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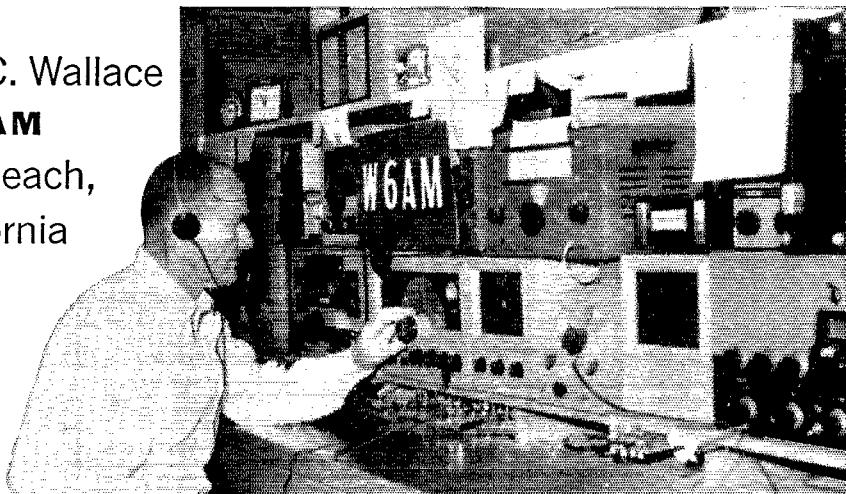


PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

# "IF YOU CAN'T HEAR THEM ... YOU CAN'T WORK THEM!"

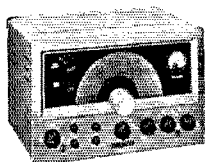
says Don C. Wallace  
**W6AM**  
Long Beach,  
California

Don Wallace  
at the controls of W6AM

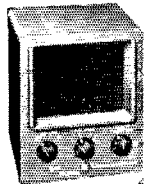


## RME HAM EQUIPMENT SCORES AGAIN IN TOP-NOTCH PERFORMANCE!

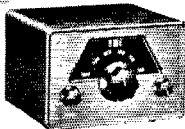
"I have concentrated on antennas, low noise level and DX for the past ten years as well as versatile inside equipment arrangements. It has worked out very well, especially with the RME equipment." says Don Wallace.



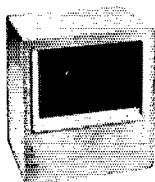
RME 4350A  
RECEIVER



RME 4301  
SIDEBAND  
SELECTOR



RME DB23  
PRESELECTOR



RME 4302  
SPEAKER

DON HAS USED RME EQUIPMENT SUCCESSFULLY FOR YEARS. RME has kept W6AM consistently on the top 10 DXCC CW and phone listings. In contest work, W6AM also has been highest DX CW scorer west of the Mississippi and at times high scorer nationally for multiple operation in DX contests, CW and phone. RME is proud to be a part of W6AM's accomplishments. *Why don't you look into the excellent performance characteristics of RME equipment? It's the first choice of hams everywhere!*

Shown in operation in this photo are an RME 4350 Receiver with an RME 4301 Sideband Selector, an RME 45 which has been used for the past fourteen years, two RME DB23 preselectors and two RME DB22's. A Great Circle map with 24 rhombic directions is just over the RME 4350 and the matching RME 4302 speaker.

**COMPARE THEM ALL AND YOU'LL FIND THAT RME HAM EQUIPMENT GIVES YOU MORE . . .**  
*in quality*  
*in performance*  
*in longer-life*

**GET THE FACTS** about RME—a respected name in communications. Write Dept. Q85 for Bulletin 244. See your RME Distributor.



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**HT-32**  
transmitter/exciter

## Exclusive HT-32 High Frequency Crystal Filter System a major, proven advance... cuts unwanted sideband at least 50 db.

Now Proven superior — vastly superior to any other type filter—is Hallicrafters' exclusive 5.0 mc. quartz crystal filter system.

Result of a three-year research program, the system makes possible, for the first time, *high frequency filtering*. Result: unprecedented rejection of unwanted sideband—50 db. or more—and the *cleanest signal of all*, bar none.

This and another major technical advance—Hallicrafters' exclusive Bridged-Tee Modulator—make the HT-32 the most wanted SSB transmitter in history.

Export Sales: International Operations  
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### *Compare these features*

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*The new ideas in communications*

*are born at ...*

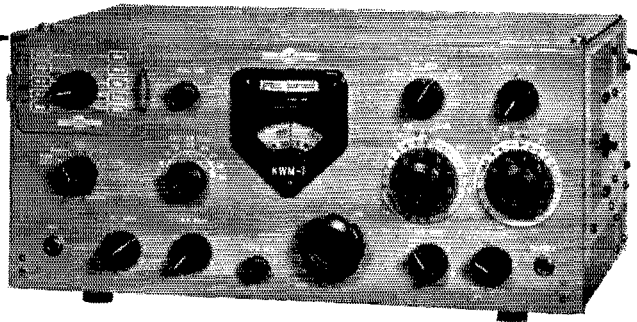
In our 25th year of service



# hallicrafters

Chicago 24, Ill.

# Collins KWM-1



mobile/fixed SSB transceiver for

# MAXIMUM VERSATILITY

## Power

The KWM-1 is the most versatile rig available with 175 watts PEP input on SSB and 160 watts on CW.

## Mobile

The most compact unit available for mobile operation with anywhere near the power — the only one available for SSB.

## Fixed Operation

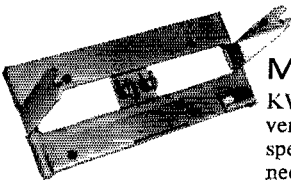
Takes very little space — includes receiver and transmitter — costs less than two separate, comparable units.

## Novice

Plug-in adapter available to operate the KWM-1 as a crystal-controlled Novice rig. When your General Class license arrives, just slide in the normal crystal box and you're set for regular VFO operation.

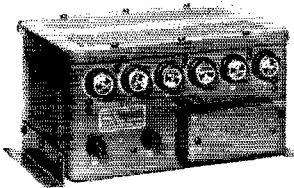
## Operational Features

Receiver and transmitter tuned to same frequency always — no need for zeroing in. Switch deck on Exciter Tune control will control remote antenna switching relays when changing bands. Only 7 db less output than a kilowatt (one S unit). Crystal switch, automatic antenna switching, control and frequency scales on PA Load and Tune controls make bandswitching easy — even when mobile — no need to get out of the car. Most inexpensive way to have 175 watts mobile AND fixed.



## Mobile Mount

KWM-1 slides in and out very easily with power, speaker and antenna connecting automatically.



## DC Power Supply

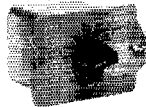
Completely transistorized. Minimum maintenance. Provides all voltages from 12 volt system. 85% over-all efficiency.

## AC Power Supply

Very compact unit supplies all voltages for KWM-1.

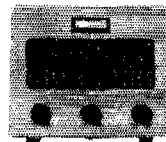
## DX Conversion Adapter

This box replaces the normal crystal box in the front panel. Provides up to 7 transmitting frequencies within the band and allows reception over a 100 kc band in or out of the band. An export model available with transmitting frequencies outside band. This box and normal crystal box easily interchange for switching back and forth.



## Extra Crystal Boxes

These can be obtained with crystals for operation anywhere in the 14 to 30 mc band. Also available for crystal-controlled transmitter for Novice operation. Power is easily reduced to conform with Novice power regulation.



## Speaker Console

Contains a 5x7 inch speaker and directional wattmeter to give the fixed station that finished touch.

Collins

CREATIVE LEADER IN COMMUNICATION



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

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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.

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### INDEXED BY

Applied Science and Technology Index  
Library of Congress Catalog  
Card No.: 21-9421

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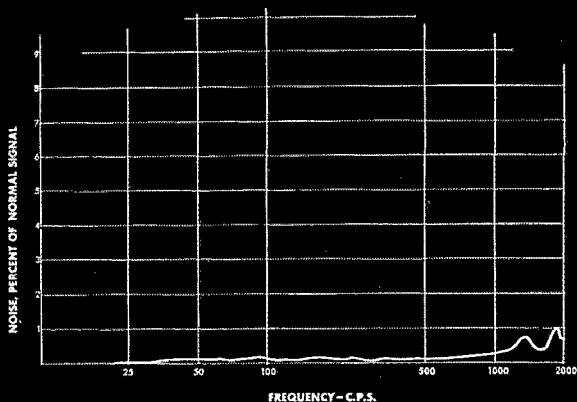
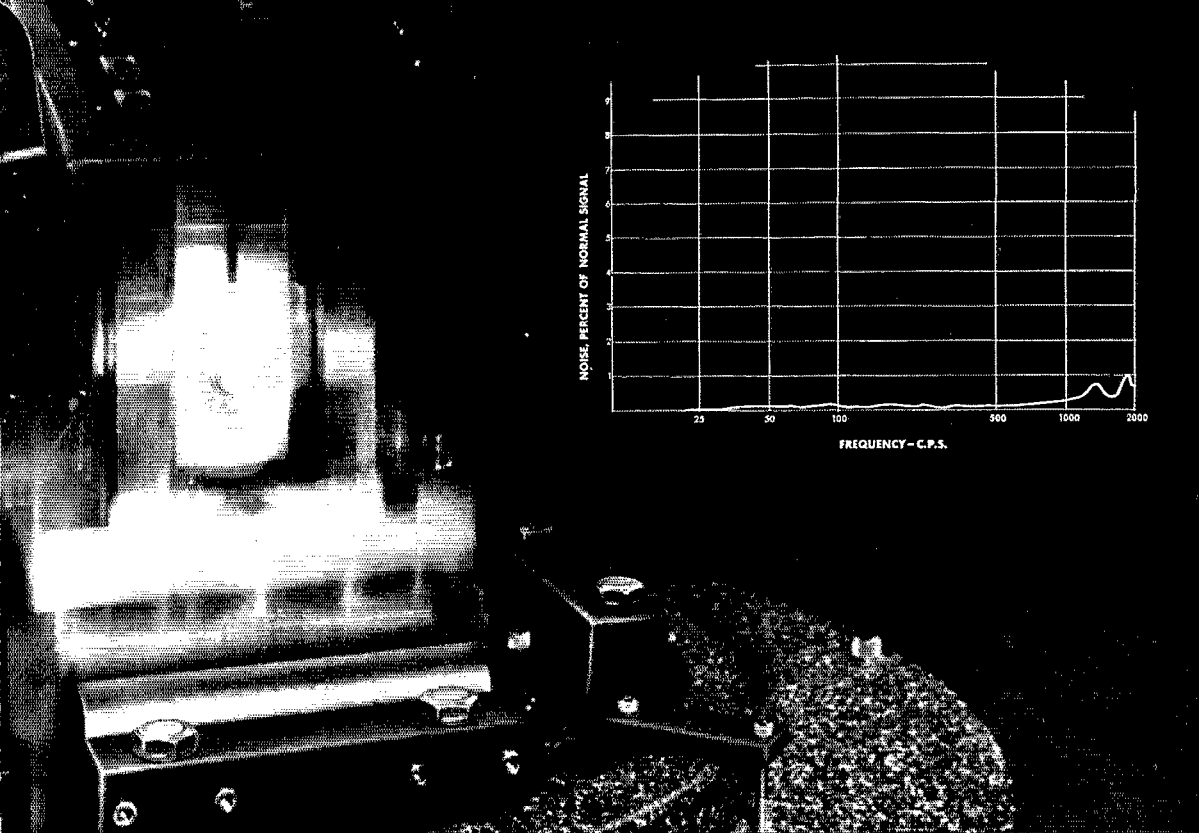
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Second in a series describing the advantages of ceramics in electron tubes. Previously discussed: Surviving Heat.

