maximum transfer of the signal to the antenna has dropped off.

— *Robert L. Ritz, W7UUZ*

25 Years Ago this month

October 1930

. . . Exhorting in "The President's Corner," Hiram Percy Maxim suggests that preparation be made for the upcoming International Radiotelegraph Conference to be held in Madrid in 1932. He urges that the League place a steady supply of amateur radio knowledge into the hands of those who will be delegates to the conference.

. . . "A Multi-Range Receiver with Four Tuned Circuits" is described by Robert S. Kruse, former *QST* Technical Editor. The unit features single-control tuning.

. . . Clark C. Rodimon, W1SZ, gives the latest dope on 28-Mc. activity and experimentation with "High-Frequency Notes."

. . . "Preparing an Article for *QST*," by James J. Lamb, *QST* Technical Editor, enlightens potential *QST* authors by "clueing them in" on just how it's done.

. . . "The Dynatron Frequency Meter," by George Grammer, W1DF, tells how to build, calibrate and use this modern measuring device. Generalized practical information on frequency-meter design and calibration is also abundantly presented.

. . . "How Our Signals Look," by Paul E. Griffith, W9DBW, lets the reader in on how a short-wave signal actually appears.

. . . Operated by Allen D. Gunston, W7GP is the station of the month. Mr. Gunston's rig uses a crystal-controlled transmitter employing two Type '10s, a Type '03A, and a Type '04A in the final. The antenna is a single-wire-fed Hertz and the receiver a remodeled commercial four-tuber.

. . . A detailed discourse entitled "Neutralizing Radio-Frequency Amplifiers" is made by Robert T. Foreman, W9ZZE.

HAMFEST CALENDAR

NEW YORK — The Federation of Long Island Radio Clubs is holding its annual Hamfest on Friday evening, October 14th, 8 o'clock, at the Lost Battalion Hall, 93–29 Queens Blvd., Elmhurst, L. I., N. Y. There will be exhibits, music for dancing, and areas set apart to meet special ham friends you've worked on the air. Tickets purchased in advance, $2.00; at the door, $2.50. Contact Robert I. Lippman, 30–51 Hobart St., Woodside 77, New York, for reservations.

OKLAHOMA — Another big general Hamfest & Auction on October 23rd at the New YMCA in Tulsa. There will be special entertainment for the ladies and noon dinner will be served on the spot. Total price per person is only $2.00 advance registration, but $2.50 at the door. Send all reservations to Norman Smith, W5EYK, 3210 South Cincinnati Ave., Tulsa, Oklahoma.

WISCONSIN — The Mancorad Radio Club, Inc., will sponsor the 1955 ARRL Wisconsin Section Meeting at its annual Fall Hamfest, to be held October 29th at the Lincoln Park Field House, Manitowoc, Wisc. Advance registration fee, $2.00, includes dinner. Late registration fee, $2.50. There will be an interesting technical program for OMs, and a special program for YLs and XYLs. For additional information, write Howard Hamann, W9RYV, 1340 North 9th St., Manitowoc, Wisc.

ARE YOU LICENSED?

• When joining the League or renewing your membership, it is important that you show whether you have an amateur license, either station or operator. Please state your call and/or the class of operator license held, that we may verify your classification.

Annual Simulated Emergency Test

(October 8–9, 1955)

By the time this appears in print, all ECs, SECs, and SCMs will have received a copy of the "SET Bulletin" outlining details and last-minute instructions concerning the ARRL's annual Simulated Emergency Test. This announcement is for the benefit of all amateurs, so that you will know about the imminence of the test and have a general idea how it works and what to do if you wish to take part.

The SET is not a contest. It is the annual test of AREC facilities in conjunction with the principal agencies we serve. Each AREC organization will attempt to better its last year's score, so the scoring system will be the same as in previous years. Here's a brief run-down of how the SET works:

1) The EC calls a surprise alert of his AREC organization sometime during the October 8th-9th week end. If another date is more convenient for local reasons, such an exercise can be counted as the SET exercise. Conduct your drill on the designated week end if you can.

2) The group conducts a simulated emergency test under the EC's direction. The test may be slanted toward natural disaster (with Red Cross participation, if feasible) or enemy attack (in coördination with local civil defense). During the test, each local participant should dispatch a message *in standard ARRL form* to the EC, indicating his presence and availability, or anything else the EC directs.

3) The EC dispatches a message to ARRL Headquarters briefly describing the test and mentioning calls of participants.

4) At the EC's solicitation, the local Red Cross Disaster Chairman (or other official) dispatches a message to the American National Red Cross in Richmond, Va., via amateur radio, reporting Red Cross participation in the test.

5) Also at the EC's solicitation, the local Civil Defense Director dispatches a message by amateur radio to his State Civil Defense Director reporting civil defense participation in the test, if any. This is a job for the SEC and state or section traffic and emergency nets. A list of state directors is included in the SET Bulletin.

6) The local press is brought into the exercise for the maximum in publicity. ARRL sends out a publicity release, but your best publicity is generated at the local level. Invite the press to your exercise.

7) Some time during the October 8th–9th week end, a Test Emergency Alert (TEA) message will be transmitted on the National Calling and Emergency Frequencies. If you copy the message, send us a radiogram indicating you copied it (giving station from which copied, date, time and frequency), then send us a confirming copy of the complete message (not just the text) by mail, you'll get special *QST* mention in the SET write-up. Last year the message was sent by W1AW only once on c.w. and once on 'phone. This year we hope to have it sent more often, and by stations in the Midwest and Far West also, if possible. Keep your receiver tuned to one of the National Calling and Emergency Frequencies during the week end and you can't miss it.

8) After the test, the EC reports details on a form provided with the Bulletin. *See that yours reports, so your work will receive credit.*

W1AW and other stations operated by ARRL staff members will be active to take incoming traffic for ARRL. Traffic for the Red Cross or state civil defense offices can follow regular routes, most of which are normally activated on Saturdays and will be activated especially on Sundays during the SET. If Amateur Red Cross Stations W6CXO (San Francisco), W9DUA (Springfield, Ill.) and W3PZA (Washington, D. C.) are able to be active, they can take traffic for American National Red Cross. If you cannot clear your hook on the NCE frequencies, try one of these: 3640 or 3880 (for Conn.), 3680 or 3835 (for Va.).

In Canada, Red Cross traffic should be forwarded to Canadian National Red Cross in Toronto, civil defense traffic to Provincial Civil Defense headquarters. Canadian ECs send their SET reports to ARRL, same as all ECs. Designated Canadian National Calling and Emergency Frequencies are 3535, 3765, 7050, 14,060, 14,160 and 28,250 kc.

If you are not already signed up in the AREC, now would be a good time to get lined up with your EC and start your public-service work right by participating in the SET. Why not look into it locally and see what's cooking? We'll tell you the name and address of your EC (if any) if you don't already know it.

See you on October 8th–9th in the SET, OM?

NATIONAL CALLING AND EMERGENCY FREQUENCIES (kc.)

C.W.		*'PHONE*	
3550	14,050	3875	14,225
7100	21,050	7250	21,040
28,100		29,640	

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
W2, K2 — H. W. Yahnel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia 5, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Oren B. Gambill, W5WI, 2514 N. Garrison, Tulsa 6, Okla.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Walter E. Musgrave, W8NGW, 1294 E. 188th St., Cleveland 10, Ohio.
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — Harry J. Mabson, VE2APH, 122 Regent Ave., Beaconsfield West, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 329 15th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1A, P. O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska.
KZ5 — Gilbert C. Foster, KZ5GF, Box 407, Balboa, C. Z.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

'Ow:

When an unbeliever (stranger to amateur radio) pays a visit to your hamshack, chances are you're more than a little perplexed at the naïve questions put to you. One such BCL-type acquaintance of Jeeves' early Oxford gyp days called on us recently and performed true to this form. After those two well-qualified quidnuncs put the Boss's brandy stock to rout Jeeves brought the chap into our shack. Their disconcertingly discursive conversation took the following course. . . .

Guest: Good 'eavens, J.J. — 'ow far do you communicate with this curious apparatus?

Jeeves: Boundless, boundlessly far, Reginald. On a still evening we may be detected inside Outer Mongolia, you know.

Guest: 'Zooks! And you constructed this gadgetry entirely yourself, J.J.?

Jeeves: Not quite, old top. The factory, you know.

Guest: Those gaily-lettered pasteboards on the wall, J.J. — some sort of optometrical claptrap, what?

Jeeves: Oh, an uncommonly rare collection of long-distance QSLs, Reginald. Uncommonly rare. The Boss conducts a DX column — samples, you know.

Guest: I observed no aerial outside, J.J., yet I would imagine one should require an imposing structure to radiate such great distances. Incongruous, what?

Jeeves: The neighbors, Reginald — we had one up this morning. Moreover, the Boss is using his underground antennae for Ceylon. Straight down, you know.

Guest: Doubtless much power is consumed by this vast thingamabob. Expensive, what?

Jeeves: Righto, Reginald, the meter does whirl a bit. But not as furiously as formerly. Jumper, you know.

Guest: I once 'eard of a wireless chappie who made quite a nuisance of himself. Downright rum performance — 'arrassed local video, the wireless, gramaphones and what not. Are you faced with such a lot, J.J.?

Jeeves: A ripping amount once, Reginald, but negligible now. Silent hours, you know.

Guest: Wires, boxes, switches, valves and more wires! I say, J.J., 'ow *do* you manage to tidy it up?

Jeeves: Elementary, dear Reginald. I shove off into the cellar, open all switches and remove all fuses beforehand. Silent Keys, you know.

Guest: I say, J.J. old bean, my brother-in-law's solicitor's nephew in Sussex is a wireless bug. Do you suppose you could chat with 'im and permit me to shout a cheerio back 'ome? Do you really, now?

Jeeves: Nothing to it, Reginald. But as you do not know his call sign I shall have to call "CQ Reginald's brother-in-law's solicitor's nephew in Sussex." Beastly cumbersome, you know. . . .

Well, the imperturbable Jeeves had his usual smooth answer for everything but surely he was going overboard on that one. Visitors who have ham acquaintances they want you to contact on the spur of the moment without schedules, call signs or other clews — hah! Just "give Egbert a call and let me say hello to him." A million to one would be comfortable odds.

But would you believe it? After Jeeves completed a short "CQ Reginald's brother-in-law's solicitor's nephew in Sussex," back came a clipped British voice on the frequency saying, ". . . This is Reginald's brother-in-law's solicitor's nephew, G3ZZZ in Sussex, returning. Thanks for the call, you know." And Reginald, Jeeves and Egbert conversed amiably for the next two hours without batting an eye.

Anyone for the rest of that brandy? (Nerves, you know.)

What:

Reginald is back on the road for Schweppes now, and Jeevesie has his head down in the mailbag to see what the gang has to say this month. There are squeals of delight on all sides, we note, as we swing toward Old Sol's acne acme on pox peak. "Just had about 300 Stateside QSOs with signals running to 5 by 5 to 9 plus 40 db., the latter predominating — all-around good Stateside QSOs." — *HZ1AB* . . . "We've had several days of wonderful long-path propagation lately." — *ZD6BX* — . . . "Twenty sure is hoppin' these days (for a change)." — *W2BRT*. . . . "Very good night openings to Europe for two to four hours at a time and some nights the band is wide open all night long — guess that's a big improvement over last year at this time." — *W6GPB*. And so it goes!

20 'phone is all the rage with pukka DX available in quantity. W9EU successfully directed his 250-watter at **CP5**EP (189) 14, **DUs** 1AP (157) 13, 7SV (195) 14, **ET2US** (187) 2, **KG6AFX** (209) 13, **KT1**WX (187) 0, **KW6**BB (245) 15, **KX6**BU (225) 14, **TF2**WAF (158) 3–4, **VS1**CZ (126) 13, W7VMD/**KG6** (199) 13, **4X4s** FK (110) 4, SK (140) 3, **5As** 1TJ (151) 3, 2TZ (170) 22 and **9S4**AD (117) 1 . . . . . HH3DL 18, **KG1**BO 7 and a 5A2 came back to W4TFB . . . . . W4GUV busied himself with a DU7, **KAs** 2AK 2JW 3EB 5HM, **KC6**CG (241) 10–12, a KG1, **KJ6**FAA (200) 9–12, **KR6**QX 12 and others . . . . . Saipan's **KG6**SB (255), **VK9**HO (190) and **VR2**CW were assimilated by W9WHM . . . . . W8KAK caught up with **EA8**BS (150) 22, **KG1**FR (210) 17, **VP2s** DA (120) 14–15 and KM (160) 14–15 . . . . . **II**BNU/Trieste, **VSs** 1GT 2CU, **VU2**EH, **XZ2**SS and **4S7**SW show up on W7AHX's

* Please mail all reports of DX activity to DX Editor Newkirk at 4128 North Tripp Ave., Chicago 41, Illinois.

list . . . . . Here and there, W6CAY nipped HH2W; W6NJU hooked VS2CV 23; and W7TML bagged KA2SK 11 . . . . . The Northern and Southern California DX Clubs and West Gulf DX Club have the goods on the 14-Mc. 'phone workability, or imminent workability, of AC5PN, BV1US (250) 15, C3WV (190), CRs 4AL 5SP 7CO (190) 15, DU9VL (171) 10, ET2s AB (150) 4, US (187) 2, XX (144) 5, FO8s AB (118) 6, AK (159) 6, FP8AP (60) 17, FY7YE (152) 5, HC8GI (115) 5, HI6EC (177) 0, KG1AA (252) 4, KH6ABH (255) 5 on French Frigate Shoal, KJ6BG (230) 14, KP6AK (236) 6, KR6AF (129) 13–14, KX6AF (250) 6, LX1JW (191) 23–0, MP4BBV (128) 3, PX1YR (162), SV0WU of Rhodes, TF2WAN (130) 15, VK1s DC ZM (150) 6 of Macquarie, VK9s BG (168) 6–7, DB (175) 15, RM (110) 6, WI (293) 10, VQs 4AQ 8AX (160) 6, VRs 2AP (152) 6, 3C (165) 6, 6AC (142) 4–5, VS1s FS (111) 15, GX (142) 14, GZ (126) 13, VS2DF (107) 16–17, VS6s BE (106) 16, CL (130) 15, CT (172) 16 and no relation to VS4CT-VS5CT, CW (99) 7, VS9s AF AL, VU2ET (196), XZ2KN (179) 15, YJ1DL (118) 7, YK1AE, YO3s GL (157) 22, GM (190) 13, ZB2A (94) 19, ZC4IP (92), ZD4BT (150) 0, ZM6s AP (163) 8, AS (180) 6, AT (167) 5, 3V8AS (164) 5, 4X4s CK (150) 4, FF (150) 4, FQ (150) 4, FV (139) 3, 5A4TX and 9S4BE . . . . . *Newark News* Radio Club members combed 20-meter 'phone frequencies for CP5s EK EQ/CP6, CR6AI, CS3AC of Azores, CT2AG, DU1s CV VVS, EA8AX (150), EA9s AR AX BC BH, EL9A, FB8BZ, FF8AK (110), FM7s WF WQ, GC6FQ, HA1LW, HH7RM/M, HK0AI, HRs 1BG 1KS 1OS 1RL 3HH, HZ1AB, JAs 1AC 1CU 1PW 1TW 3BD 4BB 6CA, JZ0AG, KC6s UZ ZB, KGs 4AP 4AX 6FAA, KM6AX, KR6s JW 00 (140), PT QW USA, KT1s DD WX, KV4s AA AQ BB BI, KW6s BD BJ, KX6BI, LB1DD, LX1DU, LZ1KSP, MP4s BBL BBU KAB QA1 QAL, OD5s AB DA, OQ5s BI ER, PI1s J LC, PJ2s AA AG LC, ST2DB, SU1AS, SV0s WM WO WS, TF2WAG, TG9s BR MB, VKs 1PG 9HB 9OK 9RH, VPs 1VR 2DL 3HAG 5BM 7NG 7NS 7NZ, VQs 2RR 4FK 4RF 5FU, VR2s AE AS, VSs 1EY 2DY 6DA, VU2s CS GM, YIs 2AM 3WW, YO3CM, YSs 1MS 1O 2JV, ZC4BA, ZD3BFC, ZE6JI, ZSs 2MI of Marion Isle, 3AN, 3V8s BA BR, 4S7YL, 4X4s CR CX FZ GB, 5As 1TK 2TK and 4TU. In addition a little A.M. prowling by NNRC racked up Yanks-in-Japan KAs 2CW 2HM 2IM 2JW 2NY 2OJ 3RR 4BB 4AQ 7JS 8AB 8SB and 9MS boiling through with that intriguing Asiatic flutter.

20 c.w., to dredge up an old cliché, needs no introduction. San Rafael's W6GPB scored with LZ1KAB (70) 5, SP8KAF (63) 5, SU1REC (90) 21, SV0WS (20) 5, VQ5FS (50) 19, VU2s AL (25) 16, JK (40) 15–16, YI2AM (20) 20, ZD6BX (60) 5, 4S7s AM (30) 16, MH (10) 15–16, NB (55) 16–17, NX (50) 15–16, PT (55) 15–16, 4X4s CK (60) 5 and IE (48) 10. A QSL from VQ8AL, three years late, and an SWL report from Odessan UA4PL were highlights among Joe's postbox items . . . . . K2BZT battled through to DU7SV (90) 15, HA5AM (22) 21, HB1s in

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"How's" normally goes light on portraiture but this gentleman is quite outstanding. He lays claim to possession of the first officially authorized station under new Egyptian amateur regulations — SU1IC. (*Photo via W4HYW; W9FDX, MRAC; W9ABA; and W9EU*)

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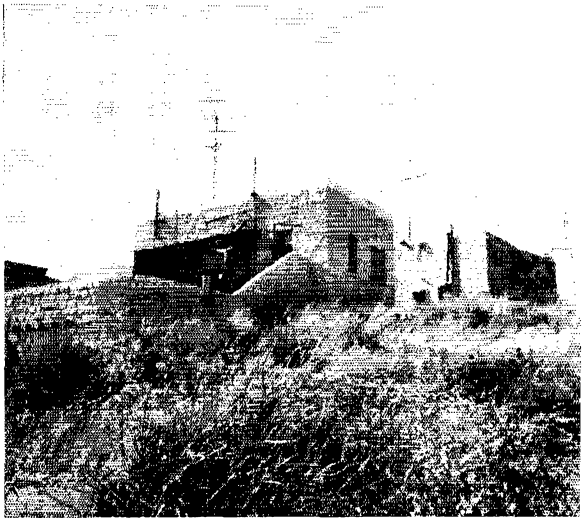
Switzerland and Liechtenstein, I5REX (80) 21, LB8ZB (30) 22 just Norway, LX1AO (69) 16, LZ1KSP (77) 23, MP4QAL (90) 18, OY7ML (50) 23 who raised soup from 15 to 75 watts and intends extensive 3.5-Mc. work this season, SPs 3PS (55) 21, 5BR (20) 23, UQ2AN (29) 4, VQ8CB (72) 15, VR2s BP (60) 5, CZ (90) 5, YO3UA (30) 0, ZD2s DCP (10) 21, NWW (20) 21, 4X4s BT (80), CK (76), DR (77), FK (60), FQ (18), FV (37), GY (80) and II (63), the Israelis worked between 21 and 22 GMT . . . . . DL4ZC Q8Od CR4AL (72) 20–21, one FC7GE 22. OQ5BT 17, VP5DC (75) 0, YS10 23, YV1AI 21, ZD1FB (21) 19–20 and ZP5AY 21–2 . . . . . EA6AM (18) 22, HB1MO in Schwyz canton, KG1AW (103) 23, KJ6s BG (15) 5, FAA (32) 1, KW6BB (30) 14, LB8YB (38) 0 of Greenland, OD5LX (10) 4, MP4JO (40) 3, VQ8AG (15) 4–5, VSs 1GS (49) 12–13, 1GX (42) 13, 6AS (46) 14, VU2s JG (43) and RC (40) 3 responded to W9EU . . . . . K2GMO did well with FD4BD (24) 22, JA6AA, KC6CG (61) 13, KG6NAB (100) 13, KJ6BG (70) 3, MP4BBL (66) 0, a Qatar MP4, OD5AP (28) 20, ST2NG (86) 22, a UQ2, VQ8AX (13) 22, a VU2 and ZD2, ZS3VC (75(19, an I5 and 4X4 . . . . . Twenty-eight watts got HA7OL (40) 22, KA3OO (62) 12, OX3AY (12) 3, TF6WAK (24) 11, VP2VB/P (85) 22, VQ4RF (90) 20 and YO3GY for W9UKG. Then Doug kicked in the 300-watter and clobbered DJ1UE/YU (!), HA5BL (41) 22, a KJ6, SP5AR (68) 4, ZS9I (41) 21 and 9S4AX (7) 22. UAs 9CM 9DH 0KAB, UB5s KAA KAB KBE and UG6AB were called in vain . . . . . W1WAI took on CP5EP (50) 22, JA5AA (70) 12, VP3VN (80) 12, UC2AA (50) 22, a ZD2, ZD3A (40) 22 and 9S4CH (33) 22, celebrating the arrival of his new DXCC diploma . . . . . IS1CXF (60) 22, KA2SK (32) 11, PJ2AR (85) 1, an SP5 and VP3, YN1PM (8) 23 and ZB1JRK (22) 23 came back to W1OJR. ZB1JRK pulls the big switch quite soon for departure from Malta. W1OJR forsakes DX on clear nights to scan the heavens with a homespun 3-inch reflector 'scope . . . . . CR8AC (10) 15 got away from K6ENX but FK8AC (10) 5–6, HR1RL (80) 16, KC6AJ (65) 7, TF2WAF (50) 7, VQ2DS (100) 16, VR3B (80) 4–5, VS1GK (70) 15, VS2CV (40) 16, VS6CQ (75) 17, ZP5GM (55) 17 and a 4S7 didn't. Since activating quite recently Otto has accounted for over 100 ARRL DXCC Countries List items in his Los Altos QTH . . . . . HA5KBZ (50) 23, HK0AI (62) 0, HP1EH (20) 14, a YS1 and ZD6 hit the spot with W8KAK . . . . . K6EC crept up on CX5CO (46) 0, I1BLF/Trieste (78) 0, SP9KAS (83) 5, VS1GU (91) 15, VS2DW (42) 16 and 4S7GE after late summer QRN drove him off favorite 40 . . . . . E2GRV caught many of those already mentioned as well as EA9AP 23, FP8AP 19, HC1LE and I1BNU/Trieste. Whit is 15 and has 60 countries to show for five months DXing with his Viking, Windom and BC-348J . . . . . DU1CV (70) 15, UA0KKB (80) 15, VP4LJ (20) 5, VS6DD (80) 13, ZM6AS (50) 3–4 and KR6USA (15) 15 worked W6UED . . . . . W7TML bore down on numerous Europeans, FK8AO 6, KA8SD 5, UAØ and UQ2, Aussie ship X1NP in the Pacific, YUs 1HU 3 and 3KT 6 . . . . . ZD6BX picked up ET3AH (21) 13–14, I5LV 18–19, KJ6KW 15, KR6s LJ 14, MC 16, VK9AU 12, VR2BZ (52) 5–7, VS6s CD CG CO DE 15, ZC2PJ (20) 13–15, ZD2HAH 17 and many other choice catches . . . . . Quick peeks at this log and that log, *W2BRV:* FB8AS, an FD4, MP4BBE. *K2GFQ:* FK8AE (15) 5, HB1OP/HE, OQ0CZ (45) 1–2, ZD2WAF 17. *K2HZR:* SV0WS (5) 19. *K2JKC:* KV4s AA BK. *W3UXX:* GD3IYS, HH9A, PJ2CT, VPs 5BM on Turks, 6PJ. *W4GUV:* a Liechtenstein HB1, IT1AGA, JAs 1CR 5AB 6AD, SP6WF 20, VQ6LQ (65) 2–4, ZB1 ZM6 9S4. *W4TFB:* HH3DL, KA2s KS RB, ZD6, 3V8AN (2) 5. *W4YZC:* CR6CS 19, FM7WP 22, HKØ, YO2KAB 20. *W6CAY:* JA6HK, VP9BM. *W6EUQ:* EA9DF, VKs ZLs. *W6HIS:* HB1PQ 0–1, JAs 1ACA 19, 1CL 13, KG1, KR6QW 7–8, YV5s AE 12, BZ 3. *W6NJH:* FM7WF 1, KC6, KX6NA (30) 4–5, OA4J, VS1 VS2. *W7AHX:* CR6, FB8BR, FP8, JZ0PS, F9QV/FC, ST2s AM AR, SU1IC (70) 3, VU2AT, 3V8AB (63) 5. *W7VWS:* KA2 KV4. *W9CLH:* KG1, VP6GC. *W9SQP:* KG1JB, KV4 and Europe with but six watts input . . . . . WGDXC, SCDXC and NCDXC contribute these tidbits to our 20-c.w. gallimaufry: AC5s PN (8–100) 15, SQ (100) 18, CRs 4AF (26) 21, 9AI (85) 16, I0AN (70) 16, CTs 2BO (68), 3AB (49) 0, 3AN (70) 22, DUs 1OR (33) 12–13, 3DO (90) 12, EA8s BF (93) 1, BP (51) 2–3, F8MA/FB8 (74) 6, FB8BO (95) 12–13, FK8AL (12) 16–17, FO8s AC (94) 6, AG (50) 6–7, AK (95) 7, AM (10) 5, one FU8AZ (75) 22, FW8AB, FY7s YE (60) 1–2, YF (40) 12, HA7s KLA (48) 16, KLZ (35) 13, HE9LAA (64) 22–23, HI8HG (56) 4, HZ1AB (70) 0–1, IT1TAI (70) 22, JZ0AG (85) 13, KC6UZ (41) 13, KM6AX (80) 5, LB5WE (64) 13, LX1JW (43) 19, MP4KAV (9) 0, OD5DA (115) 23, SPs 5CC (110), 9KAB (40) 17, 9KAD (37) 13, one TF1PJ (10) 4, VK9s RH (70) 7, RM (46) 13, WP (25) 7, VQs 1QDN (73) 3–4, 2GW (45) 14–15, 4EO (83) 5, 4FM (64) 0, 5EK (100) 5, VR4AE, VS1s BJ (82) 16, FS (50) 14, GT (32) 15, VS2s DF (57) 13, EM (5) 15, RM (84) 14, VS6s AE (95) 13, AS (47) 14, AJ (100) 12–13, CL (6) 14, CT (88) 17, CW (76) 14, VS9AF, XZ2AD (18–90), YOs 2VM (72) 23, 3RF (58) 5, one ZA1KA (68) 20, ZC4GF (8) 21, ZDs 1PW (110) 13, 4BT (137) 4, 9AC (75), ZS2MI (175), 4S7s LW (58) 16, WP (30) 17 and 9S4BS (60) 23. UAs 3CR (79) 5, 4HI (81) 3, 6KTD (50) 14–15, 9DN (80) 23, 0GF (50) 13, 0GR (55) 13, 0KAB (50) 13, 0KAD (50) 14, 0KOA (46) 13–14, 0KUA (40) 13 and UH8KAA (60) 15 are included among the reserved Russians poking through. PX1EX (raised by K2BZT, Ws 1WAI 4GUV 6GPB 9EU 9UKG and others), XW8AB (52) 14 (reported by K2GMO, Ws 6GPB 7TML, K6ENX), YJ1DL (18) 6 and ZS8L (ZS1PD on DXcursion) appear in many logs. So does AC0AA who is rumored to be (1) in Korea, (2) en route up Mt. Everest, (3) 'board ship here and there, *ad infinitum.* Now we give the dial a healthy twirl and find ourselves scanning

15 'phone. European, African and Oceanian openings now are the 21-Mc. fad and W4WVM snapped up VQ4s EO SS, VS1FK, ZB1AJX and 4X4BL with his 30-watter. Friend W4NQM raised a bunch of Europeans including ZB1s AY JRK, as well as CN8MT, ZLs and ZSs. VS2BB and LX SP SU stations were heard . . . . . Fifty watts and an 80-meter skywire were sufficient to accumulate CE3TH, CXs 2GM 2IY 5AF, CP5EQ/CP6, FM7WQ,



Before terminating his activities at OE13USA, K2IXD (left at table) visited on-the-air acquaintances in Israel. One of the many highlights of his 4X4 tour was a jolly hamfest at 4X4FV where these scenes were photographed. The chief op and host tunes the NC-98 while maintaining a schedule with K2IXD's Salzburg home base via the 4X4FV 40-watter. The station's location, shown at right, is situated in northern Galilee atop one of Israel's highest prominences. Beams and dipoles for all DX bands are plentiful and a new 100-watt rig is under construction.

HH7JL, HK2GO, HR3HH, KG4AV, KV4BJ, PJ2AA, TI2BX, ZP5IT and sundry PY-LU fellers for W4CHK . . . . . W4YOK drew forth CE3SQ, CX6BM, HC1FK, HH7W/m, KH6EY/m, KV4BB and PK2AO, also hearing and working the /MM gang all over the place . . . . . KA2GS, *KH6s KZ5s*, PY4YC, VKs 2AFE 3GV, ZLs 1GJ 2AX and ZP5HX returned W6ZZ's compliments . . . . . W6UED trapped VP1SD while vacationing from 14 Mc. . . . . NNRC reporters tagged 15-meter A3 activity by GN8s FM GO, CP5EK, EA9BS, FY7YE, HC1s EP FS, HP3FL, KG4AN, KL7ZG, MP4BBV, OAs 3L 4AK, SVØWO, TI2s RC WM, VP5BM, VP6s FR GN GT WR, VP7NK, VQ4s AQ EA EU RF, VR2CG, YV5BB, ZD4BO, ZP5IB, 4X4s BL GB and 9S4AD.

15 c.w. still attracts the more adventurous Novice clientele. WN3ZKH captured F8VK, GW3QN, LUs 3EQ 3EX 8EN 8TA, VP9BL and PJ2AR, reaching 21 countries on five continents. Anybody collected a Novice-style WAC yet? WN8BVF worked DL4ZC, HB9MQ, KN4CIO/KV4, KP4s in number, PJ2AV, VPs 6KL 7NN and TI2EA with his Viking Adventurer . . . . . Back to the Generals, K2DSW telegraphed with a big bunch including FA8s DA RJ, LX1DZ, OE3SE, SP5AR, VP9BO and ZB1AY. CR6BX and KT1OC are gottaways . . . . . W1CTW soaks up Europeans like a blotter now that he's licked his local power leak. Cal also stalks SU1CN, ZSs 7C and 8I via the A1 route . . . . . FF8AJ 16–17. LU9DAZ 19–20 and another ZP6CR 19 came back to DL4ZC.

40 c.w. conjured up LU7ZT 4, VP5DC 4, YU4DOP 4 and nifty ZD9AC 8 for W4TFB . . . . . K2HZR mentions OY7ML, UAØKKB, UB5ID and other 7-Mc. triumphs . . . . . Among K2IKZ's lengthy list of European catches we note UO5KAA, SP7KAN, YUs 1KF 2BOP 3AJK and 4EPQ. Small wonder he likes his new QTH! . . . . . K2IGG mentions the availability of CR7CI, FQ8AA, JZØDN, OX3AY, ZD6BX and ZE3JP on 40. VP8ZTQ and HZ1A were heard in the ? department . . . . . W1VSW exchanged RSTs with FA8s DA RJ, HB1OP/HE, HR1JZ, SP8KAF, YU4JF, YV1AI, numerous PYs LUs and others — "More than enough to keep one on forty meters these days." . . . . . W2CUQ/3's 4.9 watts made the grade with many Europeans, KH6AYG, IT1TAI, VP5BM and ZP6CR. Will recommends a 50L6GT final for a bit of sport on forty . . . . . Hopscotching hamshacks hither and yon for 7-Mc. items, *K2EPP:* FA3OA 23, FM7WP (20) 22. *W4BXV:* FA8, Europeans, HH3DL (6) 5, VP4BN 6. *W4GCB:* YU2IP. *W4YOK:* HK3KG, HR1, TI2CR. *K4ADU:* KV4BK (178), one HK5M, KL7s. VKs and ZLs. *W5YBF:* KT1TW. *W7AHX:* FG7XB, ZSs. *WØVBS:* TI2ES . . . . . Moving upband, KN4CQA goes in for Novice-style DX in no small way. CM2PX, KN4AZY/VP9 (!), KV4BK, WH6BLI and XE1KB wound up in Henry's bag . . . . . Before becoming W7WSS, WN7WSS chatted with CE3DZ and JA8AQ on 40-meter WN/KN frequencies.

160 c.w. continued to produce unusual midsummer DX at W1BB and other East Coast stations. As late as July 31st W1BB worked G3JVI 3–4. W3RGQ also was heard on the other side around this time, G3s GGN and ERN are in there pitchin', too. W1BB opines that only the static level holds down hot-season 1.8-Mc. DX — the signals are there if activity exists at all. Whether winter or summer, keep an ear on one-sixty for one of those rare cool and quiet nights — you may be pleasantly surprised!

It takes the contest season to stir up much excitement on ten and forty 'phone at this stage of the solar cycle. NNRC's kilocycle inspectors hear HK4DT, JA1s AAX AD ADL AEO AFU AGU ALD ALL ANR AOD AOO AT ATW CE CU DY GE JO JS JV MR SW VP, JA2CF, JA3s EY HF MD, JA6s AE SO, JA7s BV DB, JA9s BY DO, KG6NAA and KW6BB creeping through on 7-Mc. voice . . . . . CT1SX, CX4CS, EAs 1CU 4DD, DLs 1HS 6RG, DM2APM, I1s ACL BEM, SM5DRG, TI2s MS RL and VQ4AQ are reported among the audibles on 28-Mc. 'phone frequencies.

Where:

G3KCE, one of MP4QAJ's former ops, unravels confusion anent the status of MP4QAJ and OD5AF. These two stations were operated jointly by G3KCE and the present legal licensee of OD5AF, both of whom are airlinesmen. Now that Roger has left the scene, OD5AF continues to operate both stations. G3KCE lately flies a route which includes stops at Nairobi so you'll be working him as VQ4FX. QSL MP4QAJ and OD5AF to Box 150, Tripoli, Lebanon . . . . . Openings to Asia still aren't on a pipeline basis but neither are they as ephemeral as they were a couple of years ago. K6DV finds that the MARTS (Malaya) bureau disgorged 900 QSLs to 63 countries during one recent month . . . . . Ex-ET3S, now VE3RE, rolled up 155 countries in Ethiopia during the period July 15, 1954, to May 10, 1955, using a 4-stage 814 rig, 12-tube receiver, dipoles and a Lazy-H beam. Phil still awaits QSLs from some of the rarer items logged although one dandy did come through from ZC3AC. Drop a line to VE3RE if you have ET3S QSL problems . . . . . W1WPO points out that the present VQ8AG attests to no responsibility or connection with VQ8AG operation prior to February of this year. Frank gets around on 20 c.w. quite handily with a c.c. 2-stage 20-watter, a modified b.c. 5-tuber and a long-wire radiator . . . . . I1BNU/Trieste, perhaps the most active I1/T on DX bands, strongly emphasizes that incoming QSLs should be sent only via ARI or direct to F. Venezian 5, Trieste . . . . . All-band Facroes DX champ OY7ML asserts that Box 184, Torshavn, is the sole QTH that ensures delivery of his incoming pasteboards . . . . . From MP4JO's agent, W2PCI: "There will be considerable delay in QSL cards from MP4JO. . . . Some of the fellows are sending follow-up cards and letters that are keeping me busy to answer — just got hit with 52 cards in the same mail!" . . . . . HI8WF, inactive since July 1st of last year, knows nought about the current usurper of his call. — *W6CUQ* . . . . . FO8AC indicates he's now up to snuff in the confirmation department after shipping stacks of cards via bureaus-bound slow boats . . . . . From the mill of Washington, D. C., Postmaster Roy W. North in a letter to DL4ZC: "You are advised that Germany, Latvia, Lithuania and Estonia are the only countries with which we do not exchange international reply coupons." DL4ZC adds that IRCs also are

unusable at APOs . . . . "We are getting complaints from W hams about not receiving F8FW/FC QSLs although USKA sends these cards directly to the ARRL QSL Bureau for each call area. . . . Those not having received F8FW/FC QSLs in due course should apply for duplicates." USKA answers F8FW/FC QSLs when received — you fellows keeping envelopes on file with your call area QSL managers? . . . . Time to reiterate, as we periodically do, that information and addresses appearing in this rubric are by no means necessarily official or guaranteed accurate. Frequently they are second-hand scuttlebut items of doubtful origin. They are reproduced in the hope that they *may* lead someone to a fast QSL or two. Incidentally, when the QTH of any given station appears a second or third time, use the address most recently published. Early versions often are fragmentary to the point of unreliability. The following QSL catalog is testimony to the benevolence of W1s OJR UED WAI ZDP, W2BRV, K2s BZT GMO, W4s GCB YOK YZC, K4ADU, WN5KNE, W6s AM NJU UED YY ZZ, W8KAK, W9s EU UKG, WØVFM, DL4ZC, HE9RDX-USKA, ZD6BX, V. Brenner, NCDXC, NNRC, SCDXC and WGDXC:

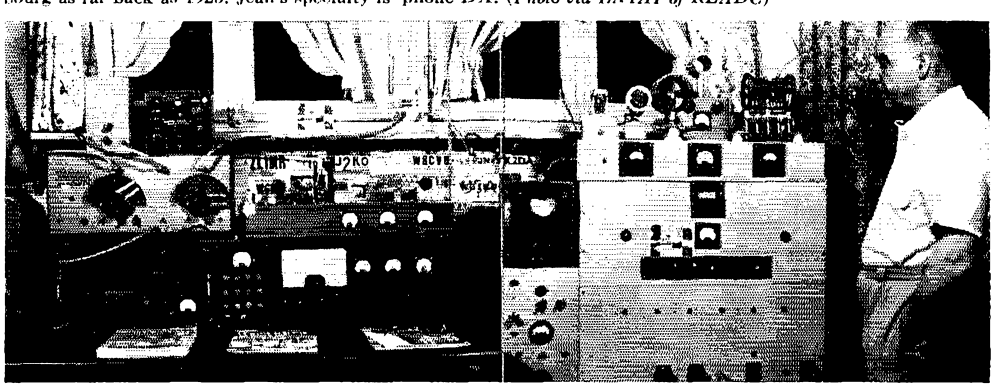
AC5PN (QSL via VU2JP) . . . . **C3WV** (QSL to C3AR) . . . . **CN8GG,** Navy 214, Box 50, FPO, New York, N. Y. . . . . **DL4PR** (QSL to W3AZZ) . . . . **EA7FS,** Box 479, Sevilla, Spain . . . . **ET3AH,** Box 499, Addis Ababa, Ethiopia . . . . **FD4BD,** Lomé Airport, Lomé, French Togoland, F.W.A. . . . . **FY7YF,** G. Wong, % Pan-American Airways, Cayenne, French Guiana . . . . **GB3GP** (QSL via RSGB) . . . . **HB1KU/HE** (QSL via USKA) . . . . **HB1OP/HE** (QSL via USKA) . . . . **HH7W/m** (QSL to HH7W) . . . . **HHØA** (QSL to W6OXS) . . . . **HR1LW,** P. O. Box 93, Tegucigalpa, Honduras . . . . **I5REX** (QSL to I5LV) . . . . **KA2SK** (QSL via FEARL) . . . . **KZ5VR,** Virginia Harvey, Box 15, Balboa Heights, C. Z. . . . . **MP4QAJ** (QSL to OD5AF — see text preceding) . . . . **OE13HVN** (QSL to W6HVN) . . . . **OE13USA** (QSL via K2IXD and W6HVN — see text preceding) . . . . **OQ5BT,** Box 2132, Elizabethville, Belgian Congo . . . . ex-**OX3AP,** P. Andersen, Kirsebaervej 13, Nykobing Falster, Denmark . . . . **OX3HN,** H. Nielsen (OZ2HN), Julianehaab, Greenland . . . . **PX1EX** (QSL via REF or F8EX) . . . . **PY2BKT,** N. Mauricio, Box 970, Santos, Brazil . . . . **PY2QH,** Box 22, Sao Paulo, Brazil . . . . **SU1CN** (QSL via RSGB) . . . . **SU1REC** (QSL via W6NIF or W6NIF/4) . . . . **TF2WAB,** Maj. C. Mack, USAF Hq. Iceland Defense Force, APO 81, New York, N. Y. . . . . **TF6WAK** (QSL to W1ZAC) . . . . **VK9FN,** F. M. Nolan, Box 110, Port Moresby, P. T. . . . . **VK9WI,** Box 107, Port Moresby, P. T. . . . . **VK9WP,** W.A.P. Luke, Box 55, Rabaul, New Britain . . . . **VP2VB/P** (QSL via KV4AA) . . . . **VP3VN** (QSL via VP3YG) . . . . **VP6KL,** F. Roberts, Diamondville, Worthing, Christ Church, Barbados, B.W.I. . . . . **VP6LT,** E. M. Glasscock, Varel, Graeme Hall Terrace, Christ Church, Barbados, B.W.I. . . . . **VP6OA,** C. Agard, Belfield, Black Rock, St. Michael, Barbados, B.W.I. . . . . **VP7NZ** (QSL via VP7NM) . . . . **VQ4FX** (QSL to G3KCE via RSGB) . . . . **VR2AB/ZM6** (QSL to VR2AB) . . . . **VR3C** (QSL via VK4NC) . . . . **VS1GQ,** A. B. Avery, 25A, Kampong Bahru Rd., Singapore . . . . **VS1GT,** Tan Geok Gim, 168 Moulmein Rd., Singapore . . . . **VS1GX,** Box 176, Singapore . . . . **VS2EQ,** T.H.M. Gibson, 527A Tanjong Bungah, Penang, Malaya . . . . **VS2ER,** Maj. J. C. Clinch, Colombo Camp, Ipoh, Malaya . . . . **XE1KB** (QSL via LMRE) . . . . **XE1MB** (QSL via XE1BM) . . . . **XE1PAC** (QSL to K6ELX) . . . . **XE1PAD** (QSL to K6ELL) . . . . **XW8AB,** HRF, Box 6, Vientiane, Laos . . . . **YN1JK** (QSL via YN1RA) . . . . ex-**ZB2D,** C3HOP, 97 Stome Rd., Stafford, Staffs., England . . . . **ZP5IT,** I. Bailie, Yegros 429, Asuncion, Paraguay . . . . **5A4TZ,** ARC, 25th Armoured Brigade, Sig. Sqdn., MELF1, Tripoli, Libya . . . . **4S7AM,** Box 985, Colombo, Ceylon.

Whence:

Asia — This month's W6YY one-man DX omnibus is ornamented with many an Oriental item: VS2DQ has ZC3 intentions upon returning from his U.K. holiday. He mentions one of the hazards of hamming on Christmas Isle — gregarious eight-foot land crabs. . . . VS6BE awaits delivery of a brand new KW-1 and 75A-4. . . . XZ2KN's protruding signal does credit to a newly installed 6-element beam. . . . C3WV fires up several evenings per week with a BC-610, 51J and half-wave vertical. Dick is slated for return to Uncle Sugar this month and hopes his relief will keep C3WV available. The other Formosan active, BV1US, is located some 150 miles to the south of C3WV's diggings . . . . VS2DW, who states he's the only native Malayan licensed, writes W9VP of DX-band trials and tribs. The Dancing-Witches BC-610 expired in smoke some time back, requiring him to fall back on a c.c. 6V6-6L6 combo which, surprisingly enough, performed quite comparably. Tan uses dipoles and a thoroughly revamped HRO-M inhaler. When not performing official duties as a legal interpreter in Ipoh (now quite a boomtown), VS2DW hits 20 meters and keeps the peace in a household which includes three sons and a daughter. His particular pet peeve is the DXer who far exceeds the bounds of civility in pursuing an inadvertently tardy "First VS2!" QSL . . . . W6AM reports that public demand forced XW8AB to scrounge up parts for a modulator after dispensing scores of Laos c.w. QSOs . . . . W6CRV, whose Saudi Arabia assignment was extended a month, has been assisted of late at HZ1AB by the keying and miking of K4DCC and W4EGG. Ron is the DXer of the group, though, and has pushed up HZ1AB's DX tally to a respectable 140/126. That's not at all bad in view of limited on-the-air tours and an accentuated traffic program . . . . K2IXD, one of OE13USA's mainstay ops for the past eight months or so, reports fabulous hospitality from 4X4s AB AE AH AM AS BO BX CK CW CX DF DK DR FB FK FQ FS FV GB GT II and associated SWLs during his recent two-week stay in the Holy Land area. One feature of Marty's visit was the ceremonious presentation of a well-earned 4X4=16 DX award, accepted by K2IXD on behalf of OE13USA . . . . A bow to JA1AA from WØVFM and the rest of us for scoring the first Japanese-national postwar DXCC.

Africa — ET3LF writes concerning a gala ham exhibit to be installed at the Haile Selassie I Silver Jubilee Anniversary Fair which opens in Addis on the second of next month. The Imperial Board of Telecommunications of Ethiopia intends to show off amateur radio to advantage. "We plan mainly operation on 20-meter c.w. and 'phone and, conditions permitting, we will be on 10 and 15 meters, too." The call isn't specified but if you encounter an expertly handled unfamiliar ET3 call early in November this should be explanatory. Souvenir QSLs doubtless will be forthcoming . . . . With an assist from buddy ZD6EF, ZD6BX blossomed out with a husky 805 final to replace his old trio of parallel 807s. ZD6EF frisks about on 'phone with a hundred-watter and ZD6RM sprinkles n.f.m. 'phone among his many 14-, 21- and 28-Mc. c.w. QSOs. (Yes, we said 28-Mc. c.w.!) "There may be another ZD6 active soon, solely on 'phone. . . . We now have 50 Mc. open for ZD6 fellows and gear for that band already is under construction." Whoops — we're slipping into W1HDQ's domain! . . . . ZS1SW, who runs 100 watts from 3.5 through 144 Mc., and 50 watts on 432 Mc., sports this variety of skybait: a 320-foot wire on 80; 66-footer on

LX1AO, currently active on 80, 40, 20, 10 and 2 meters, pioneered amateur radio in the Grand Duchy of Luxembourg as far back as 1925. Jean's specialty is 'phone DX. (*Photo via LX1AI of RLADC*)



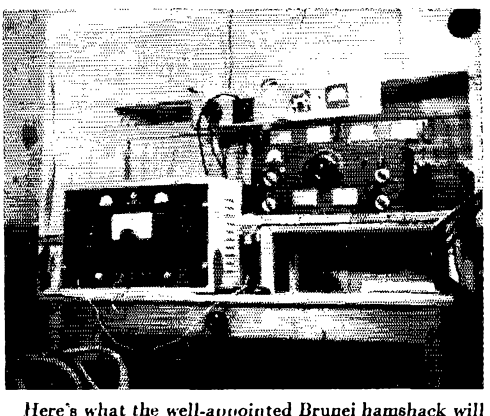
40; separate 4-element rotaries on 20, 15 and 10; 6-element spinner on 6; 21-element job on 2; and a 40-element array on 432 Mc. — all aloft 80 feet or higher. This from a QSL to W7PHO which also depicts the elaborate ZS1SW console-type operating position . . . . . EL2X, ex-DL4EA-OE13EG-W8OFQ, closed his Liberian logs after collecting 219 countries. All states were worked on 14 Mc., and

FK8AH performs entertainingly on 14-Mc. c.w. and 'phone. Those in need of New Caledonian DXCC credit will find it to their advantage to join the pile-ups over which he presides. (*Photo via W1WPO*)

all but one on each of 3.5, 7 and 21 Mc. "I heard W1BB, W8GDQ and W9PNE on 160 and managed to work W2GGL and KP4KD crossband, they on 160, me on 80. Sorry that I'm not going to be there this fall as I had planned a Vee for Top Band. I sold out the complete station to my replacement — he will be on 20 for sure as he has my new 3-element Telrex. . . . Over 7000 EL2X QSOs from January, '54, through June, '55, with a couple of months off for vacation. Contests sure run them up!" . . . . . ZS5s AZ BF CY EG EZ JF JK KL LA OJ PB and PK manned impressive all-band installation ZS5DHE at the Durban Hobbies and Crafts Fair this summer. Did you dig that souvenir QSL?

Oceania — WIA (Australia) and NZART (New Zealand) invite world-wide participation in the 1955 VK/ZL DX Contest to be held ('phone) from 1000 GMT, October 1st, to 1000 on October 2nd, and (c.w.) from October 8th through 9th, same hours. The serial exchange is the usual five-digit (A3) or six-digit (A1) figure — RST001, RST002, etc. — except that an operator may commence operation with any number between 1 and 99. E.g., your first QSO can be numbered RST063, your second contact RST064, etc. Any amateur band can be used. *Scoring:* One point per contact, each station to be worked but once per band, this point total to be multiplied by the combined numbers of VK/ZL call areas worked on all bands (ZL1 through ZL4; VK1 through VK9, excluding VK8). *Logs:* For each contact record the date, GMT, band, call, and serials sent/received in that order. Use a separate sheet for each band and underline each new band-area as worked. Attach a summary sheet bearing total score, a brief station description and a signed declaration that rules have been observed. Entries must be postmarked on or before October 31, 1955, addressed to WIA Federal Contest Committee, Box 1234K, GPO, Adelaide, S. A., Australia. From these will be ascertained winners of certificates to be awarded high scorers in each ARRL DXCC Countries List country and U. S. A. call area. *Note:* There is no provision for multioperator work in this competition; operators manning the same station will submit separate entries as individual competitors. Good fishin'! . . . . . One more peek at W6YY's dopesheet, this time from an Oceanian angle: VR2AB tried a few QSOs as VR2AB/ZM6 this summer, traveling via the Tokelaus where he (sob!) found no opportunity to fire up. Friend VR2BZ still entertains strong slant-VR5 notions. . . . YJ1DL, intermittently active on 20 and 40, states that the McCoy YJ1AA has not been active during the past year because of power deficiencies. . . . No. 1 WAVKCA DX award (see p. 63, August *QST*) went to W6YY. . . . All-band DX phenom DU7SV reached the DXCC-mark in the confirmation department. A hearty huzzah for Volt — DU7SV no doubt could have worked dozens more countries if he had hard-heartedly ignored the DU-hungry W/K pack always yapping on his heels . . . . . KC6CG (W2UDI) has another month or two to fatten his log before moving Jerseyward. — *K2GMO* . . . . . VP2VB/P (ex-G7DW) heads out of the Caribbean for the open Pacific aboard yacht *Yasme*, bearing a pair of self-powered ham stations courtesy the good offices of KV4AA. Danny hopes to anchor and operate gear ashore from various DX points while circumnavigating westward.

Europe — K2LXD (OE13USA) tells W1VG that OE13s will be no more. The advent of the Austrian Peace Treaty brought this about and the resident OE crew will take over on DX bands in good stride. OE13USA recently managed to accumulate the wherewithal for DXCC despite the heavy demands of frequent traffic skeds . . . . . GB3GP worked out of a Boy Scout camp in the U.K., according to W5KNE who gets in some SWLing while stationed with the army in Germany . . . . . YU1GM hopes for a Pakistani or Ethiopian assignment since closing down in Belgrade. W6YY adds that Bob may head southward with the Byrd Antarctic Expedish come next fall . . . . . TF6WAK should be back home to take care of those Icelandic QSLs by now . . . . . New officers for the La Rochelle (France) Amateur Radio Club, which consists of Yanks in F7 clothing, are K2JCS (F7ER), president, and KØBGZ, secretary-treasurer. Competent service committees also have been designated . . . . . 9S4AX, who acquired an HT-18 with DL4ZC's assistance, tells WØPRM he'll be greeting the W/K gang with a new 829B final and 15-meter beam before long . . . . . As signified by the recent activities of HB1s KU and OP, Swiss hams once again may operate in Liechtenstein with that principality's prefix properly appended. HE9RDX mentions the possibility of HB9KB and associates putting a 3A2 call on the air during the first week of this month — QSLs to go via USKA . . . . . DL4PR, who is W3AZZ back home, has a Globe King, HQ-140X and 20-meter rotary about ready to go. Jim writes: "I attended a recent annual German-American Amateur Radio Club hamfest in Frankfurt which was attended by almost 200 hams and XYLs from surrounding Europe, a really fine affair." . . . . . Professional work temporarily has put the quietus on CT1CL's hamming but Gene hopes to be back in the swim before next summer. With 210 countries worked, QSLs from W7s GBY and WYM would complete CT1CL's WAS . . . . . EI3R, EI4AB and EI9Q were in the field operating "/P" on DX bands during this year's successful IRTS (Eire) National Field Day. Considerable DX and many North American amateurs were worked during a hectic fun-filled 24-hour period . . . . . Three DXCC memberships from three different continents have been earned by Lt. Col. Lloyd D. Colvin, DL4ZC. His previous two DX triumphs were ticked off as W4KE and JA2KG. The colonel has operated under 18 different calls from all



Here's what the well-appointed Brunei hamshack will feature in the way of DX gear. VS5CT was a rare catch operated by G3DCT to the tune of 942 DX QSOs early this summer. Much of this equipment saw service as VS4CT in Sarawak and may now be in use under a British North Borneo call sign. (*Photo via W5ALA, West Gulf DX Club*)

over the globe and has had over 65,000 QSOs with amateurs in 242 countries. DL4ZC's wife and daughter also hold tickets . . . . . If you took your out-of-town vacation during the first two weeks of August, a favorite time for many, you missed a darned good shot at Andorra. PX1EX, representing a DX endeavor dreamed up by Fs 8EX 8EO 31B and 9UK, worked a flock of DX on several bands with an 807-final h.f. rig and a separate outfit for v.h.f. An HRO with converters received and the antennae were a ground-plane for 20, Marconi for 40 and 80, and 3-element spinner for 2. Fine, guys — now how about HV1EX and ZA1EX?

South America — W6ZLH of OA5G, back north on vacation, tried DX bands from California in late summer. George found being just another Six quite a bit different from his Peruvian DXperiences and he also missed the 800-foot-per-leg Vee he left down south. Regarding South American DXing, OA5G comments: "Fifteen has been

(*Continued on page 142*)

Results, 21st ARRL DX Contest

Entries Rise for Fourth Straight Year; 328 Earn Certificates

BY PHIL SIMMONS, W1ZDP

"How high can scores go in an ARRL DX Contest? That question comes to mind each year when we analyze entries in these periodic contests of DX operating skill. And each year we say to ourselves in answer, 'This is it. We've reached the leveling-off point. It's impossible for scores to go any higher!' We've been wrong . . . which proves that impossible goals have just not appeared on the DX Contest horizon, at least not for the experienced DX operator who comes up annually with new score records or the neophyte who keeps improving . . . in an attempt to break into the top score brackets. It all adds up to the fact that these contests are great builders of operator-station performance. If DX is your meat, you'll continue taking part and become more skilled as time goes on; if you're new to DX operating, you just haven't been indoctrinated in the game until you've come through your baptism of fire in an ARRL DX Contest!"

THOSE words, concocted by W1JMY in his 16th ARRL DX Contest round-up in September 1950 *QST*, are apropos today. Again the long-time enthusiasts returned, some to register postwar scoring records, and when the usual generous helping of fresh converts is taken into account, we emerge with 1242 entries (886 c.w., 356 'phone), up 11.5 per cent over 1954. There has now been a steady participation increase — 'though scarcely a meteoric one — in each of the past four Tests.

The *unexpected* makes every DX Test a continual game of fox and hounds, keeps the brethren hoping and hopping. An hour of fruitless calling elapses and you are as discouraged as a woodpecker in the Petrified Forest — suddenly three new countries reply in as many minutes and all thoughts of "pulling the big switch" are banished; now a block and tackle couldn't detach you from the operating position! This year TI9MHB, PJ2MA and HKØAI, in spots that even some DXCC Honor Rollers lack, injected spice. In February, 15 meters briefly cleared for Europe, allowing alert code proponents to hijack several multipliers in a short span. A gorgeous array of African prefixes — including CR5, CR6, CR7, CT3, EA8, EA9, EAØ, ET3, FB8, FF8, KT1, ST2, VQ2, VQ3, ZD3 — were catchable. KH6IJ and W6AM QSOd on 7 bands, and W4KFC did the same with HK4DP. W2SKE snapped up 16 countries on 10 'phone and was thrilled to raise Africans there for a change; Bill prophesies W/VE radiotelephone totals of *one million points* in sunspot peaks soon to arrive. The newly-introduced rule whereby Ws and VEs identified their states and provinces was happily endorsed by those in far-away places; many kept careful track of their states worked and several got all 48.

Let us pay tribute to such Test regulars overseas as CT1SQ, CT2BO, CT3AB, DL1BR, DL1DX, EA1AB, EA9AP, EI9J, F8VJ, G2PU (who has earned the last *nine* 'phone awards for England), G5RI, KH6IJ, KH6MG, KT1UX, KV4AA, KZ5BC, LA6U, LU3EX, LU9AX, OK1MB, ON4TQ, OZ1W, PAØUN, PAØVB, TF3MB, VK2EO, VK2GW, ZL1BY, ZL1MQ, ZS6DW — to mention a few. Each year they hurl themselves into the melee on one mode or the other, sometimes on both. When we raise them there is seldom a moment for even "HI JIM" or "PSD CUAGN OB," the hustle-bustle tempo being what it is. But they swap exchanges with thousands of us on numerous bands and we are grateful that they pop up perennially. Now that the furor has subsided, the League says, on behalf of the W/VE contingent, "MNI TNX OMs ES CU IN 1956." And sure-as-shooting we shall!

In line with long-established policy, competition for awards was confined to competitors in each ARRL mainland section and in each country outside the U. S. and Canada from which qualifying entries were received. Certificates of Performance will be issued in these categories:

	c.w.	*'phone*
Single-operator, W/VE	68	61
Multioperator, W/VE	3	1
Single-operator, non-W/VE	86	63
Multioperator, non-W/VE	1	0
Club	33	12

The 328 good-looking pieces of wallpaper are scheduled for mailing on October 15th, or

A Viking II, a 75A-2 and XYL-sponsored "coffee breaks" furnished EL2X any impetus needed to pace the Dark Continent on both 'phone and c.w. Ray has since bid farewell to Liberia, which now promises to become a real toughie.

thereabouts, and with each will go ARRL's congratulations for a job well done!

The 21st International DX Competition, however, was the only recently-scheduled ARRL contest which did not smash all previous records for participation (see Fig. 1). Despite vigorous advance promotion via IARU societies, foreign QSL bureaus, clubs and hundreds of prominent DXers, the success of the contest appears to depend principally upon the vagaries of sunspot numbers and the m.u.f. This, of course, is because it's a *DX* activity, not a domestic QSO Party, and as such it's particularly susceptible to the status of the ether. Under the rules U. S. and Canadian amateurs must work the 270-plus *other* items on the ARRL DXCC Countries List. It's the only contest in amateur radio which pits Ws and VEs "against" the world, and your letters tell us that you prefer it this way.

Even when the Kennelly-Heaviside layer just about dries up and blows away, more logs arrive from good old Europe than from any other continent save North America. Reflecting the reliability of the North Atlantic path, European high scores, like statistics dealing with valid entries, testify to the importance of ionospheric behavior. In 1949, for example, *13* European c.w. ops tallied over 100,000 points, and *26* did it in 1950. Their signals, with db. to burn, consistently blasted our eardrums on three or four bands during that banner era, an era when the Zurich sunspot count hovered well over 100. Alas, came 1951 and the average European score plummeted like a helicopter with a jammed rotor — GW3ZV, sporting a fabulous combination of gear and ability, was the sole 100,000-pointer. The next three dreary years drew blanks but results inched upward, and in 1955 DJ1BZ and DL1KB broke the tape at 138,462 and 102,258 points respectively. As Europe goes, it seems, so goes the DX Test![1]

The C.W. Section

When records are made, you can bet your r.f. gain control that W3BES will be involved. Mr. Mathis moseyed over to W2SAI (the boss himself was out of town) and, employing all bands but 11 meters, achieved 601 QSOs, a 246 multiplier and 443,538 points, a brand new U. S. A. single-operator high.

Others that reached the coveted 6-digit mark:

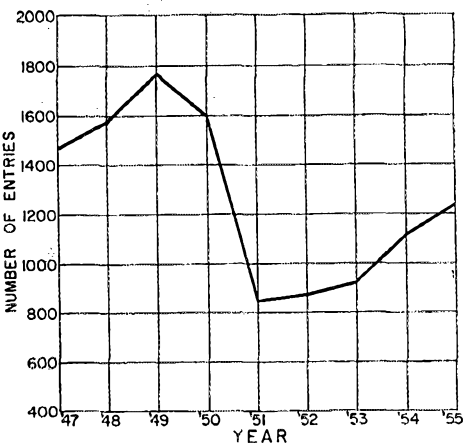
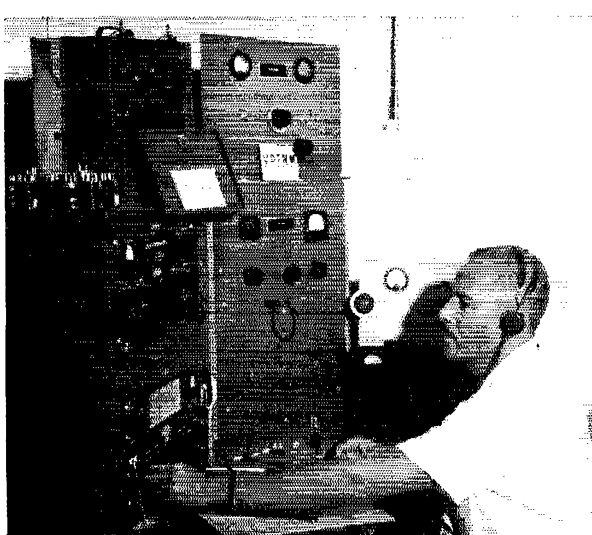


Fig. 1 — Total number of valid entries, c.w. and 'phone, in the 9 postwar ARRL International DX Competitions.

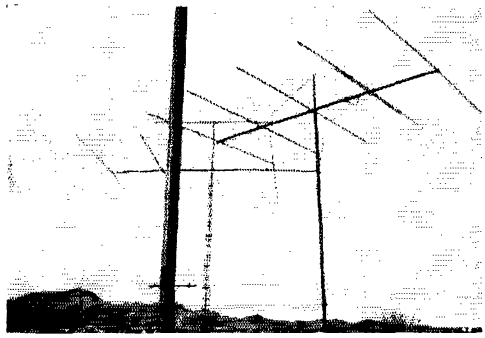
W4KFC 426,024, K2EDL 400,200, W3DGM 385,548, W4DHZ/4 370,962, W4CEN 330,336, W3LOE 325,717, W3BVN 313,110, W2WZ 306,838, W3EIV 277,440, W6GAL/7 254,592, W8FGX 249,504, W3GHS 234,765, W3JTC 227,367, W3JTK 225,888, W8PQQ 220,473, W4YHD 188,543, W4OM 187,488, W9IOP 176,904, W1BFT 171,687, W4DQH 168,795, W8BKP 167,796, W6VUP 165,600, W3HEC 160,038, W8BTI 159,852, W9HUZ 159,360, W9LNM 153,180, W9FJB 150,234, W6RW 148,920, W1BIH 146,861, W1AXA 143,934, W1TYQ 140,448, W1JEL 139,722, VE4RO 137,160, W8DUS 136,782, W5CKY 130,077, W3KT 126,900, W6MBA 126,153, W3KDP 125,936, W6KEV 124,605, W4UXI 122,264, W1AZY 120,834, W4LZF 120,096, W6WB 119,340, W6FSJ 118,491, W3GHD 118,170, W2DOD 118,054, W4MZP 115,506, W3EKN and W3MFW 114,972, W1BOD 113,577, W3ADZ 110,565, W9VUL 110,403, W5DWT 110,336, W2AIW 110,166, W4CC 105,705, W1ODW 104,775, WØDAE 104,538, K6CIT 104,544, W1TX 101,748, W1DLC 100,564.

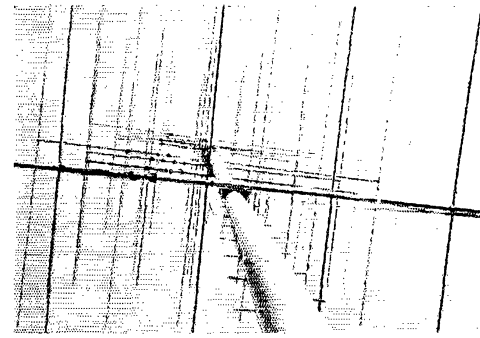
Another precedent-wrecker was the 514,080 points of W3CTJ, jointly manned by W3s CTJ and NOH. Maury and Al racked up a four-day



VP7NM dispensed 1939 A-1 exchanges on all bands 1.8 through 28 Mc. for 453,725 markers and third high non-W/VE. Charles, proprietor of the Bahamas QSL Bureau, has 142 confirmed on the DXCC roster. You can QRQ to 50 w.p.m. in his direction any old time — he's an ex-commercial op.