## Surviving Vibration is an Eimac Ceramic Tube Extra

High reliability under severe impact and vibration is an important vacuum tube requirement for mobile applications. An important aspect of this reliability is the tube's ability to operate under extreme vibration without envelope damage, introducing noise or developing inter-electrode short circuits. Eimac ceramic design improves tube performance under these conditions.

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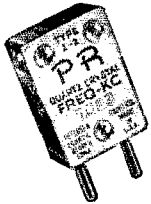
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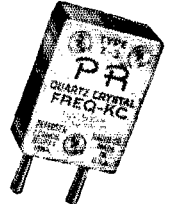


### 40, 80 and 160 Meters, PR Type Z-2

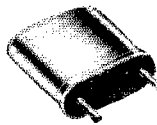
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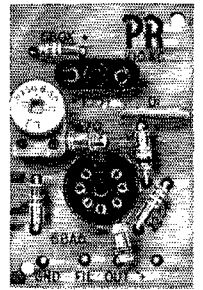
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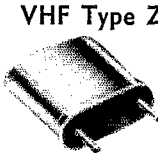


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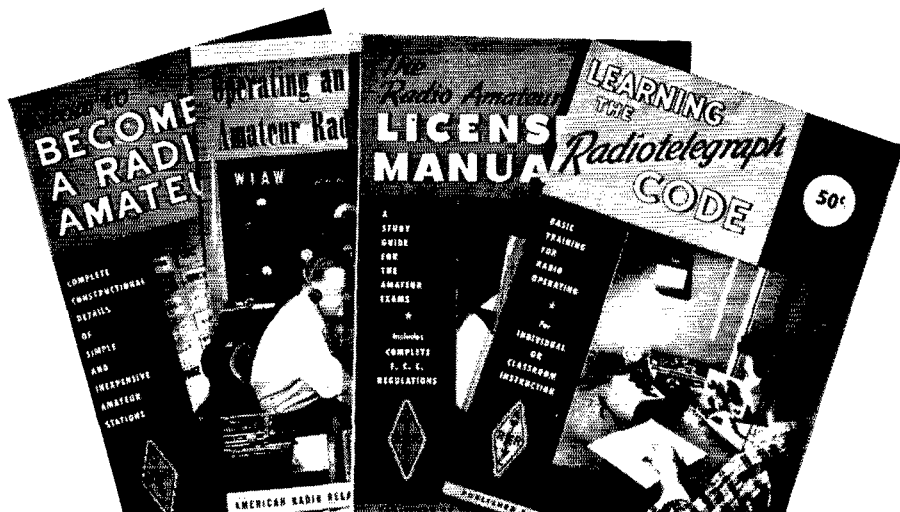
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**Reports Invited.** All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club 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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- ★ LEARNING THE RADIO TELEGRAPH CODE
- ★ OPERATING AN AMATEUR RADIO STATION

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# THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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



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# "It Seems to Us..."

## AMATEUR CALLS

Our early wireless transmitting experimenters, some 50 years ago, soon found a need for some sort of station identification. As this was long before government licensing, private (amateur, for the most part) stations chose the simplest solution — the owner-operator merely signed his initials. When the law came in 1912 amateur licenses were issued with numeral-and-two-letter combinations, the numerals of course indicating the newly created licensing district and, therefore, the area of the country in which the station was located. A big step was taken, long before World War I, when the ham fraternity was growing so fast that it became necessary to use three-letter calls.

In the 1920s, with the opening of short waves to international communications, for the first time it became important to indicate the country of origin. IAW might work an overseas station signing 2AB but not know whether it was in England, Turkey, or Lower Slobbovia. So the League, through IARU, sponsored an eagerly accepted system of international two-letter prefixes where the first letter indicated the continent and the second the country — e.g., NU for North America United States, NC for Canada, EB for Belgium, etc. Soon thereafter, however, the 1927 Washington radio conference set up an official allocation of prefixes which included W and K for the U. S.; thereafter, a standard pattern of W-numeral-letters (two or three) was followed, with K prefixes for possessions. It never occurred to anyone that such an arrangement would not serve indefinitely; after all,  $26^3$  is 17,576; with nine districts that meant 158,184 possible call signs — and how could ham radio possibly grow that large?

But grow it did. Just before World War II the permutation table began to pinch in several districts where amateur growth was particularly heavy (original boundaries were more on geographical areas than population). During the breathing spell of the wartime shutdown, the League and FCC worked out a new plan to take care of the expected postwar expansion. A new 0 district was added, and the ten areas rearranged more logically in accord with population (we goofed on California — we should have made it two call areas!) Two-letter K prefixes were set up for the possessions, so that the single K would be available for continental U. S. growth. The problem, we all hoped, was solved.

But in 1951 the Novice license was born, and with it the desirability of a distinctive call. Simple — assign WN, and when — if ever — those are used up, use KN; drop the N when the Novice graduates. No problem, really.

Hah! No problem except that ham radio continued its prodigious growth. In the second and sixth areas we zipped through WNs, then KNs, a second time through the WNs to pick up expired calls, and a second time for the KNs, too! So for the past year or two we've been helping the Commission bite its fingernails on the imminent problem. FCC has now announced its solution, by means of a public notice which we reproduce on page 72. It's "must" reading, so that shortly when you hook up with WA2ABC or WV6DEF you won't think your ears have gone bad.

... Let's see, now —  $26^4$  times ten districts times two (for W and K) comes out to something over 9,000,000 possible calls signs in the amateur service. Let's hope *that* holds us for a while! . . .

## U. S. COMMUNICATIONS POLICY

Eight years ago President Truman set up a President's Communications Policy Board to make an over-all study of U. S. frequency usage and communications policy. A year later the Board released its report which, in the amateur field, contained a forceful statement of endorsement of the U. S. amateur radio service.

Communications policy matters are now broadly lodged in the Telecommunications Advisory Board, established by the Office of Defense Mobilization. TAB and ODM have recently been engaged in a re-appraisal of our country's telecommunications policy and have just released a preliminary statement. Particularly in view of the concern which some amateur quarters have expressed in recent months as to our future, it is especially reassuring to have the United States reiterate its endorsement of a strong amateur radio service, as expressed in the following language:

### *Amateur Radio Service*

*The United States considers its own amateur service to be vitally necessary to the national defense and security because it provides a pool of personnel trained in the techniques of telecommunications, including skilled operators.*

*It shall be the policy of the United States to foster and encourage the amateur service because the*

immediate availability to all world areas of the amateur services' frequencies and the amateurs who utilize them are vital during times of emergency, whether such emergency be of a localized nature or national in scope.

3,000,000

We're mighty proud of a milestone we passed in League amateur publications history earlier this year: during the printing of the 1958 edition of *The Radio Amateur's Handbook* the THREE-MILLIONTH copy was produced by The Rumford Press, our printer, up in Concord, N. H.!

Three million copies of anything seemed to us to be quite a record but just to check we went over to the library and consulted Hackett's *Sixty Years of Best Sellers—1895 to 1955*, and found it confirmed us even better than we hoped. Not only is the *Handbook* head-and-shoulders above any other technical book in any field, in total copies sold, but only twenty books, or thereabouts, including the *Bible*, have sold more copies than our *Handbook* in the past sixty years!

Wherever the *Handbook* stands on the best seller list, however, its own sales record speaks for its worth to the amateur, the technician and the engineer. We like to picture the *Handbook* lying open on a workbench, dog-eared and spattered with solder — not a book read in the

Fred Davis, at the left, has been associated with the Rumford Press and the ARRL printing account for well over a quarter of a century. Together with ARRL's W1BUD, at the right, he has sweated out 35 editions of the *Handbook* to the tune of over three million copies, and goodness knows how many issues of *QST*, *License Manual*, and numerous other League publications. Here W1BUD accepts the three millionth copy of the *Handbook* as it comes off the trimming machine in Rumford's bindery at Concord, N. H. This three millionth *Handbook* will be preserved for posterity in W1BUD's office at ARRL Hq.



silence of a library or quoted from in halls of ivy but the one used every day by the practical men who do the practical work in electronics.



(See page 65)

### COMING A.R.R.L. CONVENTIONS

May 3-4 — Oregon State, Salem  
 May 24-25 — N. H. State, Concord  
 June 7-8 — Pacific Division, Fresno  
 June 14-15 — Rocky Mountain Division, Santa Fe, New Mexico  
 July 26-27 — West Gulf Division, Oklahoma City, Oklahoma  
 August 15-17 — ARRL National Convention, Washington, D. C.  
 October 4-5 — Midwest Division, Des Moines, Iowa  
 October 18 — Ontario Province, Hamilton, Ontario

### A.R.R.L. NEW HAMPSHIRE STATE CONVENTION

Concord, N. H.—May 24-25

The Concord Brasspounders, Inc. invites all hams and friends to attend the ARRL N. H. State Convention in Concord on May 24-25.

The convention will officially start with a party Saturday night at the New Hampshire Highway Hotel, including an initiation for the Royal Order of the Wouff Hong.

Sunday's activities will include special ladies' events, transmitter hunts, top-notch speakers, mobile contests, and many more activities.

Pre-registration of \$4.25 will be accepted until May 21; thereafter tickets will be \$4.75. The registration fee will include Sunday's banquet and all activities, except the Saturday night buffet dinner and initiation. Hotel and motel reservations can be obtained through Norman Chapman, W1JNC, and convention tickets through Norman Collishaw, W1CVB, both in care of P. O. Box 339, Concord, N. H.

### OUR COVER

*QST*'s cover this month shows the "Driven Beast" at W6KPC, featured starting on the next page. See the diagram on page 17 to get an idea of how high up in the air this monster reaches. The photo shows W6KPC himself standing at the 60' level on top of the tower (at the level of the lower boom), while half-way down the tower is close neighbor and able assistant W6QMC. The tower itself was engineered to withstand one million inch pounds of overturning moment, so W6KPC and W6QMC appear to be in no jeopardy (provided they don't commence to wave with both hands).

# The Driven Beast

## A High Gain Rotary for the 10, 11, 15 and 20 Meter Bands

BY A. J. F. CLEMENT,\* W6KPC

**A**MATEURS who are seriously interested in DX work, whether it be contest activity, zone and country list improvement, or just plain long-distance rag chewing must, in some degree, be envious of those rare characters who are fortunate enough to be in possession of a rhombic farm. It is well known, of course, that a terminated Class "A" Military Rhombic, operating over a frequency range of 4 to 1, will provide excellent unidirectional performance on the 40-, 20-, 15-, 11- and 10-meter bands.<sup>1</sup>

In contrast to the terminated rhombic antenna, a critically adjusted three-element "Yagi" antenna will yield up to 7.5 db gain over a reference dipole.<sup>2</sup> The Yagi will generally give its maximum gain at elevations of 18 to 25 degrees, in contrast to the more useful low angles of a rhombic.