[1] There has been no change in the mathematics of scoring, but two special factors modify postwar European comparisons: (1) The twofold hiking of W/VE c.w. quotas has served to swell QSO figures of DLs, Gs and others in the densely populated countries. (2) 21 Mc., available the past three contests, has already upped South American and African results enormously; Europe-to-W/VE openings on this spectrum portion, however, have been infrequent and thus far have affected European totals to a negligible degree.





Herewith a couple of elaborate antenna layouts that paid off handsomely in the scoring columns. *Left:* W6YMD's beams and verticals form picturesque angles as they jut skyward at Pacific Palisades; that's the base of the 3.5-Mc. ground plane in the foreground. A quintet of Southern California DX Club brasspounders utilized the whole shebang to good avail, got a thumping 363,480 points . . . . *Right:* Have a look at the maze of 48 elements comprising stacked Yagis for 14, 21 and 28 Mc. at W2SKE/2. The 108-foot mast is self-supporting and rotatable. This awesome structure helped Bill nab second position among U.S.A. 'phones.

DXCC with 101 countries worked, a multiplier of 255 and 672 QSOs.

These efficient crews also finished up admirably in the more-than-one operator goings-on: W6YMD 363,480, W4KVX 358,974, W6ITA 314,820, W6TT 284,271, W3ALB 256,896, W6LDJ 244,620, W9AVJ 207,765, W3ECR 189,879, W6AM 185,370, W3GHM 164,088, W6GTI 134,670, W6LDD 112,266.

In the overseas division, contester par excellence KH6MG remained in top form, beat out the rest of the non-W/VEs with his 2203 QSOs, 74 multiplier, 489,066 points.

The continental yardstick is probably the fairest for study of foreign scores. Sorted in that fashion, the leaders shape up thusly: *Africa* — EL2X 182,373, EA9DF 127,661, OQ5GU 113,490, CR6AI 104,400, FA9RW 97,290; *Asia* — JA1CJ 50,715, KR6LJ 40,560, JA3AF 38,529, JA3AB 25,766, KA2OJ 21,947; *Europe* — DJ1BZ 138,462, DL1KB 102,258, OE13USA 98,805, DL4ZC 91,875, G5RI 89,712; *North America* — VP7NM 453,725, XE2OK 308,636, KG4AJ 302,849, KV4AA 296,140, KP4CC 247,040; *Oceania* — KH6MG 489,066, KH6IJ 461,700, ZL1BY 306,408, KH6PM 237,006, KH6AYG 211,526; *South America* — HK4DP 232,712, LU3EX 185,304, LU8AE 156,774, PY7AN 109,620, CE3AG 98,340.

The 'Phone Section

In the frenzied battle of the microphones, veteran DXer W1ATE set a staggering all-time high of 492,184 points. Chad, with his lavish antenna collection, scored everyplace from 160 through 10 but had his best luck on 20, where 435 of 690 QSOs were consummated. He also snared 105 different countries for a multiplier of 238, was active 94 hours out of the possible 96.

Other extraordinarily successful huffers and puffers: W2SKE/2 439,356, W4KWY 282,540, W6YY 233,444, W3DHM 230,640, W4OM 214,884, W2WZ 173,160, W3GHS 158,410, W7ESK 151,200, W9EWC 139,500, W4DQH 119,915, W8NXF 101,178, W4EEE 100,602, W6VSS 99,231, W8RLT 89,916, W8LKH 88,832, W3JNN 86,697, W8DUS 67,041, W3CUB 64,842, W5KBP 62,496, W7DL 59,584, W6IDY 59,040, W4CBQ 55,872.

These partook of the verbal fisticuffs on a "Winter Field Day" basis and fared well as multioperator set-ups: W2SAI 314,880, W9AVJ 141,614, W8BKP 133,569, W6AM 124,413, W8NGO 91,432, W3GHM 75,864, W8NWO 74,466, W6WZD 66,846, VE3RCS 56,158.

Hawaiian KH6IJ shoved aside his electronic key, unshorted the modulation transformer and QSYd to the 'phone segments. And before he plopped into his four-poster on March 13th, Katashi had logged 918 contacts, a 59 multiplier, and 162,486 points, the huskiest tally from overseas.

Continental pace-setters: *Africa* — EL2X 81,405, ZS6DW 41,140, EA9AR 13,524, ZE2KR 9675, CT3AE 6831; *Asia* — KA2OJ 3531, JA1VP 450, JA4BB 450, OD5AB 336, HZ1AB 234; *Europe* — CT1SQ 46,440, EA4DL 27,552, OE13USA 16,548, EA4DR 13,248, ZB2A 12,213; *North America* — VP7NX 148,665, VP6WR 127,098, HP3FL 73,017, VP9L 66,317, KG4AJ 55,044; *Oceania* — KH6IJ 162,486, KH6PM 90,576, KH6AXH 59,040, KH6MG 35,100,

Multiplier-hungry DXers welcomed with open arms an EA6AF 25-hour 3-band junket, during which Bartolome's 50-watter culled 31,488 points and A-1 honors for the Balearics.

CLUB SCORES

Club	*Score*	*C.W. Winner*	*'Phone Winner*
Frankford Radio Club	3,753,930	W2SAI	W3DHM
Southern California DX Club	3,489,751	W6GAL/7	W6YY
Potomac Valley Radio Club	2,314,488	W4KFC	W4CBQ
Northern California DX Club	1,845,895	W6KEV	W6IDY
Ohio Valley Amateur Radio Assn	1,048,925	W8FGX	W8BTI
Maui Amateur Radio Club (Hawaii)	972,444	KH6MG	KH6PM
Northwest Amateur Radio Club (Ill.)	453,461	W9NH	.....
Lancaster Radio Transmitting Society (Pa.)	429,051	.....	.....
Rochester DX Assn	367,117	W2DOD	W2VQM
Connecticut Wireless Assn	261,025	W1BIH	.....
North Suburban Radio Club (Ill.)	258,438	W9FJB	.....
El-Ray Amateur Radio Club (Mass.)	237,948	W1BOD	.....
North Carolina State College Amateur Radio Club	237,890	W4UXI	.....
Four Lakes Amateur Radio Club (Wis.)	204,777	W9LNM	.....
Anchorage Amateur Radio Club (Alaska)	153,613	KL7AWB	KL7BCH
Order of Boiled Owls (N. Y.)	125,046	W2HSZ	.....
Milwaukee Radio Amateurs' Club	90,877	W9GIL	W9FDX
Central Connecticut Contest Club	90,192	.....	.....
Richland Amateur Radio Club (Wash.)	80,208	W7GWD	W7GWD
San Diego DX Club	79,848	W3MSK/6	.....
Helix Amateur Radio Club (Calif.)	59,691	W6LRU	.....
Antietam Radio Assn. (Md.)	57,781	W3EPV	.....
Westpark Radiops (Ohio)	54,107	W8AJW	W8AJW
Egyptian Radio Club (Ill.)	51,451	WØANF	.....
Schenectady Amateur Radio Assn	49,787	W2FBS	.....
South Jersey Radio Assn	45,970	W2SDB	.....
Tri-County Radio Assn. (N. J.)	36,936	W2JME	.....
Chicago Suburban Radio Assn	29,413	W9WFS	.....
Delano Amateur Radio Club (Calif.)	28,125	W6EFV	.....
Lake Success Radio Club (N. Y.)	24,187	W2SGK	.....
Dade Radio Club (Fla.)	15,465	.....	.....
Coronado Radio Club (Calif.)	15,015	K6EBH	.....
Morris Radio Club (N. J.)	14,120	K2CBB	.....
Central High Radio Club (Iowa)	10,749	WØDSP	.....
Tri-State Amateur Radio Society (Ind.)	7755	W9FGX	.....
Silvergate Amateur Radio Club (Calif.)	3909	K6BEC	K6BEC

ZL1BY 32,289; *South America* — PJ2AF 101,475, LU1EQ 63,300, VP4BN 28,700, LU7BQ 17,496, VP3HAG 15,930.

The Clubs

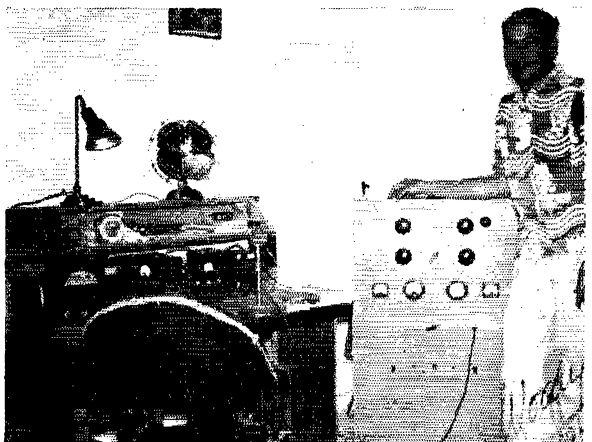
The cocobolo gavel with the engraved silver band, issued annually to the club whose members accumulate the largest aggregate score, is dearly sought after indeed. Some groups, we're told, employ any method short of the cat-o'-nine-tails to effect a full turnout. Winner in 1955 was once again Philadelphia's Frankford Radio Club, whose 41 entries added up to a brilliant 3,753,930 points. In a valiant bid to repeat their 1950 gavel-winning drive, Southern California DX Club members forged into second position only 265,000 points shy of FRC's total. The accompanying tabulation shows the standings of the 36 competing groups and the calls of their 45 certificate awardees.

Disqualifications

The following are deemed ineligible for score listings or awards. In each case disqualification is for off-frequency operation as confirmed by a single FCC citation or two accredited Official Observer measurements: *C.W.* — W2ESO, K2GAL, WØGXI/Ø, WØRLI, KC6CG; *'Phone* — W3ALB, W3VKD, W3YRK, W3ZQ, W4AIA, W4NHF, W4RRK, W4SOV, W5FBW/4, W6BYB, W7JLU, W9AMM, WØLBB, WØVIP.

—•••—

Propagation specialists agree that we are presently poised on the threshold of a DX millennium. Thousands of new amateurs are expected to succumb to the lure of DX as, starting very soon, they enjoy their first taste of ideal conditions. How are *you* fixed for the bonanza? The time is ripe to reduce s.w.r.s, scrape the rust from the 10-meter rotator, lick any 21-Mc. TVI and align the inhaler, if needs be. Don't be caught flat-footed. Take the action required to get your station functioning at peak efficiency *now*, because the 22nd ARRL International DX



VP6WR knuckled up to 127,098 points, ranked number three among the 120 foreign radiotelephones. Woody used a pair of 807s, modulated by more of the same, to twirlers of the plumber's delight variety, a long wire and a Windom. Best band: 21 Mc., where he snagged 234 of his 625 contacts.

Competition will be upcoming almost before you know it! Watch future *QST*s for details.

C. W. SCORES

Twenty-First International DX Competition

Operator of the station first-listed in each section and country is winner for that area. . . . The multiplier used by each station in determining score is given with the score — in the case of U. S.-Canada this is the total of the countries worked on each frequency-band used; in the case of non-W/VE/VO entries it is the total of the U. S.-Canada districts worked on each band. . . . The total number of contacts is listed next. . . . The letters A, B, and C approximate the input to the final stage at each station; A indicates power up to and including 100 watts; B indicates over 100 watts, up to and including 500 watts; C indicates over 500 watts. . . . The total operating time to the nearest hour is given for each station and is the last figure following the score. . . . Example of listings: W3DGM 385,548-228-565-C-83, or final score 385,548; multiplier 228; 565 contacts; power over 500 watts; total operating time 83 hours. . . . Stations manned by more than one operator are grouped in order of score following single-operator listings in each section or country tabulation; calls of participants at multi-operator stations are listed in parentheses. . . . Where three or more multiple-operator entries appear, the top-scoring station is being awarded a certificate.

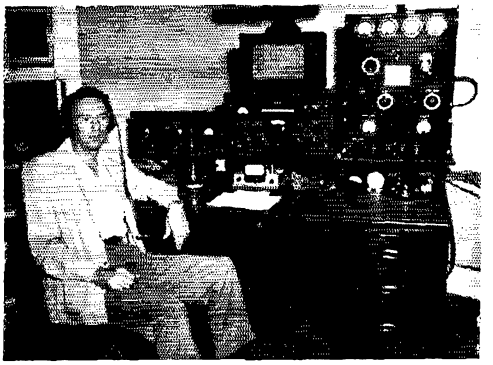
ATLANTIC DIVISION

Eastern Pennsylvania

W3DGM . . . 385,548-228-565-C-83
W3GHS 234,765-185-423-C-64
W3KT 126,900-141-300-C-60
W3GHD . . . . 118,170-130-303-B- –
W3MFW . . . 114,972-143-268-C-40
W3ADZ 110,565-135-273-C-55
W3CGS 88,830-126-235-C-48
W3DLR 64,152- 99-216-C-46
W3LEZ 61,692-106-194-B-50
W3ALX 38,505- 85-151-B-12
W3EQA 38,181- 89-143-C-45
W3EVW 35,340- 76-155-C-15
W3HER 33,300- 74-150-B-25
W3IMV 26,130- 65-134-B-23
W3QLW 17,874- 54-111-B-27
W3MDE 14,100- 47-100-A-20
W3EAN 9546- 43- 74-C-11
W3OCU 9240- 44- 70-C-10
W3TYW . . . . . 9020- 41- 74-A- –
W3RRI 8904- 42- 71-C-38
W3TJW 7920- 40- 66-B-20
W3GRS 7371- 39- 63-A- 9
W3MFT . . . . . 3000- 25- 40-B- –
W3ANZ 2337- 19- 41-B-20
W3SOH 1920- 20- 32-B- 9
W3HTF 1512- 18- 28-B-10
W3MDO . . . . . 1500- 20- 25-B- –
W3LAP 693- 11- 21-B-12
W3CTJ (W3s CTJ NOH) 514,080-255-672-C-86
W3ALB (W3s ALB JNQ) 256,896-192-446-C-75
W3ECR (W3ECR, W4JFM) 189,879-167-379-C-74
W3GHM (W3s GHM KDF) 164,088-159-344-C- –
W3KFQ (W3s KFQ QMZ) 53,628- 82-218-C-76

Md.-Del.-D. C.

W3LOE . . . 325,717-217-501- C-70
W3BVN . . . 313,110-213-490- C-80
W3EIV . . . 277,440-204-454- C-88
W3JTC . . . 227,367-189-401- C-83
W3JTK . . . 225,888-181-418- C-80
W3HEC . . . 160,038-153-350- C-71
W3KDP . . . 125,936-134-310- C-48
W3EKN . . . 114,972-132-297-BC-50
W3AOO . . . 87,240-120-243- B-39
W3DRD . . . 80,325-119-225- B-54
W3ZQ 63,036-103-204- C-70
W3AYS 55,836- 99-190- C-34
W3EPV 53,592- 88-203- C-53



By checking in with 330,336 points, W4CEN extended his streak to five North Carolina c.w. triumphs. The 75A-3 above is flanked by the exciter unit on the left and the final amp, parallel 4-250As, on the right. Tom, a star performer in the shindig since the Thirties, labels it "THE Contest," is presently toiling with a 2-element 7-Mc. beam to boost his percentages in the 1956 *doings*.

LICENSING AREA HIGHS

C.W.		*'PHONE*	
W1BFT	171,687	W1ATE	492,184
W2SAI	443,538	W2SKE/2	439,356
W3CTJ	514,080	W3DHM	230,640
W4KFC	426,024	W4KWY	282,540
W5CKY	130,077	W5KBP	62,496
W6YMD	363,480	W6YY	233,444
W6GAL/7	254,592	W7ESK	151,200
W8FGX	249,504	W8BKP	133,569
W9AVJ	207,765	W9AVJ	141,614
WØDAE	104,538	WØEIB	23,079
VE1NN	76,146	VE1CU	429
VE2BP	10,296	VE2APC	23,562
VE3IR	11,613	VE3RCS	56,158
VE4RO	137,160	VE4RO	49,128
VE5PM	5859	VE5GF	2142
VE6VK	18,513	VE6NX	4316
VE7KC	7805	VE7ZM	462
VO6N	10,908	VO6N	4455

W3DVO . . . 45,936- 87-176- B-65
W3CPB . . . 38,097- 83-153- B-30
W3AEL . . . 37,674- 78-161- B-25
W3WV 25,740- 65-132- B-19
W3VRJ . . . . 17,472- 52-112- C- –
W3EPR 16,380- 63- 88- B-29
W3CDZ . . . . 16,170- 55- 98- -32
W3WG . . . . . 14,448- 56- 86- -15
W3ZAL 11,400- 50- 84- C-27
W3HVM . . . 10,560- 48- 74- A-40
W3EIS 5760- 40- 48- B-10
W3WU . . . . . 5202- 34- 51- B- –
W3HDV 4818- 33- 50- C-15
W3COK . . . . . 4512- 32- 47- C- –
W3YRK . . . . . 4060- 29- 48- -30
W3IYE 2940- 28- 35- A-10
W3GAU . . . . . 2697- 31- 29- C- –
W3BVO . . . . . 75- 5- 5- B- 5
W3NZT . . . . . 36- 3- 4- A- 4
W3MFJ (W3s IKN MCG MFJ) 77,112-102-252- B-75
W3YTS (W3s RYX YTS) 2340- 20- 45- B-20

Southern New Jersey

W2SAI[1] . . 443,538-246-601- C-80
K2EDL . . . 400,200-232-575- C-90
W2GGL 93,534-131-238-BC-55
W2SDB 28,770- 70-139- C-50
W2PAU 12,100- 55- 74- B-17
K2CH 10,550- 50- 71- B-21
W2QKJ 9348- 38- 82- B-50
K2CPR 6405- 35- 61- A-35
W2DAJ . . . . . 4992- 32- 52- – 4
W2GND . . . . . 1950- 25- 26- B- 4
W2VUM 1890- 18- 35- B-17
K2CSC 960- 17- 19- B-14
W2CAG . . . . . 108- 6- 6- B- 4
W2EBW . . . . . 48- 4- 4- C- 4

Western New York

W2DOD 118,054-134-295-B-5
W2UWD . . . . . 78,000-104-250-C- –
W2SAW 75,597-113-223-B-50
W2DSB 41,886- 78-179-B-32
W2BJH 40,320- 84-160-C-51
K2CD 28,644- 62-154-C-39
W2FBA 27,846- 78-119-B-20
W2ABM 27,720- 60-154-C-40
W2ICE 25,200- 75-112-C-18
K2KID 21,105- 67-105-B-68
W2QJM 20,355- 59-115-B-41
W2TXB 14,847- 49-101-C-18
W2MA 10,716- 47- 76-C-25
W2EMW 8610- 41- 70-B-15
W2QZI 3807- 27- 47-C-14
W2ROM 3360- 28- 40-C-19
W2DKS 2886- 26- 37-B-18
W2BYY . . . . . 2760- 23- 40-B- –
W2VXA 2616- 24- 37-B-32
W2KEL 1980- 22- 30-B-18
W2REF 1710- 19- 30-B- 5
W2ZCZ 1638- 21- 26-B-10
K2BKU 1035- 15- 23-B-14
W2WPJ 840- 14- 20-C- 9
W2UTH 210- 7- 10-B- 2
W2CIH 189- 7- 9-A- 6

Western Pennsylvania

W3VKD 56,430- 95-198-C-16
W3NCF 24,840- 69-120-B-56
W3APQ 15,990- 65- 82-A-42
W3ELZ 10,080- 40- 84-B-21
W3ZAO 3528- 28- 42-B-27
W3SIJ 1125- 15- 25-B-25
W3KNQ 960- 16- 20-A-30

CENTRAL DIVISION

Illinois

W9HUZ . . . 159,360-160-332- B-82
W9FJB . . . 150,234-147-342- C-72
W9GRV 93,375-125-249- C-72
W9NII 92,628-124-249- B-70
W9ABA 78,648-113-232- C-60
W9ERU 78,144-111-236- C-65
W9UNG 43,172- 86-168- C-40
W9EU 34,344- 72-159- C-21
W9TGB 33,069- 73-151- B-43
W9FJY 28,860- 74-130- B-22
W9FID 26,274- 58-151- C-50
W9QIY 17,010- 54-105- B-46
W9WJV 11,454- 46- 83- B-28
W9FNR 9751- 49- 67- B-27
W9WFS . . . . . 7200- 40- 60- B- 7
W9VL 4524- 29- 52- B-19
W9WIO 3750- 25- 50-BC-10
W9SGB 3726- 27- 46- B-35
W9WYB 3375- 25- 45- A-15
W9KLD 3150- 25- 42- B-12
W9PCF . . . . . 1071- 17- 21- B- 7
W9DQV 960- 16- 20- A-10
W9NJZ . . . . . 378- 9- 14- B- 7
W9LQF . . . . . 48- 4- 4- B- –
W9EXL . . . . . 18- 2- 3- A- 5
W9AVJ (W9s GVZ NZM PKW) 207,765-171-405- C-96
W9DDP (W9s DCP DDP DWD OCB) . . . 22,144- 64-116- B-29

Indiana

W9IOP . . . . . 176,904-168-351-C- –
W9VUL 110,403-141-261-C-30
W9UKG 38,988- 76-171-B-87
W9ZTD 8170- 43- 64-B-25
W9PQA . . . . . 4743- 31- 51- -40
W9CWO . . . . . 4428- 36- 41-A- –
W9FGX 4239- 27- 53-A-50
W9EHU 3465- 33- 35-B-19
W9DHM 1767- 19- 31-B-14
W9UC 540- 12- 15-B- 4
W9FYM 147- 7- 7-A- 5
W9DGA 18- 3- 4-A- 1

Wisconsin

W9LNM . . 153,180-148-345- C-75
W9RQM . . . 81,360-113-240-BC-48
W9GIL . . . . 43,344- 84-172- B- –
W9FDX . . . . 21,594- 59-122- C- –
W9RBI 21,060- 65-108- C-25
W9KXK . . . 18,648- 56-111-BC-25
W9WJH 15,087- 47-107- A-25
W9RKP 13,413- 51- 89- B-30
W9SZR 10,665- 45- 79- B-30
W9GWK . . . 10,332- 42- 82- B-20

This neat arrangement features (from left) a p.p. 810s rig, voltage regulator, VFO, 'scope and HQ 129X. It's the property of CT1SQ, top voice man for Europe with 46,440 points and 389 contacts, 47 of which came about on the allegedly uninhabitable 40-meter 'phone band. Nice going, Humberto!

W9VOD....5338- 34- 53- B- 9
W9WEN....3969- 27- 49- B-13
W9HMU....1188- 18- 22- A- 9
W9QNO....1080- 15- 24- B-20
W9BTM....630- 14- 15- A-30
W9SDK....540- 12- 15- B- 5
W9WWJ....180- 5- 12- A- 4
W9UDK....75- 5- 5- B- 3
W9MDG....12- 2- 2- - -

DAKOTA DIVISION

North Dakota

WØEOZ....1131- 13- 29-B- 4

South Dakota

WØBLZ....25,740- 66-130-B-28

Minnesota

WØTKX....34,188- 77-148-B-35
WØYCR....27,840- 64-145-C- -
WØJSN....17,856- 62- 96-B-42
WØQBA....11,481- 43- 89-A-18
WØVIP....6039- 33- 61-B- -
WØEDX[2]....5810- 35- 56-C-20
WØPHZ....5208- 31- 56-B-21
WØDRG....2898- 23- 42-B-20
WØOTI....2394- 19- 42-A-37

DELTA DIVISION

Arkansas

W5MSH....5880- 35- 56-A-25
W5QKZ....2100- 20- 35-B-14

Louisiana

W5KC....49,383- 93-177-B-35
W5MNT....42,828- 83-172-A-62
W5CEW....30,104- 71-142-C- -
W5KTD....3180- 20- 53-B-30
W5BI....726- 11- 22-B- 9

Mississippi

W5CKY....130,077-149-291-B-61
W9APY/5....60,348-107-188-B-50

Tennessee

W4DQH....168,795-155-365-C-66
W4FKA....33,288- 73-152-B-72
W4ZZ....429- 11- 13-B-19
W4ZWZ....270- 8- 10-B-15

GREAT LAKES DIVISION

Kentucky

W4KTC....46,248- 94-164-C-45
W4JBQ....16,905- 49-115-B-37
W4OMW....3813- 31- 41-B- -
W4KVX (W4s EPA KVX OMW, W8UOD) .358,974-231-518-C-88

Michigan

W8DUS....136,782-153-298-C-70
W8CVU....98,208-124-264-B-40
W8UAS....76,272-112-227-C-60
W8YIN....50,490- 90-187-A-42
W8HMI....48,636- 84-193-C-21
W8RQ....27,648- 72-128-B-34
W8KWC....4692- 34- 46-B- 5
W8KPL....1530- 17- 30-B- 7
W8MCC....630- 14- 15-A- 9
W8MFI....432- 12- 12-B- -
W8DLZ....429- 11- 13-B- 5
W8SS....12- 2- 2-B- 1

Ohio

W8FGX...249,504-184-452- C-60
W8BKP...167,796-158-354-BC-57
W8BTI...159,852-154-346- C-48
W8PUD....67,221- 97-231-BC-55
W8EV....44,118- 86-171- C-25
W8AAP....37,680- 80-157- C-38
W8STL....31,484- 68-155- C-40
W8BOJ....30,492- 77-132- C-18
W8VTF....26,880- 64-140- B- -
W8JJW....21,488- 68-106- C-30
W8OPG....16,348- 61- 90- B-21
W8AJW....14,840- 53- 94- A- -
W8JIN....14,151- 53- 89- C-12
W8SMC....12,450- 50- 83- B-17
W8GJG....10,449- 43- 81- B-26
W8BQT....4704- 49- 32- C- -
W8KMF....3799- 29- 45- C-18
W8NP....3510- 30- 39- B-27
W8KC....3200- 25- 44- B-21
W8PM....3042- 26- 39- A- 9
W8KZT....2904- 22- 44- B-30
W8VZE....2775- 25- 37- B-15
W8PCS....2520- 24- 35- B-10
W8LOF....2496- 26- 32- A-10
W8PBU....2205- 21- 35- C- -
W8BUM....1914- 22- 29- B- -
W8HZR....1575- 21- 25- B-18
W8BNO....1311- 19- 23- B-15
W8HFE....1134- 18- 21- A- 8
W8DAE....495- 11- 15- A- 7
W8MQQ....450- 10- 15- B- 7
W8FDC....405- 9- 15- B-13
W8AQD....297- 9- 11- A-14
W8CQD....126- 6- 7- B-15
W8FRD....36- 3- 4- A- 3
W8NDX....3- 1- 1- A- 3

HUDSON DIVISION

Eastern New York

W2HO....69,690-101-230- B-71
W2HSZ....55,290- 95-194- B-50
W2EWD...47,478- 82-193- B-58
W2FBS....46,512- 76-204-BC-42
W2AWF...22,422- 74-101-BC-40
W2CJM....10,944- 48- 76- B-30
K2EDH....10,442- 46- 76- B- -
K2BE....3150- 30- 35- B-12
K2EIU....2622- 23- 38- A-11
K2HVN....2550- 25- 34- B-13
W2GRI....2240- 20- 38- C-10
W2IP....576- 12- 16- B- -
W8RGF/2....429- 11- 13- A- -
W2APH....147- 7- 7- B- -
W2BYN....12- 2- 2- B- 1

N.Y.C.-L.I.

W2WZ....306,838-202-507- B-70
W2BRV....78,660-114-230- B-45
W2GSN....45,600- 76-200- C-30
W2AZS....39,312- 78-168- C-45
W2IRV....37,800- 84-150- B-30
K2CF....27,300- 64-140- B- -
K2DCJ....23,010- 65-118- A-30
W2SGK....15,444- 54- 96- C-20
W2KTF....14,326- 58- 83- B-14
W2NUO....13,950- 50- 93- A-60
W2MUM...12,642- 49- 86- A-25
K2DGT....6804- 36- 63-AB-25
W2VDT....3166- 24- 44- B- -
W2FCT....3150- 21- 50- B-21
W2DLO....3132- 29- 36- -15
W2JB....2244- 22- 34- B-11
W2DTL....1710- 19- 30- A-20
W2EEN....1254- 19- 22- B- 8
K2CMV....1170- 15- 26- B- 8
K2GXL....510- 10- 17- A- 2
W2MZX....126- 6- 7- - -
W2LRJ....102- 6- 6- B- 7
K2DEM....27- 3- 3- B-20
K2ENO....27- 3- 3- A-26

Northern New Jersey

W2AIW...110,166-122-301- C-46
W2ZGB....82,485-117-235- B-80
W2EQS....81,184-118-230- B-85
W2CWK...62,192-104-200-AB-48
W2BOK....26,019- 59-147- B-29
W2JME....18,432- 64- 96- B-21
W2TWC...15,912- 52-102-AB-17
K2CBB....12,314- 47- 88- B-13
W2DRV....12,000- 48- 84- B-26
W2GKE....6076- 31- 66- B-22
W2GDX....4884- 37- 44- B-13
W2CVW....1734- 17- 34- B- -
W2ZXL....1605- 15- 36- B-19
K2GLQ....1377- 17- 27- B-10
K2EPP....1152- 16- 24- A-22
W2EHN....960- 16- 20- A-20
W2SCV....429- 11- 13- B- 1
K2GFX....333- 9- 13- A-14
K2EUH....12- 2- 2- A- 1
W2FXZ (W2FXZ, KN2KFP) 9143- 41- 75- B-50

MIDWEST DIVISION

Iowa

WØNWX...88,803-117-255- B- -
WØSQO....33,702- 82-137-BC-34
WØQVZ....16,560- 60- 92- B-15
WØVFM....6372- 36- 59- B-28
WØDSP....4524- 29- 52- C-20
WØDIB....1566- 18- 29- B- -
WØGXQ....75- 5- 5- -12
WØLNI (WØs GVZ GWE GWP GXQ KYI LNI) 6150- 30- 69- B-28

Kansas

WØDAE....104,538-131-266-C-45
WØERI....43,848- 84-174-C-34
WØVBQ....25,830- 70-123-C-40
WØIUB....3658- 39- 74-B- -
WØCAX....4524- 29- 52-B- -
WØCTK....2128- 19- 38-B-18
WØQVO....540- 12- 15-A- -
WØUAT....297- 9- 11-B-15

Missouri

WØBMM/Ø.36,720- 80-153- C-85
WØCVZ....34,428- 76-151- B-44
WØANF....25,792- 64-135-AC-37
WØQDF....22,491- 63-119- C-35
WØBIA....22,156- 58-128- B-54
WØLBB....12,900- 50- 86- B-23
WØPGI....1920- 20- 32- B-15
WØPWN....1404- 18- 26- A-20
WØLLU....924- 14- 22- A- -
WØEZU (WØs EZU GVI LHY MNV) 19,824- 56-118- -80

Nebraska

WØBUR....7140- 35- 68- A-18
WØAIN....1843- 19- 33- B- 7

NEW ENGLAND DIVISION

Connecticut

W1BIH...146,861-143-343- B-50
W1TYQ...140,448-152-308- C-45
W1ODW..104,775-127-275- B-67
W1TX....101,748-122-278-BC-46
W1AW[3,4]...80,736-116-232- C-40
W1DIT....78,648-116-226- C-44
W1AB....48,321- 91-177- C-45
W1ZDP[4]...47,904- 96-168- B-40
W1TSZ....32,640- 80-136-AB-50
W1NI....23,530- 65-122- C-53
W1WY....17,280- 60- 96- A-24
W1FVF....14,268- 58- 82- B-56
W1JTD...13,920- 58- 80- B- -

Timber! While he transmitted "569 KANSAS" to 11ADW the first morning of the c.w. affair, WØDAE's 70-foot tower collapsed. Undaunted, Jack carried on with makeshift skyhooks, got 104,538 points, tops for his call area and section. Dry those tears of sympathy, fellows! DAE is back in business with an effective assortment of rotaries, doublets and ground planes.

NON-W/VE LEADERS

C.w.		*'Phone*	
KH6MG	489,066	KH6IJ	162,486
KH6IJ	461,700	VP7NX	148,665
VP7NM	453,725	VP6WR	127,098
XE2OK	308,636	PJ2AF	101,475
ZL1BY	306,408	KH6PM	90,576
KG4AJ	302,841	EL2X	81,405
KV4AA	296,140	HP3FL	73,017
KP4CC	247,040	VP9L	66,317
VP7NX	241,164	LU1EQ	63,300
KH6PM	237,006	KH6AXH	59,040
HK4DP	232,712	KG4AJ	55,044
KP4DH	220,779	XE2OK	53,998
KP4ZW	218,970	YN4CB	49,545

W1FTX....11,918- 59- 83- B-14
W1YYM[4]....9348- 38- 82- B-28
W1AJO.....6882- 37- 62- B-23
W1APA.....6720- 35- 64- B-20
W1GVK.....2500- 25- 34- B-20
W1NLM.....1530- 17- 30- B-20
W1HV.....1056- 16- 22- B- 8
W1BDI[4].....450- 10- 15- B- 5
W1RWS.....48- 4- 4- A- 2
W1ZMB.....3- 1- 1- A- 1
W1ICP[4]...(W1s ICP WPO)
11,316- 46- 82- C-50

Maine

W1DLC....100,564-124-271- -90
W1IKE.....59,712- 96-208-C-40
W1EF.....23,040- 64-120-B-30
W1VEH.....1728- 16- 36-B-15

Eastern Massachusetts

W1AXA....143,934-149-322-C-75
W1JEL....139,722-146-319-C-75
W1AZY....120,834-137-294-B-68
W1BOD....113,577-131-289-C-55
W1TW.....65,376- 95-227-B-25
W1PEG.....32,234- 71-154-B-58
W1WLW....29,308- 68-145- -33
W1JDE.....28,260- 60-157-C-34
W1HX.....12,648- 62- 68-B-35
W1QJR.....12,120- 40-101-B-38
W1AQE.....10,560- 44- 80-A- -
W1NS.....9520- 40- 80-B-24
W1ISX.....8880- 37- 80-B-23
W1JSM.....5106- 37-138-A- -
W1PYM.....2451- 19- 43-B-10
W1LQQ.....1683- 17- 33-A- 8
W1CTW.....1632- 16- 34-C- -
W1BND.....1584- 16- 33-A-12

W1TVZ.....1575- 21- 25-B-14
W1CPJ.....1350- 15- 30-A-14
W1BB.....27- 3- 3-B-10
W1MX...(W1YFM, W4YMJ, W9GQL)
43,848- 87-168-C-49

Western Massachusetts

W1UYY.....15,600- 52-100-B-32
W1CLX.....14,124- 44-107-B -8
W1EFQ.....13,432- 46- 98-C-19
W1ZD.....9282- 39- 80-C-10
W1YQC.....7182- 38- 63-B-45
W1JYH.....1584- 22- 24-B- -
W1DGT.....1037- 17- 21-B- 7
W1HPA.....273- 7- 13-B-10

New Hampshire

W1BFT.....171,687-151-379-B-75

Rhode Island

W1CJH.....49,941- 93-179-B- -
W1AWE.....23,184- 56-138-C- -
W1RFQ.....144- 6- 8-A- 4

Vermont

W1QMM....20,460- 62-110-B-28
W1RWP.....5148- 33- 52-B-17
W1SPK.....1302- 14- 31-B-10

NORTHWESTERN DIVISION

Idaho

W7VWS.....570- 10- 19-A- 8

Montana

W7CJB.....6873- 29- 79-B- 4
W7PCZ.....3645- 27- 45-B-20

Oregon

W7DAA.....63,480- 92-230-C-62
W7AHX.....35,397- 69-171-B-50
W7OCL.....20,034- 53-126-C-60
W7JLU.....12,726- 42-101-B-24
W7TML.....4758- 26- 61-C-28

Washington

W7PQE....78,225-105-249- C-65
W7AJS.....40,044- 71-188- C-35
W7GWD...39,831- 71-187- C-56
W7NLI....24,882- 58-143- C-20
W7HJC.....9798- 46- 71- C-19
W7JC.....8640- 36- 80- A-36
W7TZ.....4200- 28- 50-BC-44
W7UQY.....1938- 17- 38- C-40
W7FZB.....225- 5- 15- A- 8
W7BUL.....180- 5- 12- A- 6

PACIFIC DIVISION

Nevada

W7VIU.....3864- 23- 56- B-20

Santa Clara Valley

W6VE.....73,830-107-230-C- -
W6HOC.....69,642-106-219-C-50
W6SR.....62,928- 92-228- - -
K6DCE.....16,215- 47-115-A-53
W6EFR.....7560- 36- 70-C-15
W6DWJ.....4752- 24- 66-B-50
K6EBB.....759- 11- 23-B- -

East Bay

W6TI.....15,792- 47-112- C-29
W6QDE....14,076- 46-102- C-21
W6IPH....11,934- 39-102- B-45
W6FLT....11,514- 38-101- C-26
W6MHB....9030- 35- 86- C-14
W6CTL....5508- 27- 68- B- -
W6LMZ....1836- 18- 34- B- -
W6EJA.....1575- 15- 35- - 4
K6AUC.....1134- 14- 27- A- -
W6TT (W6s CGG MVQ PYH TT)
284,271-197-481-AB-96
W6LDD (W6s DZZ LDD MEK)
112,266-126-297- C-90
W6IDY (W6s IDY UZX)
74,970-102-245- C-48
W6KEK (W6s CTL KTK)
25,842- 59-146- B- -
W6OT (W6s OT PHI QUV UES, K6s AUD HFB)
1209- 13- 31- B-24

San Francisco

W6WB....119,340-130-306- C- -
W6GPB....91,176-116-262- C-30
W6BYB....80,010-105-254- C-66
W6HIP....76,464-108-236- B-38
W6ATO....62,517- 91-229- C-82
W6GWQ...21,840- 56-130-BC-48
W6GQK....18,450- 50-123- C-42
W6YC.....7548- 34- 74-AB-20

Sacramento Valley

W6GHG.....32,913- 69-153-C- -
W6ONZ.....30,132- 62-162-C-73
W6CIS.....20,680- 55-126-B-25
K6EDE.....12,096- 42- 96-A-60
W6BIL.....1710- 19- 30-B-17
W6HIR.....1188- 18- 22- -20
W6DTJ.....168- 7- 8-A- -
W6IRA.....3- 1- 1-A- -

San Joaquin Valley

W6KEV...124,605-135-309- C-64
W6EFV....16,800- 50-112- - -
W6UJ.....15,150- 50-101- C- -
W6BYH.....9600- 40- 80-BC- 8
W6MPG.....3450- 23- 50- C-18
W6BVM.....510- 10- 17- B- 3

ROANOKE DIVISION

North Carolina

W4CEN....330,336-222-496-C-60
W4UXI.....122,264-136-301-C-75
W4LZF.....120,096-144-278-B-50
W4MZP....115,506-138-280-C-76
W4RRK.....6068- 37- 57-B-32
W4MR.....1512- 21- 24-B- 8
W4VEO.....12- 2- 2- - 1

South Carolina

W4GQE.....49,383- 93-177-B-69
W4BAN.....1428- 17- 28-B-20
W3HH/4.....1008- 16- 21- - 5

Virginia

W4KFC....426,024-244-582-C-87
W4DHZ/4..370,962-222-557-C-85
W4YHD....188,543-167-377-C- -
W4OM.....187,488-168-372-C- -
W4CC.....105,705-135-261-C-60
W4PNK.....96,840-120-269-C-72
W4JAT.....56,160- 96-195-C-67
W4KXV.....49,632- 94-176-B-60
W4WWN....37,884- 82-154-B-80
W4YZC.....21,573- 47-153-B-21
W4VZQ.....18,005- 65- 93-A-14
W4HJK.....9030- 43- 70-B-20
W4IA.....7904- 38- 71-B-17
W4SHX.....5032- 34- 50-B-22
W4SJG.....2331- 21- 37-B- 6
W4WBC.....2016- 21- 32-B-10
K4CAR.....816- 16- 17-B-13
W4CJC (W4s CJC KRW)
9594- 41- 78-B-35

West Virginia

W8PQQ....220,473-187-393-C-69
W8UMR....18,150- 55-110-B-22
W8CDV.....1880- 20- 32-B-10
W8AVW.....540- 12- 15- B-4

ROCKY MOUNTAIN DIVISION

Colorado

WØAZT.....55,272- 94-196-C- -
WØSBE.....23,994- 62-129-C- -
WØIXF.....15,198- 51-100-B-44

Utah

W7QDJ.....17,748- 51-116-A-45

Wyoming

W7PSO.....13,287- 43-103-C-30

SOUTHEASTERN DIVISION

Alabama

W4CEB.....1620- 20- 27-B- 7
W4WOG.....918- 17- 18-B-10

Eastern Florida

W4LVV.....87,822-125-233-B- -
W4WHN....18,330- 65- 94-A- -
W4LQN.....12,300- 50- 82-A-30
4DXL.....3159- 27- 39-B-14
W4EEO.....1083- 19- 19-B- 5
W4ZQK.....359- 9- 13-A-20

Western Florida

W4AFS.....13,426- 49- 92-B-45
WØHRI/4.....7596- 36- 71-B-48

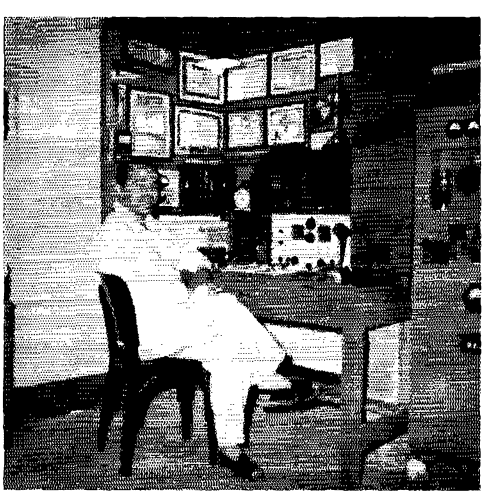
Georgia

W4BBP.....45,414- 87-174-B-32
W4TED.....30,618- 63-162-B-58
W4CYA.....26,784- 72-124-B-42
W4SOV.....2244- 22- 34-B-10
W4BXV.....189- 7- 9-A-10

SOUTHWESTERN DIVISION

Los Angeles

W6VUP...165,600-160-345-BC-85
W6RW....148,920-146-340- C-84
W6MBA..126,153-131-321- C-65
W6FSJ....118,491-127-311- C-60
K6CIT....104,544-121-288- C- -
W6VSS....92,547-113-273- C-36
W6BUD....89,562-118-253- C-60
W6SWG...82,176-107-256-BC-70
W6OXS....78,936-104-253- C-64
W6NZW...63,147- 97-217-AC- -
W6MUR...59,040- 96-205- C-45
W6CUQ....57,132- 92-207- C-42
W6OYD....48,762- 86-189- C-80
W6HJT....40,716- 78-174- C-34
W6NWL...34,650- 70-165- B-60
W6NJU....33,252- 68-163- A-70
W6NTR....33,228- 71-156- A-28
W6HJK....26,448- 58-152- A-70
W6APH....23,490- 58-135- C-57



An 813 at 200 watts, a Super Pro, and 75 hours of plodding netted PY7AN a total of 109,620, fourth in *America del Sur*, and the Brazilian c.w. Certificate of Performance.

W6UED....22,344- 56-133- A-72
W6NKR....20,691- 57-121- C- -
W8JFJ....16,371- 51-107- - -
W6ID.....13,482- 42-107- C-33
W6YY.....13,080- 40-109- C-10
W6LDR.....9447- 47- 67- C- -
W6KNE.....5829- 28- 67- B-30
W6HPB.....3510- 26- 45- B-15
K6AUZ.....2520- 21- 40- B- 4
K6DNH.....1665- 15- 37- A-10
K6GUZ.....1440- 15- 32-AB-18
W6GEB.....792- 11- 24- C- 2
W6YMD (W6s AOA BXL FUF IFW IBZ KFV OZ PB YMD) 363,480-233-520- C-86
W6ITA (W6s ITA OEG ENV) 314,820-212-495- C-92
W6LDJ (W6s EEK KRI LDJ LHN NKU) 244,620-180-453-BC-93
W6AM (W6s AM GFE KSF QMC) 185,370-167-370- C-80
K6BFC (K6s BFC EAP) 22,156- 58-128- A-80
K6CYT (K6s EGF CVU CYT) 3762- 22- 57- B-50

Arizona

W6GAL/7..254,592-192-442-C-88
W7PZ.....3024- 28- 36-B-18
W7ENA.....2280- 20- 38-A-22

San Diego

W3MSK/6...64,512- 96-224-A- -
W6LRU.....50,463- 89-189-A-55
W6CAE.....22,743- 57-135-B- -
W6CHV.....16,800- 50-112-B-40
W6LJQ.....12,789- 49- 87-B- -
W6CRT.....10,152- 36- 94-B-12
W6BZE.....8424- 36- 78-C-12
K6EBH.....7140- 34- 70-A-41
W6MCY.....5184- 32- 54-B-28
K6DGB.....4941- 27- 61-A-24
K6BEC.....2640- 22- 40- - 2
W6JVA.....2268- 18- 42- - -
K6CTQ.....1050- 14- 25-A-14
W6MGT.....804- 12- 23- -13
W6GBG.....540- 10- 18-B- 6
K6CUZ.....60- 4- 5-A- 1
K6DNO/6.....3- 1- 1- - 1

Santa Barbara

W6ULS.....79,380-108-245-C-75
W6ALQ.....60,210- 90-223-C-34
W6YK.....53,311- 89-203-C- -
W6AGO.....22,110- 67-110-C-22
W6PQJ.....6912- 32- 72-C-13
W6GTI (W6s CEM GTI RRR) 134,670-134-335-C-90

WEST GULF DIVISION

Northern Texas

W5QF.....11,592- 46- 84-B-22
W5DXW....10,363- 43- 81-B-44
W5KUJ.....8127- 43- 63-C- -
W5AJA.....7560- 45- 56-B-30
W5CAY.....5704- 31- 62-B- -
W5AWT.....3726- 27- 46-B-15
W5BJA.....3105- 23- 45-A-15
W5VNW.....504- 12- 14-B- 6

Oklahoma

W5LW.....35,964- 74-162-B-50

Southern Texas

W5ZD.....80,682-119-226-BC-65
W5VIR....49,383- 93-177- A-62
W5MCO....10,164- 44- 77- A-65
W5BTS.....2904- 24- 41- A-23
W5ZWR.....1620- 18- 30- A-11
W5SU.....288- 8- 12- B- 3

New Mexico

W5DWT....110,336-128-288-C-59
W5VRP.....35,112- 76-154-B-70
W5FTP.....1122- 17- 22-B-10

CANADIAN DIVISION

Maritime

VE1EK.....20,349- 57-357-A-27
VO6N.....10,908- 36-101-B-60
VO2G.....10,450- 38- 93-B-30
VE1CU.....7665- 35- 73-A-16
VE1HG.....2112- 22- 32-B-15
VO6U.....360- 10- 12-A- 2
VO1D.....264- 8- 11-A- 7
VE1NN (VE1s ABC FF KM KW OU SS)....76,146-111-233-B-84
VE1YU (VE1s BD FB YU) 20,041- 49-137-B-64

Ontario

VE3IR.....11,613- 49- 79-B-46
VE3BHS.....2112- 22- 32-A-21
VE3YV.....1380- 20- 23-B- 5
VE3DJD.....192- 8- 8-B-12

Quebec

VE2BP.....10,296- 39- 88-B-50

Alberta

VE6VK....18,513- 51-121-AB- -
VE6MN.....3654- 21- 58- C-18
VE6NX.....1957- 19- 35- B-11

British Columbia

VE7KC.....7805- 35- 75-B-20
VE7FC.....5712- 28- 68-B-25
VE7ZM.....5508- 27- 68-B-10

Manitoba

VE4RO.....137,160-127-360-C-65
VE4TJ.....1560- 20- 26-B-12

Saskatchewan

VE5PM.....5859- 31- 63-A-45
VE5JV.....378- 9- 14-B- 8

AFRICA

Algeria

FA9RW.....97,290- 47-694-A-60
FA8DA.....53,724- 44-408-A-30

Anglo-Egyptian Sudan

ST2AR.....20,475- 25-273-B- -

Angola

CR6AI.....104,400- 40-871-B- -
CR6CS.....3630- 11-111-A-12

Belgian Congo

OQ5GU.....113,490- 45-845-A- -

Canary Islands

EA8BF.....93,120- 40-778-A-54

Ethiopia

ET3S.....2808- 12- 78-A- -

French Morocco

CN8EB.....7423- 13-191-A-10

French West Africa

FF8JC.....29,526- 37-266-AB-11

Gambia

ZD3A.....735- 7- 35-A- 4

Liberia

EL2X.....182,373-53-1147-B-54

Madagascar

FB8BR.....1590- 10- 53-A- 8

Madeira

CT3AB.....46,020- 65-236-A-15

Mozambique

CR7AF.....2688- 16- 56- A- 9
CR7LU.....1080- 8- 45- A-14
CR7CO.....792- 12- 22-AB- -

Northern Rhodesia

VQ2GW.....8640- 20-144-A-10

Rio de Oro

EA9DF.....127,661-37-1152-A-74

Southern Rhodesia

ZE5JA.....26,730- 30-297-A-36

Spanish Guinea

EA0AC.....8840- 26-115-B- 8

Spanish Morocco

EA9AP.....37,888- 32-396-A-22

Tanganyika

VQ3CC.....1248- 8- 53-A- 8

Tangier Zone

KT1UX.....69,996- 39-598-B-32

Union of South Africa

ZS5U.....22,380- 30-251-A-45
ZS1PD.....2112- 11- 64-A- -
ZS6AJO.....1862- 14- 45-A- 9
ZS1RM.....120- 4- 10-A- 1
ZS1OU.....24- 2- 4-A- 1

ASIA

Hong Kong

VS6CQ.....448- 2- 76-A- -
VS6AE.....290- 2- 49-A- 6

Japan

JA1CJ.....50,715- 35-485-AB-61
JA3AF.....38,529- 27-476-BC-84
JA3AB.....25,766- 26-339- B-47
KA2OJ.....21,947- 17-433- B-24
JA1CR.....15,428- 19-271- B-37
JA1VX.....14,648- 19-263- C-44
JA4BB.....10,458- 18-196- B-20
JA7BO.....4355- 13-112- A-35
JA1SR.....1998- 9- 76- A-28
JA0AA.....936- 8- 39- A- 7
JA8AH.....885- 5- 59- A- -
JA8AQ.....763- 7- 37- A- -
JA1AS.....225- 5- 15- A- 4
JA7AZ.....150- 2- 25- A- -
JA7AD.....84- 2- 14- A- 3
JA3IS.....54- 2- 9- A- -
JA1ACA.....18- 2- 3- A- 1
JA3BB (JA3s BB DM) 7290- 15-162- B-25

Lebanon

OD5AX.....737- 11- 24-A- 9

Ryukyu Islands

KR6LJ.....40,560- 26-520-C-47

Singapore

VS1BJ.....1025- 5- 69-B- -
VS1GO.....48- 8- 2-A- -

EUROPE

Austria

OE5JK.....57,540- 28-685-A- -
OE2JG.....14,400- 25-192-A-96
OE5AH.....6003- 23- 88-A-41
OE13USA (K2LXD, W6HVN) 98,805- 35-949-B-60
OE2SP (OE2s PP SP) 7616- 16-160-A- -
OE13OM (OE13s OM YL) 45- 3- 5-B- 3

Azores Islands

CT2BO.....7476- 21-119-A-13

Balearic Islands

EA6AF.....34,488- 36-322-A-25

Belgium

ON4TQ.....13,872- 17-273-B-25
ON4QS.....7200- 15-160-A-28

Corsica

F9QV/FC....14,275- 25-192-A- -

Czechoslovakia

OK1MB.....77,560- 40-654-A- -
OK1LM.....19,136- 26-247-A- -
OK3DG.....2030- 10- 68-B- 5

Denmark

OZ1W.....43,290- 30-488-A- -
OZ7G.....16,226- 19-286-A-20
OZ7BG.....11,730- 17-230-B-14
OZ5PA.....10,678- 19-190-B- -
OZ6OJ.....5076- 12-143-A- -

Eire

EI9J.....57,924- 36-538-B-32
EI9Y.....25,740- 22-393-B-31
EI5F.....9280- 16-196-B-12
EI5G.....6000- 15-137-B-14
EI6G.....4732- 14-116-A- 6
EI9F.....2541- 11- 77-B-11

England

G5RI.....89,712- 48-623-B-50
G2QT.....31,096- 28-380-B-40
G2BB.....15,916- 23-233-B- -
G3HJJ.....7264- 16-152-B-30
G3BLE.....4212- 13-108-B-19

Faeroes Islands

OY7ML.....318- 6- 18-A- -

Finland

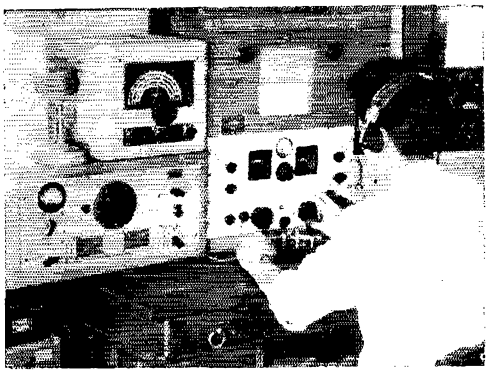
OH6OB.....11,880- 18-220-A- -
OH6NR.....7905- 15-176-B-35
OH1PW.....5854- 14-141-A- -
OH7NW.....1742- 13- 45-A-24
OH2LA.....1128- 8- 47-A- -
OH3NY.....870- 10- 29-A- -
OH2OJ.....440- 10- 15-A- 3
OH3RA.....5- 1- 2-A- 1

France

F8VJ.....44,166- 34-438-A-36
F9MS.....22,160- 25-299-A-36
F7EH.....17,180- 20-287-A-34
F8TQ.....9800- 28-119-A-18
F8PM.....7540- 20-127-A- -
F8TM.....2808- 18- 52-A-18
F9RM.....2170- 14- 52-A- -
F9DW.....858- 13- 22-A- 6
F3IB.....810- 10- 27-A- -
F8SW.....810- 9- 30-A- -

Germany

DJ1BZ....138,462- 47-991- B-70
DL1KB...102,258- 46-746- B-57



Of all the areas around the globe, Asia has perhaps been hardest hit by the ionospheric doldrums of recent Tests. In 1955 Tokyo's JA1CJ, unimpressed by the propagation forecasts, stacked 485 QSOs for 50,715 points, the largest c.w. total out of the Far East since 1950. (*Photo by JA1CJ*)

DL4ZC.....91,875- 49-625- B-64
DL1DX....76,956- 44-583- B-46
DL1JW....45,623- 41-371- B-49
DL1BR....31,043- 37-280- A- -
DJ2BC.....18,117- 27-225- B-52
DL7AA....14,670- 30-163- B-70
DL1QT.....4608- 24- 64-BC-14
DL9PJ.....3666- 13- 94- B- -
DL3OC.....1513- 17- 30- B-40
DL4DX.....1130- 10- 41- B-27

Gibraltar

ZB2A (G3s DBT GFM, BRS 20,186).....6583- 29- 76-A- 7

Iceland

TF3MB.....44,544- 32-464-A- -
TF3AB.....18,456- 24-257-A- -

Italy

I1NT.....29,970- 27-370-B-30
I1BDV.....27,360- 24-380-B- -
I1AMO.....5552- 16-117-B-17
I1ER.....2004- 12- 83-B-54

Liechtenstein

HB1MX.....3666- 13- 95-B- 9

Malta

ZB1JRK.....3850- 10-129-A-18

Netherlands

PA0UN.....77,444- 38-680-A- -
PA0VB.....25,560- 30-284-B- -
PA0UV.....19,512- 24-271-B- -
PA0XD.....12,816- 18-238-A-26
PA0FAB.....10,512- 24-146-A-21
PA0FLX.....8200- 20-137-A- -
PA0TAU.....8142- 23-118-A- -
PI1RRS*.....6682- 26- 87-B-23
PA0MDG.....5450- 25- 73-A-10
PA0HJK.....3168- 16- 66-A-13
PA0LY.....2240- 10- 86-A- -
PA0OTC.....576- 8- 24-A- -
PA0BRS.....513- 9- 20-A- 8
PA0AGA (PA0s AGA UKC) 594- 9- 22-A- -

Northern Ireland

GI3JEX.....990- 11- 30-B- -

Norway

LA6U.....9685- 15-194-A- -
LA4SE.....4634- 14-111-A-30
LA3HA.....3555- 9-135-A-20
LA7X.....3468- 12- 97-A-19
LA1IE.....1638- 13- 42-A- 8
LA7KA.....1500- 10- 50-A- 8
LA6YC.....957- 11- 29-A- 6
LA3SE.....294- 6- 17-A- 9
LA1K (LAs 6PB 7ZC) 2301- 13- 59-B- 5

Portugal

CT1JS.....3510- 10-117-B- -

Roumania

YO3RF.....1550- 10- 52-A-20

Saar

9S4AX.....12,673- 23-187-A-50

Spain

EA4CR.....63,297- 39-541-B-96
EA1AB.....60,822- 31-654-A-40
EA3GF.....19,155- 15-427-B- -
EA5CS.....12,150- 27-153-A-26
EA1CP.....8192- 16-172-A-33
EA4ED.....5148- 12-143-A- -
EA3IH.....3380- 13- 88-B-10

Sweden

SM3AZV....12,711- 19-226-B- -
SM5ANY....10,962- 21-174-B-28
SM2VP.....9348- 19-164-B-12
SL3AG.....7800- 25-104-A- -
SM4BEC.....6669- 13-171-B- -
SM2BCS.....6030- 15-134-B- -
SM2AIU.....5759- 13-149-B-25
SM5IZ.....3432- 13- 88-B- -
SM2BZI.....2418- 13- 62-B-18
SM3AKM.....2352- 14- 56-B-56
SM7BHF.....855- 9- 32-B- 4
SM5PX.....513- 9- 19-A-19
SM5CCE.....96- 4- 8-A- -
SM5UU.....96- 4- 8-B- 3
SM7MS.....12- 2- 2-A- -

Switzerland

HB9CI.....6681- 17-132-A-12
HB9RD.....3276- 14- 78-A-10
HB9MU.....3006- 9-113-A-84

Trieste

I1BNU.....29,852- 34-293-A-56
I1BLF.....11,088- 24-154-B-19
I1BCB.....2873- 17- 57-A-17
I1YCZ.....518- 7- 25-A-14

Wales

GW5SL.....30,384- 24-424-B-33

Yugoslavia

YU2AE.....15,774- 26-200-A-35
YU2HG.....9126- 18-169-A-20
YU2HV.....1305- 9- 55-A- 6

NORTH AMERICA

Alaska

KL7AWB....80,442- 41-657-C-30
KL7AOL....71,136- 39-609-B-38
KL7BCH....63,342- 34-621-B-55
KL7MF.....576- 6- 32-A- 4

Bahamas

VP7NM....453,725-78-1939-A- -
VP7NX.....241,164-66-1218-A-30
VP7NG.....130,624-52- 840-A-22

Canal Zone

KZ5BC.....36,224- 16-759-B-40
KZ5NB.....14,025- 15-312-A-27

Cuba

CO2BM.....78,648- 29-904-A- -
CM5HF.....2280- 10- 76-A- -

Greenland

OX3UD.....8762- 13-226-A- -

Guadeloupe

FG7XB.....2970- 18- 55-A- -

Guantanamo Bay

KG4AJ.....302,841-57-1771-C-64

Mexico

XE2OK....308,636-76-1365-A-50
XE1PJ.....9036-12- 251-B- 5

Puerto Rico

KP4CC....247,040-64-1287- B-68
KP4DH....220,779-51-1450-AB-80
KP4ZW....218,970-54-1354- A-66
KP4YL....158,799-43-1233- B-50
KP4YT....39,312-42- 312- A-27
KP4DV.....8417-19- 149- B- 3

St. Pierre and Miquelon

FP8AP.....39,990- 30-445-A-18

Turks and Caicos

VP5AE.....90- 5- 6-A- 1

Virgin Islands

KV4AA....296,140-68-1453-B-31
KV4BK....106,950-31-1150-B-46

OCEANIA

Australia

VK2GW.....97,014- 46-703-A-50
VK2EO.....68,046- 33-683-A- -
VK3XK.....23,556- 26-302-A-29
VK7KM/7....18,524- 22-283-A-26
VK5FO.....8030- 15-181-A- -
VK3XB.....7215- 13-185-A-21
VK3AHH.....7062- 22-108-A-10
VK5WO.....1677- 13- 43-A-12
VK3CX.....960- 8- 40-A- -
VK3HL.....856- 8- 36-A- -
KV3KS.....3- 1- 1-A- -

Hawaii

KH6MG....489,066-74-2203-C-69
KH6IJ.....461,700-75-2052-C-74
KH6PM....237,006-63-1254-B-61
KH6AYG...211,526-58-1216-C-60
KH6SP.....88,800-40- 740-B- -
KH6ANK....61,047-51- 399-B- -
KH6WW....11,250-25- 150-B- 6
KH6IB.....9570-22- 145-A-32

New Caledonia

FK8AL.....1785- 7- 85-A- 7

New Zealand

ZL1BY.....306,408-68-1502-A- -
ZL2GS.....106,869-49- 727-A- -
ZL1MQ.....81,243-51- 531-A-37
ZL4CK.....7293-17- 143-A- -

Philippine Islands

DU7SV.....56,064- 32-584-B- -

SOUTH AMERICA

Antarctica

LU1ZV.....5151- 17-101-B- 4
LU2ZV.....1530- 10- 51-B- 2

Archipelago of San Andres and Providencia

HK0AI.....32,384- 22-499-A- -

Argentina

LU3EX.....185,304-56-1103-B- -
LU8AE.....156,774-53- 986-B-60
LU8FBH....31,119-23- 451-B- -
LU7AS.....28,008-24- 389-B-32
LU3CS.....12,177-11- 369-C- -

Brazil

PY7AN.....109,620- 45-812-B-75
PY3QX.....19,499- 31-213-B-16
PY1LZ.....5814- 17-114-A-12
PY1AZO.....5712- 16-119-A-10
PY3AHW.....3296- 16- 71-A- 5
PY1ADA.....3090- 15- 69-B- 4
PY6FU.....1624- 14- 39-A- 5
PY2BNX.....621- 9- 23-A- 4
PY1CK.....324- 6- 18-A- 2

Chile

CE3AG.....98,340- 44-745-B-27
CE6AB.....45,430- 35-435-B- -
CE4AD.....37,842- 34-371-B- -

Colombia

HK4DP....232,712-76-1040-C-66
HK4BD.....41,370-30- 465-B-46

French Guiana

FY7YE.....2025- 9- 75-A- -

Netherlands West Indies

PJ2AR.....94,031- 49-641-A-50
PJ2AN.....72,468- 44-558-A-35

Paraguay

ZP9AY.....13,760- 20-232-AB- 9

Peru

OA4J.....4520- 10-155-B-35

Trinidad

VP4BN.....23,352- 28-281-B- 9
VP4LW.....8100- 12-266-A- -

Uruguay

CX6AD.....63- 3- 7-A- 4

Venezuela

YV5BJ.....44,462- 43-345-B- -
YV5AE.....28,980- 23-420-B- -
YV5DE.....19,425- 35-191-B-10

[1] W3BES, opr. [2] WØBMY, opr. [3] W1WPR, opr. [4] Hq. staff — not eligible for award. [5] PA0INE, opr.

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'PHONE SCORES

ATLANTIC DIVISION

Eastern Pennsylvania

W3DHM..230,640-186-414-BC-76
W3GHS....158,410-165-318- B-58
W3ECR....124,200-150-276- C-81
W3CUB....64,842-107-202- C-30
W3KT.....37,848- 83-152- C-40
W3EQA....21,672- 62- 86- C-30
W3CGS....16,461- 59- 93- C-27
W3IMV....11,172- 49- 76- B-16
W3EAN....11,070- 45- 82- C-10
W3QLW.....1980- 22- 30- B-13
W3GHD.....1320- 20- 22- B- -
W3TJW.....1254- 19- 22- B- 8
W3OCU.....1020- 17- 20- C- 3
W3EVW.....720- 15- 16- C- 3
W3LEZ.....672- 14- 16- C- 8
W3GRS.....240- 8- 10- A- 3
W3MDE.....75- 5- 5- A- 1
W3GHM (W3s GHM KDF) 75,864-109-232- C- -

Md.-Del.-D.C.