The author's home is located on an average sized city lot with an abbreviated rear yard. Thoughts of such antennas as rhombics, "V" beams and such had to be abandoned. The idea of stacking a 10-meter Yagi over a 15-meter Yagi over a 20-meter Yagi at the spacings I consider desirable, for the multiband use of a single tower, was likewise discarded. Several experimenters<sup>3,4</sup> have found that there is inevitably such cross coupling in multiband stacked Yagi arrangements

*We do not expect the antenna shown on the cover this month and described on these pages to be widely duplicated. In the first place it took W6KPC about a year to design and build the "Driven Beast," and a long-term project like that is likely to separate the men from the boys. We just thought you would be interested in a 3-band beam that has the reputation for putting out a band-opener signal; the antenna men will get ideas galore from this ingenious combination of antenna principles.*

that no antenna acts quite properly without an inordinate amount of cut-and-try adjustment.

The author's diligent search of the literature failed to reveal a practical multiband antenna that would give respectably high gains on the 20-, 15-, 11- and 10-meter bands and still fit into the small backyard of an average city lot.

### Evolution of the Antenna

A center-fed dipole at frequency  $f$  (say 14 Mc.) can be connected and matched to an open wire feed line through a  $\frac{1}{4}$ -wave "geometric mean"

\* 4117 Via Solano, Palos Verdes Estates, Calif.

<sup>1</sup> Signal Corps Technical Report #6, "Calculation of Sky Wave Field Intensities, Maximum Usable Frequencies, and Lowest Useful High Frequencies," by Signal Corps Radio Propagation Agency, Fort Monmouth, N. J. June 1949 revision, page 142.

<sup>2</sup> Uda and Mushiake, "Yagi-Uda Antenna," Maruzen Co., Ltd., Tokyo, Japan.

<sup>3</sup> Orr, "20 Meter DX with a 2-Element Beam," *CQ*, February, 1955.

<sup>4</sup> Mitchell, "Design Notes on Four Band Rotary," *QST*, December, 1955.

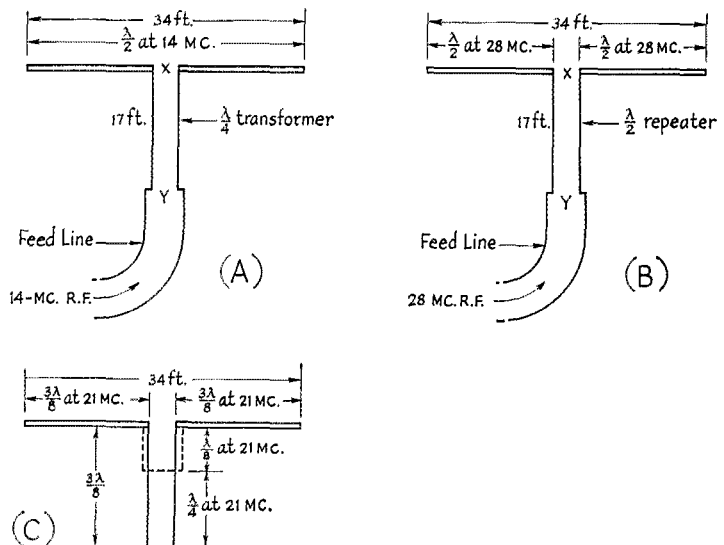


Fig. 1—(A) A 14-Mc. half-wave dipole fed at the center becomes (B) two half waves in phase at twice the frequency (28 Mc.) It can be fed on the two bands through a "quarter-wave transformer" at the lower frequency, which becomes a half-wave repeater at the higher frequency. (C) At 21 Mc. the antenna becomes two  $\frac{3}{8}$ -wavelength sections in phase.

matching transformer<sup>5</sup> as shown in Fig. 1A. This same physical arrangement when fed with  $2f$  (28 Mc.) energy then becomes a *collinear pair of in-phase dipoles*, each dipole being end fed by a  $\frac{1}{2}$ -wave impedance repeater.<sup>6</sup> Fig. 1B shows this.

Now if this same dipole is fed with  $\frac{3}{2}f$  energy (21 Mc.) then it will radiate as a center-fed  $\frac{3}{4}\lambda$  antenna,<sup>7</sup> or from another viewpoint, as two  $\frac{3}{8}\lambda$  collinear antennas fed in phase. The remaining  $\frac{1}{8}\lambda$  of each  $\frac{1}{2}\lambda$  dipole can be considered as "folded" into the open wire transformer, completing the resonant  $\frac{1}{2}\lambda$  dipole in each case. Since the open-wire transformer is  $\frac{3}{8}\lambda$  long at 21 Mc. and  $\frac{1}{8}\lambda$  of it is used to accommodate the "folded ends" of the two dipoles, it follows that a  $\frac{1}{4}\lambda$  length remains to be used as a portion of a  $\frac{1}{2}\lambda$  "repeater" section to be described later. This 21-Mc. utilization of the dipole and transformer illustrated in Fig. 1A-B is shown in Fig. 1C.

The next problem was really the main issue: how could a single array of fed dipoles be built to give unidirectional gain on the three bands? After much consideration the "couplet" of Fig. 2 was designed. This consists of two 14-Mc. dipoles spaced  $\frac{1}{6}\lambda$  and fed as shown. The elements become a pair of  $\frac{3}{8}$  wavelengths at 21 Mc. and a pair of half wavelengths at 28 Mc., as outlined in Fig. 1. The spacing is  $\frac{1}{4}\lambda$  at 21 Mc. and  $\frac{1}{8}\lambda$  at 28 Mc.

If the elements were always fed in phase or 180 degrees out of phase, the resultant radiation pattern would be bidirectional and the beam would be limited in its usefulness. However, a unidirectional pattern is obtained by feeding the elements as shown in Fig. 2. Feeding at points *ab*, the line (A) to point *y* is shorter than the line (B+C) to point *x*. Using the electrical lengths shown in the sketch, the phasing given in the caption is obtained. On the various bands, these phasings and the corresponding spacings give a forward cardioid pattern with a small back lobe.<sup>8</sup>

After due consideration was given to the mechanical and structural problems involved, the author finally decided to erect an array composed of four of the two-element 20-meter "couplets" described above. Such an arrangement would result in an array having 8 elements on 20 meters or 16 elements on 10 meters. The problem of feeding such an array suggested two couplets to a bay with the two bays placed collinear to each other.

Many visitors have asked why vertical polarization was chosen. The answer is not simple, and was based on these factors:

- (1) The mechanical and structural problems were simplified, since both wind loading and the radial moment of inertia of the rotating system could be materially reduced.
- (2) The author's tower is located a bare 50 feet from a 16½-kv. 3-phase power line that radiates an enormous amount of horizontally-

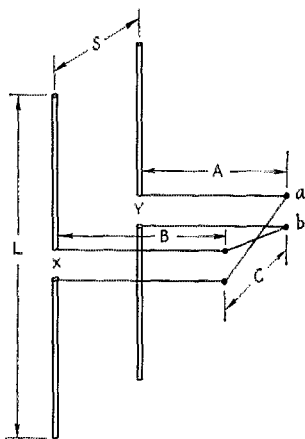


Fig. 2—A basic "couplet"; a three-band directional element. The feed point is *ab*. For operation on 10, 15 and 20 meters, the dimension become:

Band	L	S	A, B	C
20 meters	$\frac{\lambda}{2}$	$\frac{\lambda}{6}$	$\frac{\lambda}{4}$	$\frac{\lambda}{8}$ (45°)
15	$\frac{3\lambda}{8} + \frac{3\lambda}{8}$	$\frac{\lambda}{4}$	$\frac{3\lambda}{8}$	$\frac{3\lambda}{16}$ (67½°)
10	$\frac{\lambda}{2} + \frac{\lambda}{2}$	$\frac{\lambda}{3}$	$\frac{\lambda}{2}$	$\frac{\lambda}{4}$ (90°)

The maximum radiation is always in the line *x* through *y*, as a result of the spacing and phasing:

Band	Spacing	Phasing
20 meters	$\frac{\lambda}{6}$	135° (180 + 45)
15	$\frac{\lambda}{4}$	112½° (180 + 67½)
10	$\frac{\lambda}{3}$	90° (180 + 90)

The 180° in the phasing is a result of the transposition of section C.

polarized noise.

(3) Low-angle radiation, especially on 10 meters, is achieved by having all of the elements placed in a vertical collinear configuration. The directivity in azimuth, however, does not differ materially from that of other common beams. This broadness in azimuth is quite advantageous when one is searching for DX over a given area. The calculated 3-db. beamwidths in azimuth are 66 degrees on 20 meters and 40 degrees on 10 meters. The variation of azimuthal beam-width from 40 degrees on 10 meters to 66 degrees on 20 meters is a function of the horizontal spacing. This spacing is only  $\frac{3}{8}\lambda$  on 20 meters, while it is at the almost ideal figure of  $\frac{3}{4}\lambda$  on 10 meters.<sup>9</sup>

Since there are two bays, stacked collinearly, in the whole antenna, the vertical pattern is somewhat sharper than usual on 20 meters. For 10-meter operation the antenna has four bays, one above the other, and the vertical pattern

<sup>9</sup> "The A.R.R.L. Antenna Book," 1956 edition, page 149 and Fig. 4-32.

<sup>5</sup> "The A.R.R.L. Antenna Book," 1956 edition, page 109.

<sup>6</sup> Clement, "The Yagi-Dagi," *QST*, September, 1951.

<sup>7</sup> Kraus, "Antennas," published by McGraw-Hill, N. Y. C., Chapter 5, page 147.

<sup>8</sup> Kraus, "Antennas," Chapter 11, Fig. 11-11, page 294.

becomes thin and flattened to the earth, resulting in a really "low-angle" radiator.

### Feed Problems

The problem of feeding this array in such a manner that it would present the same impedance to the transmission line on 10, 15 and 20 meters presented quite a challenge. Here is a step-by-step explanation of how this was accomplished:

First, let us consider the array being fed with 10-meter energy. All sixteen elements are *end fed* and thus each of the eight *collinear pairs* present a pair of high-impedance terminals. The \$64 question, of course, was *how high* was the impedance of any one collinear pair of dipoles while operating in the mutual field of all seven other pairs? A letter, dated July 7, 1952 and signed by Dr. John D. Kraus, W8JK, gave me the answer. I could expect a small but significant drop in input impedance to the collinear pair caused by another collinear pair *behind* the pair in question, but the effect of elements collinear with the pair in question could almost be neglected. Since a pair of collinear dipoles, end fed in free space, could be expected to show a terminal impedance of perhaps 1600 ohms,<sup>10</sup> I reasoned that *mutual effects* would lower this impedance to about 1200 ohms in the array contemplated. The next problem was how to feed eight of these 1200-ohm points so that the front curtain (elements 1 through 8 in Fig. 3) would have all element currents in phase

600 ohms at that point. The same reasoning can be applied to C and D, resulting in a 600-ohm point appearing at X. Point X can be fed 90 degrees behind point W and the two points can be effectively paralleled by connecting them together with a transposed section of 600-ohm open-wire line  $\frac{1}{4}\lambda$  long on 10 meters. This transposed  $\frac{1}{4}\lambda$  section does not act as a transformer since it sees a 600-ohm impedance at each end. Since X and W are effectively in parallel, a section of 300-ohm line from L is used to feed W and a similar section from L is used to feed Y, since Y is another 300-ohm point resulting from paralleling Y and Z. Midway between W and Y is point L, where the 150-ohm feedline is attached to the two sections of 300-ohm line described above.