W3JNN.....86,697-117-249-C-40
W3JTC.....27,648- 58- 96-B-28
W3DRD.....21,090- 74- 95-C-32
W3EQK.....300- 10- 10-B- 8
W3HDV.....168- 7- 8-C- 8
W3VAM.....90- 5- 6-B- 6
W3BVO.....45- 3- 5-B-11
W3NZT.....3- 1- 1-A- 3

Southern New Jersey

K2EDL.....2880- 30- 32-A- 3
W2WE.....663- 13- 17-B- 6
K2CH.....533- 13- 15-B- 7
W2SAI (W2SAI, W3BES) 314,880-205-514- -80

Western New York

W2VQM.....9648- 48- 69-BC-18
W2ROM.....7626- 41- 62- B-34
W2TEX.....3321- 27- 41- B-18
W2ICE.....3168- 32- 33- - 6
W2FBA.....2352- 28- 28- C- 8
W2PUN.....2070- 23- 30- A-20
W2UTH.....675- 15- 15- B- 3
W2WPJ.....396- 11- 12- C- 9
W2TXB.....192- 8- 8- C- -
W2SNI.....147- 7- 7- B- 2
W2ZCZ.....3- 1- 1- B- 5

CENTRAL DIVISION

Illinois

W9NII.....11,076- 52- 71- B-40
W9ABA.....9360- 48- 65- C-40
W9EU.....8742- 47- 62- B-21
W9SD.....3999- 31- 43- B-10
W9FVU.....21- 3- 3- A- -
W9AVJ (W9s GVZ NZM PKW) 141,614-157-302- C-96
W9LBB (W9s PSP QXO ZJS, WN9s IFP IRH) 11,016- 51- 72-BC-90

Indiana

W9JIP.....27,729- 79-117-C-34
W9ZTD.....4118- 29- 48-B-28
W9PQA.....546- 13- 14-B-18
W9EHU.....3- 1- 1-B- 1

Wisconsin

W9EWC....139,500-155-300-C- -
W9RBI.....20,202- 74- 91-C-18
W9EZD.....17,388- 69- 84-B-22
W9FDX.....4884- 37- 44-B- -
W9WJH.....1512- 18- 28-A- 5
W9OMZ.....1089- 11- 33-B- -
W9VOD.....396- 11- 12-A- 4
W9ONY/9.....48- 4- 4- - -
W9GIL.....36- 3- 4-B- -
W9RKP.....27- 3- 3-B- -
W9GWK.....3- 1- 1-B- 1
W9UDK.....3- 1- 1-B- 1

DAKOTA DIVISION

North Dakota

WØEOZ.....9- 2- 3-B- 2

South Dakota

WØLBS.....1512- 18- 28-B-12

Minnesota

WØTKX.....192- 8- 8-B- 4

(*Continued on page 134*)

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON, W1HDQ

IT is now more than two years since the first work of W4HHK, W4AO and W2UK in sending 2-meter signals over long paths by meteor scatter was reported in these pages. In this time tape recordings have been played and the general subject discussed in nearly all parts of the United States, and the work has attracted considerable favorable attention in scientific circles. Relatively few 2-meter men have been more than casually interested in the new method of working v.h.f. DX, however, and you can count on your fingers the number who have actually tried it.

Yet W4HHK, who was in there first, has had exciting success in working 2-meter DX by the meteor route. Two-way meteor communication with New Jersey (W2s UK, AZL and NLY) and Connecticut (W1HDQ) was achieved last year, the contacts with all but W2UK coming at the height of the Perseid meteor shower late August. The Perseids put on a show last August, peaking just before the middle of the month, so W4HHK was busy again this summer drumming up some schedules for exploitation of the opportunity they would afford in 1955.

New states were the objective, and there were at least two good prospects. W1FZJ, Medfield, Mass., a big-antenna man from away back as W8UKS, had been burning up the 2-meter band with a high-powered rig and a 64-element array. He was an almost certain bet for the first Tennessee-Massachusetts 2-meter QSO. Some sign of signals had been heard from W7VMP, Phoenix, Ariz., in the past, so Paul lined up a series of morning skeds with the Fenwick brothers, too.

A test with W1FZJ on Aug. 12th produced the first break. Using the one-minute-each-way method that had worked so well under marginal conditions last year, Sam and Paul started in at 0500 CST. Nothing was heard for 45 minutes, but at 0545 W1FZJ was heard calling and breaking. Complete exchange of signal reports and confirmations was accomplished between then and 0556.

Then followed an hour test sked with W7VMP, beginning at 0600 CST. Several calls and signs were copied, but no complete exchange was possible until the following morning. On the 13th, just an hour was consumed in exchanging calls and signs, signal reports and final confirmations. One not accustomed to meteor-scatter talk would not think much of the QSOs that are achieved by this hit-and-run approach, but the fact remains that useful information can be exchanged and positive identification established by the meteor-scatter method. You have to send fairly fast, on c.w., and you have to try again and again, usually; but if we judge a QSO by whether or not useful information can be exchanged, then certainly these meteor-scatter tests qualify. Much more so than some of the exchanges that pass for QSOs in DX pile-ups or during some of our more hotly-contested operating activities on lower frequencies!

The W1FZJ-W4HHK contact was good for more than 1100 miles, and the W7VMP haul is just under 1300. The limit? Who knows, for sure? What we need is more of this sort of thing, to find out. Surely meteor scatter represents a way to communicate with states and over paths that are highly unlikely to be bridged on 144 Mc. by other means. It put W4HHK at the top of the

50 WAS Mc.

WØZJB.....48	W4IUJ.....38	W8YLS.....41
WØBJV.....48	W4BEN.....35	*W8OJN.....40*
WØCJS.....48		
W5AJG.....48	W5VY.....48	W9ZHB.....48
W9ZHL.....48	W5SFW.....47	W9QUV.....48
W9OCA.....48	W5GNQ.....46	W9HGE.....47
W6OB.....48	W5ONS.....45	W9PK.....47
WØINI.....48	W5JTI.....44	W9VZP.....47
W1HDQ.....48	W5ML.....44	W9RQM.....47
W5MJD.....48	W5FSC.....44	W9ALU.....47
W2IDZ.....48	W5JLY.....43	W9QKM.....47
W1LLL.....48	W5JME.....43	W9UIA.....45
WØDZM.....48	W5VV.....42	W9UNS.....45
	W5FAL.....41	W9MFH.....36
W1GJO.....47	W5HEZ.....41	
W1CLS.....46	W5HLD.....40	WØHVW.....48
W1CGY.....46	W5FXN.....38	WØQIN.....47
W1LSN.....45	W5LIU.....37	WØNFM.....47
W1DJ.....41		WØTKX.....47
W1RFU.....41	W6WNN.....48	WØKYF.....47
W1FOS.....32	W6ANN.....45	WØWKB.....47
	W6TMI.....45	WØJOL.....46
W2MEU.....47	W6IWS.....41	WØMVG.....46
W2AMJ.....46	W6ABN.....35	WØTJF.....44
W2BVM.....46	W6GCG.....35	WØURQ.....44
W2RLV.....45	W6BWG.....30	WØJHS.....43
W2FHJ.....44		WØPKD.....43
W2GVY.....40	*W7HEA.....47*	*WØIPI.....41*
W2QVH.....38	W7ERA.....47	WØORE.....37
W2ZUW.....36	W7BQX.....47	WØFKY.....32
	W7FDJ.....46	WØUSQ.....30
W3OJU.....46	W7DYD.....45	
W3TIP.....42	W7JRG.....44	VE3AET.....44
W3NKM.....41	W7ACD.....43	VE3ANY.....42
W3OTC.....40	W7BOC.....42	VE1QZ.....34
W3MQU.....39	W7JPA.....42	VE3AIB.....34
W3KMV.....38	W7FIV.....41	VE1QY.....31
W3MXW.....38	W7CAM.....40	VE3DER.....29
W3LFC.....37		XE1GE.....25
W3RUE.....37	W8NSS.....46	CO6WW.....21
W3FPH.....35	W8NQD.....45	
	W8IJZ.....45	
W4FBH.....46	W8RFW.....45	
W4EQM.....44	W8CMS.....45	
W4QN.....44	*W8SQU.....43*	
W4CPZ.....42	W8LPD.....42	
W4FLW.....42		
W4OXC.....41		
W4MS.....40		
W4FNR.....39		

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

states-worked standings, with 28, and he is the only operator known to have worked 9 call areas on 144 Mc. Shouldn't this be enough to stir up some interest on the part of other 2-meter DX hounds?

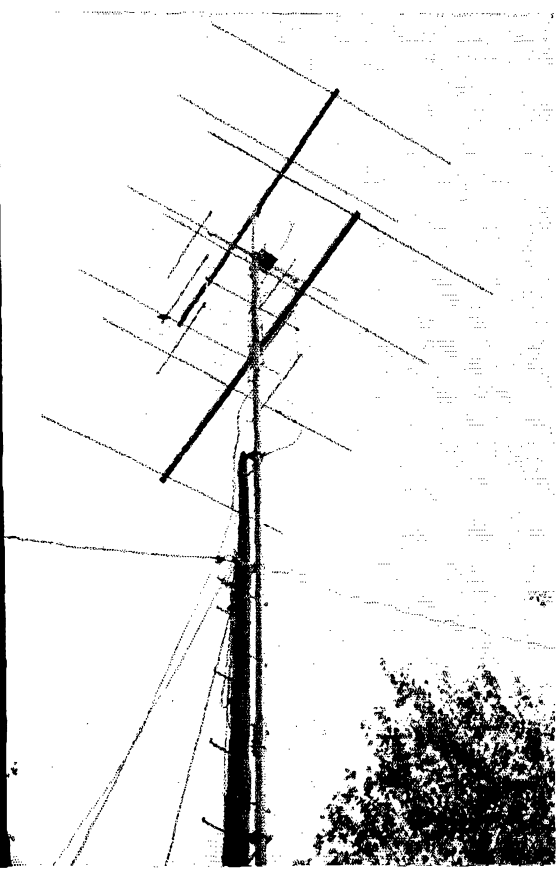
The possibilities of the 6-meter band in this department should not be overlooked, either. In fact, the chance of working long hauls under otherwise dead-band conditions is probably much better on 50 than on 144 Mc. The potentialities of the 50-Mc. band will remain hardly more than touched, so long as the vast majority of 6-meter men operate with low power, small antennas, no better than mediocre receivers, and voice. At least a few o. us should be going for the limit in all these categories, and on c.w. There are some surprises in store on 6, we're sure, when we give it the full try.

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

The discussion of national calling frequencies for the v.h.f. bands (August *QST*, page 57) has so far brought only three written responses. W1DPO, Chatham, Mass., and WN9OKB, who travels widely, are all for the idea. W3OTC likes the idea too, but suggests other channels than the 50.1- and 144.6-Mc. in the original proposal.

Bob feels that the 6-meter channel should be in the lower c.d. segment, and suggests 50.4 Mc., already widely used by nets in many parts of the country. He says that members of a fixed-frequency net in Annapolis have worked 18 states with both transmitters and receivers set on this channel. For the 2-meter band, W3OTC wants the channe to be in the Novice band. This also takes care of the c.d. angle, but no specific suggestion has been made as to what the frequency should be. Suggestions?

A special frequency to monitor would be helpful to fellows situated like XE1GE, Cuernavaca, Mexico. Jeff has heard DX signals in the region just below the 50-Mc. band many times when no amateurs could be heard. It is interesting to note that he has found some resumption of the spring-fall 50-Mc. DX between Mexico and South America in 1955, after a lapse of several years. XE1GE heard harmonics of Latin American stations in and near the 6-meter band several times in March and April. LU8AE and LU4BJ were worked on March 12th, his first South American DX on 6 in 4 years.



This array helped to make the first 50-Mc. WAS by a W2. The stacked 4-over-4 at W2IDZ, Denville, N. J., has a 12-element 2-meter job in between the 6-meter bays. The 2-meter portion may see some service now that Ed has nailed down the elusive 48 on 50 Mc.

Single-hop contacts were made with several W5s during the May-to-July E_s season, and on July 21st, W1CLS, W1VNH, W1HDQ and W2MEU were worked, between 2000 and 2045 CST. These are the first XE — W1 and 2 contacts since about 1950, as far as we know. The 50-Mc. DX in May, June and July was better all over the country than in several years past, so it looks as if we're on the upgrade again.

The F_2-layer predictions issued by the Central Radio Propagation Laboratory begin to look interesting again, too. The charts for November actually show a small ellipse of 50-Mc. m.u.f. just above Latitude 20 North in the Pacific Ocean area. KH6s please take note! North Africa, Southern Europe and South America give indications that 50 Mc. might be open for F_2 DX on the peak days in both October and November.

Here's a late 50-Mc. DX report. (Late because it came to your conductor's home address, and got mislaid in personal papers. Moral: Mail v.h.f. news to ARRL Headquarters, *not* the home address of W1HDQ!) VP9AY made what is believed to have been the first 50-Mc. contact from Bermuda, working W2KNQ, on June 23rd. W2IDZ and W2MEU were worked the same night. On June 26th, Max (now W1TJZ) worked W2OHJ, W8CM8, W8SVY, W8NQD, W3ZKR and W8IIH between 1935 and 2245 Bermuda time. Signals were heard from W1, 4, 6, 7 and CO.

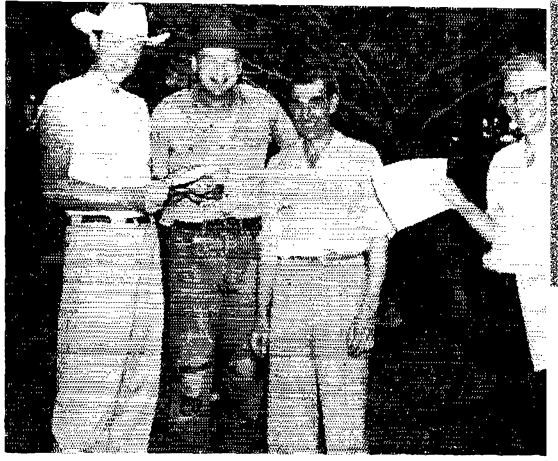
VP9BM writes that while he is doing his best to work some 144-Mc. DX from Bermuda (he's on 144.35 Mc.) he is working on a receiver to provide continuous monitoring of the f.m. services just below the 50-Mc. band, to give him tip-offs on possible 50-Mc. DX to W.

In addition to his 5-over-5 that's 120 feet above ground in Johnstown, Pa., W3TIF has erected a 4-element array atop 2700-foot Pleasantville Mountain near by. Doc drives up there and operates his TBS-50, and occasionally a 200-watt 24G amplifier, in search of contacts with Vermont and Rhode Island, two of the six states he now lacks for WAS on 6.

Members of the Andrews Electronics Association, whose 50-Mc. club project was described in August *QST*, operate their Windbag Net each Tuesday night at 1900 local time. Frequency is 50.4 Mc., and at present 10 members are active. Daily at 1730 EST an informal get-together is held, this spreading out over Pennsylvania, New Jersey and Delaware. Everyone is invited to join in helping to keep the band hot through the fall and winter months. This from W3RV and W3ZQD, who started the ball rolling.

Two more 50-Mc. men reached the coveted 48-worked spot this month. WØDZM, Minneapolis, who had been on the hot seat with 47 for years, finally caught up with W7JRG, Billings, Mont., and got the cards through in time to qualify for special 50-Mc. WAS Award No. 13. WØHVW, Pleasant Hill, Mo., was the beneficiary of an expedition to Rulo, Nebr., by WØQZT. WØHVW had done this same favor for WØINI a couple of years ago, so it was quite fitting that he should make his 48th in a similar manner. The Nebraska activity, what little there has been in recent years, has been beyond the reach of Missouri stations, even though the two states share a common boundary in some 50 miles of the Missouri River. The cards for official confirmation have not yet been received from WØHVW as we write but he is in line for No. 14. The WØQXT expedition also provided first Nebraska contacts for WØs PYK TOQ VFF VRF WNU and YKI.

♦



Ed Ladd, W2IDZ (right), shows off his 50-Mc. WAS certificate, while the team who helped make the achievement possible look on. Left to right, Roy Sebring, W2QCY, Reb Allen, K2ODA, and George Whattam, W2CZE, of the W2QCY/7 50-Mc. expedition to Utah and Nevada. Event pictured was a picnic in honor of these 6-meter stalwarts at the Greenwood Lake home of W2KNQ.

♦

V.h.f. men of central New York are invited to a V.H.F. Round-up being planned by the Syracuse V.H.F. Club, Saturday, Oct. 15th. Starting time will be 2 P.M. Location: Frank Taylor's on Route 11, North Syracuse. Speaker: Art Koch, W2RMA, well known for his v.h.f. and microwave gear in the *GE Ham News* and *QST*. Price: $2.50, including dinner. Tickets and further information from Joe Lando, K2JIM, R.D. 1, East Syracuse.

Contacts over the Cascade Mountains to Eastern Washington on 144 Mc., distances of 150 to 250 miles, are reported by W7JIP, Portland, Ore. Higher power, big beams (horizontal) and better receivers are turning the trick. W7JIP's first contact over this route was with W7HEA, Toppenish, Wash. Both stations run about 500 watts. Contacts over the Cascades by W7LHL, Seattle, and W7s PVZ and UVH of Olympia, 130 miles, were mentioned last month. This work and the contacts over the mountains to Arizona from Southern California demonstrate that there is hardly any such thing as an "impossible" v.h.f. path at distances under 300 miles or so. The presence of high mountains in between you and your objective may actually improve your chances of covering the distance. Under ideal conditions this "obstacle gain" can reach quite remarkable proportions.

Another mountainous path broken down for the first time: W7JU, Boulder City, Nev., finally worked W7FGG, Tucson, Ariz., 353 miles, after almost a year of trying. W7JU runs 100 watts input, c.w., feeding a 6-over-6 horizontal array.

There never has been enough use of the consistently good conditions that prevail on the v.h.f. bands in the morning hours. VE3DER, Toronto, would like it known that she calls CQ to the west each morning at 9 on 144 Mc. If no contact is made she also tries east and south.

Two-meter mobile record? G2HCY asks if his contact with F9JY, Cherbourg, 250 miles, has been bettered by a 2-meter mobile station in this country. He was actually in motion at the time contact was made, traveling about 3 miles south of his home in Warrington, Lancashire. He has also worked EI2W while mobile, at a distance of more than 200 miles.

Those States-Worked Boxes

Every few days someone writes in to know how to get his call listed in the 50- or 144-Mc. states-worked standings. The answer is that you just send in your record. No QSLs are needed, unless you are claiming WAS; in that case we must have proof in the form of 48 cards. A special hand-lettered and serial-numbered certificate is awarded to anyone who makes the grade on 50 Mc. and can prove it. We may have to get a 144-Mc. WAS award ready one of these days, at the rate some of the gang are going, but up to now we'll take your word for the number of states, call areas and best DX you've worked on 2.

Obviously, we can't list every active v.h.f. man in these boxes, so we try to spot the outstanding achievements in each call area. A W6 with 3 or 4 states has done an outstanding job, but a W1 or W2 with 12 may never have done anything noteworthy. W1MMN, in northern Vermont, has worked hard for his 10 states, so he stays in, but a Connecticut station with 12 hasn't done much yet, so he stays out. A rule-of-thumb check on whether you'll be accepted for listing is to see if your record is equal to or better than some fellow in your neighborhood who is already listed. If it is, you're eligible. And once you're in, be sure to let us know when you move up in any category.

Canadian Provinces do not count as states, and Canadian call areas do not count in the second column of the 2-meter listing. DX with a Canadian, Mexican or other non-U.S. station can be included for your best DX, however. Mobile or portable contacts made while more than 25 miles from the licensed location are not acceptable for states claims by the mobile operator. Ship or aircraft stations are out, too.

We've received quite a few requests to begin listing similar accomplishments on 220 and 420 Mc. This would probably be done by skipping the 50- and 144-Mc. boxes occasionally, and running the box scores for the higher bands. If you want such a listing, now is the time to send in your records for those bands. If we get enough data we'll give the higher bands a whirl now and then. Include the number of states and call areas and your best DX worked on either band, or both, in your next report.

Special to Technicians — let's have your record for 50-Mc. work to date. We'll list any respectable total of states worked on 6 by a Technician. Don't feel that you have to wait to catch up with the fellows who have been at it for nearly 10 years!

OES Notes

K2DYC, Phelps, N. Y. — Operating on 50.4 nightly, 7 to 9 P.M., looking for new stations. Western N. Y. activity on 6 very promising.

K2GAN, Murray Hill, N. J. — Experimenting with two-tube compact transmitter-receiver for 144-Mc. local communication, presently using two 12AT7s, and operating from 90-volt supply.

W2UTH, Victor, N. Y. — Much new activity on 50 Mc. Several Saturday morning skeds with W1HDQ, 250 miles, show slightly better signals on 50 than on 144, though evidence is inconclusive as yet.

W3OTC, Silver Spring, Md. — Good summer on 50 Mc. Worked 7 W6s on July 9th, along with stations in many other states. Band open more than half the days in July. VP9G worked July 19th.

W4FLW, Dresden, Tenn. — DX heard or worked 19 different days during July. Using converted Howard f.m. tuner to monitor 50-Mc. band. As it tunes broadly, signals will usually be heard if band opens well.

W5NSJ, Albuquerque, N. Mex. — Completed portable transmitter-receiver for 50 Mc. Works from 250-volt 100-ma. supply.

W5RFF, Albuquerque — Off the air due to damage to home and ham shack by flash flood. Antennas down; shack roof blown off, and ham library and QSLs ruined.

W5SCX, Ardmore, Okla. — Using Channel 10 transmitting antenna, W5IOW, Ada, Okla., was up more than 3 S units over normal signal. He worked Mississippi, Kansas and Texas Panhandle stations that were inaudible at W5SCX. The TV antenna is 700 feet above ground level.

W6CFL, Los Angeles, Calif. — Keeping nightly sked with K6KHD on 420 Mc.

W7JHX, Port Orchard, Wash. — Changed over to horizontal polarization in July, with varying results. Signals that were reflected from mountain peaks with vertical polarization now seen weaker and more subject to fading with horizontal. On the other hand, one of the stations so affected, VE7JG, Duncan, B. C., is able to work Seattle stations regularly with horizontal. These stations were not heard often with vertical. Check to be set up with W7BML, Port Angeles, Wash., who is on the opposite side of a 6000-foot range of mountains, at a distance of about 75 miles. Signals over this path have been mostly steady on vertical,

(*Continued on page 132*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.
ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., 'Phone

The Simulated Emergency Test. By far the most important first-of-season activity is the SET. For ARRL Emergency Coördinators this is also their "annual roll call" time, and a time to extend the continuing invitation to *all licensed amateurs* to register in the AREC.

The SET as explained more fully elsewhere in this issue is a practical communications test exercise based on communications plans for the locality. For those in leadership capacities, Emergency Coördinators and Radio Officers as well as AREC members, it is the kick-off for the new fall-winter season of activity and the proper time to initiate the SET as the first of some recurrent planned tests to be held during the year. Responsible officials for the city or area and agencies to be served should be contacted by ECs, both to maintain friendly relations and so that full advantage of the exercise to improve on past deployments of mobiles and facilities, or get a statement or message from officialdom to transmit as part of the exercise.

There should be a workout for emergency-powered equipments, and an attempt made to build up our capabilities in both size and quality of performance in connection with this chance to demonstrate all our operative mobile gear.

ARRL's new *Emergency Radio Unit* placards are available through ECs for temporary or permanent use with cars or rigs and should be utilized at this time wherever justified by the equipment. All AREC members with mobiles also should ask ECs about the *Official Mobile Unit* pocket cards where mobile equipment has been acquired since a previous AREC registration. This as well as the regular AREC identification card will be issued by ECs where warranted. Purpose of these forms is to insure the individual operator better public understanding of his public and amateur radio service functions. The ERU card on one's car or set-with-handles advertises the public service aspects and identifies amateur work as more than a casual hobby!

We encourage ECs to sign up Novice operators in AREC (and newly licensed General Class personnel) as well as amateurs working *all bands* regardless of specialized interest. The availabilities of WNs and Technicians when registered will be considered by ECs and ROs to man circuits and posts and assist in other ways in the larger emergency plans developed by the whole amateur group. It is essential to create and maintain "one strong facility" through AREC/RACES in connection with general emergency work and civil defense planning. There are not enough persons with advance training and skill to meet most emergencies, so every registrant fills a real need and should be made a part of the team. We suggest that local leaders schedule periodic discussion periods and operating exercises through the year and get the help of clubs in advancing know-how and in recruiting active amateurs. By critiques of the operations and classes to advance methods and procedures, strides in accuracy and speed of handling record communications are possible. All this helps each individual make of himself one of the more accomplished rather than merely casual operators in amateur circles.

Results of this test (the SET) are a barometer scanned each year indicating the over-all ability of amateurs to serve in emergencies. This test therefore calls for every active licensee to register with his EC or SEC . . . participating in every disaster and exercise as his circumstances permit. So be ready for this test, whatever form your local SET takes, on or about October 8th–9th. You as an individual, and your community, and the whole body of amateurs can thus demonstrate as fully as possible our communications readiness for either c.d. or natural disaster operations.

Amateurs Again Serve in Flood Emergency; Report Your Part. Once again scores of amateurs in and about the stricken communities of several states have risen to support the tradition of the amateur service for providing stand-by radio communications. We have reason to be proud of the radio work chalked up by amateurs which began following the unprecedented deluge delivered by dying hurricane Diane. As we write after five strenuous days, operations are still in progress from Pennsylvania to Massachusetts with radio taking only high priority traffic for those points in the Naugatuck valley (Conn.) areas where very limited wire service has been restored.

Since W1AW itself was engaged each day we had to suspend the code practice periods during the peak of this effort; we hope all parties will understand. The National Emergency Coordinator found himself in Pennsylvania, also hard hit by the storm. No few words can adequately record the operating events that have transpired over such a wide area in such a short space of time. But the NEC will start work on the story on return, when the radio work itself is completed and your reports are in hand. We want to call on each and every amateur participant *to report* his work, whether as part of an organized AREC or RACES facility, for governmental units or Red Cross or individuals —

so *QST* may accurately record the whole effort, and attempt to credit what (and how) we did. Be sure to include any pictures. Thanks. We'll have more to say on the emergency operating events next month.

Additional FCC Suspensions. Latest FCC actions enforcing indicated amateur service regulations are now reported. See page 70 of March '55 *QST* and page 68 of July '55 *QST* for suspensions covering other types of violations.

FCC ordered (August 10, 1955) that the amateur operator license of Ronald F. Ridenour, Denver, Colo., be suspended for ninety days, that the license be turned in to the FCC, and WØCNK not be permitted to be operated by any person in the 90-day period, *it appearing that the licensee* on various occasions during the period from September 1952 to June 1955 and particularly on June 4, 1955, violated Sections 12.91 and 12.93 of FCC rules by engaging in the operation of his station after changing residence from Fort Dodge, Iowa, to Denver, Colo., without first notifying the Commission's Field Office, Denver, of his intended portable operation, and continued such radio operation for a period exceeding four months without having his amateur radio licenses modified to provide for his change of residence, and *it further appearing*, that said licensee in this period failed to maintain an accurate radio station log and have same available for inspection by a representative of FCC, in violation of Sec. 12.136 and 12.137 of FCC rules.

FCC ordered (August 17, 1955) that the amateur operator license of Jack A. Gardiner, Havre, Mont., be suspended for sixty days, that the license be turned in to FCC, and W7DZF not be permitted to be operated by any person in the sixty-day period, *it appearing that the licensee* on March 13, 1955, operated on 14,197.9 and 14,198.1 kc., using A-3 emission in violation of Section 12.111 of FCC rules; also that he failed to respond to FCC violation notices pertaining to the alleged improper operation which is a violation of Sec. 12.155 of FCC rules.

Stuttered Speech for Clearness? "In the course of a study of voice communication that is being made at Ohio State University. . . . It was found that a radiotelephone conversation is much clearer if the speakers seem to stutter, that is, if they say 'wuh-one, tuh-two' instead of the usual 'one, two.' This method of saying 'wuh-one, tuh-two' is known as the 'bounce block' stutter. . . ." Quote is from the *New York Times*. K2FG wonders if this could lead to 'phone operator use of such expressions as "Bounce the blocks, Boy [i.e., please stutter], QRM is tough" or "Gimme that ole double stutter, friend. The block is bouncing." A few years of this and the only way the XYL can get through the OM's mental haze will be, "Nuh-now, duh-dear, Uh-about thuh-that nuh-new huh-hat." With tough going we'll have to stutter our way through. Speaking of intelligibility, the psychoacoustic laboratory at Harvard completed several outstanding studies during the last world war. Their conclusions — indicating that in any phonetic alphabet, the *more* syllables that can be used emphasizing a given character, the *better* the intelligibility — agree firmly with the above principle.

— *F. E. H.*

DXCC NOTES

We should like to call attention to two matters concerning DXCC. A number of DXCC applicants, both for initial applications and endorsements, are neglecting to comply with rule 4 of the DXCC Rules (copy upon request). Rule 4 specifically states that a list must be sent in with all such applications. Such a list helps keep track of your card mailings, assists in rechecking at future times and aids us in speeding service to all the DXCC gang. Your coöperation in complying with such rules will be appreciated.

At this time we'd like to make mention of a relatively new U. S. Mail service known as certified mail. As far as safe mail delivery is concerned, this new service does exactly the same thing as registered mail, but at less than half the cost of registered mail. Incidentally, registered-mail fees have gone up to 40 cents for North and South America and 55 cents for all other parts of the World (4 and 5 IRCs respectively). Regrettably, the certified mail service is applicable only in the U. S. and possessions.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....260	W8NBK...250	W3KT.....247
W6AM.....254	WØYXO...250	W6MX.....247
W6VFR....254	W3GHD...249	W5MIS....246
W3BES....251	W68N.... 249	W6MEK...246
W6ENV....251	W2AGW.. 248	W9NDA...246
W5HGW.. 251	W3JTC... 248	W8BRA....245
PY2CK....251	G2PL.....248	W7AMX....244
W6SYG....250	W2BXA...247	G6ZO.....244

Radiotelephone

PY2CK....243	W1JCX... 219	XE1AC....215
W1FH.... 233	W1MCW...219	W8HGW...214
VQ4ERR...231	W1NWO...217	W9NDA...213
ZS6BW.....227	W3JNN... 215	W5BGP....211

From July 15, to August 15, 1955 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed *below*.

NEW MEMBERS

W31MV. ..183	W3WUH.. 108	WØQGI... 102
G5LP.....146	ZL1LZ....108	JA6AD....101
PAØSPR....129	W1ORP....107	W3RWA....101
W1KQF....116	W2STJ....106	HB9MX....101
ET3S.....116	W4JBQ....106	KP4WD....101
W2CKY....115	W4EBO....105	W3CPB....100
DL6MK....115	VE3IG....105	W3SOH....100
W3VRJ.....111	DL1BZ....103	DL3XS....100
DL4UZ.....111	HR9OQ....103	G8LG.....100
W2BOK....108	4X4DN....103	ZS6SG.....100

Radiotelephone

W3IMV....163	PY4LP....109	W1QWU...101
W9QLH....137	W2BQM...106	YK1AA....101
I1KDB.....115	H3SGA.....104	W3RVM....100
W2CKY....111	DL4UZ....103	CX5AF....100
W9JYU....111	EA7EM....103	CX2CN....100
	VS2DQ....102	

ENDORSEMENTS

W6TT.....243	WØERI....163	DL3RK....140
W2WZ.....241	W8TMA....161	W3LXE....135
W6VE.....230	W4ZD.....160	CT3AN....132
W4TM.....223	W9FDX....160	W1JDE....130
W1HX.....222	W5OLG....158	W2NOY....130
ZS6DW....222	W9QLH....158	W4THZ....130
WØAIW....221	W9AMU....153	W5HDS....130
SM5KP....220	WØANF....151	W8HMI....130
W5BGP....212	G3EMD....151	W6OX8....121
W1HA.....210	W1VG.....150	W2CR.....120
W2GNT....200	W5KBU....147	W4DPE....120
W6PGB....200	W8EV.....144	W5UUK....120
CN8MM....200	W9VP.....144	W8OGV....120
W2RWE....192	OZ3Y.....143	W3WDC....119
W6LDD....190	K2BZT....142	WØYZO....119
W2MLO....181	DL1YA....142	W8PC8....114
W6WO.....172	W5UX.....140	W2NIY....110
OZ3FL.....171	DL1BO....140	W2OXR....110
W4VE.....169		W4PVD....110

Radiotelephone

ZS6DW....200	W8BKP....160	ZS3G.....123
ZL2GX....190	W8QJR....150	W4VNE....121
G3HLS....190	WØGKL....148	W4EEE....120
W8KML....170	W5KBU....140	W9WHM...112
CO2BL....170	W9FDX....138	K2UJN....113
LU4DMG..170	W4NBF....130	W2JIL.....110
HB9J.....162	LA5YE....130	W6SYG....110

W/VE/VO Call Area and Continental Leaders

W4BPD....241	VE5QZ....140	VO6EP....190
VE1HG....150	VE6GD....108	4X4RE....210
VE2WW....181	VE7HC....209	ZS6BW....234
VE3QD....210	VE8AW....160	ZL2GX....240

Radiotelephone

W2APU....202	W7HIA....181	VE3KF....163
W2BXA....202	WØAIW....191	VE7ZM....140
W4HA.....184	VE1CR....120	OD5AB....170
W6AM.....206	VE2WW...102	SM5KP....210
W6DI.....206		ZL1HY....196

In most AREC organizations, the EC has enough to do in just organizing and promoting. Yet, we here at ARRL are constantly hounding him to report: report this, report that, give us figures on the other thing, and so on. Along with this, we say we'd rather have an EC who does things but reports nothing than one who does nothing and reports just that.

The value of statistical reports is tremendous, and yet it's a big chore for the ECs to compile and submit them — especially for some ECs who are super-active when it comes to operations but not the slightest interested in statistics. We've done some thinking about this and would like to make a suggestion.

How about an AREC reporter? Our organizational standards provide for Assistant ECs to take on specialized departments of the work, especially in large organizations. Why not designate one of your members who is statistically inclined, or handy with the pen, as Assistant EC in charge of reports and publicity? It could be a big job, and a most important one. He would need to know what's going on in the AREC organization, how RACES is progressing locally; he would want statistics on all sub-groups; he would need contact with local newspapers, radio and TV stations to give the group's efforts publicity; and his would be the job of writing up regular EC reports for the EC's signature to go to the SEC or headquarters and any writing or reporting to be done for *QST* or other publications.

An Assistant EC serving as "AREC Reporter" would be most valuable in the larger organizations, of course — such as those in large cities. There, unlike the small community, the EC cannot do all the work. He has to delegate a lot of functions and be pretty much an overseer of work being done rather than the one who does the work. To an active amateur, overseeing is a harder job than doing the work himself; that's why many of our ECs are overworked and quickly burn themselves out. An AREC statistician or general reporter could do much to take some of the hated statistical and reporting burden off his shoulders. Has anyone tried this?

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Supplementary "Operation Alert" reports:

In Omaha, two separate operations were conducted. One was to provide communication between c.d. Medical and 18 first aid stations. The other was to provide communications between county and state civil defense headquarters. The former was done on ten meters, with mobiles reporting in from first aid stations. The latter was done on 75, and a relay established between county c.d. headquarters and 2-meter control. Thirteen mobiles were operated and 18 other amateurs participated.

W8HZA reports that the West Virginia Net (WVN) in coöperation with the West Virginia Phone Net was active in "Operation alert" from 1600 to 2230 on June 15th. Ten meter links maintained contact between state c.d. headquarters (W8QHG), the 'phone message center (W8CLX) and the c.w. message center (W8HZA/8).

Oregon SEC W7WAT reports participation in his section. In Portland, W7VS operated from c.d. headquarters under the direction of W7KY on 3995 kc. In Medford, participation was on a limited basis by members of the Rogue Valley Amateur Radio Club, including W7s HLF (RO) QMK ULR OFS and LYR.

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On April 25th the Red Cross alerted the AREC in Hamilton, Ont., to render service in connection with a flood and high waves in the Crescent Beach area of Lake Ontario. Two mobiles were put into action at the Beach, and the Red Cross official was transported to the beach. Four mobiles and a control station saw action in this emergency.

— *VE3KM, SEC Ontario*

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On July 23rd a soldier drowned near Great Falls, Mont., in the Missouri River. Amateurs from Great Falls were called upon to assist in rendering communications between the scene and the Great Falls Army Air Base. W7PCZ/m operated at the scene while W7TSG and W7KUH handled other necessary communications contacts.

— *W7KUH, SEC Montana*

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W7OKM was able to perform an emergency service on the "Seven Devils Road" (U. S. Route 101) between Coos Bay and Bandon, Ore., on July 31. Spotting a car off the road on the brush on one of the many bad turns in the road, he stopped his car and investigated. The stalled vehicle was from British Columbia and was teetering perilously on the edge of a canyon, occupants still inside and afraid to move. While W7OKM contrived to steady the teetering car, the British Columbia couple climbed out safely. Then he contacted W7VPF from his car and had him summon a tow car, which arrived 45 minutes later and pulled the endangered automobile to safety. — *W7QKU, PAM Oregon.*

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We want to enter herewith a few words of praise for the Alabama Section emergency organization. There has just recently come to our desk an eighteen-page manual of "Instructions for Members of AEN CW and Phone Nets," issued and approved jointly by the Section RM (W4KIX), the Section PAM (W4WOG), the SEC (W4TKL) and the SCM (W4MI). Although the cover realistically states that the manual covers only the "barest essentials," it is one of the most complete and comprehensive section net operating manuals and directives we have seen. Other sections might well take a cue from Alabama on their fine net organization.

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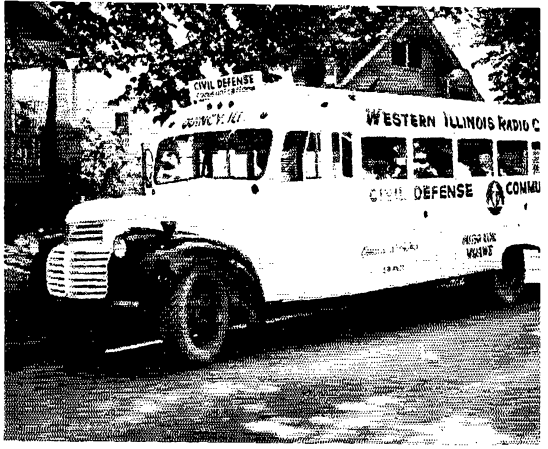
Fifteen SECs reported June activities, representing 5195 AREC members. Two reports did not include figures on AREC membership. Reporting sections: Minn., Wash., Tenn., West N. Y., NYC-LI, Georgia, Kentucky, San Joaquin Valley, Louisiana, Wis., Colo., S. Dak., Los Angeles,

Here is the Mobile Squad of Civil Defense, Saline County, Salina, Kans. Most of them are members of the Central Kansas Radio Club. All members of the mobile squad are police commissioned and carry out their duties with the full support of the police. A great deal of commendable work has been done in this manner.

The Western Illinois Radio Club of Quincy purchased this bus and turned it over to the city of Quincy to be made into a communications control center. The city purchased some equipment for it, and club members did most of the work installing it. It is intended primarily for civil defense use and contains several transmitters and receivers, a gas-driven generator and a public address system.



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Mont., Ore. This June's results exceed those of June a year ago and two years ago, both in number of reports and number of AREC members represented. The mid-year record thus shows a gratifying, if not considerable, increase over that of last year. For example, at midyear 1954 we had reports from 21 different sections; this year we have 26 different ones. At mid-year 1954 we had a total of 77 reports on file; this year we have 98. The record even compares favorably with our good 1953 record, but does not yet exceed it in all particulars. It would be easy to do so if more of you SECs would drop us a report on Form 8 each month.

The following sections have a 100% reporting record so far this year: Minnesota, Western N. Y., NYC-LI, San Joaquin Valley, Wisconsin, South Dakota. These have missed only one report: Washington, Tennessee, Georgia, Eastern Florida, Los Angeles, Oregon.

RACES News

We have just received from FCDA a comprehensive listing of states and local areas now operating under RACES plans. Although it will take up quite a lot of room, we think it is worth reproducing here. The following states are now operating under state RACES plans: Alabama, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Kansas, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, Washington, West Virginia, Wisconsin. That makes 34 states under RACES, leaving 14 who have not yet submitted RACES plans; however, of these 14, six have local RACES authorizations operating within them. Alaska, District of Columbia and Hawaii are also RACES authorized under an approved plan.

Following are the local RACES plans now in operation:

Alabama: Jefferson Co.

California: Napa Co., Marin Co., San Luis Obispo, Yolo, Santa Maria, Sacramento Co., San Francisco, San Mateo Co., Contra Costa, Santa Barbara, Sonoma Co., San Diego.

Colorado: La Junta, Alamosa, Denver, Grand Junction, Colorado Springs, Fremont Co., Pueblo Co., Boulder, Adams Co.

Connecticut: New London, Portland, Naugatuck, Ansonia, Hamden, Bridgeport, Coventry, Middletown, New Britain, New Haven, Norwalk, Shelton, Waterbury, Watertown, Wethersfield, Southington, Redding, West Hartford, Plainville, Easton, Enfield, Glastonbury, Greenwich, Groton, Madison, Manchester, Mansfield, Milford, Monroe, New Canaan, Stafford, Stonington, Stratford, Torrington, Trumbull, Waterford, Windsor, Woodbridge, Bristol, Chaplin, Darien, Fairfield Co., Hartford Co., Norwich, Stamford, Willimantic/Windham.

Florida: Brevard Co. (Pending), Dade Co., Halifax, Hillsborough Co., Leon Co., Manotee Co., Orange Co., Pensacola, Pinellas Co., Sarasota, Lake Co.

Illinois: Chicago, Decatur, Des Plaines, Joliet, LaGrange Park, Lake Co., Du Page Co.

Indiana: Vanderburgh Co., Marion Co., St. Joseph Co., Wayne Co., Hammond.

Iowa: Cedar Rapids.

Kansas: Olathe, Scott Co., Kingman Co., Topeka/Shawnee Area, Pittsburg, Kansas City/Wyandotte Co., Halstead, Wichita/Sedgwick Co., Marysville, Clay Co.

Maine: Augusta, Bangor, Aroostook Co., Androscoggin Co., Oxford Co.

Maryland: Baltimore, Harford Co., Cecil Co., Prince George Co. (Pending), Montgomery, Anne Arundel.

Massachusetts: Abington, Acton, Arlington, Belmont, Beverly, Boston, Brookline, Cambridge (Pending), Chicopee, Danvers, Dedham, Dover, Easton, Fairhaven, Haverhill, Holyoke, Leominster, Lexington, Malden, Needham, New Bedford, Newburyport, Newton, Norfolk, Norton, Norwell, Petersham, Scituate, Wakefield, Waltham, Watertown, Wellesley, Westfield, Worcester.

Minnesota: Duluth, Minneapolis, St. Paul.

Mississippi: Jackson.

Missouri: Independence, Springfield, St. Joseph.

New Hampshire: Portsmouth.

New Jersey State: State Area 1, Bergen & Passaic Co.; State Area 2, Hudson Co.; State Area 3, Essex Co.; State Area 4, Union City; State Area 5, Sussex and Morris; State Area 6, Warren, Hunterdon & Somerset; State Area 7, Middlesex; State Area 8, Mercer; State Area 9, Monmouth & Areas; Burlington; Camden & Gloucester; Atlantic & Cape May; Salem & Cumberland.

New Mexico: Albuquerque.

New York: Albany Co., Allegany Co., Broome Co., Cayuga Co., Chemung Co., Clinton Co., Columbia Co., Cortland Co., Delaware Co., Dutchess Co., Erie Co., Franklin Co., Greene Co., Herkimer Co., Ithaca, Jamestown, Jefferson Co., Lewis Co., Livingston Co., Madison Co., Monroe Co., Montgomery Co., Mount Vernon, Nassau Co., New Rochelle, New York, Niagara Co., Niagara Falls, Ogdensburg, Olean, Oneida Co., Onondaga Co., Orange Co., Orleans Co., Oswego Co., Otsego Co., Peekskill, Port Jervis, Putnam Co., Rome, Rensselaer (city), Rensselaer (county), Rockland Co., Rye, Saratoga Co., Schenectady Co., Schoharie Co., Seneca Co., Steuben Co., Suffolk Co., Sullivan Co., Tompkins Co., Ulster Co., Utica, Warren Co., Washington Co., Wayne Co., Westchester Co., White Plains, Yates Co.

Ohio: Barberton, Canton, Cleveland, Jefferson Co., Lucas Co., Montgomery Co., Columbus, Ross Co., Van Wert, Youngstown.

Oklahoma: Tulsa.

Oregon: Baker Co., Benton Co., Deschutes, Jackson Co., Josephine Co., Lane Co., Linn Co., Marion Co., Portland, Umatilla Co., Washington Co., Yamhill Co.

Pennsylvania: Butler Co., Centre Co., Cumberland, Delaware Co., Philadelphia.

Rhode Island: Bristol, Coventry, Cranston, Portsmouth, Warren.

Tennessee: Chattanooga, Knoxville, Memphis, Nashville, Weakley.

Texas: Dallas Co., Fort Worth, Galveston Co., Houston, Paris, Wichita Falls.

Utah: Provo City, Salt Lake City, Utah Co.

Virginia: Hampton, London Co., Norfolk, Northern Region, Richmond, Roanoke.

Washington: Chelan Co., Clallam Co., Clark Co., Cowlitz Co., Douglas Co., Franklin Co., Garfield Co., Grant Co., Grays Harbor, King Co., Kitsap Co., Okanogan Co., Pacific Co., Pierce Co., Seattle, Snohomish Co., Spokane Co., Tacoma, Thurston Co., Yakima Co.

Wisconsin: Madison, Milwaukee.

Let us know of any inaccuracies in the above lists, so they can be corrected on both our and FCDA's listings.

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Ready for the Simulated Emergency Test, October 8th-9th? See announcement elsewhere in this issue.

PREVIEW — 1955 FIELD DAY

Shown below are high claimed scores reported for the Nineteenth ARRL Field Day, held the week end of June 25th and 26th. These are subject to checking and grouping according to the number of transmitters in simultaneous use at each station. Complete FD results will appear in a later issue of *QST*.

CLASS A — Portable Clubs and Groups

(Listings show call used in FD, claimed score, and number of simultaneously-operated transmitters.)

K6BAG/6	20,220– 9	W9ZKW/9	5550– 3
W2LI/2	18,135–10	W4TRC/4	5542– 4
W4FU/8	18,009–10	W2DAY/2	5542– 4
W9IT/9	15,723–10	W2MO/2	5456– 3
W9AP/9	15,255– 9	W9FLP/9	5301– 7
W6UW/6	13,983–10	W7HZ/7	5301– 3
W1OC/1	13,905– 9	W2QVV/2	5275– 3
W6HS/6	13,743– 9	W4MK/4	5247– 1
W6CG/6	12,816– 5	W2BVL/2	5223– 5
W9PCS/9	12,663– 5	W6TTN/6	5202– 4
K6DTA/6	12,123–11	W0YDX/0	5184– 1
W0CKF/0	11,187–13	W3AFM/3	5162– 4
W8KP/8	11,169– 6	W9CAF/9	5148– 3
W2VDJ/2	11,160– 6	K5FGJ/5	5094– 2
W6TOL/6	11,111–11	W6MHM/6	4977– 4
K6EBN/6	10,800– 7	W3PIQ/3	4962– 5
W3RCN/3	10,764– 9	K6LTA/6	4941– 5
W6OTX/6	10,233– 7	K6ER/6	4905– 7
K2AA/2	10,233– 4	W5IDX/5	4887– 3
VE3JJ/3	9846– 8	W9TCH/9	4838– 3
W9SW/9	9648– 6	W7VTO/7	4815– 4
VE2BBR/3	9468– 9	W1GLA/1	4815– 6
W5SC/5	9414–10	W3DYL/3	4806– 1
W2ARL/2	8874– 3	W9NUW/9	4797– 2
W9SWQ/9	8685– 5	W2ZRC/2	4770– 2
W6MGJ/6	8658– 4	W3RQZ/3	4710– 3
W8PM/8	8649– 3	W2ODP/2	4698– 2
W6PD/6	8040– –	W6RUD/6	4689– 3
W9OBB/9	7848– 6	W9UDU/9	4653– 2
VE3DC/3	7737–10	VE3YJ/3	4650– 3
VE3ZM/3	7605– 7	W4MOE/4	4644– 5
W2OR/2	7416– 3	W9HRM/9	4628– 2
W6BIP/6	7170– 7	W8DC/8	4530– 4
W9OFR/9	7056– 4	W2QW/2	4461– 3
K2BC/2	7038– 4	W0ERG/0	4458– 4
W8MRM/8	6808– 4	W4DU/4	4458– 4
W3CLC/3	6804– 2	K6CLZ/6	4441– 3
W1SKT/1	6735– 3	W6CEA/8	4428– 1
W3PKV/3	6723– 3	K6FDB	4419– 7
W3VRZ/3	6717– 4	W5NWV/5	4368– 3
W3OK/3	6687– 4	W5CF/5	4356– 4
W9AB/9	6570– 3	K6CTO/6	4329– 3
W8RUM/8	6498– 4	W1ICP/1	4320– 1
W6IFW/6	6381– 3	W5MPZ/5	4302– 3
W2YKQ/2	6363– 5	W4PAY/4	4287– 4
W9BA/9	6300– 5	W2ALR/2	4278– 3
W7DK/7	6246– 6	W4FR/4	4275– 3
W2KOJ/2	6228– 4	W4SKH/4	4269– 3
W9ERU/9	6156– 4	W8MAA/8	4267– 3
K6CEF/6	6084– 6	W8RNF/8	4260– 4
W6PMI/6	6075– 3	W1VB/1	4257– 2
W1WKN/1	6030– 7	W3FT/3	4251– 4
W6NWG/6	6003– 4	W6DVU/6	4203– 6
K2CBB/2	6003– 3	W1OP/1	4194– 2
W1EIA/1	5994– 1	W6WVK/6	4176– 3
W5PDO/5	5982– 4	W9KA/9	4167– 3
K2LJM/2	5899– –	W8TPW/8	4145– 4
K6CXI/6	5832– 4	W8UWB/8	4122– 3
W2OW/2	5820– –	W9WFJ/9	4105– 5
W3NKF/8	5733– 6	W1NEM/1	4095– 6
W4PLB/4	5727– 3	W8PLQ/8	4074– 1
W6LUC/6	5706– 5	W8FO/8	4038– 6
K2LSA/2	5697– 3	W9DUP/9	4023– 8
W3GRX/3	5622– 3	W0RFU/0	4017– 2
W8ACW/8	5604– 5	W2MUM/3	4005– 2
W2GTD/2	5589– 3	W4TL/4	4005– 3
W3CWC/3	5553– 2		

CLASS B — One- and Two-Man Portables

(Listings show call and score.)

W3EIS/3	6993	W6MUR/6	2547
W5VRP/5	5751	W6RSU/6	2496
W2FBA/2	5319	W8VWY/8	2444
K5BLL/5	4995	W5PIZ/5	2304
W9ESQ/9	2979	W8NKI/8	2160
W9DSP/9	2778	W7CMQ/7	2106
W0AJA/0	2592	K6DQA/6	2058

CLASS C — Mobiles

W8HFE/8	4914	W8BDZ/8	2255
W8QAV/8	4374	W8KCD/8	2254
W4YI/4	3821	W8WAG/8	2241
W8ERA/8	3740	W8NNC/8	2201
W8FKB/8	2929	W8NNO/8	2201
W8SRH/8	2916	W8NZC/8	2201
W8GHO/8	2903	W8RAK/8	2201
W8AJH/8	2862	W8VM/8	2201
W8AEU/8	2511	W8LHJ/8	2200
W8GMK/8	2511	W8BPE/8	2187
W8INO/8	2417	W8OIU/8	2174
W8PM/8	2363	W8FTD/8	2160
W8MWE/8	2336	W8OKI/8	2129
W8WZS/8	2336	W8MAE/8	2120
W8INW/8	2268		

CLASS D — Home Stations, Emergency Power

K4CDA	361	W7YRV	178
K6AAJ	267	W3LSS	61

CLASS E — Home Stations, Commercial Power

W3QQO	463	W3ISE	149
W4YZC	296	W9WAN	145
W6MSO	247	W2DRV	142
K2DEM	232	K2HVN	140
W9EXL	177	W9HBP	102

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for July traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3WG	7	692	676	8	1383
W9NZZ	362	488	3	481	1334
W9DO	26	616	567	74	1283
WØSCA	20	535	544	4	1103
W3CUL	62	496	399	91	1048
W7BA	22	467	444	21	954
WØCPI	12	427	394	33	866
WØPZO	1	432	420	3	856
W7PGY	31	404	341	63	839
W3WIQ	6	338	341	12	697
W4PFC	11	339	320	15	685
W1ARR	33	309	261	34	637
WØBDR	6	281	254	2	543
W3WV	35	264	160	49	508
Late Reports:					
W4LEV (June)	24	26	371	373	794
WØKQD (Apr.)	73	365	318	9	765
KØANZ (Apr.)	12	362	332	6	712

More-Than-One-Operator Stations

KH6AJF	66	1077	989	75	2207
W6IAB	33	1071	1022	49	2175
W6YDK	35	561	483	82	1161
KØWBB	39	288	276	36	639
W9OFR/9	633	0	0	0	633
K5FFB	37	276	290	17	620
Late Reports:					
KH6AJF (June)	291	1087	978	103	2459
KØWBB (May)	53	474	440	30	997
KØWBB (Apr.)	36	350	307	35	728
KØWBB (Mar.)	40	337	277	41	695

BPL for 100 or more *originations-plus deliveries:*

K4ASU	224	WØTQA	108	WØTVI (Apr.)	116
W6GYH	119	WØRLQ	107	W4UHA (June)	115
W1DYE	118	Late Reports:		WØNVU (May)	112
KP4WT	114	WØLO/Ø (May)	302	W4ZBA (June)	105

More-Than-One-Operator Stations

W3UCR 152 KH6QU 119 Late Report:

K3WBJ (June) 101

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: K4AKP, W4DDY, K4WBG, W5DTA/5, W5KPB, W9YWL.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. possessions who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month. All messages must be handled on amateur frequencies, within 48 hours of receipt, in standard ARRL form.

TRAFFIC TOPICS

It is entirely inevitable that we continue to regard traffic activity on the amateur bands in terms of "seasons" rather than calendar years. Not only *is this a result of habit*, because we've always done it that way and years ago nearly all traffic activity was suspended in May until October, but also of the necessity of taking into account the fact that most traffic men handle traffic because they enjoy it — and they don't enjoy it in the summer, with heat, insects, QRN and diversions occasioned by vacations and other invitations to the great out-of-doors.

Since the advent of NTS, however, and the tendency in other traffic circles as well to keep the traffic moving all year around, the aspect of "seasons" of traffic handling has been less noticeable. Oh, activity still drops off in summertime, and network organization goes all to pot when people start legal clock-changing, but you'll notice that the BPL *is* far larger by comparison during the summer months than it used to be, say, in 1936. For example, in December of 1935 we had 109 BPLs, but the following August only nine — this, mind you, during the lush traffic years when traffic handling was described (by Clinton B. DeSoto) as the "major activity" in amateur radio. Compare *this with the* BPL total of 114 in December of 1953 and *85* in August of 1954. Our summertime traffic activity, these days, is equal to some of the lower-yielding winter traffic months.

This is as it should be. If we are going to have a functioning traffic organization, it should function all year around. If training is one of the most important objectives in our traffic work (and we think it is), training in handling traffic under unfavorable conditions is one of the best kinds, if not *the* best kind. Why? Because most training is conducted under favorable conditions, causing almost complete breakdown when the trainee is faced with difficulties.

We have no quarrel with "fair weather" traffic men. In fact, we're mighty glad to have them working in the system during the good radio months. All we're saying is that the boys who stick with it all summer are getting the greatest benefit and doing the greatest good. And now that the fall operating season is on us again, let's make this the greatest traffic year yet.

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HAVE YOU REGISTERED YOUR NET? If not, better do it if you want it in the annual Net Directory. Deadline for November *QST* listing was September 15; for January *QST* listing, November 15. For the cross-indexed net directory, December 1. See Traffic Topics in September *QST* for details on how to register.

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Traffic nets will have a part to play in the Simulated Emergency Test, October 8th–9th. This is an ideal activity with which to pry the lid off the so-called fall operating season. See complete announcement elsewhere in this issue of *QST*.

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The First Call Area Section of the Transcontinental Phone Net registered 614 message counts with 14 stations participating in July. During June, the message total was 400 by 8 stations. The Second Call Area Section reports 608 messages by 12 stations in July, 786 messages by 12 stations in June. This info by W1LYL.

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National Traffic System. As of this writing, the Eastern Area Net of NTS can handle traffic addressed to APO New York City. This is handled by a corps of stations organized by W2JOA who report into EAN for that purpose each night. The traffic is handled via MARS circuits, not by amateur radio. Stations participating are W2JOA, K2JEB, K2AEQ and W3WG. If you have traffic for APO New York, it can be routed to EAN through normal NTS channels.

Traffic for APO San Francisco (or other Pacific points) is an assignment of the Sixth Regional Net and should be routed through PAN to RN6. APO Seattle is similarly handled by RN7.

Of course we can't guarantee that these routings won't be changed by the time you read this!

July reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation*
EAN	19	508	1.16	26.7	——
PAN	27	431	0.15	15.9	100%
1RN	26	251	0.30	9.6	76%
3RN	33	94	0.40	2.8	88%
RN5	30	325	0.46	10.8	55%
RN6	24	129	0.36	5.4	——
RN7	40	95	——	2.3	29%
8RN	38	110	——	3.2	70%
9RN	23	430	0.61	18.7	89%
TEN	66	1059	——	16.0	59%
TRN	16	21	——	1.3	52%
TCC (Pacific)		240			
TCC (Eastern)		85			
Sections *	322	1519			
Summary	664	5297	EAN	7.5	PAN
Record	664	6145	1.16	15.2	100%

* Section Nets reporting: KYN (Ky.); WSN (Wash.); WVN (W. Va.); Hi Noon (Colo.); SCN (Calif.); NTX (N. Tex.); AENB & AENP (Ala.); GSN (Ga.); QKS, QKS-SS & QKN (Kans.); Tenn. CW & Tenn. Summer; CVN (San Joaquin Valley, Calif.).

Late Reports:					
CAN (Apr.)	20	690	——	34.5	95%
CAN (May)	22	1095	0.67	49.7	97%
CAN (June)	22	650	——	29.5	95%
TCC Central	(Apr.)	172			
TCC Central	(May)	685			
TCC Central	(June)	384			
WVN (June)	13	79			

It appears that one of the hardest things for net managers to do is get their reports in here on time. This isn't always their fault, after all, they have to get QNS reports from NCS before they can make out a report, simple as it is after that. So this is a plea to NTS Net Control Stations at all levels: *report to your net manager promptly* after you control a net session, whether you are the regular control or not. Failure to do so results in a delayed report (which may then miss its proper issue of *QST*), or an incomplete report which prevents us from indicating the true status of NTS. *NCS: report to net manager promptly! Net Managers: Get reports into headquarters not later than the fifteenth of each month!*

Despite the "summer slump," only two regional nets and one area net failed to report, and fifteen section-level nets reported. Traffic is low, but organizational morale is high. RN5 reports a sharp decrease in traffic with cessation of traffic from MARS sources; K4AKP has been most consistent station during July. RN6 certificates have been awarded to K6GID, W6TTX, and K6EVM. July RN7 representation has been *nil* from Wyoming, Montana, Saskatchewan, Alberta and Alaska. W4KKW submits his first report as 9RN manager. WØKLG submitted the July TEN report for WØDQL. VE3GI reports that Maritime representation is badly needed on TRN.

In TCC, WØKQD will take over the TCC Pacific Area directorship being vacated by W6HC at the end of September. W9JUJ will continue with the Central Area directorship and W8UPB with Eastern Area. The present roster, according to latest info from TCC directors: *Eastern Area:* W1EMG W1AW W1NJM W3COK W4OCG W4ZFV W8DSX W8FYO W8MQQ VE3AJR VE3BJV VE3GI VE3TM VE3VZ, *Central Area:* WØBDR and WØSCA; *Pacific Area:* W6ADB W6IPW K6BDF/7, W7CCL W7KZ KØANZ/6 KØWBB WØKQD.

W1AW OPERATING NOTE

The W1AW operating schedule, as shown on page 70, May *QST*, and page 70, September *QST*, will be maintained through October 29th. The W1AW fall schedule, effective Oct. 30th with return to EST, will be in November *QST*.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

San Joaquin Valley	Ralph Saroyan, W6JPU	June 15, 1955
West Virginia	Albert H. Hix, W8PQQ	Sept. 18, 1955
San Diego	*Don Stansifer, W6LRU*	Oct. 15, 1955
Vermont	Robert L. Scott, W1RNA	Oct. 15, 1955

In the Wyoming Section of the Rocky Mountain Division, Mr. Wallace J. Ritter, W7PKX, and Mr. Oscar Younglund, W7NVX, were nominated. Mr. Ritter received 46 votes and Mr. Younglund received 25 votes. Mr. Ritter's term of office began July 11, 1955.

In the Eastern Florida Section of the Southeastern Division, Mr. Arthur H. Benzee, W4FE, and Mr. John W. Hollister, W4FWZ, were nominated. Mr. Benzee received 182 votes and Mr. Hollister received 178 votes. Mr. Benzee's term of office began Aug. 14, 1955.

In the Southern New Jersey Section of the Atlantic Division Mr. Herbert C. Brooks, K2BG, and Mr. Edward G. Raser, W2ZI, were nominated. Mr. Brooks, received 151 votes and Mr. Raser received 105 votes. Mr. Brooks' term of office began Aug. 26, 1955.

A.R.R.L. ACTIVITIES CALENDAR

Oct. 7th: CP Qualifying Run — W6OWP
Oct. 8th–9th: Simulated Emergency Test
Oct. 13th: CP Qualifying Run — W1AW
Oct. 15th–16th: CD QSO Party (c.w.)
Oct. 22nd–23rd: CD QSO Party ('phone)
Nov. 5th: CP Qualifying Run — W6OWP
Nov. 12th–13th, 19th–20th: Sweepstakes
Nov. 18th: CP Qualifying Run — W1AW
Dec. 2nd: CP Qualifying Run — W6OWP
Dec. 12th: Qualifying Run — W1AW
Jan. 7th: CP Qualifying Run — W6OWP
Jan. 7th–8th: V.H.F. Sweepstakes
Jan. 14th–15th: CD QSO Party (c.w.)
Jan. 21st–22nd: CD QSO Party ('phone)

ELECTION NOTICE

(*To all ARRL members residing in the Sections listed below.*)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. 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: (Signers will please add city and street addresses to facilitate checking membership.)

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

We, the undersigned full members of the.....
.....ARRL Section of the.....
Division, hereby nominate.....
as candidate 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*
Yukon *	Oct. 14, 1955	W. R. Williamson	Mar. 17, 1949
West Indies	Oct. 14, 1955	William Werner	Aug. 15, 1952
Utah	Oct. 14, 1955	Floyd L. Hinshaw	Feb. 18, 1954
South Carolina	Oct. 14, 1955	T. Hunter Wood	Oct. 15, 1955
Western Florida	Oct. 14, 1955	Edward J. Collins	Oct. 15, 1955
East Bay	Oct. 14, 1955	Guy Black	Resigned
Eastern New York	Oct. 14, 1955	Stephen J. Neason	Dec. 14, 1955
Ohio	Oct. 14, 1955	John E. Siringer	Dec. 14, 1955
Alabama	Oct. 14, 1955	Joe A. Shannon	Dec. 14, 1955
Quebec *	Oct. 14, 1955	Gordon A. Lynn	Dec. 15, 1955
Illinois	Oct. 14, 1955	George T. Schreiber	Dec. 15, 1955
Alaska	Nov. 15, 1955	Dave A. Fulton	Jan. 15, 1956
Virginia	Dec. 15, 1955	John Carl Morgan	Feb. 11, 1956
Oklahoma	Dec. 15, 1955	Dr. Will G. Crandall	Feb. 15, 1956
Maritime *	Dec. 15, 1955	Douglas C. Johnson	Feb. 15, 1956
Georgia	Jan. 16, 1956	George W. Parker	Mar. 18, 1956

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

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on October 13th at 2130 *EDST*. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7125, 14,100, 21,010, 52,000 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on October 7th at 2100 PDST on 3590 and 7138 kc.

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

Code-practice transmissions will be made from W1AW each evening at 2130 *EDST*. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To get sending practice, hook up your own key and buzzer and attempt to send in unison with W1AW.

Date	Subject of Practice Text from August *QST*
Oct. 4th:	*An Improved Antenna Bridge*, p. 11
Oct. 6th:	*The Transistorized "Little Gem,"* p. 16
Oct. 10th:	*807s in Parallel*, p. 18
Oct. 12th:	*One Tube — 80 and 40 Meters . . .*, p. 26
Oct. 14th:	*Portable Antennas for 50 and 144 Mc.*, p. 29
Oct. 18th:	*The Automobile Storage Battery . . .*, p. 32
Oct. 20th:	*A Six-Meter Club Project*, p. 37
Oct. 25th:	*A.R.R.L. at Operation Cue*, p. 45
Oct. 28th:	*The World Above 50 Mc.*, p. 55

JULY CD QSO PARTIES

Among the highlights in July: OO W6MUR claims a record 68 sections worked on c.w. (all but VE4, VE5, VE6, KL7 and KZ5), and ORS W3DGM, a long-time brasspounder and contest enthusiast, took microphone in hand to pace the 'phone gang.

Listed below are the highest claimed scores. Figures after each call indicate score, number of contacts, and number of ARRL sections worked. Final and complete results will appear in the October *CD Bulletin*.

C.W.

W6MUR	211,072–341–68	K2AFQ	65,750–251–50
W6BIP	157,080–287–60	W4JUJ	64,900–213–59
W4KFC	136,335–440–61	W2DGW	64,435–263–49
W4YZC	126,700–412–60	W9FGX	60,760–242–49
W4PNK	124,500–415–60	K2HID/2	60,580–233–52
W1AW [1]	118,035–380–61	W3BIP	60,180–229–51
W1RAN/4	115,500–379–60	K6BWD	59,950–131–50
W3VOS	114,755–384–59	W3JNQ	59,160–232–51
W1WEF	110,865–382–57	K2EIU	59,020–227–52
W1TYQ	105,600–351–60	W1YNC	57,360–234–48
W4TFX/4	98,890–336–58	W0DW	56,930–207–55
W9NH	94,400–314–59	W0DQL	56,925–200–55
W2ZVW	89,375–318–55	W1AQE	54,880–224–49
W7VIU	88,485–190–51	W3UOE	53,750–246–43
W6UED	79,305–170–51	W8JDN	53,280–219–48
W9KLD	72,345–269–53	W8MVJ	52,210–224–46
W3DVO	70,560–281–49	W8DAE	51,840–209–48
K2DSW	69,420–261–52	W1JYH	51,750–200–50
W4WQT	69,390–252–54	W8MQQ	51,500–201–50
W7GHT	67,206–159–46	W1UGW	51,465–214–47
W4SIE	66,780–252–53	W4VQZ	51,290–219–46
W6CRT	66,727–136–53	W2LRO	51,000–200–50
W1CRW	66,150–245–52	W6CHV	50,862–112–49
W7JLU	66,048–149–48	W2NIV	50,830–215–46
W3TYW	65,880–240–54	VE7AC	50,204–124–44
W0SMV	65,780–253–52		

'PHONE

W3DGM	22,400–133–32	W1JYH	9500– 88–20
W9ZRP	18,600–117–31	W1YBH	9350– 82–22
W4TVO	18,480–112–33	K2DSW	9350– 79–22
W0AGD	17,850–102–34	W8JDN	9000– 69–25
W9KDV [2]	16,800–105–32	W8NOH	9000– 67–25
W8NSS	13,390– 98–26	W2ZVW	8800– 73–22
K2GHS/1	13,125–100–25	K2AFQ	8280– 66–23
W1CRW	12,470– 86–29	W8PBX	8100– 60–27
W2JGV/1	11,700– 75–30	W8MGC	7935– 69–23
W3BNR	11,500– 92–25	W4JUJ	6720– 57–21
W9KLD	10,625– 81–25	W8NYH	6360– 53–24
W4IA	10,465– 84–23		

[1] W1WPR, opr. [2] W9VFY, opr.

After making 380 c.w. QSOs at W1AW, statistics-minded W1WPR sat down and did some figuring on the distribution of appointments. There were 273 stations worked once, 78 two-banders, 14 three-banders, and one four-bander. Here's the way the 273 different broke down: ORS 138, OO 47, EC 24, RM 18, OBS 13, OPS 7, Asst. Director 5, SCM 5, Director 4, PAM 3, OES 2, Headquarters 2, Vice-Director 2, QSL Manager 2, SEC 1. Since those holding more than one appointment can pick any one of several to identify themselves, the figures must be taken with a pinch of salt. Apparently, however, in a c.w. CD Party more than half your contacts will say "HR ORS."

SCM AREC ORS CP SEC OBS TCC OO

Station Activities

PAM WAS NTS WAC

OBS AIOPR EC DXCC CLUBS RM OPS RCC

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

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Clarence Snyder, W3PYF — SEC: NNT. RM: AXA. PAM: TEJ. E. Pa. nets: 3850 and 3610 kc. ZRQ has a new 300-watt rig. NNV reports his son, AQI, was home for a visit from Lowery AFB. His other son, AQM, just made his first contact on 2 meters. FPC just passed his 20th year of having the same call and living at the same QTH. FPC invites interested amateurs to visit South Philadelphia Amateur Radio Club every Tue. night at 17th and Tasker. ZSH is back from a vacation in W9-Land. BIP is back on the air with a new shack. TEJ, E. Pa. PAM, is lining up liaison for the PFN to other nets for the coming season. LJ, act. mgr. for YDX, reports the heat and vacations caused traffic to drop off at that QTH. CBZ, the Reverend Paul Sheffer, Lutheran pastor at Ferndale Lutheran Parish, is a new amateur. He is on the air now with a new Viking Adventurer and formerly was licensed under the call 3ARP in York around 1938. The new club at Leavittown has adopted the name Windsor ARC. Officers are NME, pres.; QHF, vice-pres.; and WUY, secy.-treas. The Club holds code and theory classes every Mon. at the Youth Center in the Holly Hill section of Levittown. Meetings are held at the same place the first Wed. of every month. MAC and the Delaware River Net meet regularly on 3910 kc. at 9:15 Mon. through Fri. Invitation is issued for applications for ARRL appointments as EC, OO, OPS, ORS, OES, and OBS. A card to your SCM will bring details. AZZ, of Wormlysburg, advises that he now is stationed in Germany and operating under the call DL4PR with a Globe King. He is looking for 20-meter contacts with the gang around Harrisburg. WUE now is asst. mgr. of the Interstate 'Phone Net. BES missed Field Day for the first time since its inception because of his wedding anniversary. RSC is off the air while moving to a new QTH. WN3CKP is operating airborne mobile on 145.360 Mc. WJY spent the month of July operating portable at Lake Harmony. Traffic: W3CUL 1048, YDX 221, TEJ 173, BFF 100, WUE 99, BUR 85, OK 85, GIY 61, YAZ 61, TSY 60, BNR 51, PVY 29, DUI 22, BIP 18, PYF 14, ELI 12, UOE 6, YVX 6, ZRQ 6, BES 3, BGA 3, OML 2.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, John W. Gore, W3PRL — The MEPN held its fourth annual picnic at Gambrills State Park near Frederick, Md., on Sun., July 24th. Among the 384 present were George Hart, 1NJM, ARRL National Emergency Coördinator, and Gil Crossley, 3YA, Atlantic Division Director. Mobiles were talked in to the mountain top on 2, 6, and 10 meters. A short mid-day shower was tolerated by the 384 present and soon forgotten in the day's activities. Liz, CDQ, found time to attend the picnic as well as the YLRL Convention at Santa Monica. Dr. Willis C. Gore, of the Johns Hopkins faculty, gave a talk and demonstration on "Parasitic Beams" at the July 11th meeting of the CARC, and Leo Hruska gave a talk and demonstration on "No B Auto Convertors for Short Waves" at the July 25th meeting. The ARRL film "Standing Waves" was shown at the July 5th meeting of the Antietam Radio Assn. of Hagerstown. At the July 19th meeting of the ARA the club's equipment console building project was started. WN3CVC has joined the fraternity with a Johnson Adventurer on 80 and 40 meters. KMA is working on his 80-, 40-, and 20-meter antennas. KMA also has completed a broad-band 144-Mc. convertor as per the *Handbook*, and found it to be the best he has used to date. RV, with 10 watts to a 2E26 on 6 meters, has worked 7 states including California. KTR has acquired a restful mountain cottage at 2500 ft. elevation in the Blue Ridge Mountains near Big Meadows, where in his spare time he operated portable with a TBS-50-C into a Windom. QCB finally worked 1AW after 6 years, during the CD Party July 16th. BUD has been appointed EC for St. Marys County. TBG received WAS in July. WV worked VQ8AX and also worked UR3B for 3B's second contact after getting settled. WAF worked his first Baffin Island station. Traffic: (July) W3WG 1383, WV 508, UCR 197, RV 63, PRL 52, COK 32, BUD 26, PKC 26, KMA 15, OYX 6, WAF 6, TBG 4, CDG 2. (June) K3WBJ 404, W3CVE 383, COK 67, PKC 56, KMA 10, WKB 2.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: W2ZVW. PAM: ZI. I am very grateful for the support that I received in the recent balloting which resulted in my reëlection. KTR has been appointed ORS and BZJ recently moved to Pennington. Welcome to the section, Walt. RG continues to do a fine job of handling traffic and is NCS of two c.d. drills each Sun. K2CPR made over 41,000 points in the recent CD Party. K2HZR has a new receiver and is keeping regular traffic skeds. ZI has a traffic sked with the YMCA Boys' Camp at Camp Wilson, N. J. After a very successful Field Day, SJRA is making plans for the Sweepstakes. OZO has a new beam on 10 meters. The JP Net, with 18 operators, worked 2, 10, and 80 meters on Field Day. The SJRA DX editor, SDB, gives lots of encouragement to the DX aspirants of the Club. The Burlington County Radio Club continues its regular weekly drills alternating between the club station, K2KED, and the area c.d. station. No doubt because of vacations, we have nothing to report from the Tri-City Amateur RC or from the SCARA. *DVRA News* keeps its members well informed by reprinting the Official Bulletins. K2ITP and ITQ are operating 2, 20, and 40 meters, and working hard for that WAS ticket. K2JKA is manager of the Stag Net on 3860 kc. Mon. through Fri. at 0900 EDT. ECs are needed in the southern counties to coördinate the available emergency facilities. Please contact your SCM or SEC. Traffic: (July) K2JKA 184, W2RG 166, K2HZR 138, W2HDW 25, ZI 9, K2CPR 2. (June) W2YRW 47.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — Asst. SCM: Jeanne Walker, 2BTB. SEC: UTH/FRL. RM: RUF. PAMs: TEP and NAI. NYS meets on 3615 at 6 P.M. and 6:30 A.M.; NYSS on 3595 at 5:30 P.M.; NYSR on 3595 at 8 P.M.; NYS on 3925 at 6 P.M.; NYS C.D on 3509.5 and 3993 at 9 A.M. Sun.; TCPN 2nd Call Area on 3970 at 7 P.M.; SRPN on 3980 at 10 A.M.; ISPN on 3870 at 3 P.M.; LCP Mobile on 2; Niagara Mobile Net on each Sun. at 11 A.M. on 3885 kc. KN2MMB is owner of a taxi company with ham gear installed. CFY renewed as EC for Jefferson County. Officers of the Syracuse V.H.F. Club are RBK, pres.; HNH, vice-pres.; JIM, secy.-treas.; RHQ, act. mgr. Many of the group are getting on 6 meters, with new stations as follows: K2JIM, GEI, EPH, and KN2LXN. The new club participated in the V.H.F. SS and Field Day. K2EVJ is operating the high school club transmitter at K2KHB. A very nice article on c.d. by PPY, Erie County EC, appears in Aug. *QST*. K2DYB has been appointed OO. K2DYC is active on 50.4 Mc. between 1900 and 2100. RSV is active from the Colton Area. An ARATS meeting was devoted to c.d. demonstration, instructing Novices in a practice drill. The Elmira ARA meeting at the club shack turned into a weiner roast and inspection of the club's new 20-meter beam. Sydney, Binghamton, and IBM Clubs held a picnic at Perch Pond with a transmitter hunt. UJS was program chairman, ZOL vacationed in New England. DLB dropped the "N" from his call. TXS operates TV and radio business and ham radio from the same room in his home with no TVI. SHZ and CYV are mobile on 10 meters. CVX and JVZ are revamping mobile gear for new cars. K2HVZ is visiting KN2INP. ZRC made Extra Class. MSJ is going to Roch. Tech. JGJ is on 6 meters. The Federal-State Flood Forecasting Service has had the coöperation of the URN and RVN Nets in getting valuable WX information into the nets once a month. Stations in the vicinity of Olean are needed to give better coverage. It would be a nice gesture if at least two stations from this vicinity in W.N.Y. could lend a hand once a month on 3585 at 9:30 P.M. Write or send a message to 3UVD for further details. QQ vacationed in VE3-Land. ZOL and CTQ were active in the Powder Puff Derby. SHZ finds the transmitter works better with just one side of the mike cable grounded. HXG renewed as Seneca Co. EC. YPW renewed as ORS. DJH moved to Warrensburg. KN2MZR and MZP are on the air. NYSR, New York Restricted Speed Net, is operating at 1800 on 3595 kc. with K2CLA as mgr. and K2CKO asst. mgr. UKQ's operating time is confined to c.d. RZP renewed as Delaware Co. EC. UTH renewed as OES K2CEH has a three-element beam on 6 meters. K2DUO had an amateur radio station at Lafayette Theatre for a demonstration. Traffic: (July) W2RUF 345, YGW 145, ZRC 145, BXP 108, BNC 101, QHH 49, K2AMZ 48, W2ZLT 44, K2DSR 36, W2RQF 16, DSS 15, EMW 10, RUT 3, K2GAL 2, W2MYN 2. (June) W2RQF 19, K2DQ 18. (May) W2RQF 11.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: GEG. RMs: UHN, NRE, and NUG. PAMs: AER and LXE/VKD. The Mercer County Radio Association recently held its annual picnic. Originally

scheduled for the local park, it was held in the evening at the residence of SYZ because of quite a bit of dampness. However, it was well attended and an enjoyable affair. The Breeze Shooters Net meets on 29 Mc. each Mon. at 8. BSN also reports officers for the coming year are SJK, pres.; QYF, checker; TTR (YL), secy.; and PII, SIR, and TDC, directors. SJK says that several persons have gotten tickets, thanks to BSN's Mon. code practice. UJP found much of his signal diverted to ground through his adjustable low-pass filter and advises users of same to check adjustment of them. KLP has a transistor receiver and one audio stage of his transmitter and also uses one. RUZ now has a 101X. WHA and KPS are recent volunteers as NCS. BSN now numbers about 251 local ground-wave members. The Radio Association of Erie boys held a hidden transmitter hunt, with MED putting out the signal and YKE, TMK, LKJ, STK, QN, and TLA tracking him down. The Annual Hamquet was observed and attended by a fine crowd. VNC is looking for an HT-18. MNP has erected a beautiful new tower for his 10- and 20-meter beams. The South Hills Brass Pounders and Modulators August Hamfest was held on schedule and was well attended. Everyone had a fine time even though a heavy rain came in at about the middle of the activities. WIQ, consistently BPL, has been vacationing in Florida. Traffic: (July) W3WIQ 697, YA 48, ZEW 37, ZEG 30, SIJ 16, UHN 9, KNQ 6.

CENTRAL DIVISION

ILLINOIS — SCM, George T. Schreiber, W9YIX — Section Nets: ILN 3515 kc.; IEN 3940 kc. SEC: HOA. RMs: BUK and MRQ. PAM: UQT. Cook County EC: HPG. News has been very scarce this month. Have you chaps been neglecting to send it in, or have you just been fishing? Members of the Knox-Warren Radio Assn. furnished communications July 4th to the Galesburg emergency police doing automobile traffic duty. VSX/9 was base station. CLH likes his new 20-meter three-element beam and keeps the QSL Bureau busy. EOL is back on 40 meters with a vertical, having returned to the section from Iowa. RMI will be out of the Navy soon and will have a new QTH in Peoria. Hope he checks into the ILN, they need him in that vicinity. FNX is chasing DX with his new Ranger. A new Technician heard is ICW. OEV does well with 100 watts on 2 meters. HMM has moved to Sycamore. The Quad City Club has bought a bus and the membership, under the leadership of OXZ, the local EC, is busy overhauling it and installing radio gear. 9LPK writes to tell the fellows they are talking to VTO, formerly of Western Springs, when they contact him on 80 meters. BA, with much help from ATU, UWP, TCX, NPM, and EWU, furnished a complete communications system for the Southern Illinois Sports Car Club hill climb on July 17th. The St. Clair Amateur Club has identification buttons 3½ inches in diameter so the members can "see" who is at the meeting. 8WKH now is K9AVC at Scott AFB. KTH threatens to be back on the air any day now. DO picked up his 17th BPL certificate. ICF has so much new equipment that it would take the entire column to tell about it. He likes his new 160-meter Windom. SHM spent six months in KH6-Land but reports there is no place like home. UGG and UGR have moved to Davenport. CMR is trying out single sideband. KDX received his engineering degree upon June graduation. Congratulations to AOB, who got married. The Central Illinois Radio Amateur Club picnic was a honey. Flowers to the *Oscillator*, the bulletin of the Tri-Town Radio Amateurs Club, on the excellent Field Day number. The editor is OQN. EVA introduced YL 7QYA to the telegraph gang at KSB 47, the Chicago Police station, and she astonished all, even Director UQT, by slipping in and copying the circuit. BII has built a Globe Scout with 155-volt mains and a vibrator supply for mobile use in his car. The Kankakee Amateur Radio Club staged a hidden transmitter hunt on July 30th. First place was taken by LCH, with IBU second. KLD hid the transmitter. CWH passed the Extra Class exam. Vice-Director QLZ won nine fishing lures and EU a deep fryer at the QCWA picnic. Now they have teamed up, QLZ to catch the fish and EU to fry 'em. Route Manager BUK's tower buckled in the middle when he raised it after trying to install a 2-meter beam. A new call heard on ILN is KMZ. GAS built a new Ranger. HPJ ran a commercial communication set-up for the National Conference of Governors held in Chicago and introduced several of them to ham radio. Traffic: (July) W9DO 1283, OFR/9 633, YYG 191 OR 116, CSW 93, VHD 54, YIX 48, IDA 47, VSX 38, CTZ 25, BUK 24, SME 21, BII 19, LRV 19, LXJ 17, EHS 12, SXL 12, BA 11, CEE 11, CZB 10, MRQ 9, CLH 8, VER 8, JMG 4, PHE 3, FNX 2, KLD 1. (June) W9IDA 367, USI 46, HPG 33, VSX 16, FRP 4.

INDIANA — SCM, George H. Graue, W9BKJ — This report is being compiled by BEM. Allen County EC, while our SCM is vacationing in Michigan. FMJ and BKJ operated mobile and portable /8 and kept daily schedule with both section nets. AQR is having receiver trouble. IOP lost some of his equipment in an electrical storm. NZZ still is moving traffic into the Arctic despite terrific temperatures. CAEN had 20 sessions and a traffic total of 50, as reported by EHZ. NTA reported 52 sessions and a traffic total of 254 for IFN. VSH received an A-1 Operator certificate. N9FJN, POS, KDH, and KDW passed the General Class exam. BEM has a three-element quad working fine. JFJ has a new Ranger. UHV is active on 50 Mc. DQI is a CAP cadet. MZE, ex-DL4CT, expects to attend Indiana Tech. in Ft. Wayne this fall. N9RVV is organizing a Novice net in the southern part of the State. OG is new in Evansville; also N9AMT and YZJ. DGA is vacationing in the Smokies and will visit South Carolina for his 48th state. ZZA is 6-meter mobile and is vacationing in Yellowstone Park. YRF has changed to a pair of 812s. The IRCC Field Day plaque was won by the Michiana Radio Club station, AB/9. Omission in last month's report was the Field Day message from LIT/9 to the SCM. MUR has resigned as EC for Wayne County and has been replaced by GOS. 6AMU is new at Bunker Hill AFB. DOK is moving his shack into the basement. CC is putting up a 10-meter close-spaced beam. The only BPL for the month is NZZ. No report has been received from Peggy, JUJ, for the third consecutive month. Traffic: W9NZZ 1334, TT 293, UQP 140, EHZ 136, WRO 113, ZYK 97, NTA 91, TQC 75, ZRP 36, BKJ 35, CMT 35, ZIB 21, CTF 15, DOK 14, GDL 11, STC 9, AQR 8, BDP 6, QR 6, FGX 5, FJS 5, PPS 5, CC 4, DGA 4, HSG 3, EQO 2, NII 2, VNE 2, AYD 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAMs: ESJ and GMY. RMs: IXA and RTP. Nets: WIN, 3685 kc., 7 P.M. daily; BEN, 3950 kc., 6 P.M. daily; WPN, 3950 kc., 1215 Mon.-Sat., 0930 Sun. Wisconsin mobile and c.d. frequency: 29,620 kc. KQB has new SX-96 and plans a 40-meter vertical and a coax-fed dipole on 80 meters for antennas. WN9NOD is new in West Bend. RQK is having FB results with 15-watt mobile on 75 and 10 meters. KHR is running 40 watts to a 6BQ6 final and has a Super Pro receiver. JEF won the Green Bay Mike & Key Club 40 meter contest with 187 cards in 2 months. UTV got tangled up with 6UTV during the CD Party on the same frequency. DIK made 45,175 points in the CD Party. SZR sends his report from Seattle, Wash., while on vacation. The NWRC held its annual picnic July 24th at Brunet Park, Cornell. KN9ASH, KN9AQS, and KN9AQT are new calls at Wausau. UOI mobiled to Colorado. BXJ caught the s.s.b. bug from GRX. YOX is building a 60-watt mobile. SIE is on with a Ranger. FCB received his General Class ticket and will be going to U. of W. this fall. YOS and YOX will attend U. of W. Ext. in Milwaukee this fall. ITI has mobile in the car now. New certificates (WIN) were issued to YZA, IXA, CCO, BVG, PVN, KQB, and DAJ. Point Radio Amateurs furnished communications for the Lions Parade and American Legion Picnic. AJU reports WPN cleared 145 messages with 661 QNI in June. HEF and ZLD have new DX-100 transmitters. EFF joined the Air Force. HAH put up a 40-meter ground plane. WYE has a new three-element beam on 6 meters. ZDU has a new B&W 5100. VOD is going to a kw. UDK is building a dual 20- and 40-meter beam. KN9ASW has been operating ODD at Marquette U. HDV has been active on 14-Mc. s.s.b. UCO, OMT, and DWT are new members of the Green Bay 28-Mc. Net. OMT qualified for RCC. KXK received a QSL from FG7XB making 137 confirmed. A Wisconsin section meeting has been scheduled for 3 P.M. in connection with the Mancorad Fall Hamfest in Manitowoc Oct. 29th. Plan now to attend. Traffic: (July) W9KQB 91, SAA 58, BVG 32, RQK 20, YZA 20, RQM 13, KHR 11, JEF 10, RKP 9, DIK 7, FFC 7, OVO 7, UTV 7, CCO 6, GMY 6, SZR/9 6, AJU 2, IAL 1. (June) W9RTP 46, BVG 34, UIM 17, IXA 14.

(*Continued on page 84*)

ILLINOIS QSO PARTY
October 21-30, 1955

A state-wide contest, in which all Illinois amateurs are eligible to take part, will be held from 12:01 A.M. October 21st to 11:59 P.M. October 30th.

Rules: (1) Object is to QSO as many Illinois stations in as many of the 103 Illinois counties as possible.

(2) Only one contact with a given station may be counted unless the station moves to a different county.

(3) Any and all amateur bands and any mode of transmission may be used.

(4) A contact shall consist of the two-way exchange of signal reports and county names.

(5) Multiply the number of contacts by the number of Illinois counties worked to determine final score.

(6) Valid contest entries must list all stations worked together with their county locations and should be submitted to the Illinois SCM. They must be postmarked not later than November 15, 1955.

About "S" Meters

WE ARE all familiar with the "S" meter calibration on communications receivers and know that indications on that meter present a measure as to the strength of signal being received in comparison with other signals. This is the basic purpose of the meter and in that function it serves well, but what about the calibration of that meter as far as its being a standard is concerned?

ALTHOUGH there are occasional departures, the standard S-unit interval has come to be established at about 6 db. If you dig into the subject a little further, you will come up with the fact that a signal indicating S-9 on one receiver will not necessarily be S-9 on another.

THE "S" meter readings can be quite different even on identical receivers run off the same production line unless some special care is employed during manufacture. Actually, "S" meter readings between different makes of receivers are about as standard as a yard determined by the stride of a six foot man and a four foot man.

BASICALLY an "S" meter is a current reading device connected in some point of the receiver circuit controlled by AVC where a change in received signal strength will cause a change in current flow. Whatever will affect that circuit will also affect the current readings.

WE AT Hallicrafters employ a 0-5 MA meter connected in series with the B+ to an RF or IF tube. This is a very effective circuit which will immediately indicate changes in plate current caused by a variation of AVC voltage at the grid of the tube according to the strength of the signal being received.

IF A conventional meter is used in this circuit, the meter calibrations would be somewhat confusing as they would be backwards. To avoid complex bridge network circuitry we simply purchase our "S" meter movements with the springs reversed, so with no current through the meter, the pointer rests at the right hand side of the scale.

ALTHOUGH all tube manufacturers fabricate tubes to certain industry standards, there still will be differences in the actual operating characteristics of each tube. Tolerances of tubes and other parts in the communications receiver may also be affected by aging and other conditions to which the receiver is subjected during its lifetime. Therefore, the "S" meter readings will be affected also.

IT IS obvious that with a poor antenna the signal strength on a given signal will be less than the same signal on a better antenna. Hence, an "S" meter report should be considered in view of the antenna used. To provide some standardization, we at Hallicrafters have assumed that a 50-microvolt signal at the antenna posts on the 80 meter band is an S-9 signal. To afford more versatility to the meter, on our large sets we also provide a second scale calibrated in microvolts. On certain larger receivers it is possible to hold this calibration fairly close throughout the tuning range. However, production variations in tube Gm preclude extreme accuracy in calibration and, therefore, don't consider your receiver as a Standard Field Strength Meter.

AGING of the receiver and resultant changes in component values and operating characteristics may affect the original factory set-up of the "S" meter, thereby making it impractical to use an "S" meter as a standard of measurement. But even though the "S" meter cannot be used as a measurement standard unless calibrated frequently from a local standard signal source, it is still an invaluable aid and helpful tool in the operation of an amateur radio station.

— Tony Dambrauskas, W9GXH

Bill Halligan Jr. W. J. Halligan W9AC for **hallicrafters**

New Heathkit VFO KIT

MODEL VF-1

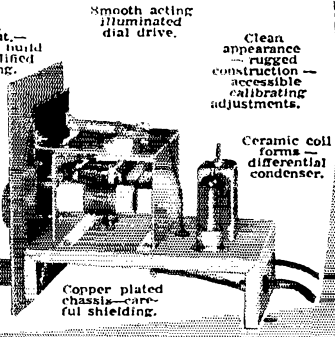
$19.50

Ship. Wt. 7 lbs.

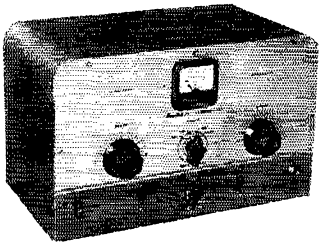
- Smooth acting illuminated and precalibrated dial.
- 6AU6 electron coupled Clapp oscillator and OA2 voltage regulator.
- 10 Volt average output on fundamental frequencies.
- 7 Band calibration, 160 through 10 meters, from 3 basic oscillator frequencies.

Here is the new Heathkit VFO you have been waiting for. The perfect companion to the Heathkit Model AT-1 Transmitter. It has sufficient output to drive any multi-stage transmitter of modern design. A terrific combination of outstanding features at a low kit price. Good mechanical and electrical design insures operating stability. Coils are wound on heavy duty ceramic forms, using Litz or double cellulose wire coated with polystyrene cement. Variable capacitor is of differential type construction, especially designed for maximum bandspread and features ceramic insulation and double bearings.

This kit is furnished with a carefully precalibrated dial which provides well over two feet of calibrated dial scale. Smooth acting vernier reduction drive insures easy tuning and zero beating. Power requirements 6.3 volts AC at .45 amperes and 250 volts DC at 15 mills. Just plug it into the power receptacle provided on the rear of the AT-1 Transmitter Kit. The VFO coaxial output cable terminates in plastic plug to fit standard ½" crystal holder. Construction is simple and wiring is easy.



Heathkit AMATEUR TRANSMITTER KIT



MODEL AT-1

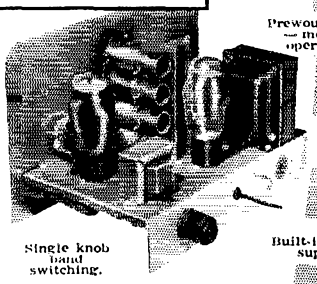
$29.50

Ship. Wt. 16 lbs.

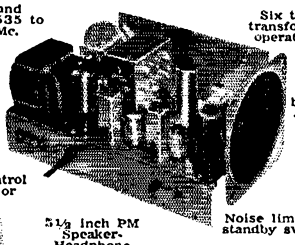
SPECIFICATIONS:

Range 80, 40, 20, 15, 11, 10 meters.
6AG7 .....Oscillator-multiplier.
6L6 .....Amplifier-doubler
5U4G .....Rectifier.
105-125 Volt A.C. 50-60 cycles 100 watts. Size: 8⅛ inch high x 13⅛ inch wide x 7 inch deep.

Here is a major Heathkit addition to the Ham radio field, the AT-1 Transmitter Kit, incorporaring many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, stand-by switch, key click filter, A. C. line filtering, good shielding, etc. VFO or crystal excitation—up to 35 watts input. Built-in power supply provides 425 volts at 100 MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis, and detailed construction manual.

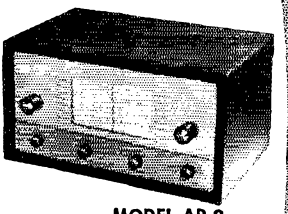


Heathkit COMMUNICATIONS RECEIVER KIT



SPECIFICATIONS:

Range.....535 Kc to 35 Mc
12BE6 .....Mixer-oscillator
12BA6 .....I. F. Amplifier
12AV6 Detector—AVC—audio
12BA6 ....B. F. O. oscillator
12A6.....Beam power output
5Y3GT .....Rectifier
105-125 volts A.C. 50-60 cycles, 45 watts.



MODEL AR-2

$25.50

Ship. Wt. 12 lbs.

A new Heathkit AR-2 communications receiver. The ideal companion piece for the AT-1 Transmitter. Electrical bandspread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

CABINET:

Proxylin impregnated fabric covered plywood cabinet. Shipg. weight 5 lbs. Number 91-10, $4.50.

HEATH COMPANY
BENTON HARBOR 9, MICHIGAN

New HEATHKIT DX-100

PHONE AND CW TRANSMITTER KIT

MODEL DX-100

Shpg. Wt. 120 lbs.

$189.50

Shipped motor freight unless otherwise specified. $50.00 deposit with C.O.D. orders.

- R.F. output 100 watts Phone, 125 watts CW.
- Built-in VFO, modulator, power supplies. Kit includes all components, tubes, cabinet and detailed construction manual.
- Crystal or VFO operation (crystals not included with kit).
- Pi network output, matches 50-600 ohms non-reactive load. Reduces harmonic output.
- Treated for TVI suppression by extensive shielding and filtering.
- Single knob bandswitching, 160 meters through 10 meters.
- Pre-punched chassis, well illustrated construction manual, high quality components used throughout—sturdy mechanical assembly.

This modern-design Transmitter has its own VFO and plate-modulator built in to provide CW or phone operation from 160 meters through 10 meters. It is TVI suppressed, with all incoming and out-going circuits filtered, plenty of shielding, and strong metal cabinet with interlocking seams. Uses pi network interstage and output coupling. R.F. output 100 watts phone, ... 125 watts CW. Switch-selection of VFO or 4 crystals (crystals not included).

Incorporates high quality features not expected at this price level. Copper plated chassis—wide-spaced tuning capacitors — excellent quality components throughout—illuminated VFO dial and meter face—remote socket for connection of external switch or control of an external antenna relay. Preformed wiring harness—concentric control shafts. Plenty of step-by-step instructions and pictorial diagrams.

All power supplies built-in. Covers 160, 80, 40, 20, 15, 11 and 10 meters with single-knob bandswitching. Panel meter reads Driver I_P Final I_G, I_P, and E_P, and Modulator I_P. Uses 6AU6 VFO, 12BY7 Xtal osc.-buffer, 5763 driver, and parallel 6146 final. 12AX7 speech amp., 12BY7 driver, push-pull 1625 modulators. Power supplies use 5V4 low voltage rect., 6AL5 bias rect., 0A2 VFO voltage reg., (2) 5R4GY hi voltage rect., and 6AQ5 clamp tube. R.F. output to coax. connector. Overall dimensions 20⅞" W x 13¾" H x 16" D.

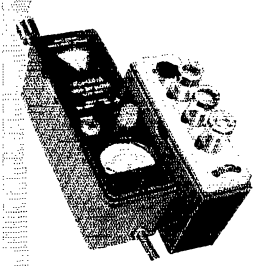
Heathkit ANTENNA COUPLER KIT

MODEL AC-1

$14.50 Shpg. Wt. 4 lbs.

Poor matching allows valuable communications energy to be lost. The Model AC-1 will properly match your low power transmitter to an end-fed long wire antenna. Also attenuates signals above 36 Mc, reducing TVI. 52 ohm coax. input—power up to 75 watts—10 through 80 meters—tapped inductor and variable condenser—neon RF indicator—copper plated chassis and high quality components.

Heathkit GRID DIP METER KIT



MODEL GD-1B

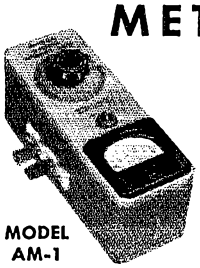
$19.50 Ship. Wt. 4 lbs.

The invaluable instrument for all Hams. Numerous applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, design procedures, etc. Receiver applications include measuring C, L and Q of components—determining RF circuit resonant frequencies.

Covers 80, 40, 20, 11, 10, 6, 2, and 1¼ meter Ham bands. Complete frequency coverage from 2—250 Mc, using ready-wound plug-in coils provided with the kit. Accessory coil kit, Part 341-A at $3.00 extends low frequency range to 350 Kc. Dial correlation curves furnished.

Compact construction, one hand operation, AC transformer operated, variable sensitivity control, thumb wheel drive, and direct reading calibrations. Precalibrated dial with additional blank dials for individual calibration. You'll like the ready convenience and smart appearance of this kit with its baked enamel panel and crackle finish cabinet.

Heathkit ANTENNA IMPEDANCE METER KIT



MODEL AM-1

$14.50 Shpg. Wt. 2 lbs.

Use the Model AM-1 in conjunction with a signal source for measuring antenna impedance, line matching purposes, adjustment of beam and mobile antennas, and to insure proper impedance match for optimum overall system operation. Will double, also, as a phone monitor or relative field strength indicator.

100 μa. meter employed. Covers the range from 0 to to 600 ohms. Cabinet is only 7" long, 2½" wide, and 3¼" deep. An instrument of many uses for the amateur.

HEATH COMPANY

A SUBSIDIARY OF DAYSTROM, INC.

BENTON HARBOR 9, MICHIGAN

(Continued from page 80)

DAKOTA DIVISION

NORTH DAKOTA — SCM, Elmer J. Gabel, WØKTZ — The 'Phone net meets on 3845 kc. at 6 P.M. Mon. through Sat., the c.w. net on 3670 kc. at 6:30 P.M. Mon., Wed., and Fri. Let's dust off those "bugs" and give AOX a workout. The Red River Radio Amateurs of Fargo are working on next year's Hamboree. It's a new YL in the home of ODX, born July 12th. Congratulations to Tom and his XYL. Tom is one of the few North Dakota hams on s.s.b. He runs an 813-10-A rig. KØATK has a new HQ-140X and found time to install the keying kit in his Ranger. VCQ is building a 14-Mc. beam. MXD back from the Park in July, is recuperating from a fall. In his words, he "missed a peak while playing mountain goat." DX-100s on the air and assembly line: SDN, BFM, and DIV. New hams: KØBWY, QOB's XYL, KØCBD, and CBE at Hillsboro, KNØCCA at Bismarck. Traffic: WØKTZ 30, VCQ 26, UBG 22, KLP 21, OWY 20, HVA 15, MQA 9, KØATK 8, WØOAB 4, BFM 3, GJJ 3, RAR 3, KØAIP 2, WØBEA 2, DNJ 2, PHC 2, PMZ 2.

SOUTH DAKOTA — SCM, Les Price, WØFLP — The emergency net is progressing under the able leadership of OXC, of Pierre, and has all the new 140X receivers and part of the BC610s that will play so vital a part in the South Dakota Emergency Net. The South Dakota Convention was held at Yankton, S. Dak., Sept. 3rd and 4th. LKO, OSQ, and QPC returned after three months on the Island of Guam, where contact was kept with KØFCE, at Ellsworth Air Force Base. Rapid City, on 20 meters. QKV has a new QTH with 900-ft. long wire. We have some very welcome new hams in Ranid City. They are KNØCDQ, the XYL of KAS, KNØCDN, the XYL of TOY, and KNØCDO, the XYL of QEK. Rapid City's youngest ham, KNØAKB, was eleven on Sept. 1st. Bill and Joan Drevedahl, KAS and CDQ, are leaving for New Mexico. A report on the section c.w. net will be welcomed next month. The NJQ Net reports attendance of 17 for July and some traffic handled. Traffic: WØGDE 88, OII 72, SCT 42, SMV 31, RRN 21, BLZ 19, DVB 14, QKV 7, RSP 4, GWS 3, WBW 2.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, ØGGQ. SEC: GTX. RMs: KLG and DQL. PAMs: JIE and UCV. The ARRL has approved the Stillwater High Radio Club as a club affiliate. For information about the time and date of club meetings contact Bob Watson, YOC, who lives at 1022 So. Fourth St., Stillwater, Minn. KLG has been appointed assistant manager of the Tenth Regional Net. RLQ and TQA made BPL for July. TPN has moved to Memphis, Tenn. GFR has been mobiling up in Canada on week ends and checking into the 'phone net. TUS has been operating on an average of 6 to 7 hours a day. QDP now has WAC. GBG was in the hospital in St. Paul and YUN in the hospital in Crosby. BHY also is in the hospital in St. Paul. We hope that when you read this Frank, Clyde, and Swanny are well on the road to recovery. VBD has been operating portable at Lake Washington. In July picnics were held by the Minneapolis Radio Club, the St. Paul Radio Club, the St. Cloud Radio Club, and the Arrowhead Radio Club of Duluth, held at Grand Marais. Traffic: WØHFY 244, KLG 210, TUS 164, TQA 108, RLQ 107, KJZ 89, SYD 86, RVO 75, WMA 54, LUX 51, LST 46, WVO 46, OHS 31, VRK 31, KFN 27, QDP 27, VBD 27, OSJ 24, RLI 23, QNY 21, UNG 21, VXO 18, MBD 16, NTV 15, BUO 13, MXC 12, TQQ 10, GTX 9, VOA 9, FCU 6, TKX 6, RLQ 5, VEP 5, QVR 4.

DELTA DIVISION

ARKANSAS — SCM, Owen G. Mahaffey, W5FMF — This section of the country has been almost too hot for much ham activity. HZU is a new ham in Rogers. K5AZG is a new ham in Springdale. BCZ has a new 75-meter 'phone rig on in Little Rock. SXM is a new ORS. EUQ is building transmitters for 6 and 2 meters, also a 40-meter mobile rig. He reports having received QSLs from 2EUQ, 8EUQ and 9EUQ. Get the rest of them, Bob. All Northwest Arkansas hams take notice: How about a Northwest Arkansas Amateur Radio Club? Let's hear from you. Traffic: (July) W5VAA 20, EUQ 4, ZJI 4. (June) W5CAF 53, ZJI 2.

LOUISIANA — SCM, Thomas J. Morgavi, W5FMO — BMD reports that a gathering of the members of the Ark-La-Tex Teenage Net is in the planning stage for Shreveport. This net meets on 3820 kc. at 4 P.M. CST on Mon., Wed., and Sat. KN5AIE has been burning up the Novice c.w. band. He took the test and is expecting his Conditional Class license. CEW worked two new countries for a total of 201 worked and 192 confirmed. TRQ now has the new 1625 final on 75-meter 'phone and 40-meter c.w. The Lake Charles Radio Club is holding transmitter hunts every three weeks with about 15 mobiles taking part. ZSP has moved to a new QTH and expects to have antennas up soon and get back on the air. FKA is back from a trip up Jersey way. SQI received his WAS and WAC certificates. He worked 11 countries in one night with 100 watts and a 33-foot vertical on 20 meters. NDV is interested in starting an 80-meter net in Louisiana. All interested should get in touch with him. Our heartfelt sympathy to VEU on the loss of his XYL

(Continued on page 86)

THE NEW PRO-310

If you want a really fine receiver... one that will give you finer performance beyond the others you've operated, you want the new PRO-310.

Frequency readings to 1 part in 5000; continuously calibrated bandspread *over the entire range;* single sideband operation; exceptional stability; high image rejection; and many other fine features all add up to finer listening whether you're a DX enthusiast, CD volunteer, or just a regular band-prowler.

Three years of intensive design and research engineering went into this rig plus the Hammarlund "know-how" developed by making thousands of sets for government service.

So, if you are one of those who demand the finest performing equipment available, look the new PRO-310 over. If your dealer doesn't have one now, he'll have one soon. Get specs and other information either from him or by writing The Hammarlund Manufacturing Co., Inc., 460 West 34th Street, New York 1, N. Y. Ask for Bulletin R-10

THE *Heart* OF THE **PRO-310**

Newly developed front-end with three tuned circuits but only one RF tube amplifier provides remarkable selectivity and ultra-high signal-to-noise-ratio.

Since 1910 HAMMARLUND

in July. The Ouachita ARC Field Day was a big success with CNG, MWE, EGK, CQZ, EB, POB, FSN, YAD, UDX, PZL, and PVE participating and making 469 contacts. Looks like HEJ is headed for s.s.b. ARRL CD appointees, please check the expiration dates on your certificates of appointment and mail to the SCM for renewal. Traffic: K5FFA 485, W5NDV 72 EZN 16, FMO 14, YSN 13, UGJ 12, SQI 8, CEW 2.

MISSISSIPPI — SCM, Julian G. Blakely, W5WZY — One of the hottest news items of the season is that JHS is taking to single sideband. YFJ reports 30 full AREC members for the Gulfport-Biloxi Area, with 100 supporting stations on 29,600 Mc., with circuits into EAN, CAN, and PAN. BSA passed up a choice QTH in Greenville when he saw YAR's antenna broadside from the porch. He chose another location and is in a triangle formed by YTZ, KFF, and DQY. Hi. WZY and WZZ are in the process of changing their QTH and will be off the air until the new antenna farm is ready. We are pleased to hear that VQE is doing well after a recent operation. GUC has dropped the "N," 9LBO (ex-5BUC) is Korea-bound. The XYL is carrying on with WN5BPZ. KN5DKK was heard portable from GAFB. K5AYP's boys now are KN5BAE and KN5BAF. Traffic: W5VME 122, JHS 60, EDE 31, EWE 22, YFJ 20, RIM 14, YAR 13, BTM 10, WZY 10, GDW 8.

TENNESSEE — SCM, Harry Simpson, W4SCF — SEC: RRV. PAM: PFP. RM: WQW. The Memphis Club's Ham School was a great success, with 63 new Novices in that area! Total attendance for Novice and General Class instruction was 119. The School was under the capable direction of DCH, assisted by BCA, CLL, FRB, SCF, WBK, and WTJ. If other clubs are interested in information on this project, contact any of the above. PL still is under the weather. CLQ is hospitalized with a fractured disc, DVM had a parasitic appendix removed, and VZU is having a hospital check-up. As you read this, the e.w. net will be in full swing under the able leadership of WQW. JVM reports good newspaper and TV publicity for hams in the Chattanooga Area. UWA, Ky., informs us that WJH has a brand-new XYL. TZB is moving to Johnson City but will be back in Knoxville for school. K2KML is a new Tennessee resident. FLW reports 6 meters was open on all but two July days. DMU reports the Davidson County 10-meter Net now has 39 members. WQT made 69,390 points in the CD Party. FEO, Bays Mountain RC secy., sends a nice report. PVD received a sticker from 110 countries. NLJ sends a fine report from the Smoky Mountain ARC and says 16 members operated the club station, OLB, during Hillbilly Home-Coming. He reminds us that the 2-meter net meets Thurs. at 1930 EST on 145.2 Mc. Members of the Frye Amateur Radio Club this summer arranged amateur communications to a camp for diabetic children. It was beyond telephone areas but tied in by several skeds a day from Jack Reeves, IBB, to Vern Etter, IIB. Traffic: W4HIH 154, OGG 149, PQP 120, UWA 61, TZD 59, WQW 52, VJ 40, BQG 35, TZB 33, HLR 25, SCF 23, PAH 16, HUT 14, YMB 13, UVP 12, JVM 7, HSX 3, DMU 2, CLQ 1, CXY 1, DCH 1, FLW 1, FRB 1, LRO 1, PVD 1, WQT 1.

GREAT LAKES DIVISION

KENTUCKY — SCM, Robert E. Fields, W4SBI — SEC: CDA. RM: KKW. Acting PAM: NIZ. In spite of the hot summer months, traffic reports show a marked increase. The latest list of nominees for KPN certificates are as follows: UVJ, UWA, ZCI, FQT, AVJ, HTB, and KBY, making a total of 58 members on the roster. July statistics are as follows: 31 sessions, 420 total call-ins, 13.51 stations per session, 72 total traffic, 2.3 messages per session. WNH is running skeds on 2 meters, but still working on the 500-watt final for 2 meters. AIT has completed construction of a DX-100. KFI/M, not to be outdone, is handling traffic from his mobile station. JSH, Fayette County EC, reports 14 full and 1 supporting AREC members. RM KKW reports the following: 55 sessions of the KYN, 37 active stations, traffic total 204, average 3.7 messages per session. Kentucky has a combined KYN-KPN bulletin, thanks to CDA, NIZ, RPF, KKW, SUD, BAZ, SBI, and others. Please note than an official report from ARRL on Field Day activities places 4FU in third place for Class A, with a score of 18,009. He is a member of the Ohio Valley Amateur Radio Assn. Floyd County hopes to have an amateur on the air soon as SBI recently conducted a Novice Class exam for Wade Moore of Prestonsburg. Traffic: (July) W4QCD 193, KKW 166, SBI 87, CDA 66, NIZ 63, UWA 61, HOJ 56, ZDB 41, JSH 35, HSI 29, ZLK 25, BZY 20, ZDA 17, KFI/M 14, RPF 14, SUD 10, IAY 7, K4AIT 6, W4OMW 6, KRC 5, SZB 5, JCN 3. (June) W4NIZ 106.

MICHIGAN — SCM, Thomas G. Mitchell, W8RAE — Asst. SCM: 'Phone, Bob Cooper, 8AQA; Asst. SCM C.W.: Joe Beljan, 8SCW. SEC: GJH. You will note by the traffic totals that this month was probably the low point of the year for activity. Next month should see us back up there in the running and all fired up for traffic, DX, SS, and what have you. About the time this write-up is in your hands, the QMN will be back on the winter schedule with ELW as the new RM. Our thanks to URM for the fine RM job and our best wishes to ELW in taking over. The new schedule will start Oct. 3rd with NUL in charge of the

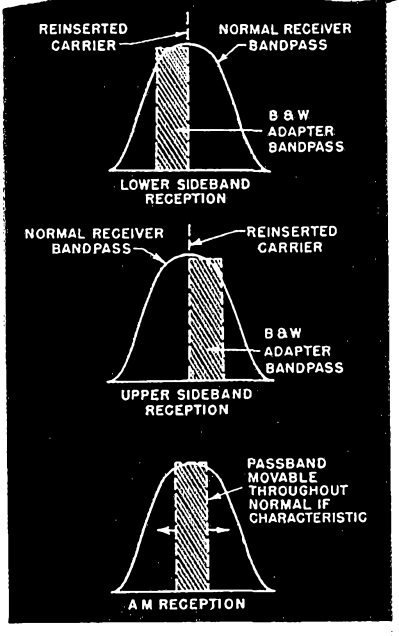
(Continued on page 88)

HOW TO CONVERT YOUR RECEIVER

FOR

- True single-signal reception on CW
- Selective sideband reception on AM
- Superb performance on SSB

Model 370 B&W Single Sideband Receiving Adapter



Relation of Model 370 passband to that of station receiver for various positions of the function switch.

Here . . . *for the first time* . . . is a truly selective bandpass type adapter for bringing the performance of yesterday's receivers up to the requirements of tomorrow! In addition to superlative performance on SSB, this unit offers true single-signal CW reception and selective sideband reception on AM phone signals.

Designed by B&W's single sideband engineering group, the Single Sideband Receiving Adapter can be used to convert *any* receiver having an intermediate frequency between 450 and 500 kc. On AM reception, B&W's exclusive "Gating Control" permits tuning over a narrow frequency range without disturbing the main receiver tuning. Sharp skirt selectivity on CW, AM phone, or SSB is assured by an integral 20 kc toroidal type band-pass filter with 3 kc passband. Signals outside passband are attenuated a minimum of 50 db. Easy to install and adjust, the unit is entirely self-contained in an attractive cabinet complete with power supply and 7" dynamic speaker.

See it at your distributors' or write for literature

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237 FAIRFIELD AVENUE, UPPER DARBY, PA.

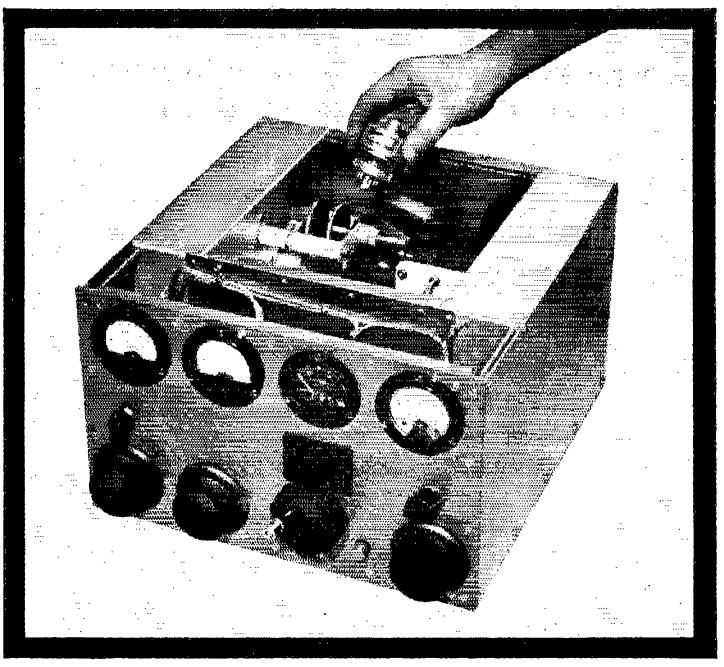
:30 net and ELW the 6:30 session. Th THN will continue as last year. QMN certificates were issued to the following stations for the '54/'55 season: SIB, SRK, WGU, and HSG. Some of the gang still are sending clippings and reports about the successful Field Day last June, so it still must be worth talking about. According to the latest *MOCD News Letter*, the RACES plan for Michigan has been printed and circulated to the c.d. organization. Gary will do likewise as soon as suitable meetings can be scheduled to discuss details with the Area ECs and their lower echelons. From this, it looks like this winter will see the RACES plans go into effect. Keep the AREC applications coming in to Gary or myself. Remember the Central Division ARRL Convention in South Bend on Oct. 15-16. Let's visit our neighbors and join the fun. I'll see you there. I'm sorry to have missed the picnics because of vacation and that's why this report is a bit short. Traffic: (July) W8NUL 95, NTC/8 69, QQO 65, ILP 58, NOH 43, IUJ 38, HKT 30, RTN 29, SJF 27, FX 25, SCW 22, IV 14, RAE 12, PHM 11, HSG 10, MGQ 10, FGB 8, PDF 7, TBP 3, ZHB 3, DSE 2. (June) W8RTN 25, KID 10.

OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: J. C. Erickson, 8DAE; W. B. Davis, 8JNF; and E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: EQN and HUX. The Buckeye Net is working in conjunction with the W8 QSL Manager, NGW, in transmitting reminder messages to W8 amateurs who have QSL cards but no envelopes at the Bureau. HOH was heard in Oklahoma on 144 Mc. MGC has a new all-band V-37 antenna. PS informs us that three new Novices are in Hubbard. WN8UJG recently suffered a severe heart attack. May he have a speedy recovery. BOJ erected new antennas for all bands, including a 20-meter beam. The Toledo group had its best Field Day with 138 registering at the site. GZ, our outstanding OO, reported 34 amateur rule infractions during the month of July. He also identified three commercials operating in the 20-meter amateur band. JHH had the misfortune of having his station struck by lightning. We're pleased to learn that LMB is doing nicely following surgery. AL reports RNL, SWB, TNK, TGZ, and UNE passed their General Class exams. QXH received his 20-w.p.m. CP sticker. DSX, 8RN Manager, states that Ohio was represented 37 times during July. Correction: The NVJ mentioned in August *QST* should have been MVJ. Toledo's *Shack Gossip* relates that new editors will replace HUX and HWX. These gals have done a splendid job during the past several years even to the extent of publishing tempting recipes. WE and OTK (OM and XYL) are moving from Findlay to Van Buren. Hamilton's *Feedline* mentions that OUD has a new 20-meter beam; ex-UJF is now living in Lake Success, N. Y.; RZA recently was released by the Air Force; and WN8CYD is the newest licensee in town. The Canton group experienced its best Field Day and plans already are being made for 1956. We regret to record the passing of UZU, past-president of the Canton Amateur Radio Club. The Hocking Valley *Key Klix* reports that the following are members of the Club's 'phone net: HPP, LGR, NAJ, GXR, DCX, RRQ, CSH, and EEQ. HPP is NCS. Springfield's *Q-5* informs us that Field Day was quite successful despite a shortage of operators and heavy rain. The OVARA'S *Ether Waves* lists the Club's top DX men regarding countries worked: JIN-250, BRA-248, BTI-246, FGX-239, JJW-215. Not bad for a small town! Eastern Ohio's *Ham Flashes* states that QYR's son received the call WN8CDX; HLX, of Niles, has a new 60-foot tower; JOD is attached to WFMJ's staff: EKX, MJI, and MUX are attending Valparaiso Tech.; HDC has moved from Youngstown to Leetonia; WOL, of Warren, is now on 6 meters; WN8WAN is the newest call in Ashtabula; KA2WC's home is in Damascus, Ohio; and the Youngstown-Mahoning County C.D. drills are being held Mon. evenings on 29.5 Mc. Traffic: (July) K8FCJ 353, W8DAE 298, MVJ 263, AMH 151, ARO 139, IIR 104, AL 46, AJW 45, HNP 45, RO 45, HPP 32, AJH 22, QXH 22, WLM 21, HUX 16, BEW 12, JMD 12, WN8WTO 12, W8QHW 11, LMB 9, EQN 8, ET 8, GZ 8, PBX 8, PGQ 8, PIJ 8, CTZ 7, HFE 6, OPX 5, LGR 4, RZ 3, WYL 3, SBH 2, STR 2, URN 2, VTP 2. (June) W8ZAU 9, PBX 8, ILC 6, MGC 6, QHW 3, DG 2.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — SEC: RTE. RMs: K2BJS and TYC. PAMs: GDD and IJG. Because of severe sun poisoning of both feet, your SCM was unable to make the June report in this column. I am now fully recovered and spending my vacation as I write this on a beautiful northern lake. K2EIU will attend R.P.I. this fall and will be active from SZ. K2JWM will be portable in Ridgefield, Conn., and with the help of IRT will keep regular skeds with OM HM. K2HVN will vacation in Maine. Bill will take along his new modulator and 25-watt rig. K2GMV will tour Europe and will try to meet some of the boys he has worked over there. K2IKH passed his General Class exam and is busy setting up shop. K2LAD recently got his General Class and driver's licenses. Put 'em together and you'll find a 10-meter mobile rig in Hank's bomb. K2EDH has a new three-element

(*Continued on page 90*)



A PAIR OF EIMAC 4X250B's—
the easy, modern approach to a compact one-kilowatt CW and SSB rig

You'd be amazed how easy it is to build a one-kilowatt rig using Eimac 4X250B radial-beam power tetrodes. Each of these bantam tubes handles 500 watts input with only 2000 volts on the plate. A pair in the final amplifier provides a kilowatt with the power supply and transmitter combined taking only a fraction of the space required for an old-fashioned kilowatt rack.

The straight forward modern approach afforded by 4X250B's allows simple circuit design. Driving power is so low that annoying TVI-producing harmonics generated in the driver stages are minimized. Low feedback capacitance makes stabilization of the amplifier stage easy.

The versatile 4X250B can supplant the famous 4X150A, and it offers the advantages of easier cooling and higher power. No forced-air cooling is required during stand-by periods if convection air is provided properly.

For further information on the new 4X250B, contact our Amateur Service Bureau or visit your Eimac distributor.

TYPICAL OPERATION

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(Frequencies to 175mc per tube)

	Class-C CW or FM Phone	Class AB_1 RF Linear
D-C Plate Voltage	2000v	2000v
D-C Screen Voltage	250v	350v
D-C Grid Voltage	—90v	—50v
D-C Plate Current	250ma	250ma*
Zero Sig D-C Plate Current	— —	100ma
D-C Screen Current	25ma	15ma*
Peak RF Grid Voltage	115v	50v*
Driving Power	2.8w	0w
Plate Power Input	500w	500w*
Plate Power Output	410w	325w*

*Max Signal

An Eimac air system socket with built-in screen by-pass condenser provides optimum amplifier circuit stability and cooling arrangements for the 4X250B.

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beam on 14 Mc. Jon has credit for WAC and eighty countries. Congrats to the 2RN 'Phone Net; the gang celebrated its second birthday with a picnic. LRW will fire up his new 20A and 500-watt linear amplifier, and to make things complete Marce will include more 50-foot masts and antennas for all bands including 144 Mc. this fall. RTE has returned from his tour of Europe. We trust that Ted has enjoyed a well-earned vacation. K2EHI has a new Elmac and receiver for the mobile. Members of the Ulster County Mike and Key Club assisted the Hudson Valley Firemen's Convention during a recent parade held in Kingston. Mobile communications were furnished by VAQ, SIF, PGE, and YOK. K2DRV acted as control from C.D. Headquarters station K2JBH. K2EKE has a new 813 final. SSV and K2CJW have new Heathkits (DX-100) ready for the fall. Traffic: (July) W2LRW 34, K2EDH 31, EKE 29, JWM 20, EHI 20, BE 6. (June) K2JWM 23, EDH 19, EKE 17.

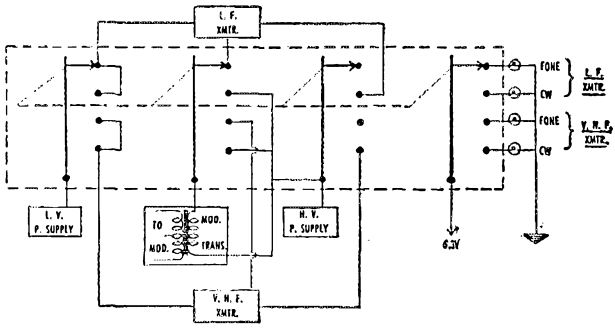
NEW YORK CITY AND LONG ISLAND — SCM, Carleton L. Coleman, W2YBT — Asst. SCM: Harry J. Dannals, 2TUK. SEC: ADO. PAM: NJL. RM: VNJ. It has been necessary for LPJ to resign as RM for 2RM because his job now requires more traveling. The section will miss his excellent traffic work and we hope he will be able to return to the Net soon again. ADO reports that 10-meter AREC activities were almost exclusively devoted to hidden transmitter hunts during the summer months. JOA reports that TAN (3630 kc. at 1830 EST/EDST) invites old-timers as well as teenagers to participate. NJL and his XYL, KN2JHQ, attended the NYSPETN picnic at Syracuse. K2GHS/1 kept up his Observer work while at camp in Becket, Mass. K2JEB is now pushing a big signal on the NLI Net with a 4-125A final. LGK reports that the Tu-Boro Club is planning another mobile "caravan" for early October. Despite the summer recess, AEE remained active in the NLI Net, with K2JFZ at the mike and key. IVA, PF's son, traveled in Europe on a motor scooter and visited some of the DX stations. K2DDK works 80 meters with Lysco 600S and 75A-1. He would like to know if anyone is interested in playing chess on 80-meter c.w. K2ICU now has a 300-watt rig. K2AVB completed a 6-meter transmitter for fixed or portable operation. K2EQH has broadened his bulletin work to include 2 meters as well as 20. K2GRE now is on 2 meters with an 832A rig. K2AMP has the Amityville Memorial HS station, K2GKQ, ready to participate in the Suffolk County RACES program. Ex-JXM, now 5JXM in Oklahoma, is active on the OLZ Net and sends regards to the NYC-LI gang. JGV/1 found DX-hunting good from his summer camp location in Massachusetts. ION/2, at Hicksville, is running 125 watts on 144 Mc. JOA and K2DDK are trying for YLCC. The section had a good turnout in the July 'phone and c.w. CD Parties. Let's see even more activity in October! GXC vacationed in W3-Land and found that his low power really gets out with a good antenna. KN2PBF is a new call in Oceanside. NIP qualified for a net certificate for his activity in NYSPETN. ADO's XYL now is active on 144 Mc. with a 2E26 rig. With this column, TUK concludes his work as Asst. SCM. It has been a pleasure assisting YBT in his work and the experience will help me to serve the section better in the future. Best wishes to Carl as he leaves office. These are his parting words to the section: "This is the last column with YBT as SCM. TUK takes over for the next two years. Many thanks and my sincere appreciation for your coöperation during my term. May I ask your assistance likewise for the new SCM. 73." Traffic: (July) W2JOA 184, JGV/1 116, WFL 96, NJL 70, K2GHS/1 54, W2IVS 41, K2JEB 29, W2LGK 16, AEE 14, TUK 10, K2AMP 7, KXZ 7, W2PF 6, VDT 6, GXC 4, K2ABW 2, DDK 2, HYK 2, ICU 2. (June) W2WFL 83, GXC 49, MUM 25, K2GHS/1 19, W2AEE 15, VDT 13, K2GRE 6. (May) W2JOA 11.

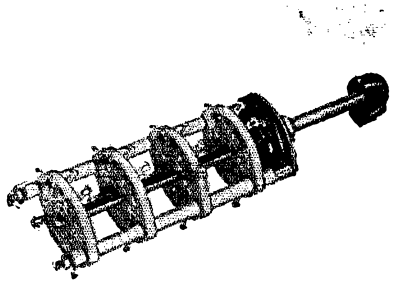
NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: IIN. PAM: CCS. RMs: NKD, EAS, and CGG. The 2nd Call Area TCPN outing was held in Middletown, N. J., with K2GTX as host. Those attending were K2BWP, BWQ, BWR, GML, EWP, JKA, CLL, IKS, W2HTD, KEB, KFV, QJO, YRW, ZOL, and SJO. Could be that in the rush we may have left someone out. If that is the case please excuse it. GVU is back with us again after a long tour of duty with the Army in different parts of the world. He is now at Ft. Monmouth and will be on the air from his quarters there. His former calls were W4GVU and KA2DX. YVQ has been QRL while on the road and on vacation. NJN operated six days a week in spite of summer vacations. EAS is doing a fine job as RM keeping up summertime interest. By the way, EAS just received an EAN certificate. K2HXP is on 50 Mc. He needs a copy of Jan. 1946 *QST*. Can anyone help? K2IKS is planning to operate portable in VE2- and VE3-Land this fall. BRC is rebuilding for the fall season but got in the July CD Party just the same. CVW now is settled in a new QTH. He has no antennas up as yet but ran up 23,760 points in the CD Party with a wire strung in the attic. GVZ has been hit by the summer lull but promises to be back full strength come the fall season. EWZ has a new 33-ft. vertical. A new club in the section is the St. Peter's Prep. Radio Club, with headquarters at 144 Grand Street, Jersey City. The Club was started in November of '54 with no one having any type of radio license. Presently there are 3 General Class and 8 Novice licensees as a direct result of the club activities.

(Continued on page 92)

MALLORY HAM BULLETIN

Switch Common Power to several RF Transmitters with Mallory "Hamband" Switches





Mallory #1600 Series Rotary Switches, better known as "Hamband" switches, were designed especially for coil switching in high frequency transmitter service. However, the heavy, wide-spaced contacts, high quality ceramic insulation, and positive indexing which make these switches so desirable for use in transmitter plate circuits, also, give them exceptional capability for many other switching functions.

For example, the diagram above shows how a #164C (4 section "Hamband" switch), connected as a circuit changer, permits operation of two separate RF chassis from common power supplies and a single modulator. VHF operators in particular, who operate separate rigs above and below 50 megacycles, will recognize the economy and convenience this arrangement adds to such a station. With contact carrying ability of several hundred milliamperes, and with 1000 volt insulation, this switch is entirely adequate for transmitter powers up to 100 watts.

The circuit shown was devised by a dyed-in-the-wool VHF man to permit the addition of a low frequency RF unit to his existing VHF transmitter, and still use only the common power supplies and single modulator shown. However, there is no reason why a dyed-in-the-wool *low frequency* man couldn't make the change the other way 'round, and let the #164C switch help him explore the possibilities of VHF operation with a minimum expenditure of funds for new gear.

When using the #164C for this application, the usual high voltage wiring precautions should be observed, even though the exact circuit arrangement may be modified to suit individual requirements. The one shown has the indicator-lamp circuit located adjacent to the panel, the low voltage supply next, then the high voltage, and last the modulator transformer shorting section for CW operation. The physical location of the switch in relation to the power supplies, modulator and RF chassis is not important, and may be placed for maximum convenience. The circuit shown has the switch located within the modulator housing. Separate input and output sockets for each piece of equipment are mounted at the rear of the modulator.