Operation on 20 meters can be explained as follows: Point A becomes the center of a 20-meter dipole whose impedance has been lowered considerably from its free space value of 72 ohms. This lowered impedance of dipole A is primarily caused by its close proximity and out-of-phase current relationship to dipole C. My correspondence with Dr. Kraus indicated that I could expect an impedance of about 16 ohms at points A, B, C, D, E, F, G and H for 20-meter operation.<sup>11</sup> The problem, then, was to feed these eight low-impedance points properly. If the 16 ohms at point A could be made to look like 1200 ohms at point W, the problem would be solved. This was accomplished by designing the line section AW as a 141-ohm four-wire open cage,  $\frac{1}{4}\lambda$  transformer. This geometric-mean transformer effectively raises the 16 ohms of point A to 1200 ohms at W. Similarly, the 16-ohm center of dipole B is transformed up to 1200 ohms at point W. Point W, therefore, is a junction point for two 1200-ohm impedances, giving a resultant 600 ohms. By similar reasoning, point X is a junction point for 1200-ohm impedances transformed up from points C and D. Points X and W are effectively paralleled by a transposed section of 600-ohm open wire line whose length is now  $\frac{1}{8}\lambda$  on 20 meters. Since point W is the juncture of two 600-ohm points, it must be fed with a 300-ohm line. By similar reasoning, point Y is a 300-ohm juncture of Y and Z. The 300-ohm lines from W and Y meet at L to match the 150-ohm feed line.

On 15 meters the section AW is  $\frac{3}{8}\lambda$  long and the line section WL is  $\frac{1}{4}\lambda$  long. If one considers element 1 and element 2 as 21-Mc.  $\frac{1}{2}\lambda$  dipoles with their ends folded in to points R and S for  $\frac{1}{8}\lambda$ , then it follows that the distance from R and S to W is  $\frac{1}{4}\lambda$ . The distance from W to L gives another  $\frac{1}{4}\lambda$ , making  $\frac{1}{2}\lambda$  from R and S to L. By tolerating standing waves on the open-wire transmission line, 21-Mc. energy can be fed to the antenna at L, either by tuning or by making the feed line a length that presents a current loop at the transmitter end of the feed line, which allows easy inductive coupling to the transmitter's tank.

### Feed System

The antenna was first tried by connecting it to

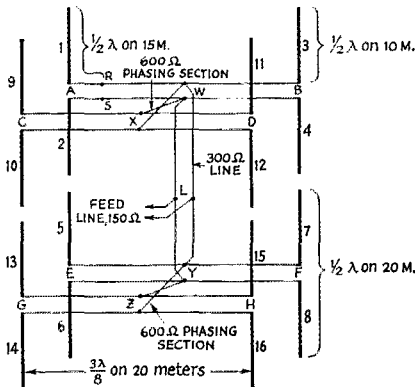


Fig. 3—The antenna is made of four "couplets" (see Fig. 2) arranged as shown here. Feed-line sections of differing characteristic impedances are used to provide a 150-ohm feed point for each band.

and of equal magnitude. Since a  $\frac{1}{2}\lambda$  section of transmission line of almost any impedance will act as an impedance "repeater," a section of 141-ohm balanced line  $\frac{1}{2}\lambda$  long at 10 meters was connected from A to W (Fig. 3). An identical piece was connected from B to W. Thus the two 1200-ohm points A and B have effectively been transferred and connected in parallel at W, giving

<sup>10</sup> Kraus, "Antennas," Chapter 9, Fig. 9-9, page 242. (1/a ratio of W6KPC's tapered elements is about 600.)

<sup>11</sup> Kraus, "Antennas," Chapter 11, Fig. 11-15.

the transmitter with a piece of 208-ohm surplus polyethylene Twin-Lead. This line gave fair results on both 10 and 20 meters but proved to be troublesome from a moisture viewpoint, especially as a result of some mismatch.

This mismatch problem was entirely solved by designing a four-wire open cage transmission line with an insulated flexible section that would "wrap around" the upper part of the tower to allow 360-degree rotation. The four-wire cross-connected open line was designed to have a surge impedance of 150 ohms.

When the open-wire line was put into service the s.w.r. dropped to 1.2 at 14.2 Mc. and rested at about 1.4 at 28.5 Mc. On 15 meters the s.w.r. was measured at 3.2. When a shorted stub slightly longer than an electrical  $\frac{1}{4}\lambda$  at 21 Mc. was attached across the antenna feed point (antenna end of 150-ohm transmission line), the s.w.r. was reduced to 1.3. This stub is connected to the feed line by relay during operation on 15 meters.

### Construction Notes

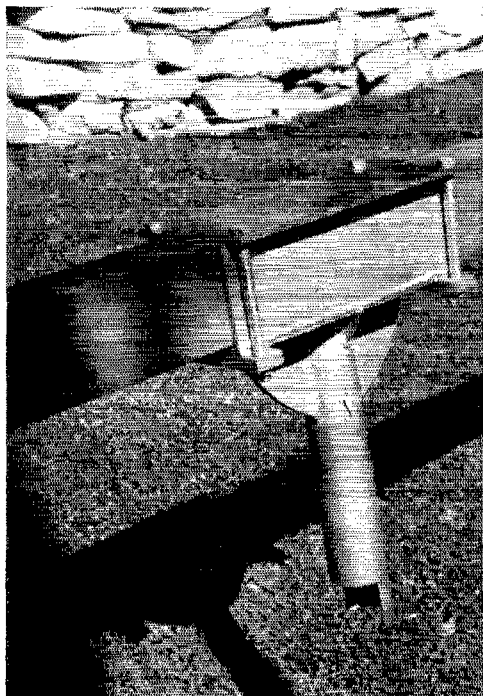
Almost every structural and mechanical detail of this antenna will differ from that found in general practice; some of the electrical components, such as the radiating elements, are also unusual.

All of the 16 radiators in the antenna are identical to each other physically and electrically. They

are tapered elements, running from  $1\frac{1}{4}$  inches diameter at the driven end to only  $\frac{1}{4}$  inch diameter at the free end. Each element is made from a single 17-foot piece of bamboo whose joints were shaved for smoothness. The next step was to provide the element with a copper sheath. Continuous 17-foot long tapered strips of 0.005-inch thick annealed copper were formed around each bamboo mandrel and soldered shut, forming an enclosing tapered tube around the bamboo core. Epoxy resin was used to glue the copper sheath to the bamboo core. Considerable additional strength and complete weatherproofing was achieved by spirally wrapping each element with two-inch wide strips of Fiberglas mat saturated with polyester resin. After this first Fiberglas coating had cured, the element was sanded smooth and given its final glossy coat of resin.

At this point an interesting comment can be made concerning tapered elements. The first two elements constructed were made approximately  $16\frac{1}{2}$  feet long and cropped to the exact same length as a trusty old split-center dipole made of 1-inch aluminum tubing that had been grid dipped on several occasions at 14.2 Mc. A theoretical study of the effect of the resin coating on the resonant length of the elements indicated that the thin coating would be of no appreciable consequence at these frequencies. Deciding to check the theory, however, the newly cropped Fiberglassed element was grid dipped with results that

Left: Close-up view of the steel center saddle mount for the upper primary boom. The saddle for the lower primary boom differs in using a split clamp to make up to the mast. Right: This photo shows how a tertiary boom is held to the secondary boom and how the Teflon insulators are fastened to the tertiary boom. The wood tertiary is covered with Fiberglas to improve the weatherproofing.



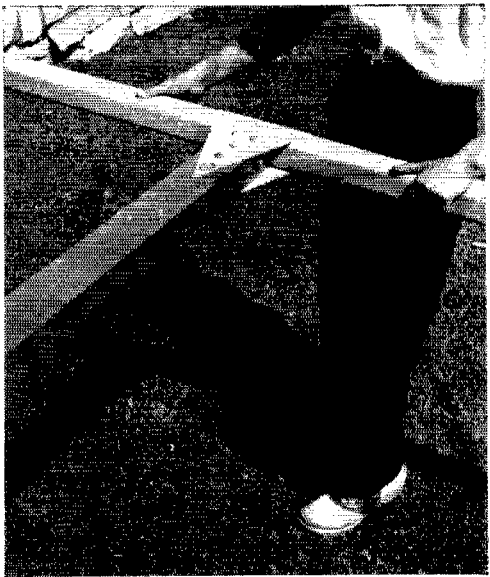


were disconcerting to say the least. The element proved to be resonant at 15 Mc.! The old trusted aluminum dipole was rechecked but persisted in resonating at 14.2 Mc. The reason for this 6-percent rise in resonant frequency could not be reasonably explained until a sudden flash of memory recalled research on tapered broadcasting towers done by G. H. Brown<sup>12,13</sup> and others at RCA. They found that the peculiarities of current distribution on tapered towers resulted in the tapered towers having to be higher (longer) than towers of uniform cross section, for a given resonant frequency. The current distribution on such towers was found to be far from sinusoidal!

New elements were fabricated and tested. It was found that these tapered elements had to be 17 feet 2 inches long to be resonant at 14.2 Mc. (Overall dipole length equals 34 feet 4 inches.)

For the past 15 years the author has lived within three miles of the Pacific Ocean and has viewed with dismay the havoc wrought by wind and salt spray on screws, iron fittings and aluminum elements of various antennas used by amateur and commercial stations. With as little as six months service some of these antennas would suffer serious loss in efficiency through element corrosion, broken or cracked insulators, broken feed wires (bending fatigue), corroded terminals and various other problems not envisioned by the designer. Aluminum and magnesium parts rapidly lose structural strength when even seemingly slight surface corrosion occurs. This loss of strength is caused by "stress corrosion."<sup>14</sup> It was decided that these ills could be avoided by meticulous care with the antenna's mechanical design.

Since all elements are fed at a high-voltage point on 10 meters, very good element insulation at the support points was a prime requisite. Ceramic insulators of adequate mechanical and electrical strength proved to be entirely too heavy and bulky. Special Teflon insulators (32 of them!) were fabricated on a small "production line." (See Fig. 4 for details.) Connections between each couplet and its 4-wire feeding trans-



Triangular gusset plates are used between the wooden main booms and the aluminum secondary booms.

former were provided by pairs of heavily-tinned flexible braided straps (similar to battery terminal straps) that were lashed and soldered to each element. These connections were then covered with Fiberglas and resin. The swaged ends of these straps were bolted to the 4-wire cage ends with 1/2-inch long 1/4-inch diameter plated aircraft bolts. The entire flexible joint was then given a wrapping of several layers of electrical plastic tape (vinyl), manufactured by the Minnesota Mining and Mfg. Co. The importance of making these connections both flexible and weatherproof cannot be over-emphasized.

The construction of the 16-foot long 4-wire transformers (eight of them in all) occupied many an evening in front of my living room fireplace. One can imagine the consternation of my neighbors who, when they dropped in for a friendly visit, would view our living room floor covered with long python-looking objects made up of four No. 6 insulated aluminum wires with Melamine-impregnated Fiberglas spacers tied into place with nylon cord every foot of their length. When I would explain that these snake-

<sup>12</sup> G. H. Brown and H. E. Gihring. "General Considerations of Tower Antennas for Broadcast Use," *I.R.E. Proc.*, Vol. 24, No. 1, January 1936.

<sup>13</sup> G. H. Brown. "A Critical Study of the Characteristics of Broadcast Antennas as Affected by Antenna Current Distribution," *I.R.E. Proc.*, Vol. 24, No. 1, January 1936.

<sup>14</sup> F. T. Sisco. "Modern Metallurgy for Engineers," Chapter 9, page 150.

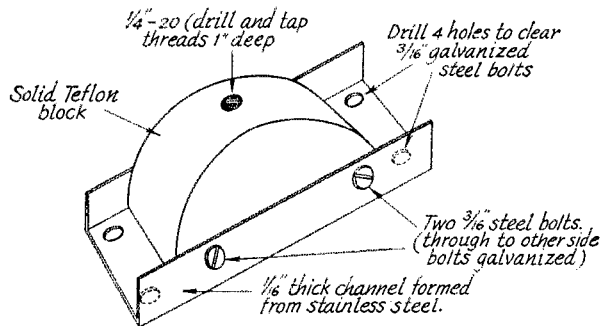


Fig. 4—Details of the element insulators; eight are used for each couplet.

like gismos were "transformers" my neighbors would invariably give each other knowing looks which always seemed to say, "Poor fellow, he must be going fast. Even *we* know those are not transformers." Plated copper lugs having  $\frac{1}{4}$ -inch holes were swaged on the 8 wire ends of each transformer and taped thoroughly.

The 600-ohm phasing sections were made of No. 12 Copperweld wire tied to 6-inch E. F. Johnson ceramic spacers. These sections were also terminated with  $\frac{1}{4}$ -inch lugs swaged, soldered and taped. The 180 degrees additional phasing was obtained by giving these phasing sections a  $\frac{1}{2}$  turn twist.

The section of 300-ohm line that was used to connect the upper bay to the lower bay was made up of two pieces of No. 6 insulated wire held 1 inch apart with ceramic spacers.

The 150-ohm main transmission line is a cross-connected open-wire cage<sup>15</sup> made up from four No. 12 Copperweld wires spaced every three feet with  $1\frac{1}{4}$ -inch diameter ceramic rings.

An unusual feature of this four-wire air-dielectric feed line is embodied in a nine-foot insulated section of it that "wraps around" the tower when the antenna is rotated 180 degrees in either direction. A cutaway view of this section of the line is shown in Fig. 5. Polystyrene discs were

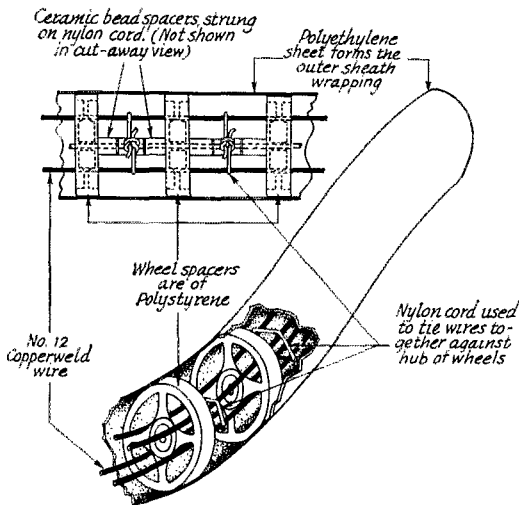


Fig. 5—Cutaway view of the flexible portion of the 4-wire 150-ohm transmission line. The outer covering allows the line to wrap around the mast without getting close enough to arc over.

spaced every three inches along the line. These discs allow an outer wrapping of polyethylene to form a protecting sheath around the 4-wire cage line, thus preventing the line from arcing to the steel tower on contact. One neighbor's small child, on first viewing this insulated section of the line, ran excitedly to his mother, crying, "Look, Mother, look at the giant snake that climbed up Mr. Clement's oil well!"

<sup>15</sup> The A.R.R.L. Antenna Book, Chapter 3, "Four-Wire Lines."

## The Structure

Fig. 6 shows the overall physical features of the antenna structure. The two main horizontal booms are made from pieces of select straight-grained Sitka spruce that were originally intended to be yacht masts; they are now, of course, serving a much more noble cause! These booms are 24 feet long and taper from  $4 \times 4$  at their centers to  $2 \times 3$  at their ends, where they are bolted to the 11-foot secondary booms. There are four of these secondary horizontal booms and they are made of  $2 \times 2 \times .062$ -inch wall 24ST hard aluminum alloy square tubing. The connection between booms is made with 24ST triangular gusset plates and  $5/16$ -inch plated alloy steel bolts. The 3-foot long tertiary booms are fastened to the ends of the aluminum secondary booms with 61ST4 aluminum clip angles and  $5/16$ -inch plated alloy bolts.

The main mast is forty feet long and rises thirty feet above the top of the tower; the bottom ten feet projects downwards into the tower to provide enough "couple" to transfer the wind-loading forces into the tower structure properly. The first 25-foot portion of the mast is made from a single piece of alloy steel seamless tubing of 4-inch outside diameter with a wall thickness of  $\frac{1}{2}$  inch. Telescoped into this lower section and rising another eight feet is a piece of seamless alloy tubing of 3-inch outside diameter and  $\frac{1}{2}$ -inch wall. The upper seven feet consists of a section of 2-inch outside diameter seamless steel tubing with a wall thickness of  $\frac{5}{8}$  inch.

The entire mast assembly is contained by a shear bearing built into the top of the tower and a thrust bearing within the tower at the 50-foot level. The tower is 60 feet high and built of galvanized structural steel.

This array is rotated by a standard prop-pitch motor arranged to furnish torque only and to receive no thrust.

The tower and its foundation took the best part of a year to build and is a somewhat unique structural system that was designed, fabricated and assembled by the author.

## Results

The antenna array has now been tested for several months on the 10-, 15- and 20-meter bands. It has shown forward gains that agree very closely with those theoretically calculated for it by Mr. Howard King, a professional antenna engineer of considerable experience. The author has also arrived at almost the same gain figures by means of the "aperture" approach.

The near field measured gains, the "long haul" comparative gains and the rigorously calculated gains center on the following values (compared to the standard dipole):

10 meters . . . . .	13.5 db.
15 meters . . . . .	11.0 db.
20 meters . . . . .	8.5 db.

The front-to-back ratio for all three bands has proved to be approximately 25 db.

To go from band to band the author uses relays to switch various finals into the common feed

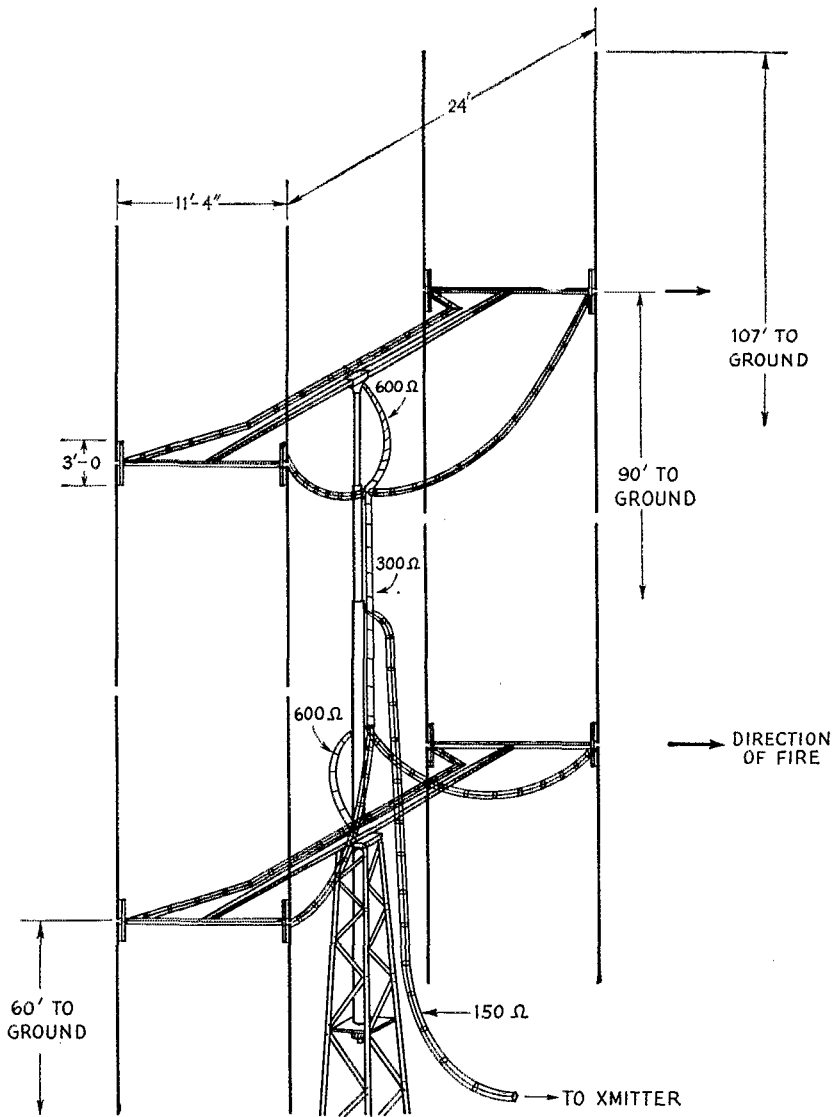


Fig. 6—Sketch of the complete beam antenna and support. The structural-steel tower is topped by telescoping lengths of seamless steel tubing. Large horizontal booms are spruce, and the smaller ones are square aluminum tubing.

line. The author has felt that all the time, money and labor that has gone into this antenna has been well spent when reports like the following come through:

One evening the antenna was being used on 15-meter phone with a 50-watt transmitter and the 75A-3, both powered by the 250-watt a.c. emergency power source at W6KPC. Upon hearing CR7AQ in Mozambique calling CQ, it was decided to give him a call. His report was Q5 S9 plus 20 db! Bill, MP4KAC in Kuwait, stated that W6KPC's 10-meter signals could be consistently heard above the general din of the east

coast kilowatts at the low edge of the band.

One very interesting feature of this antenna is the fact that it seems to "open the band," especially on 10 and 15 meters. In other words, there have been several instances of reports from Europe and the Near East when the stations worked have stated that, on that day, up to that moment they had not heard other W6s and W7s.