The convenience and efficiency added by this circuit has been reported by its user to be most satisfying. Why don't you investigate the money saving possibilities Mallory rotary switches offer? Your Mallory distributor will be glad to help you select the right one.

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The club call is K2OQJ. The big news for the month of July is that two more new General Class licenses have been obtained — K2LWX, age 14, and K2LSU, age 16. The Club desires to maintain skeds with other high school clubs during the coming fall season. Contact K2LSU, the secy., for skeds. Other officers are K2KRE, pres.; KN2KUD, vice-pres.; and K2KOS, moderator. This is a splendid example of what can be accomplished by group activity. It is suggested that readers who desire to get started in ham radio contact their local club. If you do not have the address, contact the SCM and you will be referred to the nearest club in your neighborhood. K2CHI is erecting a new three-element 20-meter beam. K2IPR is on 144 Mc. with a new Gonset final. K2ICE is QRL with seasonal business going strong and has no time for ragchewing. FCC and BRC were heard mobile on 144 Mc. from Eagle Rock. K2DHE is the chief antenna erector in Monmouth County. He specializes in swinging aloft from 100-foot towers with sixteen and thirty-two elements surrounding him. Traffic: W2EAS 137, K2GAS 109, GFX 53, W2HTD 28, CCS 26, K2IKS 21, BWQ 18, CHI 2, W2NIY 2, CVW 1.

MIDWEST DIVISION

IOWA — SCM, Russell B. Marquis, WØBDR — The Cedar Rapids Club was host to the 75-meter 'phone net picnic, at which 144 licensed hams were present with a total attendance of 255. The Waterloo and Creston Clubs also had picnics. SLC has a new KWS-1 and 75A-4. KØBZF and KØCCZ have General Class licenses. KØCCZ hopes to operate from Turkey while on duty there with the Navy. BBZ is home on leave from the Navy. BVE is on leave from the Air Force and will be stationed at Sioux City Air Base. SCA has a new Elmac mobile rig in a new Buick. CGY is on vacation in Ohio. FMX is vacationing in Colorado. UCE and SQE received ORS appointments. PZO made second high traffic score for the second month. HMM is starting code classes for General Class aspirants. LPK has returned to Cedar Rapids after several years near Chicago and has rejoined TLCN. LGG did a fine job as liaison station to TEN, substituting for BDR while he was on vacation in Wyoming. BDR attended the Fort Dodge and Fairfield Club meetings. QVA received a certificate for perfect copy of the Armed Forces Day message on May 21st. FWF is the newest member of TLCN. The Davenport Club is building a Novice station in addition to the kw. rig. SQE spent a week in Buffalo, N. Y., at a radio and TV school. VFM has received a WAC certificate. Traffic: (July) WØSCA 1103, PZO 856, BDR 543, CZ 319, SQE 81, LJW 76, BLH 51, LGG 41, QVA 40, TGQ 25, NGS 13, IUY 5, PAN 5, SRQ 5, KJN 4, PUR 4, UTD 4, NYX 3, FDM 2, IHC 2. (June) WØSQE 45 TGQ 23.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: NIY. VGE received her General Class ticket July 15th. Congratulations. Becky also has the honor of being the only one sending in a bit of news for station activities this month. Traffic: (July) WØNIY 259, BLI 238, MXG 130, YFE 31, FNS 25, LOR 22, SAF 20, VVM 19, ECD 18, EOT 16, FDJ 16, TNA 15, VGE 14, RXM 9, WJB 8, WNØYJU 5, KNØBZO 1. (June) WØNFX 13, LOW 9. (May) WØQGG 47, DEL 17, WWR 9, UAT 4.

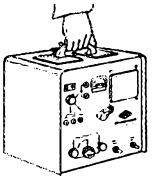
MISSOURI — SCM, James W. Hoover, WØGEP — SEC: VRF. PAM: BVL. RMs: OUD and QXO. VTF has added a VFO to his rig. SAK appeared on KRCG-TV and discussed amateur radio. OMM's son has returned from Alaska. KØFCT wants traffic schedules on any band, 'phone or c.w. TCF is moving to Minneapolis. GCL installed a 75-meter mobile and plans to use it during a vacation to Colorado. The Southwest Missouri Amateur Radio Club had stations operating in Springfield for reporting the arrival of airplanes during the Powder Puff Derby. Participants were HUI, EBE, QWS, SPU, LQC, ICW, CZC, GBJ, and HGD. EBE is handling RACES applications in the Springfield Area. Traffic: (July) WØCPI 866, GAR 398, VTF 278, GBJ 169, SAK 164, OMM 141, HUI 104, RTW 99, KØFCT 72, WØOUD 70, MRQ 46, CKQ 34, VWZ 26, BVL 22, KIK 15, IIR 13, VPQ 8, BUL 6, FLN 6, EBE 5, KA 5, TCF 1. (June) KØFCT 148.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — Asst. SCM: Tom Boydston, ØVYX. SEC: JDJ. PAM: EUT. KNØAKR, AKV, AKW, BBC, BJT, and BNP, at Scottsbluff, have formed a new net with KNØAKW as NCS. It is called the S.A. Net and meets at 8 P.M. MST every Mon. and Thurs. on 3735 kc. Relaying and delivering messages to the Panhandle is its goal. HMN is listening on 2 and 6 meters and building a power pack for 6 meters and vertical ground-plane antenna. DDT is the regular Mon. NCS on TEN and NCS for the Nebraska C.W. Net 3 nights a week. UOV was mobile on his vacation in South Dakota. BZS has returned to North Platte from Salt Lake City. 7MVD, in North Platte as general foreman for the Union Pacific, has been transferred to Hinkle, Ore. KXD sure is going to have a nice shack when he gets moved into his new home. IBA can be heard operating from McCook now. CBH has just about finished his monoscope. ERM is the new EC at North Platte. More ECs are urgently needed for all parts of Nebraska. Please select one for your club and request your SCM to make the appointment. Another

(*Continued on page 94*)

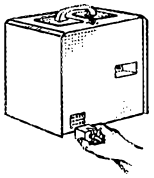
GONSET 6 METER "Communicators"

PORTABLE..

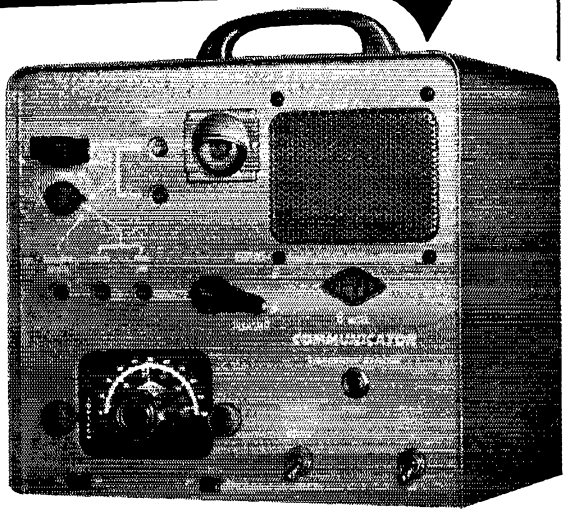


9-1/4" high,
10-3/8" wide,
7-3/4" deep.
Weight approx.
20 pounds.

AC/BATTERY



Merely use appropriate plug-cable for AC or DC operation.



Now--6 meters in the desirable, widely accepted 2 meter Communicator package. Here is a complete station, suited equally to fixed or portable operation, with performance comparable in every respect to larger sized communications equipment suitable only for fixed station use.

The excellent receiver features "Cascode" R.F. for high sensitivity, dual conversion for image rejection and added selectivity useable on 6 meters. Tuning range includes 49 meter BC band, a real assist in spotting band openings. Gonset noise limiter and adjustable squelch make worthwhile contributions to overall receiver performance.

Transmitter uses 2E26 final to provide power output of 8-10 watts with high level modulation. Power supply is self contained, universal for 6 volts, (or 12V) DC and 115 volts AC.

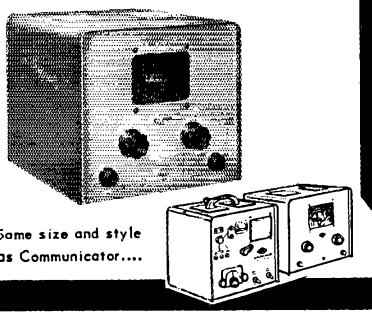
De Luxe Model--6V DC/115V AC---No.3049--- Net 229.50
De Luxe Model--12V DC/115V AC--No.3058---Net 229.50

6 METER LINEAR RF POWER AMPLIFIER

Add to your 6 meter Communicator,(or other 6 meter, 5-6 watt modulated equipment) to increase POWER OUTPUT to 50-60 watts. Simple to adjust, foolproof in operation. Uses push-pull 826 triodes, (supplied) with forced air cooling. Has heavy-duty 115V AC power supply. Antenna relay is built-in.

Models available on special order for commercial, government, aircraft frequencies from 50 to 150 mcs. Your inquiries invited.

6 METER RF LINEAR- - - - - Net 149.50



Same size and style as Communicator....

GONSET CO.

801 SOUTH MAIN STREET, BURBANK, CALIF.

bang up picnic was held at Lincoln Park in Grand Island. That G.I. gang sure can put on good picnics. Traffic: WØZJF 210, DDT 146, QHS 34, FXH 32, HTA 26, MAO 21, ERM 18, KØWBF 11, WØFRS 10, OOX 8, ORW 8, PQP 8, LZL 7, AGP 6, PNS 4, ZOU 4, AFO 3, LWK 3, NHS 3, OCU 3, AEM 2, BEA 2, DJU 2, KLB 2, HQN 1, UJK 1, VGH 1.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Milton E. Chaffee, W1EFW — SEC: LKF. PAM: LWW. RM: KYQ. MCN and CN 3640 (0645 and 1845); CPN 3880 (1830); CTN 3640 (Sun. 0900); CEN 29,580 kc. We are now well into a new traffic season. C.w. traffic men are urged to meet CN or MCN, originate and handle traffic, and send a monthly report to the SCM by the 5th of the following month. CPN will welcome the 'phone traffic men daily or Sun. at 1000. CTN is a training net for those whose c.w. speed is below that customary on CN but who want to learn how to handle traffic. ORS and OPS appointments are available from the SCM to all who qualify. ANU is chasing DX on 20 meters with 35 watts, expects a new 3-band rhombic soon, and seeks OO appointment. A fine report was received from EJH, Bridgeport EC, on the activities of BRACES. There are four active 2-meter nets for the Fairfield County gang. UIZ now is with RCA in New Jersey but finds time for v.h.f. fun. RAN, in the Army at Fort Bragg, bemoans weak CN signals for QNI; he may soon be on K4WEE (MARS). BDI enjoyed VE1 mobile and CN QNI from northern points. NFG has been mobile on 10 meters down Florida way visiting 4FH. GIX and TD are covering all OBS skeds and GIX adds the only OO report. An FB bulletin was received from the Middlesex RA. How about other clubs? EFW mobiled on 2 meters in Maine and worked five states during the opening July 29th. Our section space in *QST* is mighty hard to fill without your monthly reports. How about more news of clubs? Note to ARRL appointees: Watch your certificate expirations and forward certificate to the SCM for renewal on time. Traffic: (July) W1YBH 233, NJM 90, YNC 90, AW 82, LIG 81, CUH 77, RGB 41, LV 31, TYQ 27, BDI 14, EFW 13, KV 10, RAN/4 6, UED 6, EJH 5. (June) W1RAN/4 14.

MAINE — SCM, Allan D. Duntley, W1BPI/VYA — SEC: TVB. PAM: TWR. RM: EFR. The Pine Tree Net meets on 3596 kc. at 1900. The Barnyard Net meets Mon. through Sat. at 0800–0930 on 3960 kc. YVN is the new net manager. The Maine 'Phone Net meets Mon. through Sat. 1700–1800 on 3940 kc. The Sea Gull Net will replace the Maine 'Phone Net with the return of Standard Time. We wish to thank all who have made the Maine 'Phone Net a success these summer months. Many of the boys and girls were very happy to meet the "Earl of Crow Island," ZE, and "Lady Margaret" while they were sojourning on Heartbreak Ridge. VXU and NXX have the solution to finding hidden transmitters. ZAH has a new mobile mike, won at the transmitter hunt at the annual Casco Day. Next year we hope you fellows won't keep BYK waiting so long for a

(*Continued on page 96*)

C.W.A. EIGHTH ANNUAL CONNECTICUT QSO PARTY OCTOBER 22-23, 1955

All Connecticut amateurs are cordially invited to take part in the Eighth Annual Connecticut QSO Party to be sponsored by the Connecticut Wireless Assn., Inc.

Rules: (1) The party will begin at 5:00 P.M. EST October 22nd and end at 11:00 P.M. EST October 23rd. (2) Any and all amateur bands may be used, and either 'phone, c.w., or both. C.w.-to-'phone and cross-band contacts are permitted, but no extra credit is allowed for such QSOs. (3) The general call will be "CQ CN" on c.w. and "CQ Connecticut" on 'phone. (4) The same station may be counted but once regardless of band. Mobile, portable and home stations covered by the same station license all constitute the same station. (5) Exchange names of town areas. (6) Score one point per contact; multiply contact points by number of town areas worked for final score. (7) Reports must show times of QSO, call of stations worked, town area of station worked. All reports must be postmarked no later than November 15th and should be sent to Tony Dorbuck, W1YNC, 1650 Stanley St., New Britain, Conn. (8) Special recognition to the high scorers *and to the highest-scoring Novice.* All decisions of the C. W. A. Contest Committee will be final.

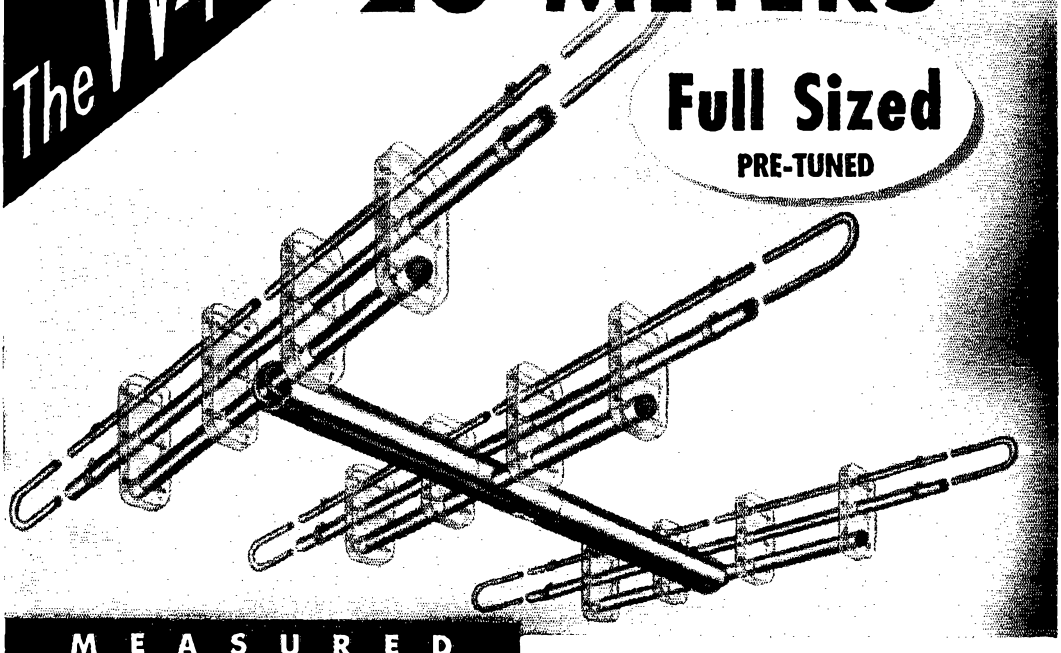
Here is an opportunity to see how many Connecticut stations you can work in a 30-hour period. Get on the air October 22nd and 23rd and meet the gang around your section!

The W4GL All Driven Rotary Antenna

20 METERS

Full Sized

PRE-TUNED



MEASURED

FORWARD GAIN 11.8 DB

FRONT TO BACK RATIO 40 DB OR *BETTER*

- **Impedance match — 52 ohms**
- **Element length — 33 feet max.**
- **Boom length — 24 feet**
- **Weight — 85 lbs. approx.**
- **All aluminum construction**
- ***Stainless steel hardware***
- **1 inch thick plexiglass insulation**
- **Pretuned for 14,250 Kc.**
- **S W R — 1:1 at resonance**
  1.3:1 at band edge 14,000—14,400
- **Quick rig assembly**

ALSO AVAILABLE
(Shortbeam)—(Multiband)—(Short Dublets)
Write for Catalogue EN20.

"Designed for the Ham Who Demands the Best"

Radio Specialties, Inc. proudly presents the greatest development in rotary antennas. This is the result of 20 years of development and research by S. E. "Dick" Adcock of Miami, Florida who has designed and perfected this most revolutionary antenna ever to be used by the Amateur. The ultimate in engineering design and the finest of materials are combined with precision workmanship to create a product unexcelled in the antenna field.

The extremely low vertical angle of radiation will provide the BEST in DX reception. Extraordinary front to back ratio guarantees minimum QRM. Exceptionally high forward gain assures outstanding reports. On the air tests by W4GL over a period of many years have proved that this all driven array has outperformed any parasitic antenna as to forward gain, front to back ratio and a desirable radiation angle. W4GL'S outstanding signal using the all driven array has been heard the world over with excellent reports.

- **Model No. 3DA20** Amateur Net $350

W4GL's ALL Driven Antenna is now available for *immediate delivery through your Distributor.*

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smoke. Thanks to ANI (Glastonbury, Conn.) for his assistance on that day. You guys and gals, don't forget to send in your certificates for endorsement. Also, anyone interested in new appointments, get in touch with your SCM, SEC, PAM, or RM. 7NVY showed the boys what call letter license plates look like. Now is a good time to affiliate with the radio club in your area. There are many good up-and-coming clubs in Maine. Anyone noticed a peach-colored Plymouth parked at or near 27 Canabas Ave., Waterville, Maine? Traffic: WILKP 99, SME 73, EFR 61, UDD 42, BX 21, TWR 21, YYW 21, LYR 14, QUA 12, BAD 11, BBS 9, DNV 8, NXX 4, OTQ 4, YVN 4, BDP 1.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: THO, QLT, and BPW as OOs; BPW as OBS. Appointments endorsed: RQZ Abington, LJH Plymouth, LPM Natick, MBQ Vineyard Haven, as ECs; BY and MX as ORSs; PXH as OO; MX as OPS; CTW as OES; RQZ as OBS. New officers of the Middlesex Amateur Radio Club are FZG, pres.; CWH, vice-pres.; FQC secy.; COL, treas.; DLF, chief eng.; FQC act. mgr. Heard on 2 meters: RCY, RFN, and QKJ. RGR is on 75 meters. ASG has a new son and WK is now a grandpa. YHK has a new son. SRG is active in several nets. JJY is moving to Baltimore to take a job with Westinghouse. THO is busy with DX on 6 meters, also mobile. MEG is building a new 6-meter crystal converter and bought a Techcraft 2-meter crystal converter and six-element 2-meter beam. The South Shore Club held a summer meeting. The Braintree Club held a meeting. UKO has a sticker for all 67 counties of WANE and has WAM. BPW has a 6146 on 80-meter c.w. WU went to Maine for 2 weeks and took the rig with him. AKN is on 2 and 80 meters. QLT has been doing some ground-wave studies on 21 and 28 Mc. RM QMU had a vacation in New Hampshire. PIW went to Vermont. LMU is working in Maine. UG had an operation. UKA is away most of the time. SXD is back from DL4-Land. Newton gave a c.d. drill for Alderman. WN1FIL is a new YL in Dorchester. CTW has WAS for 15-meter c.w. AVY had an operation on his throat. WN1DIY worked CZ-Land with a 30-watt Heathkit. CDO's father supplied South Eastern Massachusetts Club's location with a black top walk. WNs FJI, FJQ and FMG all have Heathkit AT-1s. New officers of the Bedford Radio Club are YFP, pres.; YYI, vice-pres.; Geo. Kozlowski, treas.; ZSG, secy. The Club had over 75 at its annual club supper. QJB is on 10 meters. WEW is on 2 meters. The Bedford Club was out on Field Day with YYI, YWY, YFP, DTN, QJB, KJO, NAD, NDI, RSY, and ZSG operating. The Billerica C.D. 10-meter Net meets on 29.12 Mc. Mon. nights with WYY as net control. DEE has a BC-474 on 80 meters. EIQ is mobile on 10 meters. BFV wants help with his TNS. DTA has a new home in Concord. KJO has a Lysco mobile rig. RSY, NAD, and NDI received awards from the Bedford Club for their c.d. work. WN1EIT, the XYL of ZSG, passed her Novice Class exam while in the hospital. YYI had 750 watts s.s.b. 2IVT came to the Club's supper. WN1ETX is very active on 3703 kc. AKN's boy, 4SRA, now is living in Hingham and has a sked on 80 meters with him. ALP and his XYL, CLF and his XYL, VYH, and VYI attended the outing of the Cape Cod & Island Net at West Dennis. Mr. Tennenbaum, of the Weather Bureau in Boston, spoke on hurricanes and the help that the amateurs can give. Officers were reëlected for another year at this annual meeting. Traffic: (July) K1USA 266, W1EPE 148, UKO 111, WSN 107, 1BE 43, BPW 19, WU 9, AVY 8, QLT 4. (June) W1AKN 3

WESTERN MASSACHUSETTS — SCM, Osborne R. McKeraghan, W1HRV — SEC: RRX. RM: BVR. PAM: QWJ. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EDST. The WM 'Phone Net meets on 3870 kc. Wed. at 1800 EDST. MNG has been appointed c.d. director of Agawam. Also in Agawam, OBQ is communications chief and VNH assistant. HRV is now Radio Officer for Easthampton. AJV, Webster, is a new OBS. ZUU is the new president of the Central Mass. Amateur Radio Assn. and is doing a fine job with the c.w. traffic nets. BKG, LPQ, and DPY are working on RACES plans for their towns. A well-attended meeting of Area 4 Radio Officers was held in Chicopee to talk over plans and progress. Much has been accomplished and area and sector organization is progressing rapidly under the direction of Area RO ICW, CO EVZ, and Director Newman. AZW is nearing DXCC. BYH received WANE and is now working DX on 20-meter c.w. Communications for the Powder Puff Derby, which ended at Barnes Airport, Westfield, were ably handled by amateurs. Eunice Gordon, UKR, national chairman of the radio network for the Derby, did a fine job of organizing complete coverage for the route of the fliers. At this end of the route four transmitters were in operation about 18 hours a day for 5 days, one on 20, one on 75, and two on 2 meters. Volunteer operators and owners of equipment used included the following: CLW, DGJ, YYT, KUE, KUL, CSR, TPH, MNG, VNE, VNH, QUQ, CGY, OBQ, TZY, WDK, ZIO, ULY, MSN, SRM, AJX, WDW, 2JGV/1, FFV, KEB, and 8KSM. Much credit is due these operators and the HCRA for the time and effort put in to furnish a splendid job of communications: Traffic: (July) W1ZUU 126, BVR 97, WEF 95, TAY 37, MNG 32, DVW 6, UVI 6, HRV 5, JAH 4. (June) W1ZUU 22, DPY 3.

(*Continued on page 98*)

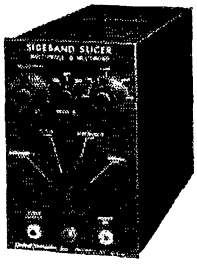
NEW MULTIPHASE "Q" MULTIPLIER

- Peaks Desired Fone or CW Signal
- Nulls Out Interfering Carrier up to 50 DB. No Loss in Speech Intelligibility
- No Insertion Loss — New Two Tube Circuit
- Special High "Q" Pot Core Inductor

MODEL AQ

MODEL DQ

MODEL B SLICER



CONVERTS MODEL A SLICER

Plugs into Model A accessory socket, converting it into a Model B. New front panel and controls provided. Enjoy all the advantages of "Q" Multiplier selectivity on CW, AM & SSB with your present Model A Slicer.

Wired $29.50
Kit $22.50

FOR AM, CW, SSB OPS

Desk Model "Q" Multiplier for use with any receiver having 450 to 500 KC IF. In attractive, compact case with connecting power-IF cable. Power supplied by receiver. Also provides added selectivity and BFO for mobile SSB or CW reception.

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Kit $22.50

BUILT-IN "Q" MULTIPLIER

Upper or lower sideband reception of SSB, AM, PM & CW. For use with any receiver having 450-500 KC IF.

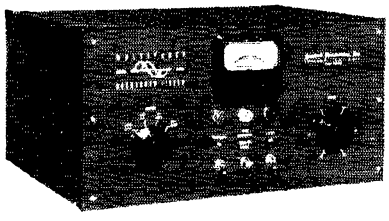
Wired $99.50
Kit $69.50

MODEL A SLICER

Same as Model B but less "Q" Multiplier

Wired $74.50
Kit $49.50

A NEW CONCEPT IN LINEARS



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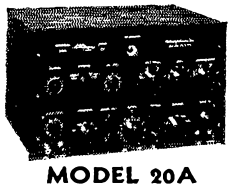
BROAD BAND LINEAR AMPLIFIER

NO TUNING CONTROLS!

SINGLE KNOB BANDSWITCHING 10-160 METERS

- Single 813 in Class AB_2. Approx. 2 watts effective or 4 watts peak drive for 500 watts DC input.
- New band-pass couplers provide high linear efficiency: 60-65%.
- Designed for 50-70 ohm coaxial input and output.
- Built-in power supply. Bias and screen regulation. Automatic relay protection.
- Exclusive metering circuit reads grid current, watts input, RF output, reflected power from mismatched load — switch to any position while on the air!
- Completely shielded — TVI suppressed. Free of parasitics! Low intermodulation distortion.
- Choice of grey table model (17⅝"W, 8¾"H, 13"D) or grey or black rack model.

Wired, with tubes $349.50



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Check These Features

NOW IN BOTH MODELS

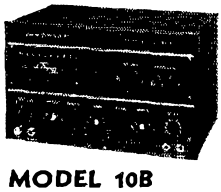
- Perfected Voice-Controlled Break-in on SSB, AM, PM.
- Upper or Lower Sideband at the flip of a switch, with 40 DB. suppression.
- New Carrier Level Control. Insert any amount of carrier without disturbing carrier suppression adjustments.
- Talk yourself on frequency.
- Calibrate signal level adjustable from zero to full output.
- New AF Input Jack. For oscillator or phone patch.
- CW Break-in Operation.
- Accessory Power Socket.

MODEL 20A

- **20 Watts P.E.P. Output SSB, AM, PM and CW**
- **Bandswitched 160 — 10 Meters**
- **Magic Eye Carrier Null and Peak Modulation Indicator**

Choice of grey table model, grey or black wrinkle finish rack model.

Wired and tested $249.50
Complete kit $199.50



MODEL 10B

- **10 Watts P.E.P. Output SSB, AM, PM and CW.**
- **Multiband Operation using plug-in coils.**

Choice of grey table model, grey or black wrinkle finish rack model. With coils for one band.

Wired and tested $179.50
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WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

NEW HAMPSHIRE — SCM, Harold J. Preble, W1HS — SEC: BXU. RMs: CRW and COC. PAM: CDX. ARR and DYE both made BPL. Two in one month is unusual for New Hampshire. Those interested in a New Hampshire section 'phone net, contact CDX. ZPA is at Air Force Technical School, Biloxi, Miss., for a course in radio and radar. The Port City RC is very busy with plans for a new club house and is planning big things after the September election. JUJ is doing an FB job handling WANE certificates. 2BBR and PRL spent vacations in Portsmouth. The Nashua Mike and Key Club is planning the New Hampshire State Convention for October. Among stations operating portable in New Hampshire this summer were 7NVY, at Freedom, and 1AJT, at Littleton. WUU is very active on 'phone and is regular TCPN net control. It's good to hear JNC back on the air while recuperating from a recent operation. CCE operated part of July in Rhode Island and ZIZ was active in Connecticut. 2JOA needs Hillsboro for WNH on c.w. ARR is a freshman at U.N.H. this fall. Welcome to Novices ETJ, EVG, EVY, FBH, FCU, FDC, FGX, FIH, FJY, FKZ, FZA, FZS, GDO, GDI, and GNW. Traffic: (July) W1ARR 637, DYE 147, ZIW 90, CRW 64, QGU 35, GMH 28, COC 26, CCE 15, IP 14, CDX 8, WBM 8. (June) W1QGU 22.

VERMONT — SCM, Robert L. Scott, W1RNA — Nets: VTPN meets on 3860 kc. at 0930 Sun. only. GMN on 3860 kc. at 1200–1300 Mon. through Sat.; VTN on 3520 kc. Mon., Wed., and Fri. at 1900. OAK advises the following were issued net certificates for VTN: IT, BNV, VZE, DAQ, BJP, ZNM, MKM, JLZ, FPS, CBW, TAN, TXY, VTP, QQJ, ELJ, and TAG. VZE reports working W3VZE/M. I have two or three recommendations for ORS but because of their membership lapse in ARRL I am unable to issue the certificates. It is suggested that any of the gang who have any question as to their status in the League check up on the matter. If a member of your family is a ham, they may have membership for $1.00 — just one copy of *QST* to the QTH, though. Traffic: W1OAK 104, CMY 101, UEQ 47, RNA 38, KJG 20, BJP 17, IT 5, UGW 2.

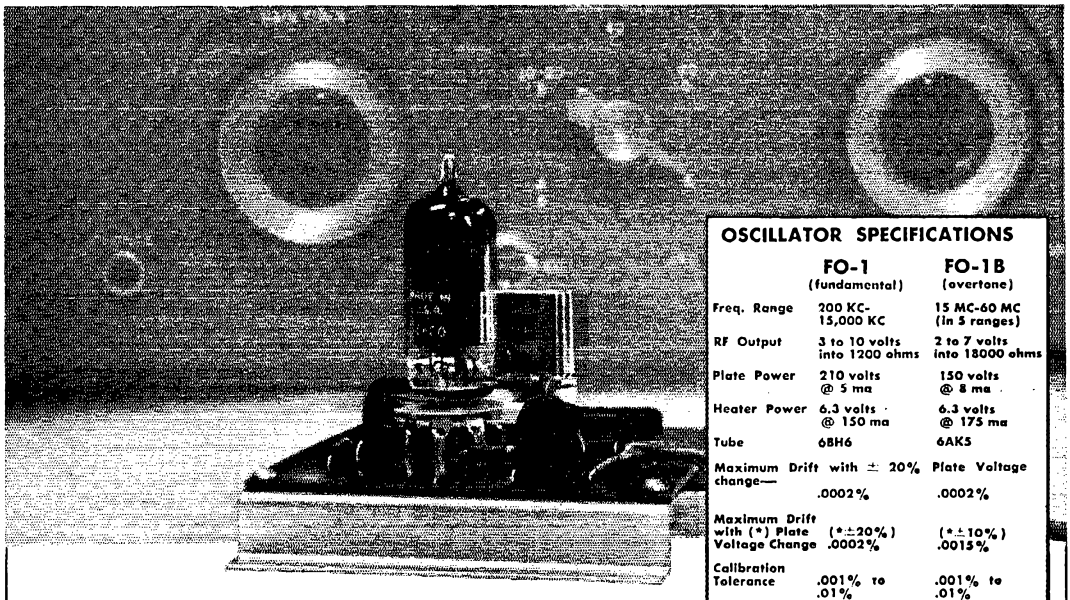
NORTHWESTERN DIVISION

ALASKA — SCM, Dave A. Fulton, KL7AGU — The 1955 All-Alaska Ham Convention was a great success. The Hamfest was sponsored by the Anchorage Amateur Radio Club and was held in Anchorage this year. There were 120 licensed hams registered and 119 attended the banquet. AOT and ANG shared honors for the best mobiles. BJW won the hidden transmitter hunt, BK the ragchewers contest, and CC walked away with the c.w. honors (35 w.p.m. with a stick). The highlight of the affair was a visit by Northwestern Division Director R. Rex Roberts, W7CPY. Rex visited Fairbanks before attending the hamfest in Anchorage and stopped at Juneau on his way back home. This is the first time that an ARRL official has ever visited the territory and we certainly hope it won't be the last. If Rex enjoyed it here half as much as we enjoyed having him, we know it will not be the last time for him.

IDAHO — SCN, Alan K. Ross, W7IWU — Smelterville: WHZ is applying for OPS appointment. Bonners Ferry: KN7ZGE is applying for AREC membership. His rig is a Viking Adventurer and an S-53A receiver. Gifford: VWS worked Maine for his 45th state. He also is after the WAVE award (worked all VE), and has a permanent pen and radio pal in K6CNE. Lewiston: A new ham in town is ZYZ. OWA has a new all-band 150-watt rig, but is working on a new p.p. final using 4-125As. Rupert: CAP operated portable from Washington, D. C., in June. We are sorry to hear of the passing of IEY, formerly of Rupert. Idaho Falls: a nice letter was received from VK2TN, who is visiting and enjoying W-Land. BAR and others have been entertaining him. Preston: A very nice letter arrived from RKI who reports he is experimenting with transistors and building a monitor receiver for 3935 kc. A new Novice in town is WN7AOR. Meridian: MKS represented your SCM at Big Springs. Sorry I couldn't make it in person. Traffic: W7OWA 26, WHZ 11.

MONTANA — SCM, Leslie E. Crouter, W7CT — Capt. Albert White, ZKV, of the Great Falls Army Air Force Base, felt that their l.f. communications channels could be jammed but that they could get a fix to a particular location. ZKV thought that amateur radio (mobile with loop antennas) in those localities when alerted and with arrangements with the local sheriff could track down and make an arrest of the jamming station. The Great Falls Emergency Corps responded, as reported by net control and EC DSS. TLA, mobile, assisted by TSG, was the hidden transmitter, with 19 hams and 17 stations taking part, of which 9 were mobile doing the hunting. All used loop antennas to look for the hidden rig on 3910 kc., with GFT the only one using an FS meter. GFT found the station in about ten minutes. Capt. White wants something like this in all of four or five of these northern states but wanted it tried out to gain experience to help in organizing. The Old Faithful Radio Club operated under the club call, ZOD, at the Park County Fair. YPN has been in the hospital and is now taking it easy. VGY is finishing a new 150-watt rig. LPL spent his vacation in Yellowstone Park. On July 3rd TPE, Wolf Point; OYP, Wolf Point; TNJ, Glasgow; and SEW, Malta, set up com-

(*Continued on page 100*)



OSCILLATOR SPECIFICATIONS

	FO-1 (fundamental)	FO-1B (overtone)
Freq. Range	200 KC-15,000 KC	15 MC-60 MC (in 5 ranges)
RF Output	3 to 10 volts into 1200 ohms	2 to 7 volts into 18000 ohms
Plate Power	210 volts @ 5 ma	150 volts @ 8 ma
Heater Power	6.3 volts @ 150 ma	6.3 volts @ 175 ma
Tube	6BH6	6AK5
Maximum Drift with ± 20% Plate Voltage change—	.0002%	.0002%
Maximum Drift with (*) Plate Voltage Change	(*±20%) .0002%	(*±10%) .0015%
Calibration Tolerance	.001% to .01% depending on FX-1 crystal used	.001% to .01%
Size	4"x4"x3" overall	4"x4"x3" overall
Mounting	4 holes (with brackets provided)	

PRINTED CIRCUIT OSCILLATORS

for Generating Spot Frequencies with GUARANTEED Tolerance from 200 KC to 60MC

Since the operating tolerance of a crystal is greatly affected by the associated operating circuit, the use of the FO-1 Oscillator in conjunction with the FX-1 Crystal will guarantee close tolerance operation. Tolerances as close as .001 percent can be obtained.

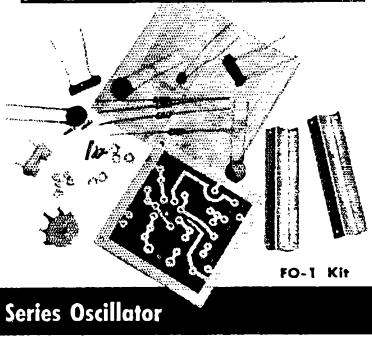
FO-1 for Fundamental Operation 200 KC to 15,000 KC

FO-1—Oscillator Kit (less tube and crystal) $3.95
FO-1A—Oscillator, factory wired & tested with tube (less crystal) ...$6.95

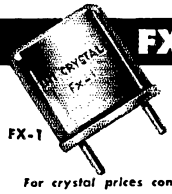
FO-1B for Overtone Operation 15 MC to 60 MC

FO-1B—Oscillator Kit (less tube and crystal).....$3.95*
FO-1BA—Oscillator, factory wired & tested with tube (less crystal) $6.95*

*Includes coil in one of five ranges: 15-20 MC, 20-30 MC, 30-40 MC, 40-50 MC, or 50-60 MC, specify when ordering. Extra coils 35c each.



FO-1 Kit



FX-1

FX-1 CRYSTAL Companion to the FO-1 Series Oscillator

The FX-1 Crystal is designed for use only with the FO-1 Oscillater. For tolerances of .01% and .005% any FX-1 Crystal can be used with any FO-1 Oscillator.

For tolerances closer than .005% the Oscillator and Crystal must be purchased together. The Oscillator is factory wired, and the crystal custom calibrated for the specific oscillator.

For crystal prices consult table below:

TOLERANCE	200-499 KC	500-999 KC	1000-1499 KC	1500-1999 KC	2000-9999 KC	10,000-15,000 KC	15 MC-29.9 MC	30 MC-60MC
.01%	$ 8.75	$12.50	$ 5.25	$ 3.75	$ 2.50	$ 3.25	$ 3.00	$ 4.00
.005%	$12.50	$15.00	$ 6.00	$ 4.50	$ 3.00	$ 4.00	$ 5.00	$ 6.50
(.0025% and .001% tolerances are available only by purchasing the FO-1 Oscillator and Crystal together)								
.0025%	$17.50*	$17.50*	$ 6.75*	$ 5.25*	$ 3.75*	$ 4.75*	$ 6.50*	$ 8.50*
.001%	$25.00*	$25.00*	$ 8.00*	$ 6.50*	$ 5.00*	$ 6.00*	$10.00*	$15.00*

*Prices are for crystal only. To insure tolerances closer than .005% crystal must be purchased with oscillator factory wired and tested. For total price add $6.95 to price of crystal desired.

HOW TO ORDER: In order to give the fastest possible service, crystals and oscillators are sold direct. Where cash accompanies the order, International will prepay the postage; otherwise, shipment will be made C. O. D.

International CRYSTAL Mfg. Co., Inc. 18 N. Lee Phone FO 5-1165 OKLAHOMA CITY, OKLA.

munications for the mile-and-a-quarter boat race qualification runs at Nelson Lake near Malta. This was a practice run for the Northwest Regional Championship Races to be held at Nelson Lake this fall. Traffic: (June) W7EWR 1.

OREGON — SCM, Edward F. Conyngham, W7ESJ — SEC: WAT. New appointments: PRA as RM, QKU as PAM. VBF and WAT are working nights and school days. KAB has been assigned to the swing shift. ZFD has left for Formosa. BLN has taken over as net manager of the Oregon Emergency Net. APF finds things looking up with a new final and no TVI. THX is running 2-meter checks from Astoria to Portland. The Salem Radio Club sponsored an OEN picnic July 10th. OEV is rushing construction of mobile equipment before vacation. A new YL Club is being formed in Portland with RVM, pres.; QKU, treas.; WN7ZMN, secy. Other members are REU, SPC, TVU, WFO, ZKY, and WN7WRA. The Oregon State Net reported 19 members, with 123 check-ins in 18 sessions, the highest being 14 in one evening. The Net now connects with RN7, WSN, OEN, and CTN. The Southwestern Oregon Radio Club held a picnic on July 21th with ERC, EUG, BLN, APF, PHG, QYS, VPF, UHI, SPB, AWI, OKM, TLQ, SCY, and UMZ attending. OKM rescued a Canadian car from going over a cliff on Seven Devils Road July 31st. VBF assisted in getting a tow car. We regret to have to report the passing of IEY to Silent Keys. QWZ, QEI, and FPD have taken NCS duty on several MARS nets. SEZ, BDU, and LI are organizing a 2-meter MARS net. WAA reported from Idaho while on vacation. AJN is off for an overhaul and modernization. Traffic: (July) W7APF 332, QKU 92, BLN 50, BVH 41, LT 26, THX 25, PRA 23, UJL 22, TIR 12, ESJ 8, NFZ 6, VDG 5, VJT 1.(June) W7ZFD 224, TIR 19, BDU 2.

WASHINGTON — SCM, Victor S. Gish, W7FIX — Nets: WSN, 3575 kc., 1900 PST Mon. through Fri.; WARTS, 3970 kc., 1800 PST Mon. through Sat. AWG joined Silent Keys Aug. 5th. Ten EC reports were listed on the SEC report received from RCM. JHX reports tests on horizontal vs vertical polarization on 2 meters. July brought the SCM a visit from 6GGC, San Francisco SCM, his XYL, and YL. It was very nice to meet Wally, Rose, and Rae. JPH now is mobile /Ø in Minneapolis. PGY reports bad conditions and a scarcity of traffic. VAZ ditto. VE7ASR (mgr. of RN7) was a visitor on Aug. 6th. UIN reports SVM, of Colville, did a swell job as NCS helping out in the search for lost aircraft on July 30th and 31st. APS vacationed in VE7-Land. UYL reports the new QTH is noise-free. FZB vacationed to Yellowstone in August. LVB spent his vacation fishing. UQY is on all bands with 600 watts. AVM makes a negative report — no traffic, no 2-meter work. CWN had fun in the recent CD QSO Party. BMK has the mobile reinstalled and working. IOH completed the Chamberlain all-band transmitter and then sold his QTH before he had a chance to test it. The old QTH was sold to VLY, who had his rig on the air the first day. UQY reports 5LGG now is A7AIR in Spokane. CBE is on with a transmitter built by KZP. FIX is on again with an ART-13 unmodified except for power supply. The State Department of Civil Defense is trying to sign up all net members in the State to insure immediate operation in case of emergency. A good old-fashioned traffic slump this summer reminds us of pre-KA days. OE is building a new Heathkit AR-2. CCL activity is 100 per cent TCC. LWB's s.s.b. rig voice-controlled threw your SCM on his first try at it. It's time to get ready for the traffic season coming up. Traffic: (July) W7BA 954, PGY 839, VAZ 308, CCL 234, OE 87, UIN 49, APS 27, AIB 22, RXH 22, UYL 20, RCM 16, USO 16, EHH 11, FZB 10, PQT 10, WQD 5, HDT 4, LVB 4, UZB 4. (June) W7TIQ 14, EYF 7.

PACIFIC DIVISION

HAWAII — SCM, Samuel H. Lewbel, KH6AED — The convention in Hilo was the biggest and best yet. For those who missed it, EM extended the invitation from the Maui Amateur Radio Club to all hams to attend the Territorial Ham Convention next year on their island. The Honolulu Amateur Mobile Club has started a drive for 100 per cent ARRL membership as well as 100 per cent AREC. The mobile gang is moving down to 10 meters forRACES frequencies, the first real activity on that band for a year or two. The v.h.f. gang is busy building antennas and still looking for that first Hawaii-Oahu 2-meter contact. W1TUI/KH6, now at KH6AJF, passed his Extra Class exam. Traffic: (July) KH6AJF 2207, QU 284. (June) KH6AJF 2459, QU 78.

NEVADA — SCM, Ray T. Warner, W7JU — SEC: WVQ. ECs: PEW, PRM, TVF, TJY, and ZT. OPSs: JUO and UPS. ORSs: MVP, PEW, and VIU. OBS: BVZ. Nevada State frequencies: 'Phone 3880 and 7268 kc.; c.w. 3660 and 7110 kc. TVF, of Las Vegas, who has been plugging away on Nevada QSOs, now has over 100 QSLs acknowledging same. The following recently received their "Worked 25 Nevada" certificates: 6PCA, 6SHY, VYC, and YAI. The Southern Nevada Amateur Radio Club now meets in the Victory Village Auditorium the 2nd and 4th Fri. of each month. TVF qualified for his 25-w.p.m. Code Proficiency certificate. OLF, of Elko, is active with a new

(*Continued on page 102*)

"Worked 87 foreign countries, all continents and 30 zones" with a Gotham Antenna and 35 watts.

READ THIS AMAZING LETTER: How an inexpensive *FULL SIZE* Gotham Rotary Beam made it possible to "work the world!"

Gotham Hobby Corp.
107 East 126th St.
New York 35, N. Y.

Florida, 1955

Gentlemen:

I'd like to express my enthusiasm and satisfaction regarding your 20-meter rotary beam antenna. I purchased one of your standard two-element units in February of this year. Prior to this time I had been using a collinear array about one wavelength above ground. The transmitter feeding this antenna had a power output of about 35 watts, and results were quite discouraging.

When my Gotham arrived, it was easily assembled in a couple hours. The same transmitter was used to excite the Gotham antenna, using the same power as before. Results have been quite gratifying, and it is interesting to note that in the three months since using the Gotham antenna, I have worked 87 foreign countries, all continents, and 30 zones.

I am able to keep schedule with amateur radio —* in the Cape Verde Islands every week. *It was impossible to even hear this station before using the Gotham beam.*

Extremely high winds are prevalent in this part of Florida. The Gotham beam has withstood blows in excess of 50 miles an hour without failure.

The elements bend almost double in these high winds, but readily return to their original configuration when the wind abates. I feel that this is an extremely important feature of the Gotham antenna.

I have enthusiastically recommended Gotham to all the hams who ask what type I am using (and most of them do, when I tell them the amount of power I'm using). I wish you every success with your product, and feel that it is well worth the modest price.

Yours very truly,

(Names and *call letters upon request.)

EVERY FULL-SIZE GOTHAM ROTARY BEAM IS ENGINEERED FOR SIMPLICITY, STRENGTH, PERFORMANCE

Your Gotham comes to you completely fabricated, made (except for the polystyrene insulator) entirely of new, rustless, first-quality mill stock aluminum. You'll find no link coupling, no complicated mounts, no tuning stubs. You get good, solid aluminum tubing—and more of it, in both length and thickness (the only true gauge of $ value)! No flimsy wire, no wood to rot or weather-proof.

Easy assembly, simple and quick matching of line to antenna. Yet Gotham's price is 25% to 75% lower than the "toy" midget beams which Gotham so easily out-performs.

MAIL THIS COUPON TODAY!
10-DAY MONEY BACK GUARANTEE

See sample beams and literature at these Gotham distributors

HOW TO ORDER:

Send coupon with check or money-order to your local distributor or direct to Gotham. Immediate shipments via Railway Express, charges collect: foreign shipments sent cheapest way.

Alabama: Curle Radio Supply, 406 Meridian St., Huntsville.
Arizona: Kennedy Radio, 4511 N. 8th St., Phoenix
California: Offenbach & Reimus Co., 1569 Market Street, San Francisco.
Florida: Kinkade Radio Supply, Inc., 402 W. Fortune St., Tampa.
Indiana: Graham Electronic Supply, 102 S. Penn St., Indianapolis.
Iowa: Radio Trade Supply Co., 1224 Grand Ave., Des Moines.
Iowa: World Radio Labs., 3415 W. Broadway, Council Bluffs.
Kentucky: Universal Radio Supply, 533 S. 7th St., Louisville.
Louisiana: Radio Parts, Inc., 807 Howard Ave., New Orleans.
Michigan: M. N. Duffy & Co., 2040 Grand River, Detroit.
Michigan: Purchase Radio Supply, 605 Church St., Ann Arbor.
Minnesota: Lew Bonn Co., 67 South 12th St., Minneapolis.
Mississippi: Swan Distr. Co., 342 No. Gallatin St., Jackson
Missouri: Henry Radio, Butler.
New Hampshire: Evans Radio, Concord.
New Jersey: Radio Electric Service, 513 Cooper St., Camden.
New York: M. Schwartz & Son, 710 Broadway, Schenectady.
No. Carolina: Allied Electronics, 411 Hillsboro St., Raleigh.
No. Carolina: Johannesen Electric Co., Inc., 312 N. Eugene St., Greensboro.
N. Dakota: Fargo Radio Service, 515 Third Ave., North, Fargo.
Ohio: Mytronic Company, 2145 Florence Ave., Cincinnati.
Ohio: Selectronic Supplies, Inc., 1320 Madison Ave., Toledo.
Ohio: Srepco, Inc., 135 E. 2nd St., Dayton.
Pennsylvania: Radio Electric Service Co., 7th & Arch Sts., Philadelphia.
S. Dakota: Burghardt Radio Supply, Inc., Watertown, Aberdeen.
Tennessee: Curle Radio Supply, 439 Broad St., Chattanooga.
Virginia: Radio Equipment Co., 819 W. 21st St., Norfolk.
Virginia: Radio Supply Co., 3302 West Broad St., Richmond.
Canada: Louis Desrochers, P.O. Box 688, Amos, Quebec.

GOTHAM HOBBY CORPORATION
107 E. 126th ST. NEW YORK 35, N. Y.

Enclosed find check or money-order for:

2 METER BEAMS			
☐ Deluxe 6-Element	$9.95	☐ 12-El	$16.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

Name.....

Address.....

City.....Zone....State.....

Viking II. YRY, of Boulder City, is keeping Far East skeds in the wee hours of the A.M. with a Globe Scout. 6PWE, Peanut Whistle Eddie, has returned to Boulder City after an absence of almost 15 years. ZZE is an old-timer who has returned to the flock with a new call in Henderson. ARA, recently licensed, also is in Henderson. ZZH is the XYL of MBQ/K6BXK.

SANTA CLARA VALLEY — SCM, R. Paul Tibbs, W6WGO — Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO. EXX reports that the PAARA did not hold its meeting in July. He keeps his OBS schedule on Mon., Wed., and Fri. at 1945 on 145.8 Mc. K6BBD worked in the July CD Contest. Dick is installing mobile in the "new 47 Mercury." WLI reports a lack of 'phone stations in the CD Contest on that week end, both on 40 and 20 meters. AIT still is working traffic in NCN and RN6. ZRJ ordered a Heath VFO. FON still is active on the MTN 'Phone Net, acting at times as eastern traffic outlet. K6GID, mgr. of NCN, is calling for new members to check into the net from the East Bay, San Francisco, and Santa Clara Valley sections. This net serves as outlet at section level for the NTS. Anyone interested in traffic work can find much pleasure by spending an hour or so most any week night working in this net. HC reports that the higher nets of the NTS are doing quite well this summer in spite of QRN and skip conditions. A nice report was received from CUB with this dope. Dave runs a Viking Ranger working the following DX: SM, OH, OE, FY, G, DL, JA, VK, and more. Power was about fifty watts using a long-wire antenna. He reports CLS is moving back to Hillsborough setting up a KW-1 in the tool shed before starting his house. GCG climbed pine trees to string CLS's sky wire. Traffic: W6ZRJ 215, HC 94, FON 93, K6GID 76, W6AIT 22, BPT 22, CUB 19, K6BBD 12.

SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC — At the July meeting of the San Francisco Radio Club ATO gave a demonstration and exhibit of new commercially-built amateur radio equipment. BIP reported that Field Day was very successful; more than 100 contacts were tallied. With Dad's new call, KN6JUK, the Harlan boys now have a complete "ham family." Sons Harry and John are K6AES and W6OST. W6IKO and club treasurer Harry Witzke had a nice mobile vacation to Idaho. BSO, Father Bose, now is back on mobile operation. K6HYW sports installation on 6-meter mobile. KN6HIW and W6QMO represented the local ladies' club at the ARRL National Convention in Santa Monica. The HAMS (Red Cross group) and the Hi-50 Club say there have been lots of band openings on 6 meters lately. The 29ers invite all amateurs locally who have 10-meter installation in mobile to join them in monthly transmitter hunts. The 29ers held its annual breakfast July 24th at Fosters Restaurant with a good turnout. PKI is operating at Devenshire Uranium Supplies in San Carlos. PCN was hostess for the ladies' club at the July meeting and it served two purposes. The OMs also were invited and all enjoyed a housewarming at PCN's and GCV's new QTH. The Tamalpais Radio Club held its first after-summer session meeting on Sept. 9th. The Humboldt Radio Club had an ARRL membership drive with good results. GDV, YQZ, K6CNV, W6BWV, K6CXB, KN6KGI, W6JSY, K6DVV, W6BJO, and JUH manned the c.d. headquarters station for the June drill. K6CNV now is a resident of Eureka. Congratulations to BIP, QMO, and GQA in coming in tops for the San Francisco Section in the July CD Party. OPL has a new QTH in Terra Linda. He requested more activity in ham radio for this section so will act as the new Asst. SCM along with Asst. GHI. JWF finished the new 100-watt Heathkit and expects to be on the air soon. CBE has the new pair of 4-125As final finished and working swell. He received MARS appointment and has been keeping daily skeds with mobile PKH on his Eastern trip. SWP, Pat Ryan, has been critically ill and will not be heard on the air for some time. He is in Ward 74-A, Oak Knoll Hospital, Oakland, Calif. His XYL reports that Pat may never be active in radio again. His many friends will be sorry to hear this as Pat was very active on the nets and a faithful worker. WB has accepted the assignment as chairman of the National ARRL Convention which will be held in San Francisco in '56. With Bud as top man the Convention is expected to be a huge success. Your SCM had a wonderful time meeting the boys of the "Grandpappy's Net" at the roundup in July at KUP's QTH in Ruth, Calif., and attended the Humboldt Radio Club meeting in Eureka and then on to the Oregon Emergency Net Picnic at Salem, Ore. A wonderful time was had and I enjoyed meeting 7SY (at the Salem OEN Picnic) and many of the other fellows I had talked to over the air. I also met that swell fellow, 7FIX, who does such a grand job editing the *PAN News* and enjoyed a steak dinner and dandy pie at K6AKF's and his XYL Madge's QTH. PHT now is busy doing remote-control radio broadcasting. Traffic: (July) W6QMO 93, GGC 32, BIP 8, GQA 5. (June) W6QMO 85, PHT 8, GQA 6.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — With the coming of the cooler weather, also the end of most vacations, I believe the Official Appointments should be listed so that all will know who is who in the Sacramento Valley section. SEC: JEQ. Asst. SCMs: ZF, K6BMU, and TMP. ECs: K6AKF, BYS, CFZ, RXX, IVD, FKI, ULC, and KTB. OBSs: SBN, MWR, FNS, ILZ,

(*Continued on page 104*)

The Original

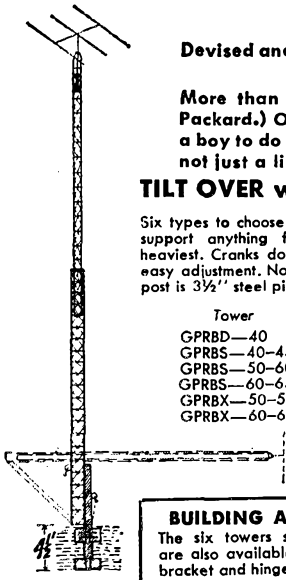
TILT OVER TOWERS

(Patent applied for.)

Devised and created by E-Z Way over 5 years ago. Often copied but never equalled.

TESTED AND PROVEN

More than 15,000 satisfied users. "Ask the Ham who owns one." (Courtesy, Packard.) One of the sturdiest and most versatile towers in the industry. Don't send a boy to do a man's job. E-Z Way Towers are *designed* to support Rotary Beams—not just a lightweight TV antenna. *We invite comparison.*



GOOD OLD TERRA FIRMA

TILT OVER with Ground Post

Six types to choose from—40 to 65 ft. Built to support anything from a Mini-Beam to the heaviest. Cranks down and tilts over for quick, easy adjustment. No guy wires needed. Ground post is 3½" steel pipe or larger.

Tower	Tower Hgt.	Price
GPRBD—40	38 ft.	**$120.00**
GPRBS—40–45	38 ft.	**$160.00**
GPRBS—50–60	48 ft.	**$210.00**
GPRBS—60–65	58 ft.	**$260.00**
GPRBX—50–55	48 ft.	**$325.00**
GPRBX—60–65	58 ft.	**$385.00**

BUILDING ATTACHED

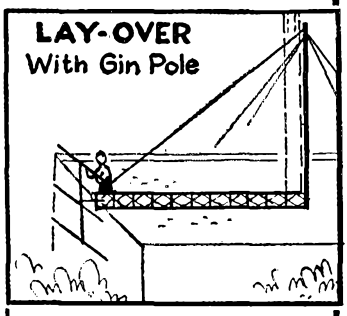
The six towers shown above are also available with a wall bracket and hinge for the base for attaching tower to the side of a building. Crank up and down.

BARBD—40	**$ 95.00**
BARBS—40–45	**$130.00**
BARBS—50–60	**$170.00**
BARBS—60–65	**$210.00**
BARBX—50–55	**$265.00**
BARBX—60–65	**$325.00**

Three types to choose from—40 to 60 ft. Ideal *one-man installation* for flat roofs or porches. Cranks up and down and lays over for easy antenna adjustment. No guy wires needed. Tower is locked in a V-bracket at top of gin pole.

GINRBD—40 **$125.00**
GINRBS—40–45 **$165.00**
GINRBS—50–60 **$215.00**

LAY-OVER With Gin Pole



We pay freight charges on any towers shipped in U. S.

Add 10% to prices shown for West Coast orders. All E-Z Towers have heavy dip-coated Goodyear Pliolite S-5 (rubber base aluminum enamel). Hot dipped galvanized available at extra charge. ⅛" aircraft cable 2000 lb. test used on D-40 towers. All other cable is 5/32 aircraft 2600 lb. test.

Provisions to mount rotor inside top of tower. Bearings at A and B relieve all strain from rotor.

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Go as high as you like with 20 ft. sections. 320 ft.?

C-10
Width 10" Max. Height 120 ft. Guy Spacing 27 ft. Weight per ft. 4½ lbs. Price (approx.) **$2 per ft.**

C-15
Width 14" Max. Height 200 ft. Guy Spacing 40 ft. Weight per ft. 8 lbs. Price (approx.) **$3.50 per ft.**

C-25
Width 25" Max. Height 320 ft. Guy Spacing 60 ft. Weight per ft. 20 lbs. Price (approx.) **$9 per ft.**

Used extensively for VHF and UHF communication antennas. Two other sizes available. When maximum height and guy spacing are not exceeded, these towers will withstand a 60 lb. wind load.

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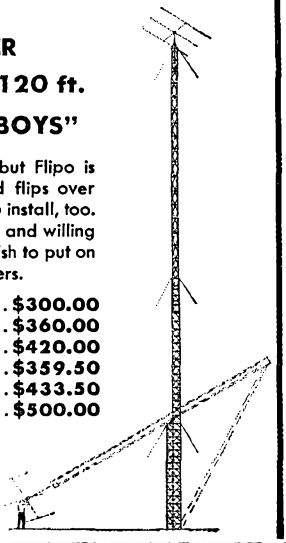
Gets you up in the air but Flipo is easily cranked down and flips over to adjust antenna. Easy to install, too. A real sturdy brute ready and willing to carry any load you wish to put on it. One of our finest towers.

FORBS—80	**$300.00**
FORBS—100	**$360.00**
FORBS—120	**$420.00**
FORBX—80	**$359.50**
FORBX—100	**$433.50**
FORBX—120	**$500.00**



Write Dept. T for Catalog

When writing, please specify type of tower in which you are interested, height and expected antenna load, (make and model number if possible). This information is necessary to give you accurate advice.

E-Z WAY TOWERS INC.

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and K6AKF. OPSs: MWR and FNS. ORSs: CMA (who is now our RM), FYK, K6GL, ASX, W6SYY, and KTB. PAM: TYC. OESs: W6LSB and QAC. OOs: K6ER, W6ILZ, FNS, FYK, BIL, KTB, and K6EHT. The recent boat race from Stockton to Redding, Calif., was well supported using mobile and fixed equipments . . . notes sent *QST*. Hats off to all who participated and did a grand job. The Feather River Amateur Radio Club is now 100 per cent ARRL; also the Tehama County Amateur Radio Club boasts the same. This is wonderful and it looks like our section is growing. K6ER is back from a fine vacation. TYC is going to resign as PAM because of his work. Sorry to hear this, Jack, but thanks for your hard work and we will see you on from time to time. JRY is attending PT&T Radio School. IMH moved to Berkley. K6BCW is now ruled by his XYL. Congratulations. QJD has a new mobile. HNL has a new sky wire. JDN was made Alt. NCS on MARS. I would like to have all clubs send me news of their activities so that I can be more fair in the reporting each month. Thanks, fellows. CU next month with more news. Traffic: W6CMA 114.

SAN JOAQUIN VALLEY — SCM, Ralph Saroyan, W6JPU — PSQ has a 10-A. KN6LLF has an RME-45 and is on 80-meter c.w. K6GBS is with Western Electric as a field engineer. QOS has a new harmonic, a girl. Congrats! LOS is heard on 75-meter s.s.b. NAS and NCG are on 2 meters with model 26 teletypes. JXY is sporting a 20-meter beam. UJU is rebuilding his SX-88. OWL is on 20 meters with a new beam. K6GTI is building a ham shack with house attached. PPO has a new Phasemaster and likes it. K6CBQ is on mobile with Carter modulator. The Fresno Radio Club gang did a bang-up job on the Cerebral Palsy Telethon. The Club received a trophy "for magnificent help on 'celebrity parade' united Cerebral Palsy." JUK has an FB patio at the new home. SNF is heard on 75 meters with a wicked signal. NBP is with Uncle Sam in the Air Force. K6BGK has a loop for 75-meter hunts. ONK is chief in charge of 2-meter repeater for the Fresno Area and reports very good progress. TTX won a $300 scholarship. PIQ is now in Alabama. KN6MQV is a new ham in Rosamond. K6GMQ now is Technician Class in Mojave. How about a report from down south and from up north, fellows? We received only one report this month. Traffic: W6TTX 496.

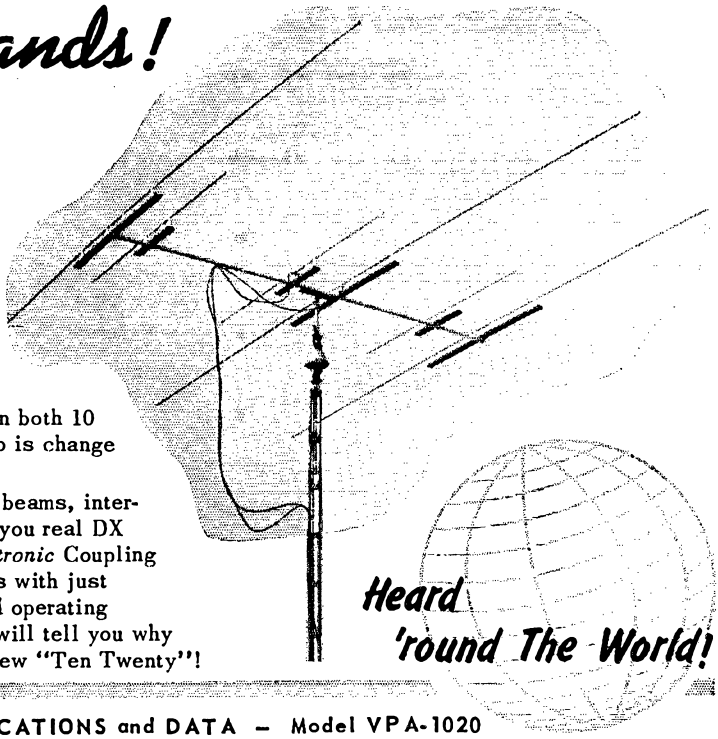
ROANOKE DIVISION

NORTH CAROLINA — SCM, Charles H. Brydges, W4WXZ — SEC: ZG. RM: VHH. PAM: ONM. Congrats to LEV on making BPL in June. VFK received his Globe King and is burning up 75 meters. GNF, the Greensboro Club, is looking at new club locations. NHW, in Greensboro, has been busy with the RACES program. TAJ has worked over 100 European stations. KN4DXI is a new Novice in Greensboro. CVX received cards for WAC and is busy on 75 meters with the teen-age net and on 20 meters with DX. The Confederate Teen-age Net has over 30 members and covers six states. You older fellows are invited to call in anytime. BUA and CZR had a good time operating CZR/4 at Cherry Grove Beach. Nearly 200 attended the Charlotte Swap-Fest held in the Army Reserve Training Center. Welcoming speeches were presented by the Army, the SEC, and the SCM. GHS is busy working on YLCC. Since most of us are emergency-minded and engaged in emergency planning, publicity is one of our most important problems. If you will give the city editor of your local paper the basic material on club activities and the like he will be more than glad to put the information in the paper, and this will go a long way in getting the public to know you and your purposes much better. The Winston-Salem gang still meets on 3805 kc. every Sat. If any of you are in the Winston Area, don't fail to call in on 3805 kc. If you want call letter plates for your car send your application with a money order for one dollar to the Motor Vehicles Division, State Capitol, Raleigh, N. C., by Nov. 1st. Please include your name, address, and call on the return address portion of the envelope. ZQB is now high power mobile using an ART-13. MDA is on 2 meters. KN4ADT is really working the DX on 15 meters. EOU has a new Viking II. K4EAR is ex-5ETV from New Orleans. EJP has a new 150-ft. long wire and is working 'phone and c.w. on all bands. WN4HPJ is back in Blowing Rock and working on exams. BUW is trying to get a BC-454 installed in the car. ZH is on 40-meter 'phone with a new 40-meter beam. NHW has a new 200-watt 2-meter rig with 24Gs in the final. Traffic: (July) W4RRH 50, GHS 30, BUA 14, CVX 12, AGI 8, ACY 6, GJD 4, EJP 2. (June) W4LEV 794, BUW 20.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — ZIZ reports that much of his traffic is relayed by MARS. HMG reports that the Columbia paper carried a new story about ham radio in which was featured HDR, who has earned and has received the BPL medallion for handling enough traffic to make BPL three times. The following are members of the South Carolina MARS C.W. Net: ANK, ET, FFH, DYP, HMG, PLX, YOH, LSD, AWY, CHD, WSA, and UOQ. Many South Carolina hams attended the Augusta-Camp Gordon Hamfest on July 23rd. It was necessary to prepare this report early this month, therefore few activity reports were received in time.