#### Credits

In concluding this article I would like to pay grateful tribute to the following good friends  
(Continued on page 174)

# A Novel Side-Band Selector System

## Electrical Scanning of a Band-Pass Filter

BY E. P. ALVERNANZ \*, W6DMN

By an ingenious combination of two mixers and a common oscillator, an incoming signal — or any part of it — can be placed in or out of the pass-band of a fixed-frequency filter as desired, simply by varying the oscillator frequency. In s.s.b. reception, this means that either side band can be selected without changing either the receiver tuning or b.f.o. setting.

THE dyed-in-the-wool side bander's definition of a Utopian receiver would probably read something like this: "A single-side-band selector in which the band-pass filter could be scanned across the intermediate-frequency channel of the receiver." Why? Because this would permit the selection of either the upper or lower side band, or any portion or portions thereof, without having to readjust the tuning of the receiver or change the placement of the beat frequency oscillator with respect to the incoming signal.

Question: How to do it? Answer: Recently a popular communications receiver partially accomplished it by mechanically linking the b.f.o. tuning control with the front-end tuning control of the receiver; effective, but not too practical an idea for home construction because of mechanical and tracking problems. The side-band selector proposed here permits pass-band tuning both with or without the b.f.o. This means that we may have pass-band tuning on standard a.m., double side band with carrier, exalted carrier, c.w., or s.s.b. suppressed carrier. As shown farther along in this article, this system of pass-band tuning makes it possible to select side bands without retuning the receiver or adjusting its b.f.o. once the receiver has been tuned to the desired frequency. In fact, the b.f.o. may be a

\*c/o Jennings Radio Mfg. Corp., San Jose 8, Calif.

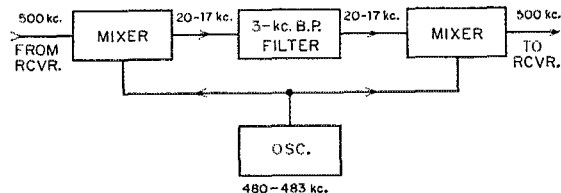


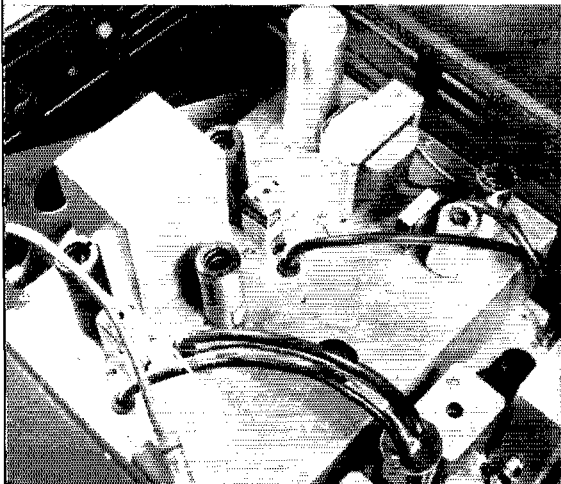
Fig. 1—Illustrating the basic principle. A 500-kc. incoming signal is converted to 17 to 20 kc., depending on the oscillator frequency, and then, by subsequent conversion, back to 500 kc. (Exact frequencies used will depend on the intermediate frequency of the receiver and frequency band of the band-pass filter.) Thus the signal can be placed in any part of the filter pass band without changing the output frequency. Signals on nearby frequencies can be shifted into or out of the pass band by the oscillator tuning.

fixed-frequency oscillator. In c.w. operation, this system permits tuning out interfering signals without changing the pitch of the desired signal.

### Operating Principles

This side-band selector employs a unique mixing technique. Basically it consists of one r.f. oscillator simultaneously feeding two mixers. The output of mixer No. 1 looks into the band-pass filter, and the output of the band-pass filter looks into one of the input grids of the second mixer. Then the output of the second mixer returns the signal to the input frequency.

The side-band selector functions in the following manner: Assume a receiver which has an intermediate frequency of 500 kc. We take the 500-kc. i.f. signal — e.g., from the plate of the receiver mixer — and couple it to the grid of the first mixer of the side-band selector through a 500-kc. transformer or transformers. This first mixer in the s.b. selector also has on one of its input grids a 480- to 483-kc. signal supplied by the one oscillator in the s.b. selector, as in Fig. 1.



Pass-band tuning installed in a 75A-1 receiver. This assembly includes a crystal-controlled beat oscillator, product detector, and power supply not shown in Fig. 2. Construction may be varied to fit space available in individual receivers. The circuit also could be built in the form of a separate adapter.

QST for

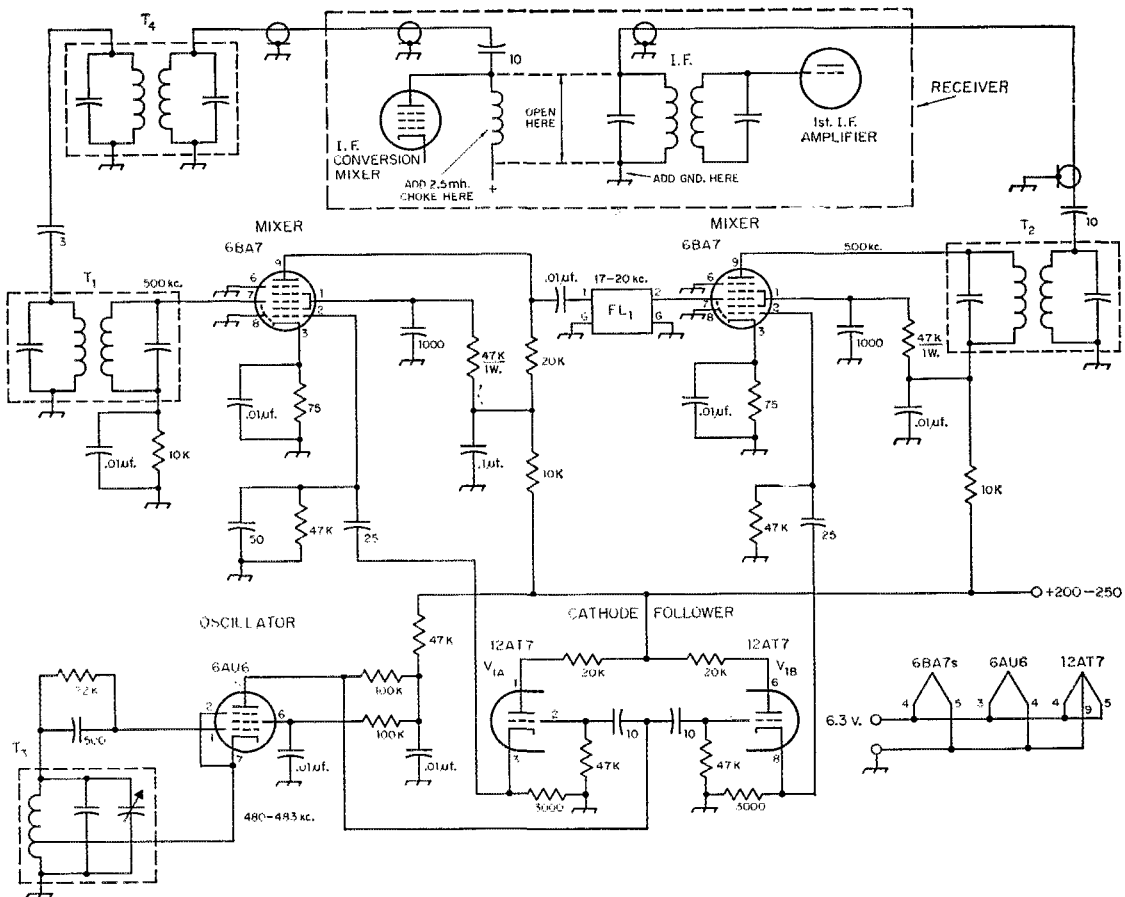


Fig. 2—Practical circuit as applied to a 75A-1 receiver, using a low-frequency (17-20 kc.) band-pass filter. Unless otherwise indicated, capacitances are in  $\mu\text{mf.}$ , resistances are in ohms, resistors are  $\frac{1}{2}$  watt.

FL<sub>1</sub>—Band-pass filter, 17-20 kc. (B.&W Type 360). (Should be terminated with a 20K resistor.)

T<sub>1</sub>, T<sub>2</sub>—i.f. transformer, frequency same as receiver i.f., (Miller types 12-C1 and 12-C2 used in unit shown).

T<sub>3</sub>—B.f.o. transformer (may be existing receiver b.f.o.), adjusted to cover 3-kc. range differing from receiver i.f. by the limits of the band-pass filter

(17-20 kc. in this unit). Frequency may be set either above or below the receiver i.f.

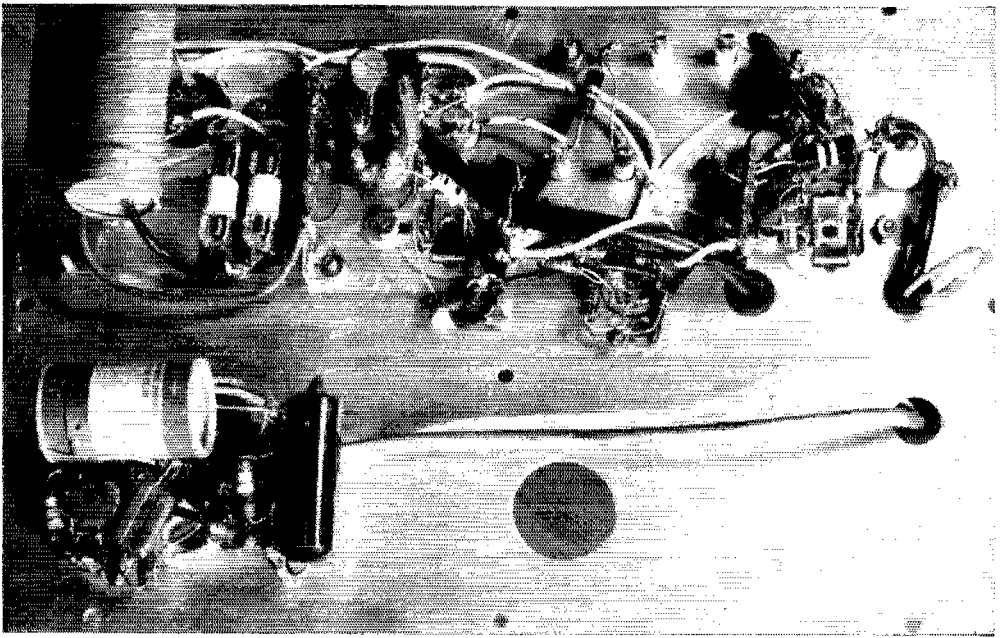
T<sub>4</sub>—Similar to T<sub>2</sub> (In the adapter unit shown in the photographs this transformer is one of the i.f. transformers already present in the receiver. It is made available by omitting one of the receiver's i.f. amplifier stages, the gain being made up by the two mixers in the adapter.)

The difference between this frequency and 500 kc. results in an output frequency at the plate of the first mixer in the s.b. selector of 17 to 20 kc., depending on the oscillator setting. This signal is then passed through the band-pass filter having a 3-kc. response from 17 to 20 kc. The output of the band-pass filter is connected to one of the input grids of the second mixer of the s.b. selector. The other input grid of this second mixer receives a signal from the 480-483 kc. oscillator of the s.b. selector. This frequency added to the frequency coming from the band-pass filter results in 500 kc. at the plate of the second mixer. The output of this mixer is coupled through a transformer or transformers to the grid of the next 500-kc. amplifier stage in the receiver.

Observe that varying the frequency of the oscillator causes no change in the frequency at the output of the s.b. selector; the frequency at

the input grid of the first mixer is exactly the same as the frequency at the output of the second mixer. In fact, what happens is that in the first mixer the input signal either is converted to a frequency that the filter will accept or, by moving the oscillator frequency, to a frequency that the filter will reject. In the latter case the signal does not appear at the second mixer to be reconverted to its original frequency.

In this way pass-band tuning is accomplished merely by varying the frequency of the oscillator in the side-band selector over a range of 3 kc., enabling the selection of upper, lower, or portions of each or both side bands. The oscillator frequency of the s.b. selector can be placed 17 to 20 kc. either above or below the i.f. of the receiver; the results will be the same. Toroidal, crystal or mechanical filters of other frequencies may be used so long as the oscillator frequency is changed



Components are mounted on an aluminum plate that fits over the r.f. coil section in the 75A-1. The power supply, product detector, and crystal-controlled b.f.o. are at the left in this view; the pass-band tuner occupies only the upper center and right-hand area.

to accomplish the conversion of the i.f. to the filter frequency.

#### *An Application*

A working model of this circuit is now built into a Collins 75A-1 receiver. The conversion-oscillator signal that feeds the two mixers in the side-band selector is obtained from the original b.f.o. in the receiver, by retuning it so that its frequency range becomes 480 to 483 kc. instead of 500 kc. (the intermediate frequency of the 75A-1). The small capacitor which originally coupled the plate of the b.f.o. to the diode detector of the receiver was removed. The plate of the b.f.o., tuned to its new frequency, is now coupled through a capacitor and small length of coax to the control grids of a twin triode, as shown in Fig. 2. The cathodes of the triodes are coupled through small capacitors to the injection grids of the two mixers in the s.b. selector, each cathode to a separate grid. This cathode-follower coupling is used to isolate the two mixers from each other; without such isolation the output signal from the first mixer might reach the second through the common injection-grid connection. Tests have shown that with this arrangement there is no detrimental coupling between the two mixers.

The cathode followers also eliminate any possibility of modulation of the conversion oscillator by the mixers. We used the b.f.o. as the conversion oscillator because of the convenience offered by its front-panel control; also, it has fine stability.

A fixed-frequency crystal-controlled oscillator replaces the original b.f.o. Our newly built product detector gets its injection voltage from this new b.f.o.

The three-position function switch marked MANUAL-AVC-CW on the 75A-1 was rewired to switch the input to the audio amplifier from the diode detector to the product detector. The connections which originally grounded the b.f.o. on MANUAL and AVC were removed from this switch. This allows the old b.f.o. (now the conversion oscillator) to run continuously. The new crystal-controlled oscillator for the product detector is now operated from this function switch so that its cathode is grounded when the switch is in the "product-detector" position and ungrounded in the other two positions. The complete side-band selector, including power supply and product detector, is mounted on an aluminum plate which covers a slug elevator rack and p.t.o. housing in the 75A-1.

### **Strays**

K2THP says that he QSO'd W2QPN for 25 minutes before W2QPN finally realized that K2THP was one of his own students both in school and at the radio club.

# Improving the "Club-Saver" Two-Meter Portable

Modifications in a Popular Design, Made by the Fox River Radio League

BY G. M. FRIEDERS,\* W9ZGP

WHEN the club project of the Wheaton Community Radio Amateurs appeared in *QST* for October, 1957, the Fox River Radio League, of Aurora, Illinois, had already started on their "Club-Saver" 2-meter transceivers. Over 50 units were under construction, and at this writing about half of them are completed and on the air, putting out mighty fine signals.

Some difficulties were encountered in the course of the construction of the first units. Modifications made in the design to correct these troubles are detailed here, in the hope that other groups building this popular unit may take advantage of our experience.

1 — Several of our group had trouble with the 6U8 oscillator in the transmitter, when using 8-Mc. crystals. The erratic condition in some was so bad that they could not be trusted when being used as portables in emergency work. It should be said, however, that many of them worked right off the bat, and are still going strong. Mine quit after a few QSOs and I could not get it to work again, so I looked around for an oscillator circuit that would be more sure-fire.

After some experimenting with the original circuit, a pentode oscillator using ideas from the ARRL *Handbook* was tried. With this circuit the slug in the oscillator plate coil could be adjusted through 4 or 5 turns and the oscillator would still function. In the original less than a quarter turn would cause the oscillator to quit. The circuit, shown in Fig. 1, has worked out very well in

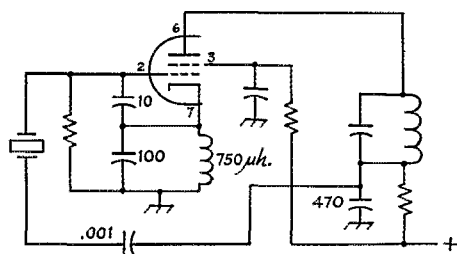


Fig. 1—Crystal oscillator circuit to provide more reliable operation in the "Club-Saver" 2-meter portable. Parts shown without values are those in the original design.

other units, stabilizing every one in which it has been tried.

Here is how the changes are made. From the original circuit remove the tickler coil,  $L_2$ . Re-

move the ground connection from the .001- $\mu$ f. bypass at the cold end of  $L_1$  and connect it back to the crystal, as shown in Fig. 1. Remove the ground connection from the cathode, Pin 7, and connect the new parts as shown. The parts in the diagram that carry no identification or value are the same as in the original unit, as described by W9LJO.

2 — The crystal tended to run hot when mounted inside the cabinet. We installed ours on the front panel, between the microphone jack and the switch. A better physical arrangement might be to put it at the right of the jack. This would prevent the operator from bumping the crystal during switching. Making this change may require some change in parts layout.

3 — Adding a 470- $\mu$ f. bypass at the junction of the 56,000-ohm final grid resistor and the r.f. choke brought up the output considerably.

4 — Motorboating in the receiver section can be eliminated and the audio volume improved by installing a 10- $\mu$ f. 450-volt electrolytic capacitor at the junction of the volume control and the 10,000-ohm resistor in the B+ lead to the detector. (This should have been in the original diagram. It was omitted in error. Correction of this and other editorial lapses appeared in *QST* for December, 1957, page 47 — *Ed.*)

5 — R.f. feedback in the transmitter was caused by switch contacts  $S_{1E}$  being located too close to  $S_{1B}$ . This can be corrected by using contacts that are on opposite sides of the switch.

6 — Erratic receiver oscillation was encountered in some sets as a result of the filament lug, Pin 4, of the 12AT7 tube being too close to the cathode, Pin 3. Bend Pin 4 down out of the way to correct this.

7 — Oscillator pulling when the r.f. plate trimmer is adjusted was caused by excessive injection coupling. This was cured by removing the injection coupling capacitor, 0.68  $\mu$ f., leaving only coupling due to the common tube elements in one envelope. This will be adequate, in most instances.

8 — In some units we found the tripler plate (6U8 triode) running red. Input was reduced by inserting a 1000-ohm resistor, bypassed by an .001- $\mu$ f. disk ceramic capacitor, in the cathode lead, pin 8.

9 — The power supply should deliver 300 volts under load. When the supply voltage drops below this point the output falls off fast.

Though only half of our units are on the air at this writing, hardly a night goes by that there

(Continued on page 176)

\* Rt. 1, Box 212A, Aurora, Illinois

# A 50-Mc. Station for the Beginner

## Part II—Transmitter, Power Supply and Antenna System

BY LEWIS G. McCOY,\* WIICP

*Part I of this two-part article on a 50-Mc. station for the beginner started on page 30 of last month's QST (April, 1958).*

**I**N DESIGNING a v.h.f. station, it is important to strike a balance between the receiver and transmitter. Use of high power in the transmitter is justified only if the very best in receiving equipment is used. The receiver being the limiting factor in the station's effectiveness, the transmitter power should be scaled to the receiver sensitivity, or the operator will find his signal being heard by stations he is not able to work.

Part I of this article described a receiver that is about as simple as can be used and still do a passable job on 6. The transmitter shown here is a companion unit, in physical design and in power level. It delivers something under one watt to the antenna—but don't be fooled into thinking that this is not enough power to do good work. With a good antenna system, even a small fraction of a watt will deliver a strong signal at distant points, when band conditions are right.

### Transmitter Circuit Details

The transmitter and power supply are shown schematically in Fig. 3. A 6U8 triode-pentode is used in the r.f. stages of the transmitter. The triode portion is a crystal oscillator, using a 50-Mc. overtone crystal (International Crystal Mfg. Co., Type FA-9). The pentode is a straight-through amplifier, running 2 to 3 watts input. The 50-Mc. crystal, somewhat more costly than those for lower-frequencies, was used for several reasons. It makes for simple circuitry and is of considerable value in preventing TVI. Crystals on lower frequencies require multiplier stages, and unwanted harmonics of the crystal or multiplier frequencies may fall in television channels and cause unnecessary interference.

Tuning is simplicity itself, as the oscillator and amplifier are on the same frequency. The power is transferred to the antenna by the coupling circuit,  $L_3C_8$ . A short length of RG-58/U coax runs from coupling loop,  $L_3$ , to the send-receive switch,  $S_1$  in Fig. 1, April, *QST*. A simple power output indicator is provided in the form of a dial lamp, coupled loosely to the amplifier plate circuit. The small amount of power this consumes makes a negligible difference in the strength of the signal at a distant point.

The modulator is a 6AQ5, driven directly from

\*Technical Assistant, *QST*.

a single-button carbon microphone. Current for the microphone is obtained by running part of the 6AQ5 cathode current through the primary of the microphone transformer,  $T_2$ .

### Power Supply

Power for the station can be obtained from the a.c. supply shown, for home-station use. For mobile or portable operation a small vibrator supply, such as the Heathkit VP-1-6 or VP-1-12 may be used. The circuit diagram shows heater connections for both 6- and 12-volt service.

Extra filtering may be needed with the vibrator supply. When a Heathkit VP-1-12 was first tried with this setup the receiver sensitivity was very low, compared with that obtained with the a.c. supply. This was found to be the result of hum and vibrator hash. It was necessary to add an extra 16- $\mu$ f. electrolytic capacitor and a 10-hy. filter choke in the B+ lead of the vibrator supply to correct this. It is a quality of the superregenerative receiver that only well-filtered power sources can be used without loss of sensitivity. This may apply even when the hum or buzz from the vibrator supply is not audible to any appreciable degree in the receiver.