(Continued on page 106)

2 DX Bands! with the mosley "Ten-Twenty"



TRUE BEAM PERFORMANCE on both 10 and 20 Meters . . . and all you do is change bands *at the transmitter!*

Two *peak-pretuned* 3 element beams, interlace mounted on one boom, give you real DX action! The Exclusive *Auto-Lectronic* Coupling —that permits feeding *both* beams with just one coax line—means Unequalled operating convenience! The story, below, will tell you why Your Best Beam Buy ... is the New "Ten Twenty"!

SPECIFICATIONS and DATA – Model VPA-1020

Forward Gain (over full size dipole): 7.5db.

Front-to-Back Ratio: 28db.

S W R: 1.5/1, or better, at resonant frequencies.

(Performance data essentially the same for both ten and twenty meter operation.)

Elements: 61ST6 Tubular Aluminum. Maximum length, 22½'.

Boom: 1½" OD 61ST6 Aluminum. 12' long.

Wind Surface Area: 11.4 sq. ft.

Wind Load: 228 lbs.

Weight (Assembled): 57 lbs.

Tuning: FACTORY PRETUNED to three resonant frequencies in each band. Drilled and color coded element sections.

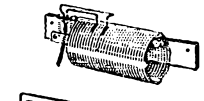
Model VPA–1020, complete with "V–P" Coils, Auto-Lectronic Coupling Yoke, all necessary hardware and full instructions. Less mast, rotor and coax line.
AMATEUR NET PRICE $120.79

New! Mosley Loading Coils

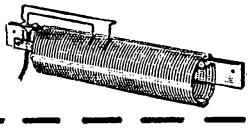
for 40, 75 & 80 Meter

'Vest Pocket' Dipoles

Not enough space for a "long wire"? – Here's the answer! Use a MOSLEY 'V-P' Dipole Loading Coil to make a high performance dipole antenna at about one-half the length of a full size dipole. Just one coil needed for each antenna. Use 52 or 75 ohm coax.



Model No. 40-D
40 Meter Coil
Net Price $7.95



Model No. 75/80-D
75 or 80 Meter Coil
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Every MOSLEY Product Advertised ...

... is AVAILABLE *NOW!*

Mosley manufacturing and shipping facilities are being constantly expanded to keep pace with the ever-increasing demand for popular "Vest Pocket" Rotary Beam Antennas and other Mosley Amateur equipment.

Every Mosley product advertised is *in production* and readily available through your Ham Equipment Supplier.

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Late reports will be included next month. Traffic: W4FFH 99, ZIZ 97, ANK 5.

VIRGINIA — SCM, John Carl Morgan, W4KX — This report was written in August when usually there is little to tell about because of summer doldrums. But in spite of very persistent QRN, record high temperatures, etc., the nets have been perking nicely and there has been lots of other activity. VFN and VN members coöperated in the AREC "Hurricane Drill," which is designed to prevent the haphazard operation which obtained last year. Following the drill, the Tidewater Mobile Club had an FB picnic. VFN also furnished communications for the Old Dominion Motorcycle Road Run. The Rappahannock Club furnished communications for the Fredericksburg Soap Box Derby. The Shenandoah Valley Club played host to some 180 hams and families at the 4th Annual Dickey Ridge "Fest." BLR reports on a fine YLRL picnic on Skyline Drive. TFZ says OLN has added a Saturday session, and YKB reports formation of the new Late Evening Net on 3820 kc. K4ASU earned a BPL medallion by the "originations" route, and has issued the first edition of the VN Directory. NQV is off to England and Cambridge on a National Science Foundation Fellowship. There are new harmonics at TVO/SIE and also at OWV, who reports the first words were "CQ" off frequency but 5 by 9. IA and TFX are ensconced in the new QTH at Warrenton, and KFC is trying to improve his notoriously puny signal by moving to a 20-acre antenna farm at Clifton, Va. YE, YZC, and KN4CAX also are about to break in a new wigwam in Fairfax County. 3WDP and K2KNN are taking turns chasing traffic and DX from K4MC. KX is off the air rebuilding. Dampness in the basement blew the final, so we have a new dehumidifier. LW now is in the new QTH with a Lysco 600 rig and linear final. EBH now is trying a new 37V all-band vertical, and first reports were very FB. RTV is trying to outdo HQN with a "plumber's nightmare" mobile antenna. Traffic: W4PFC 685, K4ASU 266, W4CGE 232, K4MC 108, W4BLR 37, YKB 37, YZC 26, WBC 14, K4NCP 8, W4APM 4, OWV 3, KFC 2, IA 1.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: GEP. PAM: GCZ. RMs: GBF, DFC, HZA, and JWX. It is with sorrow that I announce the passing away of Ed Lockhart, sr., NAM. New Novices in Princeton are CXV, BFG, BIK, ADG, AGK, and DSK. Recent Novices in the St. Albans-Nitro-Dunbar Area are UQP, TVK, VBD, ADD, TVO, BOZ, and CUK. I would greatly appreciate receiving more activities information. For those who desire reporting forms, please request same by dropping me a post card. The Princeton Club has resumed regular meetings on the 1st Fri. of each month at 8:00 P.M. at the City Hall. LSG has a new B&W 5100. NLT has a new 20-meter beam operating. The W. Va. C.W. Net maintained excellent activity participation during summer months. CLX has an s.s.b. rig now. Traffic: (July) W8KXD 89, HZA 40, JWX 35, NYH 21, PZT 12, BWK 9. (June) W8JWX 31, BWK 22, NYH 9.

ROCKY MOUNTAIN DIVISION

COLORADO — Acting SCM, Carl L. Smith, WØBWJ — The value of AREC preparedness and training was emphasized to Colorado during the flood of last May. Special thanks are due NVU and his wife for going on emergency stand-by before the disaster struck, and for operation during the entire period. Mac, Milt, and Dave of KØWBB were at the scene with emergency equipment. Excellent work was done by KQD, SUP, IUF, ICR, PGN, OIQ, WIR, and KØANZ in handling traffic coming out of the area. Congratulations to all for a job well done. The Sky High Radio Club held a picnic at Monte Vista and all attending had a fine time. MYX had BDR and his wife, from Iowa, as guests. A picnic was enjoyed by the families of KQD, BDR, and MYX with traffic the subject of a big ragchew. LZY is on 7094 kc. at noon on Tue., Wed., and Fri. with the latest Official Bulletins. SGG has 15 watts 'phone and c.w. on 6 meters; he and SWS are hoping to get some activity going. Anyone interested? CSSN (slow-speed net) meets Mon., Wed., and Fri. at 1715 MST, resuming operations on 3570 kc. Oct. 3rd. Former members and newcomers invited. In the meantime, all c.w. operators are urged to check in to the High Noon Net — there's plenty of activity for you. During July the High Noon Net handled 191 messages in 19 sessions. Late BPL credits: KØWBB March, April, and May; KQD April; TVI April, ANZ April; NVU May, and LO/Ø May. Amateurs in Colorado, New Mexico, Wyoming, and western portions of Kansas, Nebraska, and South Dakota are invited to take part in a QSL card contest being held until Nov. 30th. Full details are available from Rapsco, 1237 16th Street, Denver. Traffic: (July) KØWBB 639, WØKQD 414, IUF 52, OGO 29, BWJ 21, HOP 17, NVU 16, UNM 14, YMP 14, PGN 12, SWK 12, W5WDK/Ø 11, WØAGU 9, SKK 9, NWJ 7, YNC 6. (May) KØWBB 997, WØLO/Ø 302, NVU 194. (Apr.) WØKQD 765, KØWBB 728, ANZ 712, WØTVI 240. (Mar.) KØWBB 695.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — Vacation time still is with us, judging by the lack of activity this

(*Continued on page 108*)

Quality, Style and Beauty

THE *ALL NEW* COMMUNICATIONS RECEIVER

GPR 90

FEATURING:

- Six bands covering .54 to 31 Mc.—AM, CW, MCW, and FS with appropriate FS converter.
- Accurately calibrated main tuning dial plus auxiliary dial with full Electrical bandspread.
- A ferrite transformer provides accurate antenna matching for 75 ohm unbal. and/or 300 ohm balanced inputs.
- Sensitivity: 1 (one) microvolt or better for 10-1 signal to noise power ratio, 1.5 to 31 Mc. Less than 5 microvolts for .54 to 1.5 Mc.
- Image Ratio: Better than 60 db.
- Selectivity: Variable in 6 steps from 200 cy to 5 KC, 5 crystal and one non-crystal positions.
- Input: 105-125VAC 50/60 cy., approx. 90 Watts—6V.-6A, and 250VDC-.1A.
- Output: 4, 8, 16, 600 ohms, 2 Watts high quality audio—better than 60 db hum level.
- Highly effective noise limiter—Calibrated "S" Meter—Dial locks.
- Specially designed Audio Selectivity control with variable bandwidth.
- Diversity operation is available with the GPR-D. Provisions for external control for HFO, BFO, IFO.
- SSB Coaxial IF output & Audio input.
- Cabinet or rack mounting . . . 52 lbs. . . . 20"w. x 10"h. x 15"d. (Cabinet.)

Tube complement:

6AB4 Grounded grid input RF amp.	3-6BA6 IF Amplifiers
6CB6 2nd RF	6AL5 Det./Noise Iir.
6AU6 1st converter	6AG5 BFO
6AG5 Oscillator	12AX7 Avc and Audio Amp.
6BE6 2nd Converter and Oscil.	6V6 Output
6BA6 IF Buffer Amp.	OA2 Regulator
	5U4G Rectifier

Bulletin 179B for complete details.

Complete receiver—Amateur Net $395.00
Matching Speaker $16.00 extra

THE TECHNICAL MATERIEL CORPORATION

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month. Even 2 meters seems deserted when compared with the winter months. SAZ has his receiving gear for 2 meters complete and will have his transmitter by fall. STC is busy servicing commercial communications equipment, and is heard only occasionally mobile in the southern part of the State. LQP has a new Buick and now must change to 12-volt gear. MWR has a good signal on 75 meters again, after having had a siege of transmitter trouble with his big rig. LQE is faithfully NCSing the Utah MARS weekly drills; but thunderstorm QRN has given him plenty of trouble.

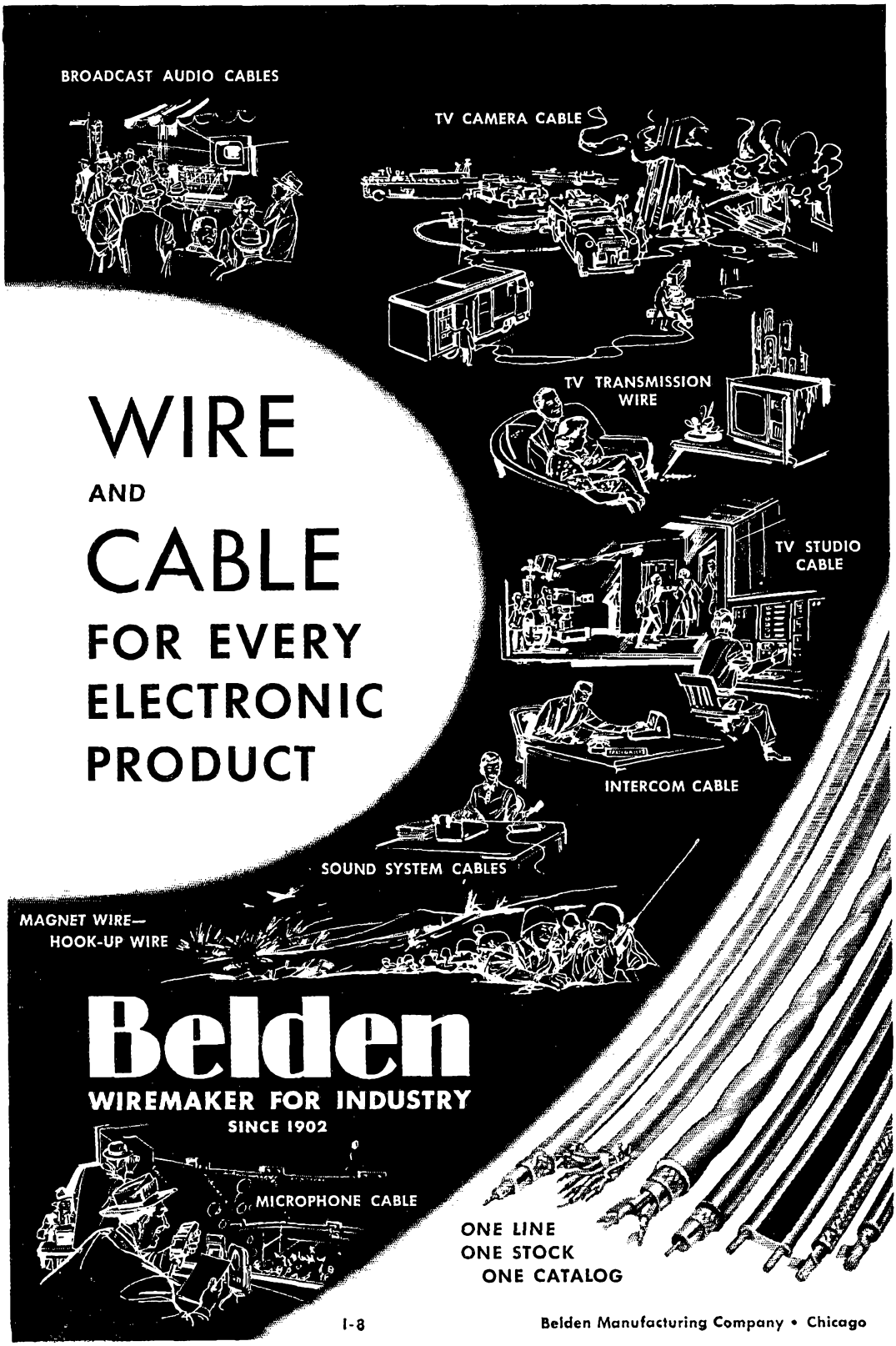
WYOMING — SCM, Wallace J. Ritter, W7PKX — The Annual Wyoming Hamfest was a big success with a record attendance from six states. The Casper Club will sponsor the 1956 Hamfest. HDS is going strong on the Wyoming Weather Net at 0700 MST on 3925 kc. getting much-needed information for the U. S. Weather Bureau. NII is checking in regularly with Jackson weather. Welcome ZUC, at Encampment, to the Wyoming nets and 75 meters. ACG has been appointed as SEC. All ECs, please coöperate. TZK and PAV reported a plane crash, fatal to two, at Alva, Wyo., via amateur radio to CAA. The Cheyenne Club held a picnic. PKX received a Public Service Award for assistance in the Belt Creek, Mont., Flood. JFN is moving all over Wyoming getting 59 reports with a fishpole antenna. AXG and NII attended the Big Springs Annual Hamfest. ØBDR, the SCM of Iowa, walked away with the c.w. speed prize at the Wyoming Hamfest. NVI is handling the Pony Express Net on Sun. mornings in fine shape while the regular NCS takes a rest. NVI was heard to break the WX Net one morning and frantically inquire how to milk a goat. YSF is running higher power and has a much better signal. Your SCM wants more news from local clubs, etc., and is looking for OO applications. Traffic: W7HDS 104, PKX 97, YSF 74, PAV 59, TZK 43, NII 37, MNW 31, AXG 29, AEC 23, NVI 10.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — SEC: TKL. PAM: WOG. RM: KIX. Several clubs have announced election of new officers: Montgomery: IWX, pres.; AZX, vice-pres.; K4AJZ, secy.-treas. Huntsville: GEQ, pres.; NKX, vice-pres.; K4BFT, secy.-treas.; HHU, act.; KPD, training. Tuscaloosa: HFK, pres.; KN4DSR, vice-pres.; KN4CFD, secy.-treas. Birmingham: UEI, pres.; HVH, 1st vice-pres.; BMV, 2nd vice-pres.; KNW, secy.-treas.; YEP, rec. secy. USM reports that UJJ is back on the air at Auburn. ZSH has had a bucketful of rig troubles, all of which apparently are all smoothed out now. WOG continues to snatch some good DX on occasions and he, DFE, HKK, and MI are suffering through reinstalling mobile gear in new cars. DTT has joined the mobile ranks while CJA and K4AYR are busy getting Vikings (mobiles) installed. K4AOZ, W4TWK, and HFK are now mobile. DXB says that after all these years he now is VFO and can slide around. HFZ, in Cullman, now is General Class. K4BSV operated portable from NG summer camp at Camp Shelby, Miss., with good results. TXO reports that he gradually is converting the BC-669 to all-band operation. Traffic: (July) W4COU 426, UHA 149, HKK 115, KIX 62, WOG 53, YRO 44, ZSQ 37, DTT 33, DXB 31, EJZ 24, YAI 18, TWK 14, RLG 13, K4BSV 12, TXO 6, USM 6, K4AOZ 4, W4CRY 4, ZSH 4, TKL 2, RTQ 1. (June) W4COU 434, UHA 431, ZRZ 65, WAZ 16, RLG 14, YAI 13, YDU 2. (May) W4YAI 32. (Apr.) W4YAI 61.

EASTERN FLORIDA — SCM, Arthur H. Benzee, W4FE — Thanks to everyone who voted in this election. The large number of ballots cast indicates a healthy interest in League affairs. Your responsibility does not stop there; it is only by concerted effort, everyone pulling together, that we can maintain the high rating this section has enjoyed for some time. Get your reports into the mail promptly. If you do not have cards, ask for them. Do not hesitate to call on me for any assistance. I shall be only too glad to help where I can. PJU is touring the West and will return in October. FWZ reports lightning damaged his station and antenna but they now are back in service. Lake County: LARA 1955 officers are SXJ, pres.; FE, vice-pres.; VDY, secy.; YUT, treas.; YAN, act. mgr. The club auxiliary power unit is in operation. K4ABV and W4HZU are now General Class. VDY has a second call at his store, K4ECF. New Novices are KN4s EAD, EMB, and EJW. Another class is under way. 29,560 kc. is monitored daily. Miami: The Florida Hurricane Net began operation July 24th. The net call is HN and the net manager is YJE. The Net meets Sun. at 0700 EST on 3695-kc. c.w. alternate frequency 7125 kc.; also 3975- and 7270-kc. 'phone. Jacksonville: The YLs and XYLs had a half page in the July 21st issue of *Times-Union* with pictures, courtesy of YNY. The Coastal Emergency Net has been set up covering Key West, Fla., to Norfolk, Va. Net Control is VSX-HHO. The Net will be activated in the event of disaster in that coastal area. DES passed away Aug. 3rd. Traffic: (July) W4PJU 326, WS 64, IM 47, ZIR 38, FE 28, FJE 26, FWZ 12, FSS 10. (June) W4ZBA 145, FJE 20, EHW 7, AHZ 4.

(Continued on page 110)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MAGNET WIRE—
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WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: PLE. ECs: MFY and HIZ. K4AKP is proudly exhibiting a BPL medallion. WN4HBK passed his General Class exam. KN4CLJ has a new transmitter. KN4CLK received a direct hit on the rig by lightning. AXP is sporting a new Lancer car. MUX is home again and building a beam. PAA is operating all bands. QK has an FB VFO perking for net work. KN4EEG is the newest ham in Pensy. CRK is heard calling DX. CCY is tuning the beam to the last watt for DX. BGG is doing antenna work. KN4ADY is looking at a new trailer for beam location. GMS has a new beam on 15 meters and is becoming a DX hound. HJA has the finest mobile set-up in the area. EAR has improved the audio 100 per cent. UCY is really enjoying 10 meters now that it opens regularly. PQW is working on the mobile gear. BIJ has a new v.t.v.m. Ex-PN promises to get a new ticket after a 20-year layoff. FHQ spends his operating time on c.w. K4ABI is going West soon. ZFL still is mobile bicycle. KN4AEP is going after General Class. YRF is looking for contacts with his brother in DL-Land. MS is enjoying s.s.b. and is dusting off the 50-Mc. gear. JPD still prefers 40 meters. DDD went up for General Class. YES is giving the DX-100 won at the Pensy Hamfest a workout. How about some reports from the rest of the section?

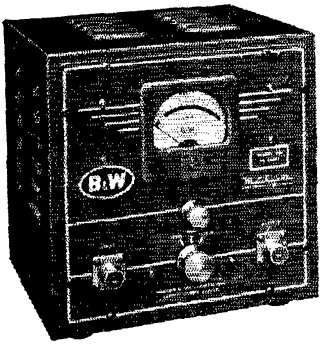
GEORGIA — SCM, George W. Parker, W4NS — SEC: CFJ. PAMs: ACH and LXE. RMs: MTS and OCG. It is with much regret that we accept the resignation of OPE as SEC. Abbott has done an outstanding job in this office, and we are very sorry that his job will make it impossible for him to continue. However, we were fortunate in securing the services of CFJ, of Atlanta, to fill the vacancy. We have every confidence that Bill will carry on with the work Abbott has so well begun. DX-100s are sprouting all over Atlanta. They can be found in the shacks of NS, NQO, FII, SWZ, and TJS. The Atlanta Radio Club's classes, under ZD, MTS, and KOR, graduated a group of Novices last month. Those receiving calls were KN4s DHN, DNI, DNL, DNS, DMX, DMY, DNR, and DOI. FZO is putting up a quad for 20 meters. BWD attended the Pittsburgh Hamfest while on vacation. BYJ, UJM, YWP and MNJ are back on the air after a siege in the hospital. KN4ANZ has a new Globe Scout. KN4DKM has an AT-1 on 80 meters. LNG still is in the Army and is not too active. IPL has two new 75-foot poles, and is putting up a 10-15 beam. WKP has a new 15-meter beam above his 10-20 array. A new club is being formed in North Georgia. If you live in the vicinity of Rossville, contact BGB. FZO has an 813 rig on 80 and 40 meters. With the return of cooler weather your SCM hopes you will include a little more news with your reports. Traffic: W4OCG 234, PIM 183, HYV 44, NS 36, HYW 28, ZD 20, MTS 18, FZO 12, BWD 4, BYJ 4, BXV 2.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: JM. JM, our new SEC, requests cooperation in making a bigger and better AREC organization. The first hurricane alert of the season found the Net ready with one station in each town with an available source of emergency power. WT acted as NCS of the 3925-kc. Net several times in the past month. ZC moved to Caguas. W4HZ, operating /KP4 while awaiting a new call, uses 32V-1 and SX-28. PW is on active duty with the National Guard. CG, DO, DV, JZ, and ZC were heard operating mobile. ACZ received his license July 20th and is on s.s.b. Please note the s.s.b. frequency for KP4 is 3850 kc. W2NIJ is the outlet for KP4 traffic on 14,280 kc. FI has completed his kw. transmitter and a three-element 20-meter beam. PZ built a two-element 20-meter beam. KP4ID/KP4, at the c.d. office in Rio Piedras, boasts a new Onan emergency power plant because of the efforts of MP. Police headquarters at Arecibo, Aguadilla, Mayagüez, Ponce, Guayama, and Humacao have made their 5-kw. emergency power plants available to amateurs. The power company at Mayagüez offered HG the use of its 3-kw. emergency power plant. The Antilles Net on 3815 kc., KP4YX NCS, was activated each two hours during the hurricane alert. UH, at Sabana Seca, has Navy emergency power. GP, Arecibo, has his own 500-watt power plant. DV operated on his own 1½-kw. power plant when the main power failed. The Cuban Emergency Net has announced it will contact the P.R. Emergency Net on 3925 kc. during the present hurricane season as well as on 20 meters during the daytime. EE promises more activity on 75 when he gets the antenna up. ZW reports zero traffic since the ban on DL4 traffic. DV is MARS. Traffic: KP4WT 174, DJ 3.

CANAL ZONE — SCM, Roger M. Howe, KZ5RM — SEC: WA. ECs: JD, RV, and QA. RM: DE. PAM: DG. A farewell party was given for KZ5JD at the July meeting of the CZARA. He will make his new home in Venezuela. GF, our QSL Manager, is leaving for a vacation in the Catskills. While he is away RM will take over the files. Organization plans are under way by the ECs to register as many stations as possible for participation in civil defense exercises as members of the Canal Zone AREC. Already 21 operators in the Central and Pacific Areas and 5 from the Atlantic Area have indicated willingness to participate. The traffic circuits between Corpus Christi and the Canal Zone carried news recently of the successful arrival of the eighth baby since Squadron 45 has been

(*Continued on page 112*)

QUALITY PRODUCTS BY B&W



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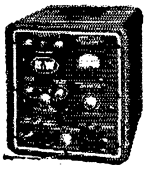

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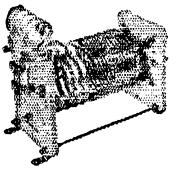

A high-power integral bandswitched pi-network tank coil for maximum efficiency from 80 through 10 meters. For Class "C" or linear operation. Minimum "Q" of 300 over entire operating range.

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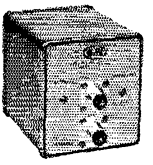

Fully automatic electronic antenna changeover from receiver to transmitter and *vice-versa* — suitable for all power applications up to the legal limit. Model 380 is ideal for voice operated SSB — AM phone and break-in CW —all with one antenna.

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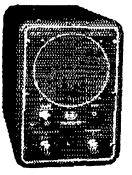
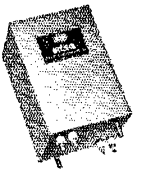


Truly selective band-pass type adapter converts any receiver with an IF between 450 and 500 kc for true single-signal CW reception, selective sideband AM reception, superb performance on SSB.

TOROIDAL SSB BANDPASS FILTER



A reasonably priced highly selective filter. Amplitude characteristic relatively flat for nominal 3.0 kc passband. Provide sharp skirt selectivity *both* sides of the bandpass region.

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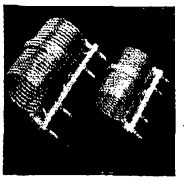

Provide maximum efficiency as link-coupled antenna coils for medium and heavy-duty service. Available for power outputs from 100 watts up to 1000 watts.

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away for two months from Coco Solo. New local licensees are KZ5s AD, DH, GB, MM, and RU. Traffic: KZ5NM 258, VR 230, WA 130, LM 54, FL 12.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, William J. Schuch, W6CMN — SEC: QJW. RMs: BHG and K6DQA. PAM: PIB and YVJ. Summer vacation took its toll, with the gang scattering from here to breakfast. K6BEQ is questing W6AWM about town. NTN put up a 7-Mc. vertical and is DXing. AM vacationed in KL7-Land and worked 5 countries from there. K6ELX vacationed in Mexico as XE1PAC. K6IQF joined the traffic boys. K6KCI assisted with the radio class at summer school. K6HOV has an AF67 and an Adventurer. K6COP now is 144 Mc. TDO is dividing time between 3.5- and 144-Mc. traffic. K6EA still is painting and polishing the shack. K6DQA is looking for help at the County Fair booth. K6EJT is going East for three months. GJP is moving to Oroville. USY has a new 14-Mc. beam and is looking for long-haul traffic. LYG furnished contact for a boys' camp. GYH snagged VP8BD on 14 Mc. LDR is trying to crawl out from under accumulated work after vacation. The Tri-County Amateur Radio Assn. will have a booth at the County Fair. K6JHR is working 21-Mc. c.w. K6HBA has a long wire on 3.5 Mc. NJU is putting up a 60-foot tower and 14-Mc. beam. K6IYF is busy on the Mission Trail Net. HBT has a parakeet that calls CQ. K6IOX and KN6IAV handled traffic for summer camps. K6HMB was on a ranch for the summer. BUK has 21- and 28-Mc. beams. Why not attend the many hamfests this year and meet some of the gang? New officers of the Rio Hondo Club are TTN, vice-pres.; and K6GJU, secy. K6IRY is on 50-Mc. K6HSN is putting up a beam for 50 Mc. K6IMF is mobile with a Globe Scout. K6CHN is 4-Mc. mobile now. The July 24th "assist" given the D.A.C. Sports Car Club "Ken Farrar Rallye" by the ARA of Long Beach was a success with 14 mobiles and four fixed stations at strategic locations doing a great job, as noted on appropriate plaques given in appreciation. Participating were DQD, OZS, UPK, GAU, QPB, GKM, PZV, KTS, CUG, GUD, TTX, KMJ, RUC, UPL, ROP, 9MDS/6, K6CPX, AVQ, CBN, KNP, and ABG. Traffic: W6GYH 304, LYG 118, USY 105, K6EJT 96, W6BHG 86, K6DQA 85, EA 74, HOV 68, W6TDO 56, K6COP 46, KCI 25, W6CMN 14, CAK 12, K6IQF 12, W6ORS 12, K6ELX 9, W6CBO 6, AM 4, NTN 2, K6BEQ 1. (June) W6TDO 69, MLZ 19.

ARIZONA — SCM, Albert H. Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZH, and Dr. John A. Stewart, 7SX. SEC: VRB. PAM: KOY. Arizona 'Phone Net: Tue. and Thurs. 7 P.M. MST 3865 kc. Arizona C.W Net: Tue. and Thurs. 8 P.M. MST 3690 kc. The outstanding event of July was the Powder Puff Derby. While we do not have a complete list of all Arizona participating stations, we know that a great number of messages were handled by Arizona operators. In Tucson, UVR was located at the Municipal Airport as a 75-meter outlet, and was assisted by LAD, MQE, and QHD. Of interest to Novices and Technicians around the State, there now is an organization called the National Novice-Technician Association (NNTA). The appointed head of the W7s is WN7ZSE, Barry Joseph, 4542 East 20th St., Tucson. This organization will maintain a QSL Bureau for Novices; and self-addressed stamped envelopes should be sent to the above address. Write to Barry for further information. HUV received his WAT (Worked All Tucson) certificate. LOC was issued the first WACA (Worked All Central America) certificate to any W Station, and LVR received his WBE (Worked the British Empire) certificate. Traffic: W7UVR 20, LVR 7.

SAN DIEGO — SCM, Don Stansifer, W6LRU — The fourth edition of the *San Diego County Amateur Directory*, a project sponsored by the Coronado Radio Club, is off the press and available. More than 1600 amateurs in the county are listed in this fine book. YDK is building an 18 half-wave Sterba curtain directed on the Far East. New officers for the Convair Club are UKU, pres.; K6GIX, vice-pres.; K6AIF, secy.; and K6CZF, treas. GVK has a new jr. operator. The Fullerton Radio Club has an active station, ULI, located at the Fullerton American Legion Hall. Newcomers to North Orange County are 5UPZ/6, IEP, and EVU. JTV, 75 years young, is active in Orange County. KDN is now in Germany. HDT enjoyed fishing in the High Sierras. QCA vacationed in Hawaii and has returned to college. ODR and his XYL flew to Europe this past summer. SEG and BZE have 75A-4 receivers. KSE wrote a book during the summer. K6DAM, W6KNR, LRU, and VYU attended college at San Diego State the past summer. K6DAM and W6LRU received their Masters Degrees. HZN is back in town after a short trip to Africa. SEG is heard on 20-meter c.w. and 'phone working DX with a new Johnston Kilowatt and three-element beam. CHV added VQ6LQ and XW8AB for two new ones. A "well done" to SK for coördinating the many breakfasts at the Division Convention. CUZ fired up on 7 Mc. with an ARC-5 and worked LU, JA, and VK when band conditions were poor. With summer now over your SCM hopes more operators and clubs will report activities regularly

(*Continued on page 114*)

or this column. I hope to be more active visiting the clubs in the section this fall, and wish to apologize for the past summer when my paper work got the best of me. Traffic: W6IAB 2175, YDK 1161, K6DBG 36, W6CRT 2.

SANTA BARBARA — SCM, William B. Farwell, W6QIW — The Santa Barbara Hamfest held in July was a roaring success, as was Ventura's held in August. K6BVZ is the first RTTY station in Santa Barbara. Sorry to see SBN, the c.w. traffic net, fold up for lack of interest. The Tri County (3820 kc.) and the Peanut Whistle (3860 kc. 'phone) Nets still cover the section for traffic at noon, and ALN (3975 kc.) is a good representation at night. The Ventura Field Day group got its activities "taped" and released over a broadcast station with a swell plug for the hams and their emergency activities. KN6LFQ also was interviewed at KTMS, Santa Barbara, at a later date, giving amateurs another big boost. Tri-County newspapers are opening up with articles and interviews with hams. Public reaction is very favorable. We have good c.d. and AREC groups now with K6KPU, as SEC, ready for any emergency. I am very pleased with the progress made by all clubs in the South Barbara section. There will be a full traffic report next month.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, T. Bruce Craig, W5JQD — SEC: RRM. PAMs: PAK and IWQ. RMs: PCN and QHI. GNE is building the August *QST* rig. The MOBILEARS of Wichita Falls hold drills on 29.1 Mc. each Tue. night and have hidden transmitter hunts each Sun. p.m. Within the last three months K5BIQ, K5BIV, and W5s AGE, DWS, GNE, GVA, KLM, PZS, QJY, QJZ, TLW, and ZAU have installed, principally all-band, mobile rigs. Thanks to MQW for the above news. AHC reports the following heard on the air: IJQ has a new DX-100. ANL is mobile in Colorado. NIC is mobile in New Mexico. AUJ reports the following: SZQ has the B&W 5100 complete with s.s.b. PXI has a new Elmac mobile receiver. TFP is getting an Elmac AF-67 and putting a Fort Worth variable inductor on his mobile. The Blue Ridge Net, on 160 meters, reports 80 per cent attendance for July. AHC went to the track meet at Houston July 24–27. He also participated in the CD C.W. Contest. NVH has his overseas orders. We are glad to get your traffic reports, but please just send a line or two of happenings. KN5BCV broke his collar bone and shoulder blade the day he received his call. DTA is going mobile in August. AWT is finishing a modulator but must build a beam yet. ACK took 3 weeks to build but has an FB Viking Ranger. TTU reports on the activity of the Texas YL Roundup Net each Thurs. on 3880 kc. 0830 to 0930 hours. K5FFB is net control of the Yankee Net, which meets daily on 7290 kc. at 0900 hours. The Dixie Net meets daily at 0800 on 3970 kc. Traffic: K5FFB 620, W5CVA 306, DTA/5 266, KPB 178, AHC 123, BKH 118, PAK 75, BTH 37, ASA 21, CF 20, FJB 16, ACK 11, OCV 8, TFP 7, AWT 5, LTY 4.

OKLAHOMA — SCM, Dr. Will G. Crandall, W5RST — Asst. SCM: Ewing Canady, 5GIQ. SEC: KY. RM: GVS. PAMs: PML, SVR, and ROZ. A look at the traffic totals shows clearly the results of hot weather and unfavorable band conditions. Increased openings on the 10-meter band have had a definite effect on the 75-meter band and there have been some indications, such as skip and dead areas, that the 75-meter band will become increasingly poor for daytime operation. The Novice crop has been picking up, as quite a number have been reported around the State, including KN5BXZ and KN5BPX. Also the three ten-year-old licensees in McAlester have gotten their General Class tickets and are heard on the air quite frequently. Several DX-100s are in operation around the State and are putting out good signals. Many hams are reporting from vacation trips and to military and National Guard camps. There was some excellent newspaper publicity from Holdenville on ADC, NVD, PGN, TKI, and WN5BXZ; also publicity on OQT and YL and XYL operators in Oklahoma City, all with pictures. All Asst. Directors got a fine letter from our grand West Gulf Division Director, CF, and he certainly should get the help and coöperation he is requesting. Dad promises a letter at intervals on West Gulf Division doings and in return wants to know of ham needs in the Division. Traffic: (July) W5GVS 132, RST 40, QAC 24, PML 21, TNW 20, ADC 17, PNG 17, EHC 16, GXH 16, MFX 14, BBB 12, MGK 5, CFG 4, UCT 4. (June) W5JXM 50, MFX 19. (May) W5ITF 112.

SOUTHERN TEXAS — SCM, Morley Bartholomew, W5QDX — SEC: QEM. AQK is OBS and transmits the latest ARRL bulletins each Mon., Wed., and Fri. at 1800 on 3900 kc. ORG and his XYL and jr. operator visited in Austin the first week of August. Blake is sporting a new Olds Super 88, mobile too. New officers of SARCEN are: THU, ncs; LVE, 1st. alt.; and JHH, 2nd alt. EJT, LVE, and KQG are new members of the Tumble Bug Net. OIK is on 2 meters. YXH has moved to Milwaukee. QEM is rebuilding his 813 rig. WVY has returned from a tour of duty in Germany. The CCARC held Field Day on Padre Island. Those participating were CRO, PPC, INN, LOW

(Continued on page 116

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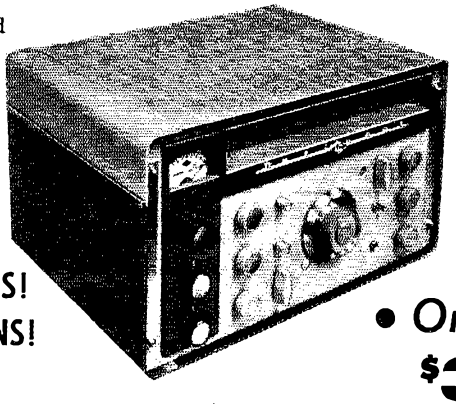

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GQN, and 6PWG/5. PPC, DQQ, QEM, and 6PWG/5 all have new 15-meter beams. PMT is back from Illinois. HQR is c.d. radio officer for Corpus Christi. YJB is attending Texas University this fall. Bill runs 2 watts mobile and really gets out; ask MSA if you doubt it. PC has his mobile in a new Mercury. Zone 1, of STEN, held a picnic in Victoria attended by ONG, TVK, RLZ, EV, MSA, BOY, YJB, MXV, and QEM. GI is now EC for El Paso. ZBK mobile and JN directed the highway patrol and ambulances to a major accident outside Houston. XE2CL visited DTJ. BLA is chasing 20-meter DX on c.w. KSY passed the General Class exam and got married before recovering from the shock. JBY also passed the General Class exam. CTZ, DFA, EPZ, WN5HTE, WN5HTG, WN5HTJ, and W5UNZ attended camp with the 49th Armored Division, Texas National Guard, and operated K5WCQ, getting messages to home stations in various parts of Texas. Traffic: W5MN 279, TFY 39, DTJ 10, RKI 4.

NEW MEXICO — SCM, Einar H. Morterud, W5FPB — RM: JZT. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1800 MST, Sun. at 0730. The NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700–0830 MST. The NM C.W. Net meets on 3633 kc. daily at 1900 MST. BJQ joined the Navy and is attending NOCS. WNU received an Armed Forces Day Message certificate. MSG averaged 1.1 p.p.m. in the May Frequency Measuring Test. The Pecos Valley ARC held an outdoor meeting in Carlsbad July 10th. RFF suffered extensive shack damage from rains. RVZ is building a 100-watt rig. MYQ, ZMN. VDY, and GXU demonstrated mobile equipment to the c.d. UFO Patrol activities are being coördinated by CA; amateurs interested in UFO (unidentified flying objects) phenomena are invited to participate in on-the-air UFO Patrol discussions on the low end of 20- and 40-meter c.w. Listen for the call "UFP." If this report seems to be mostly Albuquerque activity each month it is because no one sends in any items and it is necessary to use information that we know about locally. This report is on YOUR activities. Traffic: K5FEF 218, FHU 37, W5BZB 20, CEE 17, RVZ 4, WNU 2.

CANADIAN DIVISION

MARITIME — SCM, Douglas C. Johnson, VE1OM — Asst. SCMs: Fritz A. Webb, 1DB; Aaron D. Solomon, 1OC. SEC: RR. Bouquets to the LCARC of Saint John and the NBARA for jointly sponsoring the ARRL Canadian Division Convention held at Saint John on July 30th and 31st. It was attended by 152 amateurs and XYLs (YLs). Outside visitors included VE2NJ, VE2OS, VE4KN, W2VDX, W2EWO, and W7RVN. Guests of honor were W1BDI, VE2BE, the mayor of Saint John, the C.D. Director, and the R.I. Activities included a meeting of the NBARA, an ARRL meeting, banquet, speeches, presentation of cups, guessing contests, a c.w. speed contest, initiation into the Royal Order of the Wouff Hong, hidden transmitter hunts, a tour of the city, and a picnic. Over 20 mobile set-ups were in attendance, which is a record. W1BDI gave an excellent demonstration of his 75- and 2-meter mobile equipment. Personally, the Hamfest was one of the best I have ever attended, and all hats are off to the LCARC and NBARA! OC and his XYL made a trip to VE7-Land. XK is doing FB with a new Ranger transmitter. WL is having success with his new mobile set-up. WB has been reëlected president of the NBARA. Musician ER did a fine job at the hamfest sing-song. Traffic: VE1FQ 236, UT 83, WK 31, ME 28, OM 4, BN 1.

ONTARIO — SCM, G. Eric Farquhar, VE3IA — YJ/3 operated at Queen's Park, London, during that city's Centennial. Personnel located at Civil Defense Headquarters were AJH, QC, BVM, AOO, and YJ. BHK visited old haunts and CAB. AAS now is mobile. AOE now is located in Kirkland Lake. At the Ontario 'Phone Club picnic, held at Collingwood recently, the following were elected: TX, pres.; RH, vice-pres.; DMI, secy. AML is recuperating from a hospital session. BRI, who did much work in forest-fire fighting service as a pilot, was hospitalized because of a car accident. The newly-appointed QSL Manager for this section, QE, has many cards awaiting self-addressed envelopes. Please assist him by sending yours in today. The Algoma Amateur Radio Club held a ham family picnic on St. Joseph's Island near the Soo. Being a definite success it is likely to become an annual affair. DVY and AXH did a yeoman job with its arrangements. AWR was heard on two meters from Port Dover. AVS completed WAC and reports on the tremendous forest fires and drought. OMs and XYLs of the Hamilton District paid tribute to BHK at a gathering on the shore of Lake Ontario. BHK has moved to Peterboro, a true loss to Hamilton. Good luck, OM. Traffic: VE3NG 140, AJR 76, VZ 51, DQX 50, GI 48, NO 45, DPO 34, KM 27, AUU 22, BUR 19, PH 16, DH 6.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — DR continues to hold forth with others on PQN thrice weekly despite the summer fall-off. DR has a new SX-96 receiver which he likes better the more he becomes familiar with

(Continued on page 118)

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For AM, CW and SSB

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Complete with tubes (less speaker) $249.95

Model R-46A speaker for above in cabinet to match 19.95

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all it will do. FL reports the Northland Net continues to meet on 3755 kc. at 1915 Wed.; also that a meeting was held at the shack of AMY to celebrate the opening of his newly-built 160-watt transmitter on 10, 20, 40, and 80 meters and to bid adieu to OB, who was leaving that district. BR spent July at his summer place with portable and mobile from that location. BK also was at his summer place getting the odd QSO, which is usually interrupted by children who want to play! LM also is operating from his summer place at Vale Perkins and manages to get in a bit of traffic. OP participated in the recent Frequency Measuring Test with gratifying results. Traffic: (July) VE2LM 48, DR 46, FL 16. (June) VE2DR 54.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD. RM: XG. Congratulations to the Southern Alberta Radio Club on the well-planned hamfest. While the attendance was down from the usual it was most enjoyable for all who attended. OD has gone for 8-mm. movies. PS, JP, PV, and YE are new Official 'Phone Stations. YE and his XYL are back after an extensive trip to British Columbia and Saskatchewan. JP is QRL working over his modulator. YN swept the gremlins out of the rig when MJ visited the shack. EH and his XYL are on a trip to California. YD is working on the organization of the Central Alberta Mutual Aid Net. HM has had VE8YO visiting him. HX was a recent visitor to Calgary. LQ is making progress on his new rig. LS is ready to go mobile. Monthly reports to your SCM for publication in this column are urgently needed, gang. Please send your news in, otherwise I am unable to find the dope to fill the necessary space. Traffic: VE6HM 143, OD 38, VE7HD 12, VE6MJ 8.

MANITOBA — SCM, John Polmark, VE4HL — OO: RB. JW's new signals show what an antenna can do. NW portable is doing well again this year. Thanks to the few who kept the noon and evening nets going throughout the summer months. Now is the time to make application for an appointment. Inquire as to the one you can qualify for and can handle. RA has a brand-new jr. operator, born July 10th. We haven't heard that big signal from DS yet. TQ was a recent visitor to the southern parts. When do we hear that kw., Ed? CX must have left television alone lately as he was heard on 75-meter mobile quite a lot. LOO, our tractor mobile, still is having trouble with the transmitter. Traffic: VE4AI 26, GE 22, QD 6, GB 5, AY 4, CB 4, KG 4, EF 3, VE5DS 3, VE4HC 2, JW 2, RC 2, YR 2, VE5GO 2.

Silent Keys

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

WN1EIM, Raymond Cox, Middlebury, Vt.
W1KK, Thomas P. Chapman, West Springfield, Mass.
W1LFF, John N. Stanley, North Wilmington, Mass.
W2EHD, Warren C. Brady, Brushton, N. Y.
W2GQG, Martin Peterson, Butler, N. J.
W2WPD, Robert Lewis, Islip, L. I., N. Y.
W2ZKB, Albert Gottlieb, Pleasant Valley, N. Y.
W3CSQ, Laurence W. Harry, Chevy Chase, Md.
W3EQ, Walter J. Deery, Havertown, Penna.
W4NYD, Dallas E. Vaughn, Middlesboro, Ky.
W5GWA, Wade Smith Luckett, Springdale, Ark.
W6ANT, Hullett H. Honeywell, Chatsworth, Calif.
K6DVA, George P. Willner, San Leandro, Calif.
W6DZH, ex-W1CCZ, Edward C. Crossett, Pasadena, Calif.
W6EUI, Roy S. Skaggs, Bakersfield, Calif.
W6YYG, Frank Leake, Glendale, Calif.
W7AWG, Claude E. Boden, Bellevue, Wash.
W7IEY, Louis Dspain, Empire, Ore.
W7TQ, Evert Rodenhouse, Seattle, Wash.
W7UM, Gerald F. Alcorn, Longview, Wash.
W8BKQ, Earl A Shulenberger, sr., Fremont, Ohio
W8NAM, Edward Lockhart, sr., Princeton, Ohio
W9BII, Roy Baskett, Rushville, Ill.
W9UIM, Murray Bingham, Sturgeon Bay, Wisc.
WØDJT, Melvyn R. Wright, Fergus Falls, Minn.
WØPPZ, Walter A. Haeussinger, Winona, Minn.
WØSWC, Arne F. Rova, Jamestown, N. Dak.
HB9AA, Hans Buechler, Zurich
KL7ABN, Robert G. Persyn, Anchorage
VE7SW, Alan Heath Pratt, Victoria, B. C.

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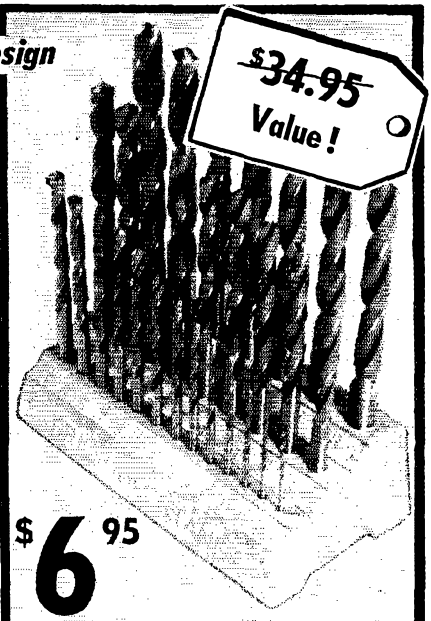

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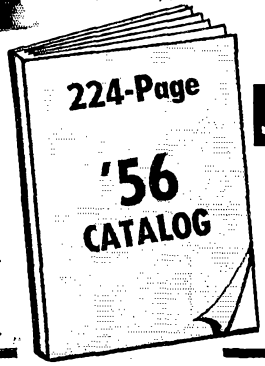

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Medium-Power Transmitter

(Continued from page 19)

chart and parts list were calculated to provide a Q of about 12 in the plate tank circuit, for a plate-voltage/plate-current ratio of about 13:1 (2000 volts, 150 ma.). Departure from this ratio will make it necessary to change some of the values of the tank components if a Q of 12 is to be maintained.[6] Ideally, the transmitter should work into a 50-ohm antenna or an antenna coupler that will present 50 ohms to the transmitter, but reasonable variations can be compensated for nicely by juggling the loading capacitors and the value of L_{14}. A little time invested in getting the transmitter adjusted to a particular antenna will pay off in signal reports.

TABLE II
Tune-Up Chart
(Values are approximate)

Band	C_{14} (Dial)	C_{15} (Dial)	L_{14} ($\mu h.$)	Output ($\mu\mu f.$)
80	95	90	26.0	600
40	23	50	14.5	300
20	82	25	8.2	200
15	15	15	6.0	100
10	5	10	2.3	100

As mentioned earlier, the rig described here has been in use for over a year, on 80, 40, and 20 for the most part, and has been a pleasure to operate. Changing bands is a simple process, and is done very quickly — a great help in the SS contest. Living in a relatively strong TV-signal area, with a TV antenna about every 50 feet in all directions as far as the eye can see, not a single TVI complaint has been received to date. This includes our own TV set, the antenna for which is about 10 feet from the 20-meter ground plane, the mast of which also serves to hold up one end of the 80/40-meter horizontal antenna.

Many complimentary reports have been received on the keying and no clicks can be heard off frequency, even by the nearest locals. Operation is full break-in, and since a TVG unit[7] has been installed in the station receiver, switching from receive to transmit involves only the movement of the hand to and from the bug.

Application of Tekni-Cals to the front panel, plus careful layout has resulted in what we feel is a "finished" look.

The author would like to acknowledge with gratitude the contributions made by W2RDK, W2HSZ, and K2EOC during the design and construction of this rig, and the patience of my XYL, who puts up with this sort of thing..

[6] A 100-$\mu\mu f.$ tank capacitor is sufficient over the plate-voltage range of 600 to 3000 (assuming a plate current of 150 ma., and a 50-ohm load in each case) for all bands except 80 meters. On 80 meters, 100 $\mu\mu f.$ is adequate for 2000 volts or more. A 150-$\mu\mu f.$ capacitor is recommended for plate voltages down to 1000, while a 200-$\mu\mu f.$ unit should be provided if operation down to 600 volts is contemplated. Also, for 80-meter operation into a 50-ohm line, an output capacitance adjustable up to 900 or 1000 $\mu\mu f.$ would provide greater assurance of obtaining a proper match. — Ed.

[7] Miller and Meichner, "TVG — An Aid to Break-In," *QST*, March, 1953.

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Collins 32V1	44.75	895.00	Morrow 5BRF	3.33	66.59
Collins KWS-1	99.75	1,995.00	Morrow FTR	6.29	125.83
Collins 32V3	38.75	775.00	Gonset Super 6	2.63	52.50
Ranger Kit	10.73	214.50	Gonset Commander	6.23	124.50
Ranger wired	14.65	293.00	Gonset Communicator	11.48	229.50
Viking II kit	13.98	279.50	Palco Bantam 65	7.98	159.50
Viking II wired	16.85	337.00	HQ 140 X	13.23	264.50
VFO kit	2.28	45.50	PRO - 310	29.75	595.00
VFO wired	3.13	62.50	Hallicrafters S38D	2.50	49.95
Adventurer kit	2.75	54.95	Hallicrafters S85	6.00	119.95
Matchbox	2.49	49.85	Hallicrafters SX99	7.50	149.95
K W amplifier	79.75	1,595.00	Hallicrafters SX96	12.50	249.95
RMD DB-23	2.48	49.50	National SW54	2.50	49.95
B & W 5100S	23.38	467.50	National NC88	6.00	119.95
B & W 51SB	13.98	279.50	National NC98	7.50	149.95
Central 10B	6.48	129.50	National NC125	10.00	199.95
Central 20A	9.98	199.50	National NC183D	19.98	399.50
Central 600L	17.48	349.50	National HRO60	26.68	533.50
Elmac PMR 6 or 12	6.73	134.50	H-W R-9	7.48	149.50
Elmac AF-67	8.85	177.00	H-W T-9	8.98	179.50

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De Luxe Receiver

(*Continued from page 26*)

Performance

When the receiver was completed, it was a pleasurable experience to discover that the amateur bands are not so crowded as old-fashioned receivers lead one to believe. As one tunes across a band, signals suddenly appear and just as rapidly disappear, instead of spreading out and merging together into one continuous bedlam of QRM. The single-signal effect is a phenomenon so startling it must be heard to be appreciated. With the 800-cycle filter in place it is absolutely impossible to hear any trace of signal on the other side of zero beat. And with the 3-kc. filter on 'phone, one listens to only one sideband at a time, depending on which one has the least interference.

Stability and freedom from drift are excellent. The reserve gain is terrific, the noise limiter works like a charm, and there just aren't any images. Best of all, one doesn't have to mortgage the house to build such a receiver. The mechanical filters can be purchased one at a time as solvency permits, and a wire jumper between the input- and output-filter sockets allows the receiver to be used even before the first filter is obtained. Once you hear what one filter can accomplish, you won't rest until the other is snug in its socket.

Simplest Converter

(*Continued from page 30*)

input, or it can be peaked on noise or signals with the antenna connected to the converter. If the grid circuit peaks satisfactorily, you are in business. Some improvement on weak signals may be possible through adjustment of the position of the tap on the grid coil, and the mixer plate voltage should be checked to see that it is somewhere near 75 volts. On the higher bands tuning C_1 will shift the oscillator frequency, so that retuning the signal as this adjustment is made may be required.

As we mentioned before, the 15-, 11-, and 10-meter bands are covered by one pair of coils. It is necessary, of course, to reset the oscillator trimmer, C_5, for each band to the proper range. An alternative would be to use separate coils and trimmers for each band as is done on the higher ranges. Bandspread obtained with the original converter using a 7-Mc. i.f. was as follows: 21.0–21.45 Mc. — 65 divisions; 26.96–27.23 Mc. — 12 divisions; 28.0–29.7 Mc. — 67 divisions; 50–54 Mc. — 75 divisions; 144–148 Mc. — 65 divisions; and 220–225 Mc. — 30 divisions. More bandspread can be obtained on the higher ranges by removing more plates from the tuning capacitor, but this will not permit full coverage on the lower bands.

That about takes care of the adjustments. You now have a converter that will do a good

(*Continued on page 124*)

job on any band from 21 to 225 megacycles. It's not the ultimate in receiving equipment, of course, but you may be surprised at how well it compares with even medium-priced receivers, particularly on 28 or 21 Mc.

Readers are sure to ask, "Why didn't you put in an r.f. stage?" (or an i.f. amplifier, or make provision for plug-in coils, or build a voltage-regulated power supply, or install a panel, or — or — or). To this we reply that for once we tried to make a usable converter that would be devoid of any feature not absolutely necessary to provide reception on the bands to be covered. This is "the simplest"; if you want de luxe features you can take it from here.

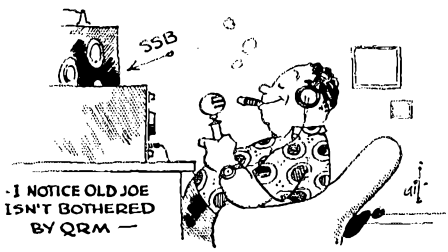
Wait and See

(Continued from page 31)

getting. "Yeah," he says, with a sour look, "I've been listening to you lately but if I have to have a note like a bunch of sparrows just to get to talk with some guy a little farther away than I can get normally I'll be doggoned if I don't jest lock up the shack and take up photography." If I had been set up with store teeth then I sure would have dropped my uppers. The guy meant it! I know he did because a year later he was off the air and so help me he has never returned.

It makes me sad to think about Old Bill. He had one of the best fists on the air and more fun with his hamming than any three hams are entitled to have. But he had an opinion and he defended it even to the point of dropping his hobby. I have always thought he just couldn't endure the thought of learning a new set of techniques in order to hold his own with the rest of the gang. After all, spark operation was simple and the new c.w. method was much more complicated by comparison. Oh well, I've seen many Old Bills in other fields and I guess there's nothing I can do about them even if they do make me sad.

Along about last year Old Joe went single sideband. Now the whole gang of locals are saying mean things about him and his "rubber-voiced" 'phone communications. They say he is taking up too much of the band and I'm kinda inclined to agree with them when I'm listening to a.m. on my receiver. But you know, I notice he doesn't have the least bit of trouble with QRM



when the rest of the band is so cluttered with a.m. signals there isn't a place to light.

(Continued on page 126)

Progress *is* necessary and it must come. The s.s.b. boys tell some fantastic stories about the wonders of their 'phone method. Their stories are almost too good to be true and I can't help but be suspicious of them. If what they say is even partially true, s.s.b. does represent progress. It looks to me as though all this fuss about s.s.b. is because the new method is gumming up the old. When c.w. came along, it was the old method which interfered with the new. But the new method was the better method. It represented progress and it did win out, but it took several years to win the boys over.

It seems to me as though both sides in this s.s.b.-a.m. row have a few new tricks to learn. It seems the s.s.b. boys need to be very sure their rigs are clean and the a.m. boys have a few more things to learn about their receivers. It'll take time for the row to be decided, but all concerned should wait and see. Many on-the-air friendships will be broken up by the a.m. *vs.* s.s.b. row. Many of the voices which are now so familiar as I tune across the band will no longer be heard. It makes me sad to see this history repeating itself. Seems it is just my bounden duty to ask both sides to be patient if the urge to spout off about opinions comes along. Seems I've just got to ask all the boys to say as little as possible to hurt the other fellow until time gives us the answer. Wait until time does give that answer, please!

You know, since QRM is so heavy, it would be foolish to get into this subject on the air. I believe I'll just give Old Joe a call on the land line so I can go and sit with him and really look into this s.s.b. business first hand. It might need a lot of looking into.

Mobile Antenna Tuning

(Continued from page 33)

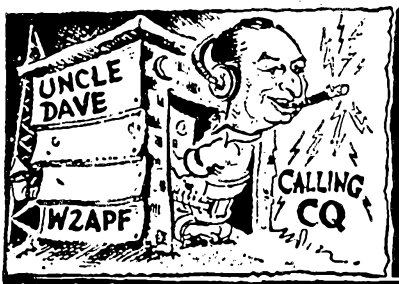
as far back against the front seat as possible. This location keeps the control within easy reach, although nothing of the cable is in sight. The hole in the car-body floor is also hidden and is easily covered when the installation is removed. No fastener or adapter could be found for the cable at the tuner end, so it was merely clamped to the car body about a foot from the tuner.

In connecting the line that runs between the thermocouple on the unit and the r.f. ammeter on the dash board, be sure to observe the polarity markings on both the thermocouple and the meter.

Adjustment

Operation of this unit is so simple and straightforward that little explanation is necessary. However, a few pointers may be helpful in getting best results on the first trial. Mount the unit as close as possible to the receptacle at the base of the antenna. Prune the loading coil so that about five turns of the rotocoil are in the circuit at the high-frequency end of the band. This will mean about seven turns less on the Hi-Q type Master-Mount coil, or slightly more on coils of

(Continued on page 128)



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Hallicrafters SX28A, w/PM23 spkr	125.00
Hallicrafters SX42 w/R-42 spkr	250.00
National NC-125 w/spkr	150.00
Johnson Viking Mobile w/VFO	135.00
Gonset Audio Amp. and Power supply 6V DC	35.00
Gonset Tri-Band converter	30.00

MOSLEY "VEST-POCKET" ROTARY BEAM ANTS AND COILS

REDUCED PRICES

10, 11, 15 Meter	
VPA1015-2 Bm.	39.89
VP1015-2 Coil	14.95
VPA1015-3 Bm.	59.68
VP1015-3 Coil	22.95
20 Meters	
VPA20-2 Beam	44.73
VP20-2 Coil	14.95
VPA20-3 Beam	66.37
VP20-3 Coil	22.95

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smaller diameter. Here is where a grid-dip meter comes in handy, although the job is by no means impossible using just the transmitter tuning indicator and the antenna-current indicator. Now try tuning the antenna to the low end of the band by means of the tuner. You will be surprised at how few more turns of coil are necessary. It is advisable to mark each end of the band on the dial of the tuner with paint or white ink. After these adjustments are made, operation consists only of tuning the transmitter and then tuning the antenna for maximum indication of the r.f. ammeter. It may be found that with very low-power transmitters (10 watts or less) there is only a slight indication of current at exact resonance. Meter deflection can be increased by adjusting the leads to the meter transformer so that slightly more than one turn surrounds the core.

As might be expected, the entire system works equally well for receiving. The antenna changeover relay should be placed in or near the transmitter.

"Little Oskey"

(Continued from page 35)

the unit becomes inoperative.

With S_2 closed, everything is ready. When the key is up the receiver is heard; when the key is down a sidetone is heard and the transmitter is keyed. The oscillator tone level can be adjusted with the gain control on the unit, while the receiver level is controlled at the receiver. If the station being worked wishes to break in, his signals can be heard between the characters being transmitted.

Since the receiver is actually on during key-down conditions (even though it appears to be off in the headphones), care should be taken not to damage the receiver by r.f. overloading. The monitor has been used successfully at W1CUT with a cathode-keyed transmitter running as high as 200 watts input. For simplicity, separate transmitting and receiving antennas are used. The unit cannot be used with grid-block keyed transmitters — it is designed for cathode-keyed rigs only.

If the transmitter and receiver are turned off the monitor can be keyed and used as a code-practice oscillator. The sidetone will appear in the headphones as the unit is keyed.

Strays

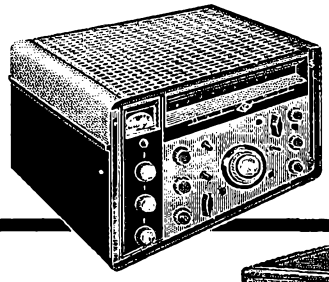
K2KTX tells us that during an operation, K2IWT was reported to have been tapping out code while unconscious from the effects of the anesthesia. Evidently K2IWT is one fellow who does not have to worry about learning the code subconsciously.

—...—

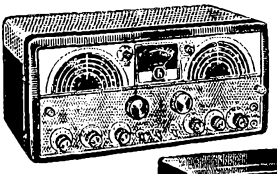
With the election of W4FE as SCM of Eastern Florida, all elected officials in the Southeastern District have two-letter calls.

"Butta, I Donta Know Anybody In Australia. Cana We Go, Now?"

There is only one source you need to know when it comes to super trades on used (factory-built) test and communication equipment and that's Walter Ashe, the House of "Surprise" Trade-Ins. So for real money saving and satisfaction, get your trade-in deal working right now. Wire, write, phone or use the handy coupon below. Do it today!

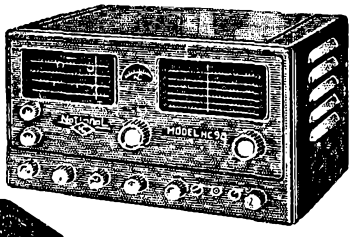


ANNOUNCING
NATIONAL'S NEW DREAM RECEIVER— THE GREAT NC-300
Less speaker. Net $349.95

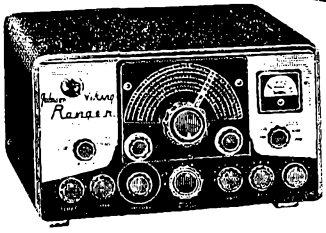


HALLICRAFTERS SX-100. Less speaker. Net $295.00

HALLICRAFTERS SX-99. Less speaker. Net $149.95



NATIONAL NC-98. Less speaker. Net $149.95



JOHNSON VIKING RANGER TRANSMITTER-EXCITER KIT. Net $214.50. Wired and tested. Net $293.00

WELLER MODEL 8100K SOLDERING KIT.

Includes soldering gun, wire soldering brush, soldering aid, and a supply of Kester solder. Packed in heavy cardboard case. Net $5.83

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for _____
(show make and model number of new equipment desired)
☐ Rush New 1956 Catalog.

Name _____
Address _____
City _____ Zone _____ State _____

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AT-1 Modifications

(*Continued from page 39*)

while holding the key down. If the amplifier is neutralized, the grid current will drop to zero and the lamp bulb will go out. Hold the key down only for a second or two when making these tests, because the amplifier tube draws excessive current when it has no grid excitation.

If grid current is present with the crystal removed it indicates that the amplifier is oscillating and must be neutralized. Hold the key down and adjust C_N, the neutralizing capacitor, to a setting that shows no grid current on the meter. Use a small insulated screw driver to adjust the neutralizing capacitor.

When the amplifier is neutralized on 80 meters, reinsert a 40-meter crystal and tune the rig up on 15. Make the same tests and follow the procedure as on 80. If the amplifier is not already neutralized on 15, the setting of C_N should not have to be changed very much to stabilize the amplifier. When the amplifier is neutralized on 15, it should be stable on all bands. It is not necessary to neutralize on 10 meters because the amplifier works as a frequency doubler.

Additional Information

In its modified condition, the transmitter can be used with 80-meter crystals for 80, 40, and 20. A 40-meter crystal will take care of 40, 20, 15, and 10. In the 15–10-meter position, the oscillator tuning is near minimum capacitance for 15 and near maximum for 10 (20-meter drive to the amplifier on this band).

A very noticeable keying chirp was present both before and after modification, most of it being caused by the change in oscillator screen voltage between the key-up and key-down conditions. The change was minimized by connecting a 68,000-ohm 1-watt resistor from Pin 6 of the oscillator tube socket to chassis ground.

To convince yourself that the modifications described here are worth while, try this test: Before making any changes, connect a 40-watt lamp bulb to the output terminal and tune the rig up on each band, observing the brilliance of the lamp. After the modification, go through the same procedure. You won't need dark glasses, but you should be pleasantly surprised by the difference in output. And don't forget — transmitters may be rated by input, but it's the output that works 'em!

COMING A.R.R.L. CONVENTIONS

October 15th-16th — Central Division, South Bend, Ind.

October 22nd-23rd — Midwest Division, Omaha, Neb.

(*Details on page 10*)

Use Your Military Training

The time was never more opportune than now for becoming associated with the field of advanced electronics. Because of military emphasis this is the most rapidly growing and promising sphere of endeavor for the young electrical engineer or physicist.

E.E. or PHYSICS GRADUATES
with experience in
RADAR or ELECTRONICS
or those desiring to enter these areas . . .

Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers *you will become familiar with the entire systems* involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

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Hughes-equipped Convair F-102 all-weather interceptor.

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RESEARCH
AND DEVELOPMENT
LABORATORIES

Culver City,
Los Angeles County,
California

World Above 50 Mc.

(Continued from page 71)

over a 3-year period. Signals have been recorded from several other outlying stations on vertical, and checks will be made on these when their horizontal installations are completed.

W7JRG, Billings, Mont. — Double-hop 6-meter DX scarce this summer, but plenty of single-hop heard and worked. Provided 50-Mc. WAS for WØDZM. Two-meter beam severely damaged by hailstorm; will be replaced when new tower is erected.

W7YJE, Seattle, Wash. — Six-meter mobile activity increasing. W7s PRW UFE TMM VIC LUF and YJE now all mobile.

W8NOH, Grand Rapids, Mich. — Acquiring a supply of crystals between 7600 and 7900 kc. brought need for surefire way to shift them to above 8000 kc. At suggestion of W8DX, tried saturated solution of ammonium bifluoride in water. This is available in flake form at low cost. Mix in plastic container, and handle with care, as the water solution will cause burning of the skin. Etching at the rate of one-half

(Continued on page 134)

2-METER STANDINGS

Call	States	Areas	Miles
W1RFU	19	7	1150
W1HDQ	19	6	1020
W1CCH	17	5	670
W1IZY	16	6	750
W1UIZ	16	6	680
W1IEO	16	5	475
W1KCS	16	5	600
W1AZK	14	5	650
W1MNF	14	5	600
W1BCN	14	5	650
W1DJK	13	5	520
W1MMN	10	5	520
W2ORI	23	8	1000
W2NLY	23	7	1050
W2AZL	21	7	1050
W2QED	21	7	1020
W2BLV	20	7	910
W2QPQ	19	6	—
W2DWJ	18	6	632
W2AOC	18	6	660
W2UTH	18	7	880
W2PAU	16	6	740
W2PCQ	16	5	650
W2LHI	16	5	550
W2CFT	15	5	525
W2DFV	15	5	—
W2AMJ	15	5	550
W2BRV	15	5	590
W3RUE	23	8	950
W3KCA	21	7	—
W3NKM	19	7	680
W3IBH	19	7	650
W3BNC	18	7	750
W3PPH	18	7	—
W3TDF	18	6	720
W3GKP	17	6	800
W3KWL	16	7	720
W3LNA	16	7	720
W4HHK	28	9	1280
W4AO	23	7	950
W4PCT	20	8	—
W4JFV	18	7	830
W4MKJ	16	7	665
W4UMF	15	6	600
W4OLK	15	6	720
W4OXC	14	7	500
W4JHC	14	5	720
W4WCB	14	5	740
W4TCR	14	5	720
W4UBY	14	5	435
W4IKZ	13	5	720
W4JFU	13	5	720
W4TLV	13	5	700
W4UDQ	11	5	850
W4ZBU	10	5	800
W4WNH	10	5	500
W4HJQ	10	4	500
W4MDA	10	4	680
W5RCI	21	7	925
W5JTI	19	7	1000
W5AJG	13	4	1260
W5QNL	10	5	1400
W5CVW	10	5	1180
W5ABN	10	3	780
W5MWW	9	4	570
W5ML	9	3	700
W5ERD	8	3	570
W5FEK	8	2	580
W5VX	7	4	—
W5VY	7	3	1200
W5ONS	7	2	950
W5FSC	7	2	500
W6WSQ	5	3	1380
W6DNG	4	2	350
W6ZL	3	3	1400
W6BAZ	3	2	320
W6NLZ	3	2	360
W6MMU	3	2	240
W7LEE	5	3	1020
W7VMP	5	3	417
W7JU	4	2	353
W7YZU	3	2	240
W7JUO	3	2	140
W7RAP	2	1	165
W8WXV	28	8	1200
W8LPD	23	8	—
W8SVI	22	8	725
W8RMH	22	8	690
W8DX	22	7	675
W8SRW	20	8	850
W8WRN	20	8	670
W8BAX	20	8	685
W8JWV	19	8	710
W8EP	18	7	800
W8ZCV	17	7	970
W8RWW	17	7	630
W8WSE	16	7	800
W9EHX	24	7	725
W9FVJ	23	8	850
W9BPV	23	7	1000
W9EQC	22	8	820
W9KLR	21	7	690
W9UCH	21	7	750
W9ZHL	21	7	—
W9KPS	19	7	660
W9MUD	19	7	640
W9REM	19	6	—
W9LF	19	—	—
W9ALU	18	7	800
W9GAB	18	7	750
W9JGA	18	6	720
W9WOR	17	6	600
W9MBI	16	7	660
W9BOV	15	6	—
W9LEE	15	6	780
W9DSP	15	6	760
W9JNZ	15	6	560
W9DDG	14	6	700
W9FAN	14	7	680
W9QKM	14	6	620
W9JIY	13	6	560
W9UIA	12	7	540
W9ZJD	11	5	700
W9GTA	11	5	540
W9JBF	10	5	760
WØEMS	26	8	1175
WØIHD	24	7	870
WØGUD	22	7	1065
WØONQ	17	6	1090
WØINI	14	6	830
WØOAC	14	5	725
WØTJF	13	4	—
WØZJB	12	7	1097
WØWGZ	11	5	760
VE3DIR	22	7	700
VE3AIB	21	8	890
VE3DER	15	7	800
VE3HQN	14	7	790
VE3BPB	13	6	715
VE2AOK	12	5	550
VE3AQG	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365

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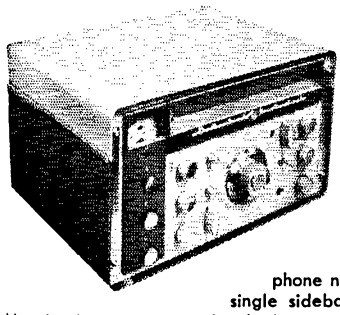
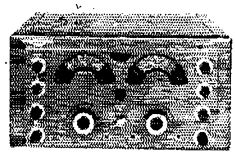


N—E—W

NATIONAL NC-300—Brand new from top to bottom, here is National's new "dream receiver", the NC-300. Dual conversion with better than 50 db primary rejection on all amateur bands—more than 60 db secondary image rejection. 10 dial scales for 160 to 1¼ meter coverage—extra long slide rule dial easily readable to 2 kc without interpolation up to 21.5 mc. Super selectivity—optimum bandwidth for CW, phone, phone net, or VHF operation. Separate linear detector for single sideband. Giant, easy-to-read "S" meter. Massive in appearance. Finished in attractive two-tone grey enamel. May be used as a rack or table model unit. Complete with all tubes. . . . . ONLY **$34.95** DOWN

$19.07 per month for 18 months.



NATIONAL 183-D—Outstanding in design—top performance even under most severe receiving conditions. Calibrated electrical bandspread for 80–75, 40, 20, 15, 11–10 and 6 meters. 3 IF stages; 16 tuned circuits. Better than 1.5 microvolt sensitivity for 6 db signal-to-noise ratio throughout the entire range. With tubes, less speaker. . . . . ONLY **$39.95** DOWN

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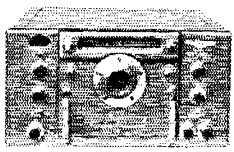
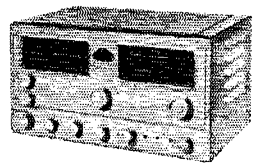
Matching 10" speaker. Housed in metal cabinet. **$16.00**



NATIONAL HRO-60—One of finest, most up-to-the-minute receivers available. Dual conversion above 7 mc; 2 RF stages. Sensitivity is 1. microvolt or better at 6 db signal-to-noise ratio. 1.7 to 30 mcs. Bandspread on 80, 40, 20, 11–10 meters. Excellent selectivity and high sensitivity. Complete with all coils and tubes. . . . . ONLY **$53.35** DOWN

$29.15 per month for 18 months.



NATIONAL NC-98—Complete with crystal filter and an "S" meter! Two models available—electrical bandspread calibrated for SWL or amateur bands. Edge-lighted dial scales—noise limiter—separate high frequency oscillator. A quality unit at a real budget price. Covers 550 kc to 40 mc. . . . . ONLY **$14.95** DOWN

$8.12 per month for 18 months—Matching speaker. **$11.00**

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SW-54. . . . . $49.95 NC-88. . . . . $119.95 NC-125. . . . . $199.50

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kilocycle per minute in cold solution can be accelerated to two kc. per minute by heating. Remove crystals from solution and rinse in clear water to stop etching process. Few crystals lose activity in the amount of etching required.

W8UZ, Columbus, Ohio — Opening of 50-Mc. band to Technicians brought about 25 new stations to the band in Columbus area, with more coming.

W9EET, Chicago, Ill. — Ten days of operating on 50 Mc. in Lincoln, Nebr., beginning July 4th, netted 116 contacts in 26 states.

Another Communicator Hint

In June *QST* we described a method for using the Gonset Communicator as a converter with a communications receiver as the i.f. This involved retuning of the i.f. system slightly, so it might scare off a potential user. (The i.f. is broad and the adjustment is in no way critical.) W1EOI goes us one better by wrapping an insulated wire around the leads to the noise-clipper switch, poking this through the back screen on the Communicator so that it protrudes about one inch. A piece of coax is connected between this wire and the communications receiver, in the usual manner. Enough i.f. energy on 6 Mc. is thus made available to give a reading, on noise alone, of S6 on W1EOI's NC-183 S-meter. No readjustment of the i.f.s is needed, and the wire may be pulled out, leaving the unit in exactly its original condition.

DX Contest Results

(Continued from page 68)

DELTA DIVISION

Louisiana

W5JUF.....23,287- 73-108-C- -
W5KC.....6930- 42- 55-B-11
W5CEW.....6765- 41- 55-C- -
W5BVD.....1320- 20- 22-B-12
W5INL.....675- 15- 15-A- -

Tennessee

W4DQH....119,915-145-277-C-57
W4FKA.....25,718- 77-112-B-41

GREAT LAKES DIVISION

Kentucky

W4KZF.....2673-27- 33-B-10

Michigan

W8RLT....89,916-127-236- B-45
W8DUS....67,041-117-191- C- -
W8PRY.....144- 6- 8- - -
W8QIT.....27- 3- 3- C- 6
W8DLZ.....12- 2- 2- B- 2
W8NGO (W8s CLR NGO) 91,432-129-236- -80
W8NWO (W8s HMI NWO) 74,466-126-197-AB-95

Ohio

W8NXF..101,178-146-231- B-67
W8LKH..88,832-128-232- C-54
W8ZOK....40,860- 90-152- B- -
W8YHO....32,766- 86-127- B-32
W8PUD....20,700- 60-115-BC-53
W8AJW....17,670- 62- 95- A- -
W8BF.....16,302- 66- 83- C- -
W8BTI....12,654- 57- 74- C-35
W8FGX....10,260- 45- 76- C- -
W8KZT.....5580- 30- 62- - -
W8HQK.....3556- 28- 43- B- -
W8LOF..... 390- 10- 13- A- 5
W8HFE.....144- 6- 8- - -
W8PM.....75- 5- 5- - 2
W8GDQ.....45- 3- 5- B- 7
W8OMK.....27- 3- 3- - -
W8BKP (W8s BKP WFB) 133,569-153-291- C-75

HUDSON DIVISION

Eastern New York

W2VRE....12,012- 52- 77-BC-30

N.Y.C.-L.I.

W2WZ.....173,160-156-370-C-6
K2CJN.....10,212- 46- 74-A-22
W2BRV.....4200- 35- 40-B-10
W2SGK.....1474- 22- 23-C- -
K2DEM.....297- 9- 11-B- 4
W2GSN.....27- 3- 3-B- 1
K2CMV.....3- 1- 1-B- 2

Northern New Jersey

W2SKE/2...439,356-228-650-C-96
W2GLF.....19,032- 61-104-C-25
W2BOK.....960- 16- 20-B- 4
K2IKS.....3- 1- 1-A- 1

MIDWEST DIVISION

Iowa

WØDIB.....264- 8- 11-B- -
WØQVZ.....27- 3- 3-B- 1
WØNWX (WØs FNR NWX PKH VDQ).....18,207- 63- 99-B- -

Kansas

WØQFQ 10,665- 45- 79-B-34
WØMVO.....5076- 36- 47-B-15
WØVBQ.....2511- 27- 31-C-14
WØLUB.....648- 12- 18- - -
WØGAX.....6- 1- 2-A- -
WØEIB (WØs EIB OCP) 23,079- 49-157-C-72

Missouri

WØGEK.....15,698- 47-112-B-39
WØMCX.....7488- 39- 64-C-28
WØQDF.....1080- 18- 20-C- -
WØANF.....168- 7- 8-C- 2
WØLLU.....126- 6- 7-A- 4

Nebraska

WØGKL.....9636- 44- 73-C-30
WØBBS.....6090- 35- 58-C-13

NEW ENGLAND DIVISION

Connecticut

W1ATE....492,184-238-690-C-94
W1ODW.....12,879- 53- 81-A- -
W1CJL.....2304- 24- 32- -20
W1APA.....360- 10- 12-C-10
W1YYM[1].....108- 6- 6-A-10
W1YWU.....27- 3- 3-B- -
W1ZMB.....8- 2- 2-B-15

(Continued on page 136)

LAFAYETTE'S SPECTACULAR MONEY SAVERS

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AT LAST A COMPLETE LINE OF QUALITY TRANSFORMERS FOR EVERY TRANSISTOR APPLICATION AT A PRACTICAL PRICE!

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- Wound on Nylon Bobbins
- Mylar Outer Wrap
- Color Coded Leads

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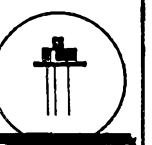
Argonne Number	Type	Impedance Pri- mary Ohms	Impedance Second- ary Ohms	Unbal- anced Current Pri. D.C. MA	D.C. Resistance Pri. Ohms	D.C. Resistance Sec. Ohms	Overall Size
AR-100	Input	200,000	1,000	.0	3600	90	1"x¾"x¾"
AR-101	Input	100,000	3,000 CT	.5	3600	60	1"x¾"x¾"
AR-102	Input	100,000	1,500 CT	.5	3600	40	1"x¾"x¾"
AR-103	Driver	20,000	2,000 CT	1	400	50	1"x¾"x¾"
AR-104	Driver	20,000	1,000	.0	400	50	¾"x⅝"x⅝"
AR-105	Driver	20,000	400	1	600	30	1"x¾"x¾"
AR-106	Driver	16,000	4,000	1.	620	350	¾"x⅝"x⅝"
AR-107	Driver	15,000	200	1.5	1000	20	1"x¾"x¾"
AR-108	Driver	10,000	3,000 CT	0	200	100	¾"x⅝"x⅝"
AR-109	Driver	10,000	2,000 CT	0	500	50	¾"x⅝"x⅝"
AR-110	Output	10,000	25	2	600	2.5	¾"x⅝"x⅝"
AR-111	Output	5,000	100	1	600	10	¾"x⅝"x⅝"
AR-112	Output	3,500	200	1	120	25	1"x¾"x¾"
AR-113*	Driver	3,000 CT	1,000	9	100	60	¾"x⅝"x⅝"
AR-114	Output	2,500	11	10	50	.1	¾"x⅝"x⅝"
AR-115	Input	2,000 CT	8,000 CT	0	150	660	1"x¾"x¾"
AR-116	Output	2,000	200	4.	120	20	1"x¾"x¾"
AR-117	Output	500 CT	30	.0	20	1.5	¾"x⅝"x⅝"
AR-118	Output	500 CT	16	0	20	1.5	¾"x⅝"x⅝"
AR-119	Output	500 CT	3.2	0	20	.3	¾"x⅝"x⅝"
AR-120*	Output	400 CT	11	1.	20	.9	¾"x⅝"x⅝"
AR-121*	Output	300 CT	3.2	.0	20	.25	¾"x⅝"x⅝"
AR-122*	Output	250 CT	3.2	0	11	.3	1"x¾"x¾"
AR-123	Input	200	2,000 CT	2.	11	50	1"x¾"x¾"
AR-124*	Output	200 CT	16	0	20	1.3	¾"x⅝"x⅝"
AR-125	Input	3	4,000	.0	.11	50	¾"x⅝"x⅝"

NEW GE TRANSISTOR TYPE 2N107

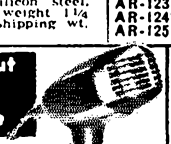
P-N-P



$1.25

RAYTHEON TRANSISTORS SALE!

High Output Dynamic Microphone



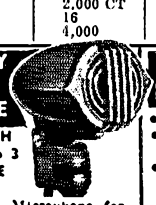
List Price ~~$47.00~~ **$12.95**

High quality Dynamic microphone exceptionally fine for Public address recording, etc. Flat response 60-10,000 cps. Impedance 40,000 ±15% at 1,000 cps output level −55 db. Die cast metal case equipped with 6 ft. of shielded cable. Shpg. wt. 3 lbs

PA-19—In lots of 3 ..... 12.45
singly, ea. 12.95

TOP QUALITY CRYSTAL MICROPHONE

COMPARE IT WITH ANY MIKE AT 2 to 3 TIMES THE PRICE



A quality crystal Microphone for PA systems, house recorders, etc. Frequency response 30 to 10,000 cycles Output level −52 db. Provides ample output for use with low gain amplifiers. Complete with 5 ft. of shielded cable. Shpg. wt. 3½ lbs.

PA-24—In lots of 3 . **$3.95**
singly, each 4.25

LAPEL MICROPHONE

- REGULAR $16.00 VALUE!
- FULL −55 db. OUTPUT LEVEL!
- IDEAL GENERAL PURPOSE MIKE!

2.95

Specially engineered crystal Microphone Attaches to lapel. Only 1⅝" in diameter. Exceptional frequency response. Output level −55 db. chrome plated case and clip for attaching to lapel. Includes 5 ft. of shielded cable. Shpg wt. 1 lb.

PA-18 ..... 2.95

CK-722 RAYTHEON

CK-722—Singly, each..... 2.10
—In lots of 10, each..... 1.95

CK-721—Singly, each..... 2.40
—In lots of 10, each..... 2.25

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5004P

Our Inexpensive Etched-Wire Kits Contain: Laminated Copper Boards (XXX-P); Printed Circuit Tube Sockets; Copper Etching Material and instructions; Etch-resistant material for Circuit layouts; Eyelets and drill for connections; Sealed Layout Sheets for making your own or standard Printed Circuits. All Kits Are Supplied with Plastic Case

5001P—BASIC KIT

Contains a complete assortment of materials needed to make a variety of different Printed Circuits. Circuit Diagrams include Multimeter and 1-tube Receiver.

Only **3.95**

5003P—SERVICEMAN & TECHNICIANS' KIT

Contains three times the material of Kit 5001P with special Sockets, Connectors and double-faced Copper Boards.

Only **9.75**

5004P—PRODUCT DESIGNERS' KIT

This special Kit enables the Manufacturer and Laboratory to make a pilot run of etched wire Printed Circuits with his own staff and facilities. Contains all the latest information, materials and methods for adapting your product to mass production techniques.

25.00

REMOTE CONTROL FOR SILENT TV VIEWING

The hard-of-hearing can listen to radio or TV without turning the volume so high that others can't stand the noise. They can listen with loud speaker cut off, or if others want to listen, with normal speaker volume. Excellent for noisy programs. Let the Kids listen and view with speaker cut off. Comes complete with miniature phone, fits snugly in ear, 20 feet of cable and instructions.

- For Hard-of-Hearing
- For Late Listening

6.50

MS-125..... 6.50

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This tiny I.F. is the same as used in the transistorized sets of the leading manufacturers. Ideal for building miniature equipment.

MS-126—Single, each..... 89c
In lots of 10, each..... 79c

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W1MKW.....216- 6- 12- - 4
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8512- 38- 76-C-27

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W1CLX.....5310- 30- 59-B-10
W1YQC.....1674- 18- 31-B-22
W1KFV.....270- 9- 10-B- -

Vermont

W1SPK.....216- 8- 9-B- 4

NORTHWESTERN DIVISION

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W7FIN.....1222- 13- 32-B-35
W7NPV.....336- 8- 14- - 5

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W7HXG.....23,790- 61-131-C-30
W7DAA.....14,553- 49- 99-C-30

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W7ESK.....151,209-120-420-C-80
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W7HRH.....9160- 40- 77-C-25
W7PQE.....3540- 20- 59- -10
W7NLI.....270- 6- 15-C- 2
W7OMB.....63- 3- 7-A- 5

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W7VIU.....405- 9- 15-B-10
W7JUO.....270- 9- 10-C- 3

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W6IDY.....59,040- 95-205-C-64
W6LDD.....1098- 18- 21-C- 6
W6KEK.....540- 9- 20-B- -

San Francisco

W6CBE.....7215- 37- 65-B-21
W6ATO.....1302- 14- 31-C-10

Sacramento Valley

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W6GHG.....1248- 13- 32-C- -
W6HIR.....900- 15- 20- -13
W6WZD (W6s WYR WZD)
66,848- 78-287-C-63

San Joaquin Valley

W6EFV.....1215- 15- 27-B- 4

ROANOKE DIVISION

North Carolina

W4CVX.....5168- 38- 46-B-10
W4UXI.....108- 6- 6- - 2

South Carolina

W4TWW.....36,288- 84-144-B-62

Virginia

W4KWY.....282,540-204-463-C- -
W4OM.....214,884-188-381-C- -
W4CBQ.....55,872- 97-192-C-54
W4NQM.....14,766- 46-107-C- -

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W8UMR.....810- 15- 18-B- 6

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Colorado

WØSBE.....6726- 38- 59-C-32

Utah

W7QDJ.....2584- 19- 46- -25

Wyoming

W7PSO.....1008- 12- 28-B-20

SOUTHWESTERN DIVISION

Alabama

W4HA.....15,028- 52- 97-C-23

Eastern Florida

W4EEO.....1587- 23- 23-B-10
W4APY.....1296- 17- 24- -12
W4LQN.....495- 11- 15-A-15

Western Florida

W4AFS.....7560- 36- 70-A-38

Georgia

W4EEE.....100,602-138-243-C-62
W4PGZ.....2688- 28- 32-B- 7

SOUTHWESTERN DIVISION

Los Angeles

W6YY.....233,444-148-526-C-81
W6VSS.....99,231- 97-341-C-36
W6HJK.....4524- 26- 58-A-25
W6NJU.....3528- 24- 49-A-15
K6AUZ.....60- 4- 5- - 2
W6AM (W6s AM BXL KPC QMC).....124,413-113-367-C- -
W6BJU (W6s BJU CUF)
9660- 35- 92-C-16
K6BFC (K6s BFC EAP)
3510- 26- 45-A-40
W6BAB (W6s OKJ VEB, K6s CJT CVL GPJ GPK
1134- 14- 27-C-48
W6UYW (W6UYW, K6DUH)
3- 1- 1-A- 1

Arizona

W7VMP³.....13,005- 51- 85-C-28
W7PZ.....1404- 18- 26-B-15
W7ENA.....18- 2- 3-A- 4

San Diego

W6CHV.....31,275- 75-139-B-40
W6CTP.....15,600- 52-100-C-35
K6BEC.....150- 6- 9-B-40
W6GBG.....126- 6- 7-B- 5
K6CUZ/6.....3- 1- 1-A- 1
K6DNO/6.....3- 1- 1- - 1

Santa Barbara

W6YK.....11,169- 51- 73- - -
W6ALQ.....216- 6- 12-A- 6

WEST GULF DIVISION

Northern Texas

W5KUJ.....7920- 44- 60-C-80
W5QF.....2706- 22- 41- -11
W5ZUI.....1817- 23- 27-B-30
W5BJA.....390- 10- 13-A- 5
W5DXW.....390- 10- 13- -13
W5VNW.....3- 1- 1- - 1

Oklahoma

W5ALB.....29,187- 69-141-B-43

Southern Texas

W5KBP.....62,496-112-186-C-56
W5SU.....5760- 32- 60-B-40

New Mexico

W5FTP.....742- 14- 19- B-10
W5DWT.....216- 8- 9-AB- 4

CANADIAN DIVISION

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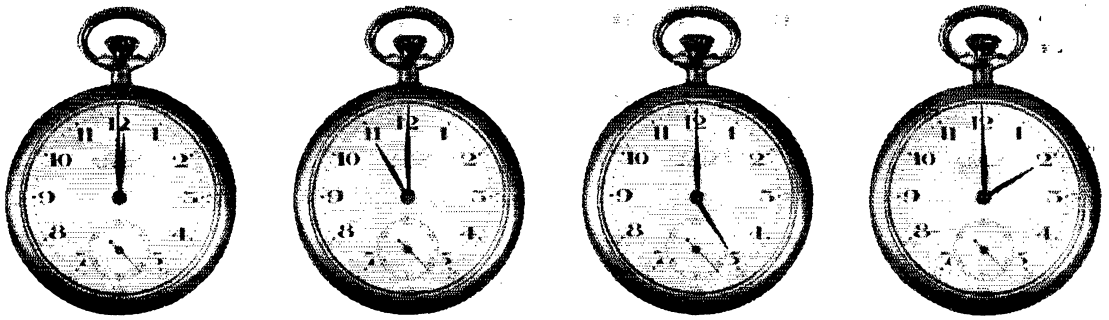
VO6N.....4455- 27- 55-B-35
VO6U.....2310- 22- 37-B-15
VE1CU.....429- 11- 13-A-12
VO1D.....351- 9- 13-A- 8
VE1HG.....75- 5- 5-B-10

Ontario

VE3ARS.....22,425- 65-115-B-31
VE3BDB.....15,600- 52-100-B-29
VE3IR.....1716- 22- 26-B-36
VE3DKH.....1386- 21- 22-A-14
VE3DNE.....147- 7- 7-A- 5
VE3RCS (VE3s ATU CWB DTM)
56,158- 86-218-B-96

(*Continued on page 138*)

WORK 'EM ACROSS THE TIME ZONES



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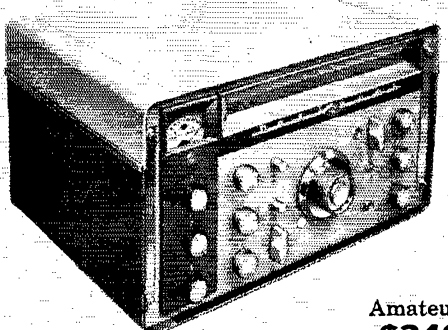
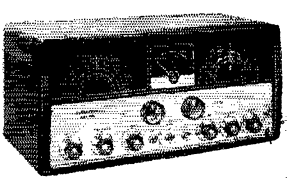
National NC-300 "Dream Receiver"



Amateur Net:
$349.95
Order now for immediate delivery



Hallicrafters SX-96 Receiver AM • CW • SSB
Standard bdcst and 3 SW bands (1720 KC to 34 MC). Dual conversion. Selectable sideband. Temp. compensated.
Amateur net: complete with tubes, wired and tested (less speaker) **$249.95.**
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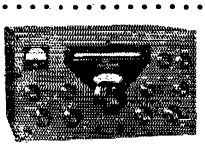

Collins 75A-4 Receiver
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160, 80, 40, 20, 15; 11 & 10 meters Dual conversion.
Amateur net: complete with tubes, wired & tested (less speaker) **$595.00.**
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VE7APV.....99- 3- 11- -21

Manitoba

VE4RO.....49,128- 92-178-C-56

Saskatchewan

VE5GF.....2142- 21- 34-B-20
VE5VZ.....420- 10- 14-B-15

AFRICA

Canary Islands

EA8AX.....546- 13- 14-A- -

French Morocco

CN8EB.....357- 7- 17-A- 2

Liberia

EL2X.....31,405- 45-603-B-45

Madeira

CT3AE.....6831- 23- 99-A-24

Mozambique

CR7AF.....105- 5- 7-A- -

Southern Rhodesia

ZE2KR.....9675- 25-129-A-20

Spanish Morocco

EA9AR.....13,524- 23-196-A-16

Tangier Zone

KT1UX.....357- 7- 17-B- 1

Union of South Africa

ZS6DW.....41,140- 44-313-A- -
ZS6FN.....1050- 10- 35-A- 4
ZS6AIY.....459- 9- 17-A- -
ZS6AFE.....384- 8- 16-A- 7

ASIA

Japan

KA2OJ.....3531- 11-107-B-16
JA1VF.....450- 3- 50-A-12
JA4BB.....450- 5- 31-B- 4
JA1AGU.....141- 3- 16-B- -
JA3MD.....52- 2- 9-A- -
JA1GV.....45- 3- 5-B- 2
JA3BU.....18- 6- 1-B- 1
JA2AH.....3- 1- 1-A- 1
JA3BB (JA3s BB DM) 162- 3- 18-B- 3

Lebanon

OD5AB.....336- 7- 16- - -

Saudi Arabia

HZ1AB[4].....234- 6- 13-B-20

EUROPE

Austria

OE13USA....16,548- 21-263-B-34

Belgium

ON4OC.....7140- 14-173-A-23
ON4LJ.....528- 8- 22-B-10

Czechoslovakia

OK1NB.....2377- 13- 61-A- -

Denmark

OZ5KP.....3648- 16- 76-A-18
OZ7BG.....1254- 11- 38-A- 7
OZ7G.....567- 9- 21-A- 8

Eire

EI5I.....14,560- 20-243-B-24

England

G2PU.....9774- 18-181-B- 9
G3DO.....5831- 17-115-B-17
G3HJJ.....432- 9- 16-B- -

Finland

OH1PN.....135- 5- 9-A- -
OH6NR.....105- 5- 7-A- -
OH3RA.....3- 1- 1-A- 1

France

F8SK.....12,012- 14-286-A-34
F9RM.....567- 7- 27-A- -
F8UM.....378- 7- 18-A- -
F3NG.....120- 5- 8-A- 5
F9DW.....3- 1- 1-A- 1

Germany

DL1KB.....8211- 17-161-B-34
DL4DX.....1107- 9- 41-B-18
DL6XZ.....644- 7- 32-A-15
DL5TW.....120- 4- 10-A- -

Gibraltar

ZB2A (G3s DBT GFM, BRS 20,186)....12,213- 23-183-B-19

Italy

I1BDV.....12,483- 19-219-B- -
I1TDJ.....2136- 12- 60-A-10

Liechtenstein

HB1MX.....3388- 11-103-B- 7

Malta

ZB1DK.....1014- 13- 26-A-10

Netherlands

PAØULA.....2457- 13- 63-B-13
PAØXD.....2301- 13- 59-A- 8
PAØVB.....990- 10- 33-B- -
PI1RRS[5].....891- 11- 27-B-16
PAØUV.....520- 8- 22-B- -
PAØOTC.....54- 3- 6-A- -
PAØZGD.....3- 1- 1-A- 1

Norway

LA5YE.....1632- 17- 32-B-12
LA4KD.....582- 6- 34-A- 9

Portugal

CT1SQ.....46,440- 40-389 B-44
CT1PK.....10,890- 22-165-B- 9

Scotland

GM3GCH.....180- 6- 10-B- -

Spain

EA4DL.....27,552- 28-328-B-96
EA4DR.....13,248- 23-194-B- -

Sweden

SM5FA.....2844- 12- 79-B- -
SM2VP.....168- 4- 14-A- 2

Trieste

I1BNU.....1290- 10- 43-A-16

NORTH AMERICA

Alaska

KL7BCH.....4200- 14-100-B-26
KL7AWB.....3856- 16- 81-C-12
KL7BHK.....1197- 7- 57-B-12

Bahamas

VP7NX.....148,665- 53-935-A-75
VP7NS.....990- 11- 30-B- -

Barbados

VP6WR....127,098- 69-625-A-40

Bermuda

VP9L.....66,317- 47-471-B-41

British Honduras

VP1GG.....22,932- 28-273-A-14

Canal Zone

KZ5DJ.....16,302- 26-209-B- -
KZ5WZ.....696- 8- 29-B- -

Cocos Island

TI9MHB....14,580- 30-162-B- 6

Cuba

CO2BM.....13,338- 26-171-A- -
CO2EC.....3828- 22- 58-B- -

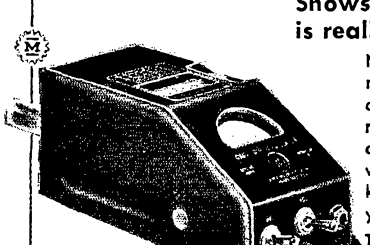
Guantanamo Bay

KG4AJ.....55,044- 44-417-B-48

(Continued on page 140)

HARRISON'S POWER PEAKING PACKAGE

Shows you when your beam or mobile antenna is really at absolutely top efficiency!!



MILLEN GRID DIP OSCILLATOR

The original, and still the best! No lab or shack should be without one. Invaluable for xmitter, receiver, antenna, etc. adjustment, de-TVI'ing, etc. Accurate calibration. Sturdy "one-hand" case. Works on 115 V AC. Complete with coils for 1.7 to 300 Mc, and instructions. Millen 90651. **$61.50**

No more blind cut-and-try! Read resonant frequency and radiation resistance. See when you have tuned out reactance, and have perfect impedance matches. Check your standing wave ratios. Tells you all you have to know to get the most power out into your signals!

The Harrison Power Peaking Package consists of the new Millen Antenna Bridge, a Millen GDO, coaxial adapter fittings, and simple step-by-step instructions.

Only Harrison has it! For sale at **$109.75,** complete, or you can

RENT IT!

by the week at moderate cost.

Stop wasting your valuable RF power! Order now, or ask for rental application. (CLUBS! Split the cost, with a "TUNE-UP PARTY".)

MILLEN ANTENNA BRIDGE

Just out! New, accurate bridge for direct reading of impedance of antennas, transmission cables, coils, receiver input, etc. of 5 to 500 ohms, at up to 200 Mc! Indicates reactance.

So sensitive a GDO provides full power for all measurements. Read about this versatile "must" instrument in August QST.

Millen 90672, with coupling loops. **$45.00**

(Millen 28801 shielded condenser for bridge-builders—**$9.00**)

Don't let a storm leave you

WITHOUT AC

for your rig, furnace, freezer, water pump, etc!

World-famous KATO brand new, low cost, dependable emergency duty gasoline driven generator plants. Hand start, need no batteries. Fully filtered. Deliver 115 volt, 60 cycle AC, automatically regulated. Powerful, air-cooled engines.

1000 Watts—$165.00
*2500 Watts—$262.50
1500 Watts—$202.50
3500 W, 115/230 V—$337.50 (FOB Minn.)

*Best size for average home.
ORDER NOW, and be ready!
Or ask for literature.

Power your rig from the sun!

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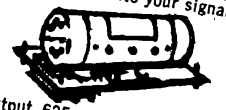
IR's type B2M.
(See pg. 11, Sept. QST)
$1.50 each, 6 for $8.75
HARRISON HAS TRANSISTORS!

GLAS-LINE

The new Corning Fiberglass and plastic insulating guy line. Strong and durable!
$2.89 per 100 feet.

GOT A 12 VOLT CAR?

Here's the dynamotor that will put a real "sock" into your signals!



Rated output 625 volts DC at 225 ma. (In typical installation, input voltage drop can reduce output voltage by as much as 10%.) Latest compact, high efficiency easy-on-the-battery design. 5" dia. x 9" long. Weighs 12 lbs.

Brand new, recent production, military spares. Worth several times the low, low Harrison price of only **$17.95**

HARRISON IS THE PLACE TO GET YOUR MOBILE GEAR

All the best equipment and accessories—plus experienced advice!

BC-458 $3.95

5.3 to 7 Mc COMMAND TRANSMITTERS In really good used condition, complete with all tubes and crystal.

CENTRAL ELECTRONICS

BC-458 Conversion Parts Kit. Makes it into a swell VFO for SSB exciters. 15 thru 160 meter bands. With dial and instructions. **$15.00**

Cabinet like Signal Slicer, with De-Luxe panel **$10.00**

Crystal Controlled converter to extend VFO into 10 meter band. Complete Kit. **$27.50**

Factory wired. **$37.50**

HARRISON IS HQ FOR ALL SSB GEAR

BEAM ROTATOR

Brand new TV rotator, complete with control case containing reversing switch, transformer, and meter type direction indicator, AT AN AMAZING PRICE!

Manufacturer says that with a radial thrust bearing ($2.97 extra) it will handle up to a 20 meter, two element Mini-Beam, and he guarantees it for a full year! **$15.99**

For 1¼" masting.

(Control cable—**$3.48 per 100 feet**)

BEAMS? Telrex, Short-Beam, Mosley VP, Gonset, Johnson, Hy-Lite, etc., etc.
Harrison has 'em all!

GET YOURS FROM HAM HEADQUARTERS!

1955 **OCTOBER** 1955

IS HARRISON'S PRE-INVENTORY CLEARANCE SALE MONTH!

GET YOUR SHARE OF THE SENSATIONAL PRICE-SLASHED BARGAINS IN BOTH OUR BIG STORES.

COME EARLY. COME OFTEN, AND SAVE REAL $$$$!

CHARGE IT!

That's what Harrison PCA customers say, when ordering by phone, by mail, or in our stores. It's the modern, convenient way to shop! And, the monthly statements can be paid either in full or by modest budget payments, with no red-tape or fuss!

Ask for your Confidential Acquaintance Form, today.

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Ham Headquarters Since 1925

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Mexico

XE2OK.....53,998- 58-312-A-20
XE1PJ.....270- 6- 15-B- 1

Nicaragua

YN4CB.....49,545- 45-367- A- -

Panama

HP3FL.....73,017- 57-429-B-15

St. Pierre and Miquelon

FP8AP.....9620- 20-161-A- -

Turks and Caicos

VP5AE.....47,880- 38-421-A-26

OCEANIA

Australia

VK2GW.....6240- 24- 87-A-25
VK5XN.....795- 5- 53-A- -
VK5WO.....18- 1- 6-A- 1

Hawaii

KH6IJ.....162,486- 52-918-C-64
KH6PM.....90,576- 44-629-B-54
KH6AXH....59,040- 40-492-A-60
KH6MG.....35,100- 36-325-C-22
KH6SP.....25,248- 32-263-B- -
KH6ANK.....609- 7- 29-A- -

New Zealand

ZL1BY.....32,289- 47-229-A-29
ZL1MQ.....17,427- 37-157-A-23

Philippine Islands

DU7SV.....2460- 10- 82-B- -

Western Caroline Islands

KC6CG.....18- 2- 3-A-16

SOUTH AMERICA

Antarctica

VP8BD.....1368- 12- 38-B- -

Archipelago of San Andres and Providencia

HKØAI.....15,433- 23-229-A

Argentina

LU1EQ.....63,300- 50-432-B-43
LU7BQ.....17,496- 36-162-A-22
LU9AW.....6318- 26- 81-A- -
LU4DMG.....315- 5- 21-B- -

Brazil

PY2CK.....10,413- 39- 89-C- 6
PY4OF.....1920- 10- 64-A- -

British Guiana

VP3HAG....15,930- 30-177-A-15

Chile

CE2GG.....5478- 22- 83-B-24
CE6AB.....3081- 13- 79-B- -

Ecuador

HC1PJ.....3942- 18- 73-B-11

Netherlands West Indies

PJ2AF.....101,475- 55-621-A-42

Paraguay

ZP5CF.....2592- 12- 72-A- -

Trinidad

VP4BN.....28,700- 35-274-B-22

Uruguay

CX2CN.....4692- 23- 68-A-21
CX2BP.....378- 7- 18-C- -

Venezuela

YV5DE.....2159- 17- 43-B- -
YV5BJ.....495- 9- 19-B- 3

[1] Hq. staff — not eligible for award. [2] W6VUW, opr. [3] W7VMQ, opr. [4] W6CRV, opr. [5] PAØINE, opr.

ARRL thanks these amateurs for submitting their logs for checking purposes: *C.W.*—*W1s* GDY KFV MAN MTG, *W2s* FE FMP GYQ NOY, *K2s* EQD JZT, *W3s* AAL AIV HTK PEV, *W4s* FSA LYV VE, W5HDS, *W6s* JYN WZD, *W7s* CRC EWR MO, *W9s* PNE TKR, WØPRM, VE3DGX, VE5CX, VE6SX, VE7FC, KL7BBV, SM5VN, SM6BDS; *'Phone*—W1KSK, *W2s* FE FMP VUM, K4AHW, *W5s* GAH ZWR, W9UKG, WØBUR, VE6FI, VE7EB CX2CF EJ6G, VP7NG.

Strays

The Civil Aeronautics Administration announces openings for electronic engineers in their New York and Washington headquarters. Those employees working out of New York will be involved in the engineering, installation, and modification of CAA communications stations, omnidirectional ranges, instrument landing systems, airport surveillance radar, precision approach radar systems, and ultrahigh frequency distance-measuring equipment. For those in Washington, the work will be similar, with the possible inclusion of design and specification writing, and factory inspection of equipment.

The New York openings involve considerable travel, while those in Washington require only moderate travel. Per diem of $12.00 a day will be paid in addition to the regular salary to those employees assigned outside the headquarters city.

Salaries are from $4345 to $6390. For specific information regarding qualifications, contact personnel officer, Civil Aeronautics Administration, Federal Building, N. Y., International Airport, Jamaica, N. Y., or Civil Aeronautics Administration, Washington 25, D. C.

How's DX?

(*Continued from page 69*)

plenty good for the last three months, ten good off and on, 20 and 40 always good, and sometimes 75 is good but lots of static on the lower frequencies. I had a couple of schedules on 160 but didn't break through." George is taking back a gallon's worth of new gear, so next time he tries Top Band, watch out! OA5G has eight operators all told, has a 90/60 DX record, and is located atop a bluff overlooking San Juan Bay and the broad Pacific. Antenna space is unlimited and so is good copper wire courtesy Marconi Mining Co. facilities ._._._ W1ZDP finds that FM7WP seeks Idaho, Me., Nebr., N. Dak., Nev. and Wyoming for WAS ._._._ CX7CO continues to put through a fine 7-Mc. signal with his homebrew c.c. 6V6-807 rig, receiving with a 12-tube double-con super. Prior to CX7CO activation in March of '55, Dan operated a bit at CX3IK. One of his most regular QSOers continues to be W2BVS who also likes to "roll his own." ._._._ W6YY, keeping a sharp ear peeled for Easter Island, reports that CEØAD regularly appears at 0400 GMT of a Friday on 14,098-kc. c.w. and 'phone ._._._ On October 15th-17th RCP (Peru) invites the 21 republics of the Americas, plus KL7 and KZ5, to participate in a contest commemorating the 25th anniversary of Radio Club Peruano. Stations in these countries will work each other (no contacts between stations in the same country) once per band during the period 1700 GMT October 15th to 0500 October 17th, exchanging five-digit ('phone) and/or six-digit (c.w.) serials consisting of RS or RST plus a three-digit figure selected at random for the initial contact. (Thereafter one sends the three-digit figure received from the previous station worked.) Multiply total contacts by the total number of band-countries worked, adding to the band-country total the number of different bands used for contacts. (E.g., 30 QSOs times 14 band-countries plus 3 bands equals a final score of 510 points.) As discerned from logs submitted to RCP, Control de Concursos, Casilla No. 538, Lima, Peru, which entries must be in the hands of RCP within 30 days after completion of the test, diplomas and/or medallions will be available to high scorers in each of the Americas, U. S. and Canadian call areas. Separate 'phone and c.w. entries are specified. *Note:* Entrants are obliged to contact at least 10 Peruvian stations on 'phone, or 3 on c.w., to be eligible for awards.

Hereabouts — W1ZZK has one of those rare HO1EH (HP1EH) QSLs mentioned in a previous column ._._._ With 150 countries worked at 150 watts input, K2BZT wonders if any of the kw. boys can match his country-per-watt-average ._._._ W6AM made a hit in flashing his Alaskan vacation before the SCDXC boys in the form of 350 color slides. Don divided his time up north between KL7 flora, fauna and ham radio ._._._ Ex-TA3AA, now W6OME, entertained W6EAY and a recent San Diego DX Club gathering. Andy could make a kingsized shortsnorter from his XYL's collection of beauteous Turkish ruggery ._._._ W4VNE's recent DXCC award was his *fourth*. Mac previously turned the trick thrice as W8LZK, NY4CM and KP4HU ._._._ W7CWN, who works his share of 50-watt DX on 20, admits that his BC-348 is aging a bit. Come to think of it, those receivers are at least ten years old now and many of 'em have DXCCs under their belts — still going strong ._._._ K2MJG, ex-W8KFY, was aghast to see our 160-meter boldface heading disappear during a summer month or two. Needless to say, if and when 1.8-Mc. DX news transpires you'll find it in "How's" ._._._ The ARRL DX Century Club Countries List now has been adopted by the *Newark News* Radio Club, a DX-savoring organization of long standing, as its official DX-performance yardstick.

(*See page 64*)

new SELF-SUPPORTING LAY-OVER TOWER

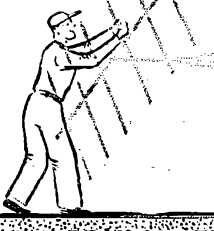
ONE MAN INSTALLATION
USE NO CONCRETE

Tele-Vue TOWERS, INC.

701-707 49th St., So.
St. Petersburg, Florida

Change beam from ground level. Telescope to 20 ft. with ratchet reel then crank over with second reel. Tower is re-inforced ¾ in. aircraft tubular steel—husky but light. Base post heavy 3 in. steel pipe with fins. ⅛ in. — 1200 lb. test aircraft cable on layover reel. Tower finished 2 coats plus asphalt protective coating supplied for base section.

These two towers not interchangeable

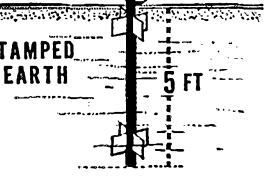


$85.50 F.O.B. St. Petersburg
PACKED IN STRONG SHIPPING CARTON

OUR REGULAR TELESCOPING TOWER USED BY HUNDREDS OF HAMS

Stop it any height 20 to 40 ft. Lower for storms. Hinged bottom. Install it yourself. SPRING LOADED RATCHET WINCH CAN BE PADLOCKED. Good looking, husky yet light. ¾ in. aircraft steel. Hoist cable tested for 920 lbs.

$53.50 F.O.B. St. Petersburg
PACKED IN STRONG SHIPPING CARTON



IN STOCK

CENTRAL ELECTRONICS MULTI-PHASE SINGLE SIDEBAND EQUIPMENT, DOW, ELMAC, ELECTRO-VOICE, NATIONAL, PALCO, RME. Dynamotors, Beams, Recording Tape, etc.

We pay shipping charges in U. S. A.

Call Bob, W3HDT at Broadway 6-8278

BOB WOLFE ELECTRONICS

2506 E. Hoffman St. Baltimore 13, Md.

FREE! a copy of "Forming Sheet Metal" tells you how to make

CHASSIS - BRACKETS
CHANNELS - BOXES

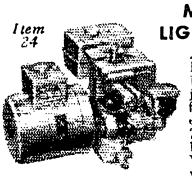
Write today for your free copy plus our catalog of unusual tools - shears, riveters, notchers, punches. Ask for Catalog 12.

TELVAC 1412 Great Northern Bldg. Chicago 4, ILL.

BUY DIRECT FROM-FACTORY — SAVE MIDDLEMAN PROFITS

MASTER MECHANIC PORTABLE LIGHT PLANTS, PUSH BUTTON START

Item 24



AC Plant **600–700 Watts** — 115 v. 60 cyc. Powered by a rugged 2 hp. easy starting Briggs gas engine. No wiring necessary; just plug in and operate. Plenty of current for receivers, transmitters, antenna motors, emergency lights, etc. which require up to 700 Watts. Ideal for radio amateurs, Civil Defense, trailers and camps. Complete with Voltmeter and built-in winding to charge 6 v. auto batteries.

Item 24. Wt. 75 lbs. Be prepared if war or storms knock out power lines..... **$143.50**
700-800 Watt Plant (Item 44) same as above but with larger engine and greater capacity..... **$169.95**
1000-1200 Watt Plant (Item 45) same as Item 24 but with larger generator and engine — 50% greater output **$199.50**

We make all sizes up to 25,000 Watts. Write for information.
Send 10¢ for big 1955 Catalog. Free with order.
Prices f.o.b. factory. Money back guarantee. Send check or M.O.

Master Mechanic Mfg. Co., Dept. 34-L, Burlington, Wis.

The XYL of W6JP, the mother of W6OMD, and a grandmother besides, is K6DEN, Evelyn Roediger, of Redwood City, Calif. Evelyn uses her Viking and NC 183 on 75 and 20.

YL News & Views

(Continued from page 52)

W2QHH, Howard Bradley. (Score two for the OMs — it's time for the distaff side to enter the race!)

— • • • —

Mrs. George Allinger, XYL of W9MYI, and Mrs. Dewey Darling, XYL of W9WBA, are co-chairmen of women's activities for the ARRL Central Division Convention, South Bend, Ind., Oct. 15th and 16th. The ladies program includes: Sat. morning — coffee get-together; afternoon — entertainment, cards, prizes, and shopping; Sunday — tour of Notre Dame University. There will be a special meeting of all licensed YLs from 1:30 to 3:30 P.M. Saturday. Write Box 551, South Bend, for further information.

Keeping Up with the Girls

Members who attended the YLRL Wed. morning 'phone net meeting conducted by W4HLF at Skyline Drive, Va.,

(Continued on page 146)

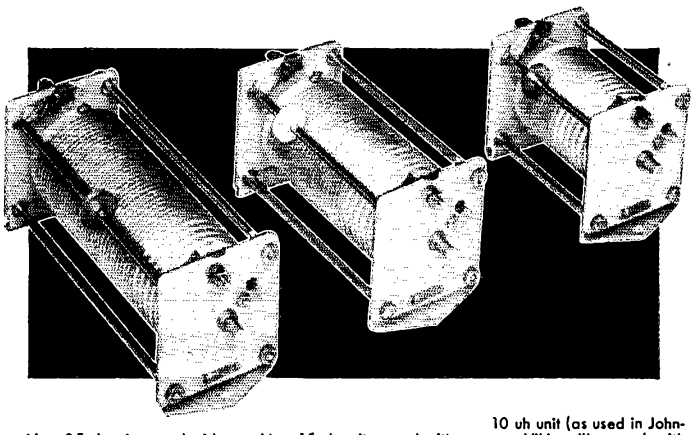
Making it easier to log a Maine YL contact, W1UZR, Rita Slater, of Waterville, is on 75 and 80 daily. With some brawn supplied by local ham friends, Rita puts up her own antennas and enjoys working out technical problems on her own. An OPS and member of six N.E. traffic nets, Rita spends her working hours on 'phone too — at the local telephone office.

PROFESSIONAL ROTARY INDUCTORS

...adjust that L/C ratio for top performance at any frequency!

Now, for peak efficiency from pi-networks and other tank circuits choose one of these popular Johnson variable inductors for your equipment. Two new models now available, both variable pitch wound with heavy No. 12 wire—for AM transmitters operating up to 500 watts or for SSB transmitters up to a full kilowatt. Windings mounted on grooved steatite form—contact wheel is spring loaded to provide smooth, reliable inductance variation throughout the entire range. Time-tested by amateurs the country over, these dependable Johnson inductors are your best buy.

Available at Electronic Parts Distributors everywhere.



New 25 uh unit wound with #12 tinned copper wire.
229-203.....**$11.50**
Amateur Net

New 15 uh unit wound with #12 tinned copper wire.
229-202.....**$9.75**
Amateur Net

10 uh unit (as used in Johnson Viking II) wound with #14 tinned copper wire.
229-201.....**$8.85**
Amateur Net

E. F. JOHNSON COMPANY

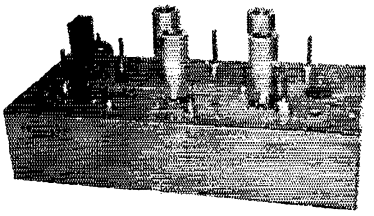
2827 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Tecraft

Get Going on 6 QUICKLY!—or on 10-11, 15, 2 or 220

YOUR **present** receiver and one of these *Tecraft* crystal controlled converters will do the job—ably and economically! During the past 3 years, operators have learned to rely on *Tecraft* for good, consistent performance on 2 meters. You will find the 6 meter model just as reliable.

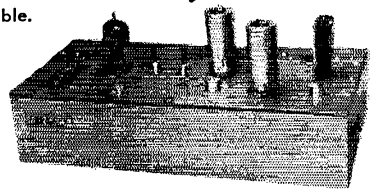
FOR THE ULTIMATE IN PERFORMANCE!



Model CC5
Any Model, any I.F. Complete **$42.50**
Model CC5-50, 144 and 148 in kit form. **$29.75**

CC5-50.....50-54 Mc.
CC5-120.....CAP intercom.
CC5-144.....144-148 Mc.
CC5-148.....CAP intercom.
CC5-220.....220-225 Mc.

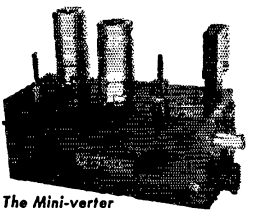
Choose I.F. frequency—6-10, 7-11, 8-12, 10-14, 12-16, 14-18 or for COLLINS, 26-30 Mc. Model CC5-220 with I.F. 14 to 19 Mc. only. This is a Cascode model—4db noise figure. (144 Mc) Tube line up: 6BZ7, 2 6CB6, 2 6J6. New-SWR bridge.....**$8.95**



Models C3 and CC3
Any Model, any I.F. Complete **$34.95**

C3-21.....	(1-6DC6	6CB6	6J6).....	15 meters
C3-26.....	(1-6DC6	6CB6	6J6).....	10-11 meters
CC3-50.....	(1-6BK7	6CB6	6J6).....	6 meters
CC3-144.....	(1-6BZ7	2-6J6).....		2 meters
CC3-220.....	(1-6BZ7	2-6J6).....		1¼meters

A natural for MOBILE use. Designed to use the broadcast band of any car radio for tuning. Compact enough to tuck away anywhere. For 15 or 10-11 meters, **$23.95**
For 6 or 2 or CAP.....**$25.95**
Tubes, crystal, power and antenna plugs included with all models.
Other I.F. frequencies on special order.



The Mini-verter

At Your Dealer or Write Us

The Equipment Crafters, Inc.

523 Winne Ave., River Edge, P. O., N. J.
Tel. COlfax 2-0159

SCM K2BG sent this photo of K2INQ, Peggy Bergin, of Moorestown, N. J. Using her Dad's rig (W2UA) on the lower frequencies, Peggy operates two-meter mobile with her own call. She takes an active part in the local RACES program, when not on duty as a registered nurse.

presented their NCS with an embroidered picture done by W4SGD, Katherine, and a cake baked by K4BNG, Janie, in appreciation of Arlie's service. Members present were K2IWO, W2OWL, W3s CZT MSU OQF PVH UTR YTM, WN3CEA, K4BNG, W4s AHN BLR BQI DWP HLF SGD. . . . SPARCYLs of St. Petersburg have welcomed four more YLs to membership — KN4EBQ, W4s GXZ HRC, KN4CUY. . . . Eight-year-old KN6MTQ, Elizabeth, and ten-year-old KN6GXQ, Patty, are new members of the San Francisco YLRL club. . . . Minnesota has 40 YLs, according to a count by YLRL chairman for the tenth district, WØKJZ, Lydia. . . . W6PCN, Peggy, and OM W6GCV, are building their house on the highest inhabited ridge on the highest of San Francisco's hills. When they figure out how to set a 70-foot antenna pole into solid rock, the Detschs think they'll have a choice spot for their 20-meter DXing. . . . KZ5VR, Virginia, is a new Canal Zone YL. . . . YLRL Publicity Chairman W1TRE announces that the YLRL Photograph Album and Scrapbook are available upon request. Barbara will send the books express collect, and they must be returned postage prepaid.

W1BB, well-known OM of Winthrop, Mass., claims he hasn't had to go without his supper yet, although his wife Alice has done a lot of operating on 80 and 2 since becoming WN1DQF. The Perrys think the answer is to set the XYL's rig right in the kitchen — cooking and QSOing blend well together. With the pet parakeet chirping "hi," Alice has a harmonious atmosphere for preparing the ingredients for her General Class ticket.

Happenings

(*Continued from page 47*)

ment of location (if station identification is necessary to carry on the service, tactical calls or other means of identification will be utilized in accordance with 12.246).

(d) The radio station carrier shall be discontinued during periods of no message transmission.

12.194 *Special Operation.* In certain cases, the Federal Communications Commission may authorize specific stations to operate during a CONELRAD RADIO ALERT in a manner not governed by these Rules, provided, such operation is determined to be necessary in the interest of National Defense or the public welfare.

12.195 *Resumption of Normal Operation.* At the conclusion of a CONELRAD RADIO ALERT, each standard, FM and TV broadcast station will broadcast a CONELRAD RADIO ALL CLEAR MESSAGE. Unless otherwise restricted by order of the Federal Communications Commission, normal operation of stations in the Amateur Radio Service may be resumed upon reception of the CONELRAD RADIO ALL CLEAR. Only the CONELRAD *RADIO* ALL CLEAR will authorize termination of the CONELRAD RADIO ALERT.

12.196 *CONELRAD TESTS.* So far as practicable, tests and practice operation will be conducted at appropriate intervals.

CODE PRACTICE FROM VOICE STATIONS

Over the years various amateur stations have conducted programs of instruction in the International Morse Code to help newcomers acquire sufficient skill for their tickets (e.g., see p. 69, May *QST*). In some instances this activity is conducted on the voice bands, with an audio oscillator in front of the mike so that code characters and voice instruction might be interspersed. A special action of FCC some twenty years ago made an exception for this emission in code practice on A-3 bands, but because of its age and obscurity there has been difficulty in recalling its text and application. As the result of conversations between ARRL and FCC it has now, logically, been decided to write the exception into our regulations, and the Commission has proposed to add a Section 12.114 (b) to our rules to provide that "Whenever code practice, in accordance with Section 12.106 (d), is conducted in bands authorized for A-3 emission, radiotelephony tone modulation may be utilized when interspersed with appropriate voice instructions." Any comment on the proposal must be filed by November 15th.

AT PRESS TIME — 420-MC. RULING

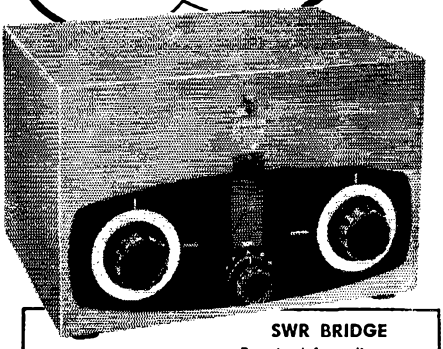
FCC has just issued an order providing that effective October 1st the present 420-Mc. limit of 50 watts peak power will be changed to 50 watts plate input.

Strays

Amateurs everywhere will be saddened to note that the name of Edward Clark Crossett, W6DZII, ex-W1CCZ, appears in Silent Keys this month. During the late Twenties, many experiments with beam antennas were conducted by prominent amateurs at the site of W1CCZ, Mr. Crossett's station at Wianno, Mass.

If you operate a kilowatt, or ever plan to—buy your Kilowatt "Matchbox" today. Use it with any lower power unit and switch to maximum power later.

NEW KILOWATT "MATCHBOX"



• Bandswitching • Self-contained • Performs all transmission line matching and switching functions required in the high power station

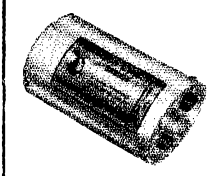
Now, quickly, easily . . . load and match balanced and unbalanced lines over a wide range of antenna impedances at the kilowatt level. Single knob bandswitching, front panel tuning and matching—no coil changing or tapping necessary. Matches unbalanced impedances from 50 to 1200 ohms—balanced impedances from 50 to 2000 ohms—tunes out large amounts of reactance as well.

Equipped with a heavy duty antenna changeover relay, the Kilowatt "Matchbox" permits separate matching of the antenna to the receiver and also has provision for muting the receiver when transmitting. An electronic time delay circuit prevents arcing of the relay contacts and provides protection for the transmitter components from undue stress of momentary high voltage surges during changeover. Nominal input impedance is 52 ohms—may be used with any transmitter operating up to and including 1000 watts.

Amateur Net

Supplied as a completely assembled and pre-tested unit in an attractive, fully shielded, maroon and grey cabinet. Cat. No. 250-30 **$124.50**

Sold only through authorized Johnson Distributors —most offer convenient time payment plans.



SWR BRIDGE

Required for adjustment of antenna coupler—permits most effective use of a low pass filter. Impedance of 52 ohms, may be changed to 72 with a change of resistor. Equipped with SO-239 connectors and polarized meter jacks for 0-1 ma meter.

Cat. No. 250-24 Amateur Net **$9.75**

E. F. JOHNSON COMPANY

2832 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

WANTED! Amateur or govt. surplus receivers, transmitters, test equipment, teletype, Boehme, manuals; such as ART-13, ARN-7, ARC-1, APR-4, 75A, 32V, BC-610, BC-614, BC-342, BC-348, BC-221, TDQ. Cash or trade for NEW Johnson Viking Ranger, B&W, Hallicrafters, Hammarlund, Harvey-Wells, National, Central El, Gonset, Elmac, Morrow, RME, Telrex, Fisher Hi Fi, Pentron, Bell, Master Mobile, Sonar, etc.

Stores: 44 Canal St., Boston, Mass. 60 Spring St., Newport, R. I.

ALLTRONICS Write or phone, Tom, W1AFN, Box 19, Boston 1, Mass.
Richmond 2-0048 or 2-0916

AN/APR-4 COMPONENTS WANTED

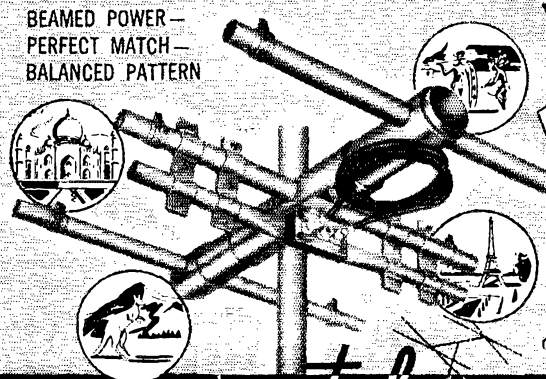
In any condition. NEW HIGH PRICES. Also top prices for: ARC-1, ARC-3, APR-1, APR-5A, etc.; TS-34 and other "TS-" and standard Lab Test equipment, especially for the MICROWAVE REGION; ART-13, BC-348, BC-221, LAE, LAF, LAG, and other quality Surplus equipment; also quantity Spares, tubes, plugs and cable.

ENGINEERING ASSOCIATES

434 Patterson Road **Dayton 9, Ohio**

For "top-man-on-the-frequency" results!

BEAMED POWER—
PERFECT MATCH—
BALANCED PATTERN



YOU'RE THERE!
—with

TELREX

PRE-TUNED

"BEAMED POWER" ROTARIES

End your antenna problems with the precision-built rotaries that are pre-tuned and matched for optimum performance at your site *WHEREVER YOU ARE.* No tuning or adjusting necessary. Quality constructed of finest materials throughout.

"BEAMED POWER" ROTARIES for 2, 6, 10, 15, 20 and 40 meters or combinations. Custom designs for commercial installations. Write for Bulletin H-130.

telrex INC. "CONICAL-V-BEAMS"
ASBURY PARK 2, N. J. — Tel.: Prospect 5-7252

Hints & Kinks

(Continued from page 46)

been replaced with a VR-150. This substitution increases the voltage for the oscillator tube and raises the screen potential of the 6L6. Recalibration of the VFO after the modification was not necessary.

— *H. Van Hooser, W4DIJ*

CRYSTAL STORAGE RACK

WE find it necessary to have quite a number of crystals on hand to cover the whole of any amateur band. When changing frequency, it has been necessary in the past to dig and sort through a box or jar until the appropriate crystal was located.

The confusion associated previously with the selection of a crystal has been eliminated by the rack shown in Fig. 7. The holder was made from a piece of oak board measuring ¾ by 2½ by 6 inches. The four rows of holes shown in the drawing are made with a No. 39 drill and accommodate a total of 20 Type FT-243 crystals.

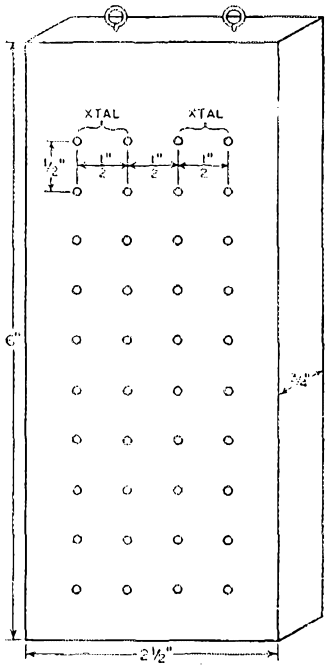


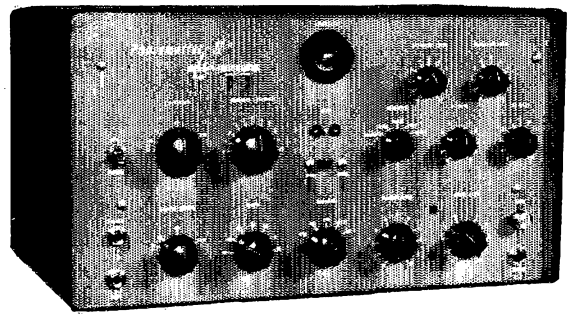
Fig. 7 — This crystal storage rack can be an attractive and useful addition to the shack.

The size of the rack was determined by the number of crystals on hand and may be altered to suit the individual requirements. Oak board was selected because of its hardness, thereby preventing the enlargment of the holes through prolonged usage. The whole unit was finished in light oak stain and coated with good varnish. A backing of pool cloth is an extra refinement and a pair of screw eyes permit hanging on a wall.

— *Jack C. Andrews, W9YWE*

here's the ULTIMATE for ALL amateur communications

AM—PM—CW and SSB . . . the "Phasemaster-II"



phasing type exciter—AM—PM—CW and SSB with switchable sidebands at the flip of a switch—75 W PEP output—completely bandswitched 160 thru 10 meters—wide range pi-network output—fast operating built in anti trap voice control circuit—rounded corner black crackle cabinet with gray front panel, black knobs and white screening—separate phone patch and mike inputs—accessory power socket for accessory equipment—COMPLETE internal shielding including solid shielding for final tank assembly to give stable operation—no critical external carrier balancing controls—new carrier insertion control—new variable calibrating control for zero beating frequency—new eye circuit for precision operation—40 DB or better unwanted sideband suppression—no mixer stage tuning ELIMINATES OUT OF BAND OPERATION—2 additional sets of relay contacts on rear chassis—wired and tested with all tubes or in kit form—a complete wired, tested and ALIGNED audio thru balanced modulator subassembly is furnished with the kit this allows the balance of transmitter to be built as simply as a CW rig-all operating controls on front panel Audio Gain, Carrier Level, Emmission, Bandswitch, Buffer Tuning, P A Tuning, Antenna Loading, VFO—CRYSTAL, Function, VC Gain, AT Gain, Indicator Level, Calibrate Level and Eye Indicator.

$329.50 Wired and tested
$279.50 Kit form

TIME MASTER

115 V AC continuous gong timer—pleasant gong strikes automatically every 10 minutes—can be reset to start at any time—dial indicates 10 min time duration—compact molded black case (2¾" x 4⅛" x 2⅝") with lithographed front face—meets FCC regs 12.82 (a) (1) (iii) & (iv) for 10 min identification requirement—complete with off-on switch and cord—DON'T GET A PINK TICKET

$7.95

Write for special electronic, electrical or mechanical timer requirements

TONE MASTER

SELF powered, transistorized audio SINE WAVE generator—approx 1200 cycle tone freq—variable from 0 to over .5 volts RMS output with calibrated dial—connects directly to Hiz mike input to provide two tone test for SSB or for checking AM modulation and speech equipment—ideal for audio enthusiasts—portable, can be hand held—A MUST for every shack or service man—no need to buy expensive bulky audio generators—housed in compact black molded case (2¾" x 4⅛" x 2⅝") with lithographed front face

$12.95

Lakeshore INDUSTRIES
408 COMMERCIAL STREET, MANITOWOC, WISCONSIN
MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature, and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply. To expedite handling of your copy please state whether you are a member of ARRL.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly. Typewritten copy preferred, but handwritten signature must accompany all authorized insertions.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

WANTED: Early wireless gear, books, magazines and catalogs. Send description and prices. W6GH, 1010 Monte Drive, Santa Barbara, Calif.

CODE slow? Try new method. Free particulars. Donald H. Rogers, Ivyland, Penna.

SUBSCRIPTIONS. Radio publications. Latest Call Books, $4.00. Mrs. Earl Mead, Huntley, Montana.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

ANTENNA for bandswitching transmitters up to 300 watts input, approx. 120 feet long, centerfed with 75-ohm line, 70 feet included, low SWR, tunes 80-40-20-10 meter bands. U. S. Patent 2,535,298. Each one tested for resonance on all bands. Send stamp for details. $18.95 each. Lattin Radio Laboratories, 1431 Sweeney St., Owensboro, Ky.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0800 to 1800 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Tel 8-8696. No. 8-8262.

WANTED: All types aircraft & ground transmitters, receivers, ART-13, RT18/ARC1, R5/ARN7, BC610E, BC221 mounts and parts wanted. Fairest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

LEECE-NEVILLE 6 volt system. 100 amp. alternator, regulator & rectifier, $60.00. Also Leece-Neville 12-volt system 100 amp. alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmermann, 570 Jamaica Ave., Brooklyn 8, N. Y. Ulster 2-3472.

NEW and used Motorola, Link, RCA, G-E, etc., FM commercial communications equipment bought & sold. Allan M. Klein, W2FOU, Communication Assoc., 138-17 Springfield Ave., Springfield Gardens, L. I., N. Y.

WANTED: ART-13 transmitters. Write B. Spivey, 3117 Rolling Road, Chevy Chase, Md.

CASH for AN/ARC-1, BC-610E, BC-614E, BC-939, BC-729, BC-221, TCS and others. Also Sig. Corps, Navy, Air Force stock catalogs; maint. and instr. TM's for war surplus equipment. Amber Co., 393 Greenwich St., New York 13, N. Y.

NEED ARC/3s. S. Gabriel, 4908 Hampden Lane, Washington 14, D. C.

NEED ARC-1s. Lou Athanus, P. O. Box 5878, Bethesda, Md.

PANORAMIC Adapter AN/APA-10 Tech. Manuals, $2.75 postpaid in U. S. A. Electronicraft, 27 Milburn St., Bronxville 8, N. Y.

SELL: 32V1 and 75A1, in excellent condx, $600. F. o. b. Royal Oak, Mich. L. Opalka, W8WBG, 721 N. Main.

WANTED: Bargains in transmitters, receivers, laboratory and test equipment, also miscellaneous and unusual gear, etc. What have you? Please state price desired. Especially interested in husky power supplies, large filter chokes and condensers, etc. Also need plate transformers putting out about 4,000 V or more each side center. Harold Schonwald, W5ZZ, 718 North Broadway, Oklahoma City 2, Oklahoma.

QSLS??? Largest variety and finest samples 25¢ (refunded). "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Michigan.

QSLS–SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS, SWLS. America's Finest!!! Samples 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS–SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Nice designs. Samples. Beseparis, W3QCC, 207 S. Balliet St., Frackville Pa.

QSL Specialists. Distinctive. Samples free. DRJ Studios, 1811 No. Lowell Ave., Chicago 39, Ill.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

100 Free QSL cards with order. Samples 10¢. World Printing, 166 Barkley, Clifton, N. J.

QSLS–SWLS. Samples free. Bartinoski, W1YHD, Williamstown, N. J.

QSLS of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

QSLS. Samples free. Albertson, W4HUD, Box 322, High Point, N. C.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL–SWL cards. Sensational offer, Bristol stock 500 1 color $3.95, 2 color $4.95, 3 color $5.95. Super gloss $1.25 extra. Rainbow cards. Samples 10¢. QSL Press, Box 71, Passaic, N. J.

QSL samples. Dime, refunded. Roy Gale, W1BD, Waterford, Conn.

QSLS–SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSL'S. Beautiful blue, silver and gold on glossy cards, $3.85 per 100 or $7.50 for 200 postpaid. 2 day service. Satisfaction guaranteed. Order and get pleasant surprise. The Constantine Press, Bladensburg, Maryland.

QSL'S. Western states only. Fast delivery. Samples 10¢. Dauphinee, K6JCN, Box 66009, Mar Vista 66, Calif.

UNUSUAL! Vivacious! Illustrated QSLS, typolithographed. Free samples. WAT Box 128, Breckville, Ohio.

DELUXE QSLS. Samples dime. M. Vincek, W2LNT, 117 Center St., Clifton, N. J.

QSLS. Samples dime. Printer, Corwith, Iowa.

QSLS–SWLS. Samples free. Backus, 5318 Walker Ave., Richmond, Va.

QSLS, SWLS. 2-colors. 125, $2.00. Bob Garra, W3UQL, Lehighton, Penna.

WOODY'S (Formerly Rosedale Press QSLS). Box 164, Asher Sta., Little Rock, Ark.

QSLS—The kind you want. Samples 10¢. Graphic Crafts, Route 12, Ft. Wayne, Ind.

QSL'S. Attractive. Samples free. Jones, W3EHA, 840 Terrace North, Hagerstown, Md.

QSLS–SWLS. Rainbow, cartoon, others. Reasonable! Samples 10¢ (refunded). Joe Harms, W1GET (W2JME), Plaistow, N. H.

QSLS! Modern, better quality designs. Samples 10¢. Tooker Press, Lakehurst, New Jersey.

QSLS. New designs, 2-call and photo cards. Star Printing, 130 S. Glenoaks, Burbank, Calif.

QSLS. Taprint, Union, Miss.

QSLS Multicolor, all kinds, all prices. Samples dime. Fast service. DX Cards, 2 Kulik St., Clifton, N. J.

QSLS. Highest quality, quick delivery. Samples 10¢. Dortch, Jocelyn Hollow Road, Nashville, Tenn.

ART-13 Wanted: W4VHG, 4908 Hampden Lane, Bethesda, Md.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco, Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

CLEANING out equipment excess to my needs; books, magazines, parts, AM, CW, SSB ham equipment, phonograph, radio, amplifier, TV set. Stamp for list. Consider trades. W4API, Spitz, 1420 South Randolph, Arlington, Va.

BC-610E, speech amplifier, mike, spare parts. WAS and DXCC 10 meter phone. $500.00. C. J. Ahern, Jr., W9WXT, Dwight, Ill.

UFO Patrol data. W5CA.

NEW ICA deluxe Signatone Code Oscillator (Reg. $15.75); Special, $7.95. Key, $1.35 extra. Surplus RG-8/U cable, 100 ft., $5.95, 250 ft., $13.25, 500 ft., $25.00. Free Bargain Bulletin. Visit store for unadvertised bargains. Lectronic Research, 719 Arch St., Philadelphia 6, Pa.

WANTED: Amateur and aircraft receivers, transmitters, direction finders. Especially APR-4, APR-5, ARN-7, ARC-1, ART-13, BC-610, BC-939, BC-348, teletype, BC-221; 32V, 75A, test equipment. Cash or trade for New Johnson Viking, Ranger, Central Electronics, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Harvey-Wells, Morrow, Telrex, Fisher Hi-Fi, etc. Write: Alltronics, Box 19, Boston 1, Mass. Richmond 2-0048 (Stores: 44 Canal, Boston; 60 Spring, Newport, R. I.).

FOR Sale: Perfect working condition: TVI-suppressed, commercially built 500 watt phone/c.w. xmitter, complete with 866s splatter suppressor, variac-controlled power supply, modulator (pair 811As); Millen 90991 final (812As); Millen 90800 exciter, all in new deluxe 6 ft. locked door Par-Metal cabinet, with rack on casters. Plug-in coils, all bands, also Collins VFO 310C2 with built-in power supply. Stromberg-Carlson speech amplifier and Harrison 500 watt antenna tuner with all coils. First bid $460 or over takes all. Single package. Phone DEcator 2-4119, W1UWB, Julian Sobin, 83 Arnold Rd., Newton Center 59, Mass.

FOR Sale: Hammarlund SP-400X in like new condx: $250. Dr. Stephen R. Fromm, 35 Revere St., Boston 14, Mass.

WANTED: Complete used 12 v. mobile rig in gud condx or used Gonset Communicator. Contact Ronnie Gann, W1FGF, c/o ARRL, 38 LaSalle Rd., West Hartford 7, Conn.

QPD? Use Stick-Tack. See page 141. The Radio Stationers.

COLLINS 32V-3 in excellent condition. $525.00. George Sperry, 108 Oak Hill, Portsmouth, Va.

SELL: Collins 75A-2, $295; 310C, $125.00; Dumont #241 'scope, $225; 32V2, $395.00; 12,000 ohm relays, 110 VAC dpdt, $1.75; Teletype equipment, Collins 30-J, $275.00; Want: APR-4 receiver and tuning units, ARN-7, ART-13. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass. Tel. Richmond 2-0916.

TROUBLE Getting out? Put a punch in your signal the easy low-cost way. Low Loss open wire folded dipole antennas, $4.95 and up. Write for free literature. R. J. Buchan Co., Bricelyn 4, Minn.

FOR Sale: 500 watt AM rig. Band-switching, gang-tuned exciter in grey desk cabinet (Collins PTO oscillator ganged to four 6AQ5 frequency multipliers, pr. 6146s, MB 150 tank); final: pr 8005s. Modulator: pr 805s, 500 watt Thordarson modulation xfrmr, 6 ft. Par-Metal grey cabinet. Commercial appearance, fully metered, TVI-suppressed. Picture is available. Elvin Miller, Albany, Ind.

TRADE for good 32V2 or 32V3, $600 as new, Zeiss Contax II, with 50 mm Zeiss Sonnar f 1.5, 85 mm Zeiss Triotar, viewfinder, Weston meter 500 watt, Bell Howell new slide projector, 3 cases used eight rolls film. R. M. Reavis, W5OWG, 127 W. Main, Ardmore, Okla.

SELL: SX-71 recvr & spkr, 100-watt bandswitching fone xmittr with built-in VFO, Baluns, low pass filter, ant. relay, 2 element 20 meter beam with rotator: $300. L. A. Haley, W3YAD, 201 Lighthouse Rd., Gordon Hts., Wilmington, Del.

FOR Sale: 20A complete, factory-wired, HRO-60, complete coils A,B,C.D, factory-wired in slicer; three units, first $575 takes it. Guaranteed perfect. O. W. Greene, W1CPI, Box 171, Wakefield, R. I. Tel. NArr. 3-4316, F.o.b. custom crated.

WANTED: Pointer coupons from Olson-Arrow, Ohio. Cash or trade electronic or ham gear, any quantity. W4WT, Eubank, 1227 Windsor Ave., Richmond 27, Va.

QST: Wanted July 1932, good clean copy. State price. G. Kirchhoff, L69 Riverside Isle, Fox Lake, Ill.

FOR Sale: 4-Band HT-17 and S-72R. $60 takes it. Stanley Wilk, Jr. 14 Dwight Ct., New Britain, Conn.

WANTED: APR-4 receiver; TN-16, TN-17, TN-18 tuning units. Kaar Engineering Corporation, P.O. Box 1320, Palo Alto, Calif.

FOR Sale or trade: New Harvey-Wells VFO; MicroMatch SWR meter; 4E27s. Trade for 810s, plus cash. WØSYA, 2619 So. Gaylord, Denver 10, Colo.

RECEIVERS repaired and allgned by competent engineers, using factory standard instruments. Hallicrafters, Hammarlund, National, Collins authorized service station. Our twentieth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

QSTS 1932 thru 1954 including six binders. Estate of W6VHG/W5BID. Best offer. W6WNI, 2042 Forest, Belmont, Calif.

AMATEUR Headquarters San Joaquin Valley. Major lines, communication receiver repairs. Trades, mail orders. Carlisle, W6VBQ, San Joaquin Electronics Supply, 710 E. Charter Way, Stockton, Calif.

CHROME Zippo lighter, your call engraved. Lifetime guarantee, $4.50 postpaid. Nice Xmas gift. Sharp Gifts, 129 W. Main, Ardmore, Okla.

FOR Sale: National NC-183-DT, three months old, w/matching spkr, in perfect operating condx. Boden DB-110-G hi-fi amp., and Webster 1127-270 changer with GE RPX-050 crtg. Prefer local contact. Richard Ebeling, 33 Randolph Road, White Plains, N. Y.

WANTED: Gonset Communicator 6 meter deluxe; 115 volts AC-12 volts DC; Model No. 3058; complete; best figure. R. Gerlach, W3UZM, 1029 Hoover Ave., Feasterville, Pa.

SELL NC-183, in original carton. Used less than 100 hours. No room at this QTH. $165.00. Leigh Robartes, W2EHA, 22 Hapsburg Place, Hempstead, L. I., N. Y. Tel. IVanhoe 6-8451.

COLLINS 32V-3 transmitter, like new and in original carton, for immediate sale at low price of only $499.00! Guaranteed perfect! Will prepay shipment up to 1000 miles! This is best buy on this famous rig. Write to F. W. Cooper, WØIOS, 901 S. 86th St., Omaha 3, Nebr.

FOR Sale: BC-457 converted to ten; 815 modulator, control box, 10-meter Gonset, relay, hash filter. Best offer takes. J. Ed Ballard, Jr., W3KKH, 3021 Fendall Road, Baltimore 7, Md.

SELL or trade for new or used Collins receiver: complete mobile rig, mount, mike and all relays, $225.00. W4DXJ, Jack, Box 642, Greenville, N. C.

VIKING II, with VFO, $270; Elmac AF-67, $125.00; Gonset Super-Six, $47.00; noise clipper, $5.00; Carter 6 v. dynamotor with relay, $20.00; Johnson Whipload Six with 8 ft. whip, $15.00; 6 v. coax relay, $5.00; Master 132XC, $6.00. All in "like new" condx. Complete mobile, $200. F.o.b. Sacramento, Calif. W6LPN, 1116 Volz Drive.

SELL: HQ-129, HV pwr supplies parts, assorted vacuum tubes incl. two 813s; heavy duty work table. Cash and carry. Inspection invited. NYC area. W2TIW, 765 East 175th St., Bronx, N. Y. Tel. TR 8-0949 evenings.

FOR Sale: HRO-7 receiver with four coils, power supply, speaker. Excellent condx. $150.00. Gene Schlig, 717 Crotona Park North, Bronx 57, N. Y.

SELL: HQ-129X, $125.00; Collins 310B-1, TVI suppressed, $200.00. Both like new. WO B. F. Brown, Staff, Comphibpac, USNAB, Coronado, Calif.

FOR Sale: BC453, 454, 455, 946 converted, in cabinet, bandswitching, power supply, speaker, $50.00. Gonset Tri-band, $30.00; 522 receiver, converted, cabinet, Millen bandspread dial, S meter, $25.00. Gonset 2-meter converter, new, boxed, $35.00; BC459 with power supply, $15.00; BC457, like new, $8.00; Silver Spark signal tracer, like new, $22.50; Gonset Model B, noise clipper, like new, $5.00; 75-meter MAB Navy Handie-Talkie with new Vibrator power supply and storage battery, $25.00; Master Mobile Mount 132XC, $6.50. W2JCI, Daniel Rosenbaum, 1450 48th St., Brooklyn 19, N. Y.

WANTED: Good communications receiver. Will sell or trade following: Harvey-Wells DPS50 dynamotor unit; S-38 Hallicrafters, Gonset 3-30 converter, Shure Mod. 100 mike, Carter Magmotor, 5.5 v. at 400 v. .150 a. What's your offer? J. Schenck, W3SIW, 17 Pontiac Rd., Pittsburgh 34, Penna.

FOR Sale: 1 Kw phone transmitter complete, in two Par-Meta cabinets; Meissner EX signal shifter driving single 4-125, a complete 200 watt rig with modulators, driving a pr. 250THs in final with 250TH modulators. Coils for all bands except 40 meters. Spare 250TH and 4-125. All Stancor transformers and Cardwell variable condensers. Not junk and has been operating within the past 30 days. Have to move. Bert Weidner, WØHNG, Box 485, Coffeyville, Kans.

SELL. Trade: 5 newly constructed 30-watt Novice or advanced xmitters, $25.00 each; 15 watt amplifier, $20.00; 40-watt modulator, $12.00; 100-watt modulator, $20.00; 10-watt Hi-Fi amplifier, $15.00; supplies: 800v. 275 Ma., 6.3v., $18.00; dual: 1000v. 275 Ma., 400v. 100 Ma., 6.3v., $25.00; Vibrapacks: 6v. 400 v. 90 Ma., $8.00; Dual: 425v. 150 Ma., $15.00; Dynamotor, 6-12v. 450v., 150 Ma. Pictures of above available. Need: Receiver, grid dipper. E.M.C. model 102 and 103 V.O.M. Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

WANTED: Model A or B slicer or kit; also an Instructograph. W4PRM, 816 Melrose St., Winston-Salem, No. Carolina.

100 Kc. crystal standards, brand new, with tube and xtal. Clearance priced at $7.25. c/o W2LZX, Gutzeit, Rogers Electronic Corp., 49 Bleecker Street, New York 12, N. Y.

FOR Sale: Globe King 400B. Good condition. Best offer over $325 takes it. J. L. Ruggieri, 165 W. Washington, Martinsville, Ind.

WANTED to buy: National AA coil. W9ZEN, Vasicak, 124 Glen Oglesby, Ill.

SELL or Swap: Power supply 500 volts, $10. Also 700 volts, $15.00. Both for $20.00. Need 813 tube. Or what have you? S. J. Flick, W3NRB, 5720 Madison Drive, Verona, Pa.

SALE: Heathkit AT-1, used only 3 mos., $25.00; Harvey-Wells pwr supply, $20.00; Home-made antenna coupler, $3.50; PE-103, used, $15.00; 6 v. dynamotor, 425 v. at 375 Ma., used, $15.00; Panadaptor, smoke damage, works OK, $27.50; Lucky Strike geiger counter, with meter, used, $65.00; Theremin, $10.00; Linc welder 60-110 v. welder, $25.00; 60 amp. jeep generator rebuilt, $15.00; Bud cabinet rack, 28 in. high, unused, $12.50; G. A. Wildeboor, WØKHJ, Savannah, Missouri.

WANTED: G, H and J coils (low frequency) for HRO-5TA1. W9JFJ, Campbell, 3013 Oak St., Evansville 14, Ind.

FOR Sale: SX-71 Hallicrafters recvr and spkr, like new: $115.00. F.o.b. Richmond, Va. J. R. Driver, W4ZRS, 6419 Fitzhugh Ave., Richmond, Va.

COLLINS 75A-4, 3 and .8 Kc. filter. First $630. Rudy Ehrhardt, W2PVI, 670 South Street, East Aurora, N. Y.

VIKING II transmitter, VFO, new spare 6146s, coaxial antenna relay, $260. W4ZMZ/2, Matthews, Highland, N. Y.

SELL: Complete station: $535: HQ-129X with speaker, like new, Johnson Viking II, Johnson V.F.O., Johnson Match Box, Johnson SWR Bridge, all factory-wired, 6 months old, 707A Shure mike. Will ship any place collect. WØOSH, Donald E. Carlson, Clarkfield, Minn.

WILL trade Lysco antenna coupler, 300 watt audio Class B xfrmrs and 80 & 40 meter command xmitters for grid dip meter or bug. Cash difference on any unequal trade. William Toben, 121 West Delano, Tucson, Ariz.

SELL: 125-watt AM modulator, speech amplifier, tubes, complete less high voltage supply. JT-30 Astatic mike. Like new. All for $58.00. WØDMA, Smith, Caledonia, Minn.

FOR Sale: Channel 8-32 element UHF Resonator beam. Can be used on higher frequencies: $25.00. Peck, 143 State, Auburn, N. Y. Tel. 3-3531.

SELLING: New NC-88 receiver, never been used. Worth $119.95, Sacrifice for $99.00 plus postage. Need cash. Richard Pugh, W3WGJ. 2302 Franklin St., Johnson, Penna.

COLLINS 30k, clean, complete, $950; Collins 32V3, same as new, $475; 32V1, $340; NC183, good condx, $150; SX28 with J. L. McLaughlin single sideband selector, $180; Hallicrafters HT-8 Radiophone with A.C. power supply, operates on marine frequencies, $80; Kohler light plant, model 800, 110 V, 60 cycles, in gud condx, not surplus, $150; Hunter Cyclemaster VFO, $115; new PE103, $30; will trade for Collins transmitters and receivers, National products, or single sideband equipment. W4MIP.

SELL: Super Pro (BC-779A), clean, like new, instruction book, original carton. $145 cash and carry. W2CJY, George Rulffs, Jr., 38 Brookwold Drive, Manhasset, L. I., N. Y. Phone: MAnhasset 7-0407.

ELMAC receiver, perfect, new 12 volt power supply, both $125; new Palco 12 volt power supply, $30, relays, body mount, other misc. gear. Marcel Valois, Box 488, Covington, La.

FOR Sale: BC221-P 125-20000 Kc. with original calibration book, metal case, $95.00. W4EAS, Box 2138 Univ. Sta., Gainesville, Florida.

SIDEBAND! Brand new unused B&W 51SB sideband generator, $230.00. Late model 75A2, $300.00; model A slicer with AP1, $40.00. W1SUQ.

SELL: Viking "Adventurer", $45.00; Heathkit VF-1, $15. Alex Lyon, K2JYJ, Rte. 3, Wilton Rd., Huntington, N. Y.

NEED: May and June 1916 QSTs to complete set. J. Simpson, 85-39 152 St., Jamaica, L. I., N. Y.

SELL: Gonset Communicator, new condition in original carton with xtal microphone, $185.00 cash. W1CLE, Washburn, RFD #1, Alton, N. H. Tel. 5-4524.

BARGAINS: With new guarantee! S-38A, $29.50; S-40A, $69.00; S-47C, $59.00; Lysco 600, $89.00; S-27, $89.00; SX-43, $129.00; S-76 $149.00; SX-71, $169.00; SX-42, $169.00; HRO-50, $275.00; Sonar VFX 680, $29.50; Eldico TR75TV, $35.00; Heath AT-1, $22.50; Meck T60, $39.50; HT-17, $29.95; EX Shifter, $39.50; Globe Trotter, $49.50; Globe Champ, $199.00; Harvey-Wells Sr., $69.00; Elmac A-54H, $99.00; PSA-500, $27.50; Viking I, $159.00; Viking II, $209.00; SS-75, $139.00; HT-9, $139.00; Globe King, 275; $249.00; Globe King 400A, $299.00; 32V1, $365.00; 32V2, $425.00; 32V3, $525.00, and many others. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deals to World Radio Laboratories, Inc., 3415 West Broadway, Council Bluffs, Iowa.

VIKING Ranger, new, no bugs. $225. F.o.b. Amarillo, Texas. W5SFW, 2410 West 4th.

WANTED: Early radio books and magazines dealing with crystal sets and 1-tube receivers. Send description and prices. G. E. Taylor VE3BNJ, Graham, Ont., Canada.

COLLINS 32V2, Sr. 1402, $435.00; 32V2, Sr. 1235 extra 4D32, 807, B&W filter, $455; SX-42, $175; S4OB, new, $99.50; TBS-50D, like new, $85.00; Webcor 299 wire recorder floor sample, $70. Hargis-Austin, Inc., 410 Baylor, Austin, Texas.

FOR Sale: 33 model 49-6 Dahlberg coin operated hospital radios, complete with bed brackets. Guaranteed in good condition. L. S. Davis, WØMAD, Box 145, Larned, Kansas.

HARVEY-WELLS T-90 Bandmaster, used one month: $165.00 or best offer. Will ship prepaid. L. Samuel, W2AYK, Fairways Apt., Pelham Manor, N. Y.

SELL: Collins 75A3 with 8R-1 crystal calibrator, in perfect condition: $395.00. A. H. Hardwick, W2VQ, Orange, N. J.

SELL: Collins 75A3, like new, all-late refinements, original carton and manual. Best offer over $425; Collins 310B exciter, TVI suppressed and turret final. No coils to change: $200.00. Dr. Haus, W2VH, 25 Upland Drive, Chappaqua, N. Y.

FOR Sale: Viking II and Viking VFO, Morrow 5BRLN converter, in good condition. Best offer. Write Wayne Valentine, W5OAE, 300 E. Capitol St., Jackson, Miss.

SELL: BC-610, BC-614, tuning units, TVI suppressed, instruction manuals. Exceptional buy. Package and pick-up only. Write Larry, W4BBU, Simpsonville, Ky.

SELL or Swap: 6K7, 6F6, 6L6, 813 400 watt, VFO Driver-amplifier, less dc power, including tubes and 20-40-80 coils, $55.00 plus shipping. VHF converter, 10.7 Mc. output, including detector, oscillator, and VR tubes and 27–60, 120–250 Mc. coils, $20.00 plus shipping. Need two meter r.f. section and antenna rotator. John L. Clark, W2MJI, RFD 2, Strang Lane, Peekskill, N. Y.

NEW Surplus small selsyns. Use on 30V 60 cycles. With instructions, $5.00 per pair. Cayuga Products, Box 137, Ithaca, N. Y.

FELLAS, No time? Have your kit wired and calibrated. Write for charge. Matt, 2322 So. 2nd Ave. No. Riverside, Ill.

2 Meter beams; 6 element, horizontal or vertical, all seamless aluminum. $6.95 prepaid. Wholesale Supply Co., Lunenberg, Mass.

SELL 1000 watt station, console transmitter capable of 2000 watts. All best heavy duty equipment. Final transformer Thordarson .5 amp at 7000 volts, plus SX-28 receiver antennae, rotator, driver, etc. Extra parts and tubes. Plus parts for heavy duty rotator. Formerly OA4EW. Best offer over $500. Col. W. H. Frederick, 311 Poplar Drive, Falls Church, Va.

LIMITED quantity DAK3 receivers, 23 tubes with 'scope and 19" cabinet 2 & 4 Kc. bandwidth 2 Mv. 60 cy. AC 175 Kc. I.F. 250 to 1500 Kc. 2 bands. AVC and BFO, F.B. with xtal converter, F.o.b. $50.00 check or M.O. Crated 350 lbs. R. A. Kerlin, W3JGW, 3757 Rutherford St., Harrisburg, Penna.

SALE: complete code recording and transmitting Ediphone equipment, including recording transmitting machine, shaver, headphones, wax cylinders, key. Specifications on request. Reasonable offer accepted. Also: No. 19 MK. II, Mk. III all parts available, new, also complete instruction book. Ask for price list. North American Electronics Co., Plattsburg, N. Y.

BUY Heathkit, Johnson Viking and other transmitters and equipment wired and tested direct. New Heath DX100 transmitter wired and tested, $241.50. Free list new and used equipment, trades and easy terms. J. Lynch Electronic Co., P. O. Box 54, Glen Oaks Branch, Floral Park, N. Y., N. Y.

COLLINS 32V3 with Johnson lo-pass filter, $465; 75A2 with calibrator and FM disc. and spkr, $335. Also Heathkits (wired) GD-1A, S-2, AV-2, V-6, SG-8, AG-8, all 50% catalog. Assorted rotary beam and wire antenna parts plus misc. station accessories all at sellout prices. H. K. Mantius, K6BKV, 342 Seale Ave., Palo Alto, Calif.

SIX-meter Communicator wanted. W12DP de ARRL.

AR-FIVE Company standing-wave bridges and 6-meter gear. SW-500 measures SWR on coax continuously with outputs 20 to 500 watts. $16.95. CV-6 converter, cascode RF, crystal oscillator, 10–14 Mc., output to receiver $27.95. Any other output 7–30 Mc., $29.95. TX-6–20 transmitter, 20 watts, fixed/mobile, phone/CW, many other features, $64.95. Power supplies, kit or wired. Soon, 2 meter equipment, many other items. Custom building a specialty. All letters answered. Write now! Jim, W9BMR, and Ed, W9QNZ, ex-W4FFW and W2QNZ. Ar-Five Co., Box 335, Shullsburg, Wis.

HEATH VFO: $16.00; 5 element 2-meter beam, horiz. or vertical, $5.00; 16 ft. sectional whip, $3.50. K2GBH, 9 Locust Ave., Oceanside, N. Y.

WANTED: McElroy S-600 "tear drop" semi-automatic key. Top price paid. G. S. Wade, 2109 Saturn, Garland, Texas.

SACRIFICE: 2-meter transmitter, 829B tuned line final, with modulator, no HV for final or modulator plates. Write for dope. $50.00; 2-meter Tecraft converter, 14–18 I.F., $20.00; new UTC S-21 110 w. mod. xfrmer, $14.00. Desk top cabinet for 8¾" panel, $8.00; Sonar MR-3 mobile rcvr. 75-20-10, $35.00 or best offer. All F.o.b. K2EQD, Box 547, Perth Amboy, N. J.

NOVICES! TR-75TV2 wired and in excellent condition. 80 and 40 meter coils. Original instructions. $70.00. Richard Nickelson, W4WJD, RFD 1, Winder, Ga.

UNFINISHED 160 phone transmitter enclosed metal cabinet, 21 x 11 x 14, 813 final, clamper tube modulated. 300 Ma. Heavy duty power supply, 866s, three 3" meters. Parts to duplicate over $100. Will supply wiring circuit to complete. Make cash offer, or swap for Panadaptor or what have you? W2DTE.

SELL National NC-183 rcvr best offer around $125.00. Spkr and NBFM adapter included. Floyd Phillips, Jr., W2PCT, 63 Lent St., Poughkeepsie, N. Y.

LEECE-NEVILLE 6-volt 100 amp with voltage regulator and rectifier, $65.00. Will ship. Sonar mobile recvr 10-20-75 M, $45.00; Mallory Vibrapack, single $15.00; Vibrapack, double, $25.00; Carter converter, 500 volts 300 Ma., $30.00. Shacket, 135-30 232 St., Springfield Gardens 13, L. I., N. Y.

VIKING II, VFO, Match Box, LP filter, D104 mike, all like new. Going to college. First check over $300.00. Prefer local buyer, but will ship. E. G. Rodgers, W4ZCP, 320-2 Atlanta St., Marietta, Ga.

COLLINS: 32V3 transmitter with Johnson filter, $425.00; Collins 75-A2 receiver with calibrator, $290.00; $700 for both. Equipment is in A-1 condition. C. Leverington, WØYZO, 5076 Arlington Ave., St. Louis 20, Mo.

TELETYPE Model #12 with AC motors, cover, table, single space gear, less keyboard, $50.00. Model 21A, $20.00; PE103 dynamotor, complete, new, $20.00. 300 ft. Amphenol 14-022 twin-lead, $8.00. All F.o.b. W4ZPZ, Neal Sheffield, Jr., 1805 Madison Ave., Greensboro, N. C.

CR-88 receiver for sale (communications model of AR-88). In excellent condition. Will crate and ship. $280.00 F.o.b. Dallas, Texas. W5HPV, Wolk, 2609 Tolosa Drive, Dallas 28, Texas. Tel. FA-9877

SELL: 600 watt pushpull 813 with power supply, Westinghouse overload relay, 6V6 clamp tubes, enclosed 36 relay rack, coils for 80-40-20-10; requires 6 watts drive, for $150.00 vicinity Cleveland, Moore, 19815 Sunset Drive, Warrensville Heights 22, Ohio. Tel. WYoming 1-4019.

FOR Sale: Vesto 44 ft. tower, complete, with exception of anchor posts which can be replaced for $14.50 by Vesto Co. Also 138-111 Johnson antenna rotator complete with selsyns and control unit and 138-108 Johnson weatherproof relay for two-beam operation. Rotator and relay like new. All of the above for $275.00. W. R. Peterson, W9PUP, 5343 Conrad St., Skokie, Ill.

OLD QSTS, 1922 up; sets or single; Handbooks, Callbooks, catalogs for sale. L. Hardy, Shirley Ave., Franklin Lakes, N. J.

ELMAC PMR-6A mobile receiver with power supply, $95.00; VFO, $15.00; portable 50-watt xmittr, self-contained power supply, $35.00; PE-103, $20.00; all F.o.b. Memphis, Tenn. W4YN.

PERFORATED Aluminum Sheet, .051", 5/64" OD holes, ½" centers, $1.20 sq. ft., cut to size. Send for listing on beams, aluminum tubing, etc. Radcliff's, Fostoria, Ohio.

SELL: BC-223 transmitter complete with dynamotor, 2 tuning units; pair of heavy 115 volts 60 cycle synchro transmitters, 4 μfd, 3000 volt condenser; 2 hy. and 3 hy. choke @ 1 amp; 15 amp powerstat; Couple of heavy duty filament transformers; O-6 Heathkit 'scope; Eico signal generator #315; enclosed relay rack with front cover; 1470 VCT transformer @ 1 amp. 110 VAC input; pair of BC-222 walkie-talkies, 6 & 10 meters; 400 volt 220 Ma. power supply, $8.00. Any reasonable offer will be accepted. Write for further information. Stan Fierston, W1BRJ, 224 Eastern Ave., Lynn, Mass.

SELL, trade, excellent Collins 75A1 w/spkr, $265; VHF 152A, factory recondx, $45.00; new 814, $3.00. Want: 752A, 75A3, DB-23 4D32, 813. Roy Sawdey, Harper Rd., Solon, Ohio.

12V. Dynamotors for late model autos; Signal Corps PE-135-AX, input 24-12V, output 500 V. 400 Ma. 7 x 12 x 13 inches; includes relay condenser, fuses, etc. New, original package guaranteed: $20.00. Lesterman Company, Barboursville, W. Va.

RIGS, station controls, etc. custom-built to your specifications. All kits wired and tested at below factory-wired prices. Custom Controls, 474 Main St., Spotswood, N. J.

DX-O-GRAPH. The DX man's guide for band conditions. Know when, where, and what band. Foremost DXers use it. $2.50. Request flyer. Box 4596, Winston-Salem, N. C.

FOR Sale: SX-28, factory recommended SX-28A modifications, improved noise limiter and r.f. stages. Built-in 200 Kc. xtal calibrator, V/R BFO and HFO. Plug-in Select-O-Ject, spare pwr transformer and tubes, schematics and maintenance manual. Best offer. K6CVO, Dell, Apt. "C", 144-35 Charter Rd., Jamaica 35, L. I., N. Y. Tel. Phone JA 6–7613.

SELL: IRE Proceedings 1953 and 1954. Will accept first reasonable offer. W2EC, 169 Buckingham Rd., West Hempstead, L. I., N. Y.

SELL: Elmac AF-67, $145.00; Elmac PS-2V, fixed supply, $35.00; Carter Dynamotor 4037AS, $20.00; Gonset 3–30 converter and clipper, $38.00. Will sell individually. K2BDA, Weik, 331 Bergen St., Trenton, N. J.

HAVE used but good S-38 receiver and RK-60 tube. Best offer or will trade for 2 meter rig, test equipment or xmtr. Gary Cain, Box 372, Stanley, No. Dakota.

SELL: Factory modified 75A2A, 3100 and 800 cycle filters, calibrator, speaker. Exceptionally clean. Make offer. Paul Elliott, Rt. 2, Bishop, Texas.

FOR Sale: Latest model Elmac transmitter, Morrow mobile receiver (converter, FTR), Precision E-200-C signal generator, PE-103. All unused. Reasonable. George Kravitz, 7919 20th Ave., Brooklyn 14, N. Y.

FOR Sale: 1 BC-610E with speech amplifier and all coils and tuning units for 80, 40, 20 and 10 meters. Used very little and like new inside and out. All inquiries answered. W7NGU, Clarence Laney, 913 F Street, Rupert, Idaho.

SACRIFICE: Gonset 3–30 converter, noise limiter, 6V. McMurdo Silver 701 transmitter, mobile. BC-474 3.5 to 6.3 Mc. transmitter-receiver. Unconverted SCR-522. Other equipment. Card for details. Paul Lesser, St. Marys, Penna.

FOR Sale: New and used Gonset mobile equipment, Communicators, two and six-meter linear amplifiers, six meter converters, etc. Trade-ins accepted. All types of Ham Gear bought, sold, exchanged. Graham Company (R. T. Graham, W1KTJ), Stoneham, Mass. Tel. ST–6–1966.

AMATEURS and Experimenters! For sale: Surplus miscellaneous items: ARR-5 receiver, power supplies, blowers, transformers, condensers, etc., new and used. Send for list. All inquiries will be answered. H. C. Franke, P. O. Box 11, Morristown, N. J.

FOR Sale: RK-4D32, new, $20; 4-250-A, slightly used, $15.00; Millen #90501 frequency standard, like new, $40.00; E-V #726 microphone, new, $30.00; Homelite gasoline engine-driven power plant, 28½ VDC at 70 amps, regulated, $50.00; choke, 1 Ohy, 250 Ma., $2.50; oil capacitors, new, 10μfd. 1000 VDC, $2.50; 4 μfd, 1000 VDC, $2.00, 6 μfd, 600 VDC, $1.50; 75A4 Receiver & speaker, new, shipment from distributor to purchaser. $575. Craig, W5VRO.

USED equipment available from the largest inventory of this type in the East. Here are a few samples: Central A Slicer $59.95 10A. $99.95; Collins 32V1 $335.00, 32V2 $450.00, 32V3 $595.00; Elmac A-54 $110.00, PSA-500 $29.95; Harvey-Wells APS-50 $29.95; VFO $37.50, TBS-50C $69.95, TBS-50D $79.95; Johnson Mobile $99.95, Viking VFO $44.95, Viking I $199.95, Viking II $265.00, Range, $215.00; National HFS $99.95, NC-57 $69.95, NC-120 $59.95, SW-54 $34.95; Millen 90281 $49.95, 90700 $19.95, 90711 $79.95, 90800 $19.95, 90881 $69.00; Precision E-200 $39.95, E-400 $99.95, 600 $19.95, 912P $34.95. For latest complete list write Carl, W1BFT, Evans Radio, Concord, N. H.

WE Want your used gear. Will pay cash, or give top trades on B&W Hallicrafters, Hammarlund, Johnson, National, etc. All the leaders in stock for immediate shipment. Write right now. Marshall Electronics, Frankfort, Indiana.

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REAL bargains: New and reconditioned Collins, Hallicrafters, National, Elmac, Johnson, all others. Completely reconditioned with new guarantee SW54 $25.00; NC57 $59.00; NC125 $129.00; NC240D $169.00; NC183D $299.00; HRO50T1 $299.00; HRO60 $389.00; Collins 75A2 $299.00; 75A3 $399.00; 32V1 $349.00; 32V3 $545.00; HQ129X $169.00; HQ140X $219.00; S38 $29.00; S40B $79.00; S85 $89.00; SX99 $119.00; SX71 $159.00; SX62 $199.00; TBS50C $69.00; Elmac receivers and transmitters; Viking II; many others. Shipped on approval. Easy terms. Satisfaction guaranteed. Write or free list. Henry Radio, Butler, Mo.

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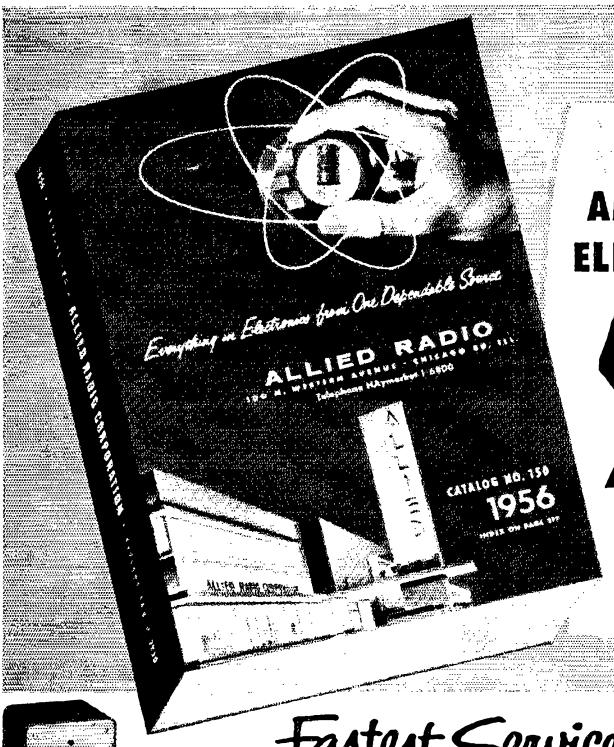

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52 Chandler St.
Worcester

Springfield Radio Co., Inc
405 Dwight St.
Springfield

Young & Young of Lawrenc Inc.
262 Lowell St.
Lawrence

MICHIGAN

Bell-Lourim Electronics, In
1845 Peck St.
Muskegon
Branch: Traverse City

C & S Electronic Supply C
758 East Witherbee St.
Flint 5

M. N. Duffy & Co., Inc.
2040 Grand River Ave.
Detroit 26

Erickson Electronic Wholesale, Inc.
1201 Woodward Heights
Ferndale

Purchase Radio Supply
605 Church St.
Ann Arbor

Reno Radio Company
1314 Broadway
Detroit 26

Radio Parts, Inc.
542-8 So. Division
Grand Rapids 3

Saginaw Distributors, Inc
1751 E. Genesee Ave.
Saginaw

Tape Recording Industrie
3335 E. Michigan Ave.
Lansing

Warren Radio Company
713 Portage St.
Kalamazoo

MINNESOTA

Lew Bonn Co.
67 So. 12th St.
Minneapolis 3
Branches: St. Paul, Dulut Fargo, La Cross

Electronic Center, Inc.
107 3rd Ave., No.
Minneapolis

Gopher Electronics
370 Minnesota St.
St. Paul

Hall Electric Co.
566 N. Robert
St. Paul

Northwest Radio
123 East First Street
Duluth 2

Northwest Radio & Elect. Supply
52 So. Twelfth St.
Minneapolis 3

Harry Stark's, Inc.
71 So. 12th St.
Minneapolis 3

MISSISSIPPI

Nelson Radio & Supply Co. Inc.
613 Caillevet St.
Biloxi

Swan Distributing Co.
342 N. Gallatin
Jackson
P. O. Box 766
506 Bouie St.
Hattiesburg
P. O. Box 824
724 Fifth St. South
Columbus

MISSOURI

Walter Ashe Radio Co.
1125 Pine St.
St. Louis

Henry Radio Co.
Butler

Radiolab, Inc.
1612 Grand Ave.
Kansas City

Van Sickle Radio Co.
1113 Pine St.
St. Louis

MONTANA

George Lindgren Co.
P. O. Box 966
Great Falls

Electronic Supply Company
216 Eleventh St. West
Billings

NEBRASKA

Scott Elec. Supply Corp.
2201 O St.
Lincoln

NEW HAMPSHIRE

Evans Radio, Inc.
P. O. Box 312
Concord

NEW JERSEY

Elmo Radio Co.
1133 Haddon Ave.
Camden
4401 Ventnor Ave.
Atlantic City

Allen & Hurley
23 So. Warren St.
Trenton 10

Federated Purchaser
1021 Route 22
Mountainside

General Radio Supply Co.
6th & Penn Sts.
Camden

Lafayette Radio

Radio Wire Television, Inc.
24 Central Avenue
Newark 2

Monmouth Radio Supply Co.
404 Shrewsbury Ave.
Red Bank

Radio Electric Service Co. of N. J.
513 Cooper St.
Camden

W. W. Rogers Radiotelephone Specialists
Curtis & Union Aves.
Manasquan

Variety Elec. Co., Inc.
468 Broad St.
Newark 2

Williams Radio Supply Co.
265 Woodbridge Ave.
New Brunswick

W.R.M. Wholesale Radio, Inc.
284 Teaneck Road
Ridgefield Park

NEW MEXICO

Talley Engineering
P. O. Box 2
Los Alamos

Walker Radio Co., Inc.
102 Granite Ave., N.W.
P. O. Box 921
Albuquerque

NEW YORK

Arrow Electronics, Inc.
65 Cortlandt St.
New York 7

Adirondack Radio Supply
185 West Main St.
Amsterdam

W. E. Berndt
655 S. Warren St.
Syracuse

Chief Electronics, Inc.
14 N. Bridge St.
Poughkeepsie

Cymac, Inc.
2325-2335 Main St.
Buffalo 14

Port Orange Radio Dist. Co.
904-916 Broadway
Albany 7

Harrison Radio Co.
225 Greenwich St.
New York
144-24 Hillside Avenue
Jamaica, Long Island

Harvey Radio Company
103 West 43rd Street
New York 36

Hudson Radio and Television Co.
48 W. 48th St.
New York

Lafayette Radio

Radio Wire Television, Inc.
100 Sixth Avenue
New York 13

Morris Distributor Co.
1153 W. Fayette St.
Syracuse

Peerless Radio Dist., Inc.
92-32 Merrick Road
Jamaica 2

Rochester Radio Supply
600 Main St. East
Rochester 6

Radio Equipment Corp.
312 Elm St.
Buffalo

Radelco, Inc.
246 West First St.
Mount Vernon

Standard Parts Corp.
277 North Franklin St.
Hempstead
Mont. Hwy. & Intersection of Blue Point Ave.
Blue Point, Long Island

Syracuse Radio Supply, Inc.
620 S. Salina St.
Syracuse 3

Stallman of Ithaca
123 S. Tioga St.
Ithaca

Terminal Radio Corporation
85 Cortlandt St.
New York

Westchester Electronic Supply Co., Inc.
602-610 Mamaroneck Avenue
White Plains

NORTH CAROLINA

Allied Electronics, Inc.
413-415 Hillsboro Street
Raleigh

Dalton-Hege Radio Supply Co.
912 West 4th Street
Winston-Salem

Freck Radio & Supply Co. Inc.
38 Biltmore Ave.
Asheville

Radio Equipment Co.
306 Cotanche St.
Greenville

Shiflet & Dickson, Inc.
1008 W. Franklin Ave.
Gastonia

NORTH DAKOTA

Fargo Radio Service Co.
515 Third Avenue North
Fargo

Maytag Electric Co.
P. O. Box 672
Minot

Mandan Electric Supply
101 East Main St.
Mandan

OHIO

Burroughs Radio Inc.
711 Second St., N.W.
Canton 3
218 E. Second Street
Mansfield

H. & W. Auto Accessories
715 Adams St.
Toledo 2

Lifetime Electronics
1501 Adams St.
Toledo 2

Mytronic Co.
2145 Florence
Cincinnati 6

Pioneer Electronic Supply Co.
2115 Prospect Ave.
Cleveland 15

Progress Radio
413-415 Huron Road
Cleveland 15

Ross Radio
325 W. Federal St.
Youngstown 3

Radio & Electronic Parts Corp.
3235 Prospect Ave.
Cleveland 15

Sun Radio
110 East Martin St.
Akron

Selectronic Supplies, Inc.
1320 Madison Ave.
Toledo

Steinbergs, Inc.
633 Walnut St.
Cincinnati 2

Srepco
314 Leo Street
Dayton 4

Universal Service
114 North Third Street
Columbus 15

OKLAHOMA

Radio Supply Inc.
724 N. Hudson
P. O. Box 1972
Oklahoma City

Radio, Inc.
1000 South Main St.
Tulsa

OREGON

Portland Radio Supply
1234 S. W. Stark
Portland 5

United Radio Supply Inc.
22 Northwest 9th
Portland
712 W. 6th St.
Eugene
697 South 12th St.
Salem
301 South Front St.
Medford

Verl G. Walker Co.
205 West Jackson
P. O. Box 1586
Medford

PENNSYLVANIA

AG Radio Parts Co.
939 Township Line Road
Elkins Park

Almo Radio Co.
509 Arch St.
Philadelphia

A. C. Radio Supply Co.
126 East 24th St.
Chester
1539 West Passyunk Ave.
Philadelphia, Pa.

George D. Barbey
155-157 Penn Street
Reading

622 Columbia Ave.
Lancaster

Consolidated Radio Co.
612 Arch St.
Philadelphia 6

Cameradio Co.
1121 Penn Ave.
Pittsburgh 22

D & H Distributing Co.
2535 N. 7th St.
Harrisburg

Federated Purchaser
1115 Hamilton St.
Allentown

General Radio & Elec. Co.
396-398 S. Main St.
Wilkes-Barre

Lectronic Research Labs
715 Arch St.
Philadelphia 6

Moyer Electronics Supply Co., Inc.
330 Norwegian St.
Pottsville

Radio Electric Service Co. of Pa., Inc.
701 Arch St.
Philadelphia 6

Radio Service Co.
346 So. Main St.
Wilkes-Barre

Scranton Radio & TV Supply Co.
419 Poplar St.
Scranton 9

Tydings Company
630 Grant St.
Pittsburgh 19
5930 Baum Blvd.
Pittsburgh 6

Eugene G. Wile
218 South 11th St.
Philadelphia 7

RHODE ISLAND

W. H. Edwards Co., Inc.
94-96 Broadway
Providence 3

SOUTH CAROLINA

A & S Electronics, Inc.
River Street at Murray Ave.
Anderson

Dixie Radio Supply Co.
1700 Laurel St.
Columbia

Florence Radio Supply, Inc.
355-65 North Irby Street
Florence

SOUTH DAKOTA

Burghardt Radio Supply, Inc.
Watertown, Aberdeen, Rapid City

TENNESSEE

Bluff City Dist. Co.
Memphis

Curle Radio Supply
439 Broad Street
Chattanooga 2

Electra Distributing Co.
1914 West End Ave.
Nashville 4

L. K. Rush Company
101-103 Highland Ave.
Jackson

W & W Distributing Co.
644 Madison Ave.
Memphis

TEXAS

Busacker Electronic Equip. Co.
1216 W. Clay Ave.
Houston 19

Crabtree's Wholesale Radio
2608 Ross Ave.
Dallas 1

Electronics Equipment Co.
917 Florence St.
Fort Worth

Lamp's 'Lectronics Ltd.
828 Brooklyn
San Antonio 10

C. C. McNicol
811 Estrella St.
El Paso

Rio Radio Supply Co.
McAllen

RC & LC Hall
1219 Caroline
Houston
1141 Park Ave.
Beaumont

Swieco, Inc.
512-18 E. Lancaster
Fort Worth

Texas Electronic Supply
1202 W. 5th St.
Austin

UTAH

Standard Supply Co.
225 E. 6th South
Salt Lake City

VIRGINIA

Bristol Radio Supply Corp.
31 Moore Street
Bristol

Radio Equipment Co.
821 W. 21st St.
Norfolk

Radio Supply Co.
3302 W. Broad St.
Richmond

Southern Electric Corp.
818 Greenville Ave.
Staunton

WASHINGTON

C & G Radio Supply Company
1303 Pacific Avenue
Bremerton
318 North Capitol Way
Olympia
510 West Wishkah
Aberdeen
2502 Jefferson
Tacoma

Northwest Electronics
N. 102 Monroe St.
Spokane 1

Pacific Electronics Sales Co.
1209 1st Ave.
Seattle 1

Seattle Radio Supply
2117 Second Ave.
Seattle

Waitkus Supply Co.
110 Grand Ave.
Bellingham

WEST VIRGINIA

Chemcity Electronic Dist.
1637 Fourth Ave.
P.O. Box 2066
Charleston

WISCONSIN

A & F Electro-Mart
7833 W. Greenfield Ave.
Milwaukee 14

Bushland Radio Specialties
9 W. Spring St.
Chippewa Falls

Harris Radio Corporation
111 No. 10th Street
Manitowac
289 No. Main St.
Fond Du Lac

Satterfield Electronics Inc.
326-28 W. Gorham St.
Madison 3

Valley Radio Distributors
518 N. Appleton St.
Appleton

ALASKA

Yukon Radio Supply, Inc.
Box 406
Anchorage

HAWAII

Radio Wholesale & Supply
P. O. Box 3768
Honolulu 11

CANADA

Alpha Aracon Radio
29 Adelaide St. West
Toronto, Ontario

Anguish Limited
Brantford, Ontario

Crawford Radio
119-121 John St. N.
Hamilton, Ontario

Johnson Electric Supply
135 McIntyre St.
North Bay, Ontario

Geo. M. LaTour
1540 — 3rd Ave.
Quebec City, P. Q.

MacDonald Electric Ltd.
307 Queen St. South
Kitchener, Ontario

Payette Radio Ltd.
730 St. James W.
Montreal, P. Q.

Edwads Sudbury Ltd.
69 Elm Street West
Sudbury, Ontario

Taylor & Pearson (B.C.) Ltd.
1006 Richards St.
Vancouver 2, B. C.

The Radio Centre
72 Craig St. W.
Montreal, P. Q.

Wholesale Radio & Electronics
1143 Bay St.
Toronto, Ontario

Phonovision Dist. Co.
388 King St.
Kingston, Ontario

Fisher Radio Company
649 Colbore St.
London, Ontario

Wackide Radio TV Labs Ltd.
28 Laurier Ave. West
Ottawa, Ontario

Complete Specifications and Features NC-300

No *greater sensitivity* in any ham receiver at any price (3-6 db noise figure on all amateur bands) plus . . . *greater stability* than most receivers costing $695 . . . *plus* all these sensational new features and priced at only $349.95!†

NEW! Features a total of *10* dial scales for coverage of 160 to 1¼ meters with National's *exclusive* new converter provision with the receiver scales calibrated for 6, 2, 1¼ meters using a special 30-35 mc tunable IF band.

NEW! Longest slide rule dial ever! More than a foot long! Easily readable to 2 kc without interpolation up to 21.5 mc.

NEW! 3 position IF selector—.5 kc, 3.5 kc, 8 kc—provides super selectivity, gives optimum band width for CW, phone, phone net or VHF operation.

NEW! Separate linear detector for single sideband . . . decreases distortion by allowing AVC "on" with single sideband . . . will not block with RF gain full open.

NEW! Hi-speed, smooth inertia tuning dial with 40 to 1 ratio! Provides easier, more accurate tuning. Smoothest dial you've ever used.

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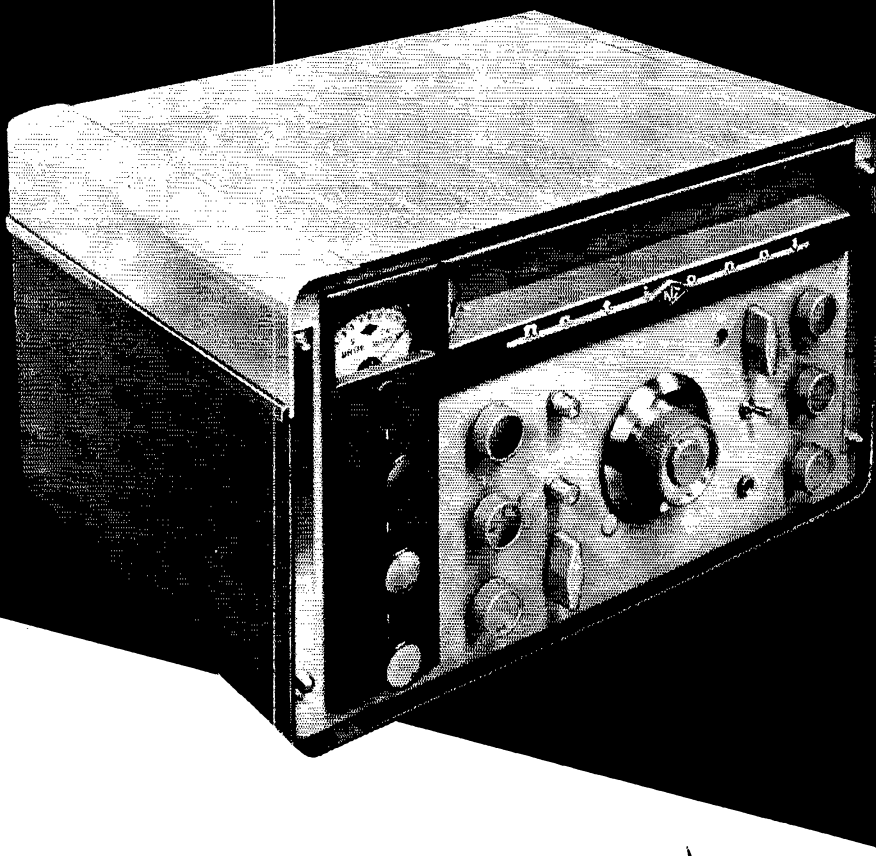

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PLUS—the newest look in ham receivers . . . "Massive in the modern manner" . . . truly a "dream receiver" that can be used either as a table or rack model!

PLUS—all these other sensational National features:

★—Calibration reset adjustable from front panel to provide exact frequency setting!

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★—Wide range tone control—for control of both low frequency and high frequency end of response curve!

★—Socket for Xtal calibrator plus accessory socket for powering converters and future accessories!

★—1st IF frequency—2215 kc

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ALL THE FEATURES MOST HAMS WANT... AT A PRICE MOST HAMS ARE WILLING TO PAY..

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• Check these features. Aren't they what *you* want most in a receiver? Check the price. Never before so much of what's "most wanted" for so little.

† *Prices slightly higher west of the Rockies and outside Continental U.S.A.*

SEPTEMBER 30

SEE National's Brand New NC-300 dream receiver

Now, for the biggest thrill, heck the *performance*. The IC-300 is at your local National Company dealers' right now Sept. 30).

★—Selectivity at 6 db down 500 cycles, 3.5 kc and 8 kc. Selectable from the front panel without additional accessories. Nothing extra to buy!

★—Crystal filter at 3.5 kc provides notching plus 4 bandwidth positions in addition to the 3 IF selectivity positions. No other receiver has this versatility.

★—14 controls—
RF gain and AC on/off
AF gain and RF tube
gain switch
Tone control
ANC-CW-SSB accessory
switch
CW on/off pitch
Main tuning
Calibration correct
Xtal calibrator on/off
On/off limiter
IF selectivity
Xtal selectivity
Xtal phasing
Bandswitch
Phono-jack

★—10 tubes, plus 5U4-G current regulator, 6X8 rectifier and OB2 voltage regulator.

★—Triple complement—
6BZ6 RF
6BA7 1st mixer
6AH6 1st osc.
6BE6 2nd mixer
6BJ6 1st I.F.
6BA6 2nd I.F.
6AL5 ANL and detector
6BE6 CWO/SSB det.
12AT7 1st audio and
S meter amp.
6AQ5 audio output

★—Power consumption 90 watts

★—Power output 4 watts undistorted

★—Power source 110-120 volts AC—60 cycles

★—Antenna input impedance 50-300 ohms

★—Output impedance—4 ohms

★—Tuning system combination gear-pinion

★—Band designation and length—
160 meters—1.8 to 2.0 megacycles
80 meters—3.5 to 4.0 megacycles
40 meters—7.0 to 7.3 megacycles
20 meters—14.0 to 14.4 megacycles
15 meters—21.0 to 21.5 megacycles
11 meters—26.5 to 27.5 megacycles
10 meters—28.0 to 29.7 megacycles
6 meters—49.8 to 54.5 megacycles
2 meters—143.5 to 148.5 megacycles
1¼ meters—220 to 225 megacycles

★—Usable with accessory converters optional at extra cost.

★—Frequency response 400-3000 cycles for communications purposes.

★—Coloring walnut—60 lbs.

★—Finish—two-tone gray enamel

★—DIMENSIONS—
19¼" wide (19" rack opening) 11½" high
13" deep

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Featuring such modern circuitry as double I-F conversion and single-sideband reception, the SX-100 is the newest addition to the Hallicrafters line that has been making communications history on the amateur bands for many years.

In this fine receiver, as in many other leading amateur and commercial designs, *RCA Receiving Tubes* are specified—because the tests of time have proved that RCA Receiving Tubes can really *take it* in day-in and day-out operation. High uniformity of characteristics makes it possible to interchange them—no matter where or when you buy them—without a lot of circuit readjustment. RCA Receiving Tubes help with greater background *quietness* enabling you effectively to boost receiver sensitivity without "knocking out" the signal.

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