### Construction

Before starting work on the transmitter, make a careful study of the photographs, layout drawing and schematic diagram. The layout, Fig. 4, will enable the constructor to make an exact duplicate, provided all parts used are duplicates of the original. If there is some variation it should not be a cause for worry, for exact duplication is not important. The general layout should be followed, however, and r.f. leads should be kept as short and direct as possible.

The chassis is made from sheet aluminum, and is 4 by 7 inches after bending over the  $\frac{1}{2}$ -inch sides. As with the receiver, the narrow-sided chassis was used mainly to provide as clear a view of the parts as possible in the photographs. Finding a commercial chassis in 4 by 7 inch size may take some shopping, as not all manufacturers list this size. Alternatives are the use of a 5 by 7, in which case the receiver will have to be moved over one inch, or a 4 by 6, which will mean pulling in the dimensions slightly from those shown in the layout drawing.

The oscillator and amplifier tuning capacitors,  $C_1$  and  $C_6$ , are mounted on the front panel. The loading capacitor,  $C_8$ , is on the chassis, and is visible in the bottom view. This does not require frequent adjustment, so it need not be accessible from the front. Also mounted on the panel are the microphone and cathode jacks, the crystal socket, and the tune-up indicator. The lamp of



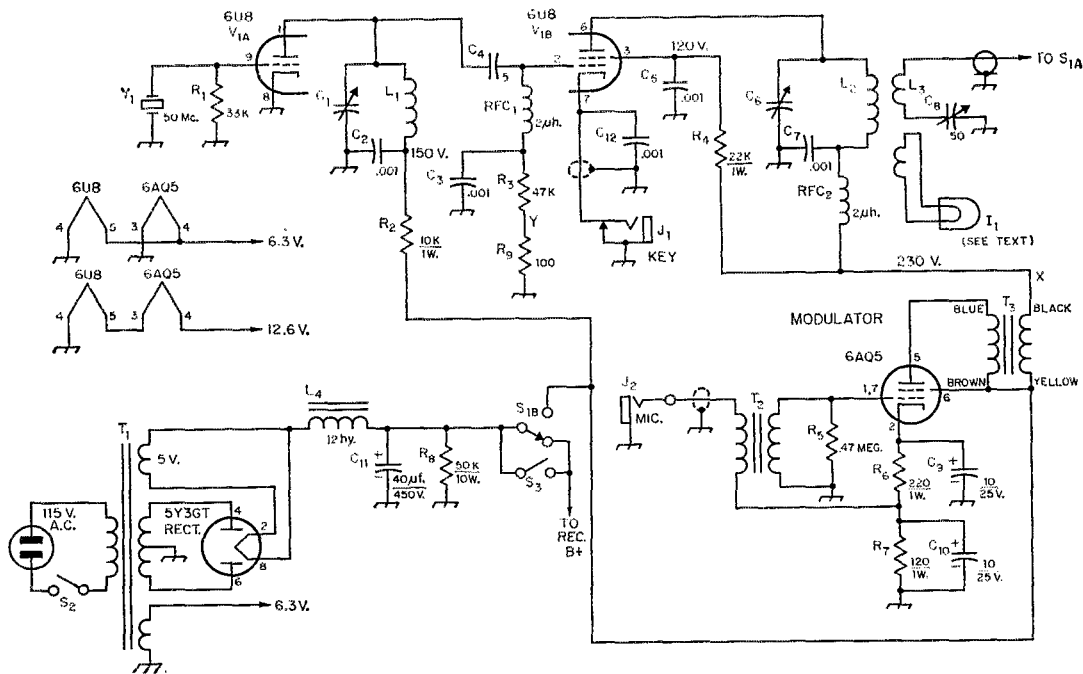


Fig. 3—Circuit diagram and parts information for the 50-Mc. transmitter.

- C<sub>1</sub>, C<sub>6</sub>—25- $\mu$ f. miniature variable capacitor (Hammarlund MAPC-25-B).
- C<sub>2</sub>, C<sub>9</sub>, C<sub>6</sub>, C<sub>7</sub>, C<sub>12</sub>—.001- $\mu$ f. disk ceramic.
- C<sub>4</sub>—5- $\mu$ f. ceramic or mica.
- C<sub>8</sub>—50- $\mu$ f. variable (Hammarlund MAPC-50-C).
- C<sub>9</sub>, C<sub>10</sub>—10- $\mu$ f., 25-volt electrolytic.
- C<sub>11</sub>—40- $\mu$ f., 450-volt electrolytic.
- I<sub>1</sub>—No. 48 or 49 dial lamp, 2-volt, .06-amp., 1-turn coupling loop.
- J<sub>1</sub>—Closed-circuit jack.
- J<sub>2</sub>—Open-circuit jack.
- L<sub>1</sub>—4 turns No. 20,  $\frac{3}{8}$ -inch diam.,  $\frac{1}{4}$ -inch long (B&W Miniductor No. 3007).
- L<sub>2</sub>—5 turns No. 20,  $\frac{3}{8}$ -inch diam.,  $\frac{5}{16}$ -inch long (B&W Miniductor No. 3007).
- L<sub>3</sub>—1 turn of No. 18 enameled or insulated,  $\frac{1}{2}$ -inch diam. (see text).
- L<sub>4</sub>—12 Hy., 75 ma., 400 ohms, filter choke (Triad C-5X or equiv.)
- R<sub>1</sub>—33,000 ohms,  $\frac{1}{2}$  watt.

- R<sub>2</sub>—10,000 ohms, 1 watt.
- R<sub>3</sub>—47,000 ohms,  $\frac{1}{2}$  watt.
- R<sub>4</sub>—22,000 ohms, 1 watt.
- R<sub>5</sub>—0.47 megohm,  $\frac{1}{2}$  watt.
- R<sub>6</sub>—220 ohms, 1 watt.
- R<sub>7</sub>—120 ohms, 1 watt.
- R<sub>8</sub>—50,000 ohms, 10 watts.
- R<sub>9</sub>—100 ohms,  $\frac{1}{2}$  watt.
- S<sub>1</sub>—See receiver parts list, Part I.
- S<sub>2</sub>, S<sub>3</sub>—S.p.s.t. toggle switch.
- RFC<sub>1</sub>, RFC<sub>2</sub>—2  $\mu$ h., r.f. choke (National R33, Waters C1002 or Ohmite Z-50).
- T<sub>1</sub>—600 v.c.f., 75 ma., 5 volts 2 amps., 6.3 volts 3 amps. (Triad R9A or equiv.).
- T<sub>2</sub>—Single-button microphone transformer, 100 ohm primary, 60,000-ohm secondary. (Stancor A-4706 or equiv.).
- T<sub>3</sub>—Interstage transformer, 1:1 turns ratio. (Stancor A-4711).
- Y<sub>1</sub>—50-Mc. crystal (International Crystal Mfg. Co. Type FA-9).

the tuning indicator is inserted in a rubber grommet,  $\frac{3}{8}$ -inch inside diameter, mounted on the front panel.

When all components are mounted in place the unit is ready for wiring. This is a simple operation, and most of the leads can be seen in the photographs. Review the wiring precautions given in Part I. Shielded wire is used from the microphone jack to the primary of the transformer, and from the cathode jack to Pin 7 (cathode) of the 6U8 pentode.

The power supply is assembled on a 4 by 6 by 2-inch chassis. The transformer, choke and rectifier tube are on the top surface, with the re-

maining components below. A 3-terminal tie-point on the end of the chassis carries the heater voltage, the B+, and a common ground. The heater lead from the receiver and transmitter is connected to the 6.3-volt terminal. Another lead connects the arm of S<sub>1B</sub> and the B+ terminal, permitting the plate supply to be switched from receiver to transmitter. A toggle switch, S<sub>3</sub>, not shown in the photographs, may be connected in parallel with S<sub>1B</sub>, to permit receiver and transmitter to be operated simultaneously.

The power supply is secured to the bottom of the case with sheet-metal screws. Installation of rubber feet on the bottom of the case is desirable,

to keep the mounting screws from marring table tops.

### Testing

The transmitter should now be ready for testing. It is suggested that the step-by-step process outlined below be followed closely. First we need a tune-up loop. This can be the one that will be installed permanently as described, but it can be used in checking the operation of the oscillator. We will test the oscillator without the amplifier stage being on. This is done by breaking the power lead to the plate and screen circuits of the amplifier, at point X, Fig. 3.

If a milliammeter of 0 to 1 range or less is available, connect it in the amplifier grid circuit between point Y and the chassis, to measure amplifier grid current. This is the best possible check on the tuning of the oscillator plate circuit, and it will also serve as a sensitive indicator of instability in the amplifier stage later on. Our tune-up loop should be placed near the B+ end of the oscillator plate coil. Plate current in the oscillator may be checked temporarily by connecting a milliammeter (25 ma. or more) in the lead from  $L_2$  to the B+ terminal on  $S_{1B}$ .

Apply power with the send-receive switch in the "receive" position. When the tubes have warmed up, switch to "transmit," and swing  $C_1$  through its range. When the oscillator starts there will be a quick dip in the plate current, the indicator lamp will light when coupled to  $L_1$ , and current will flow in the amplifier grid circuit. Oscillator plate current will be about 15 ma. off resonance, dipping to around 8 ma. when the crystal oscillates. The setting of  $C_1$  should be that giving the greatest lamp brilliance or amplifier grid current. Be sure that the loop is not too close to  $L_1$ , or the lamp may burn out, even with as little power as our oscillator delivers. If a grid current meter is used, it should read about 0.2 ma. With a grid meter in use the tuning loop can be disregarded, as maximum grid current is the objective in tuning the oscillator.

After the oscillator has been tuned, put the tuning lamp in the grommet in the panel and couple the pickup loop loosely to the amplifier

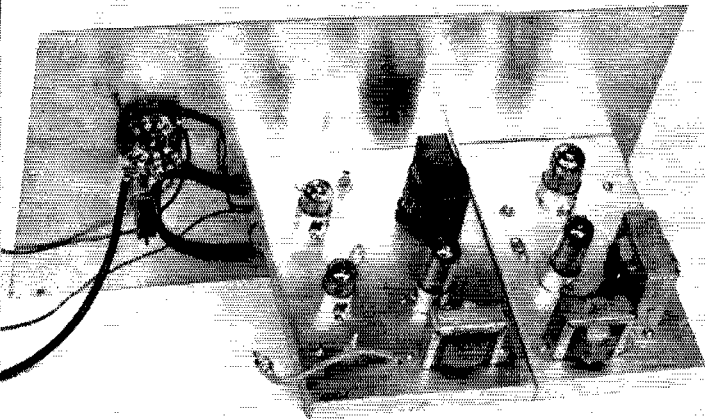
plate circuit. Close the B+ lead to the oscillator; if a meter was connected therein during the previous step, remove it and connect it in the amplifier cathode circuit by plugging into  $J_1$ . Close the plate-screen circuit at point X. Apply power as before, and tune the amplifier plate circuit for maximum brilliance in the lamp. Watch the position of the loop to prevent lamp burnout.

Another word of caution: make your tests brief until after it has been determined that the stages are tuned properly. Plate current will run high when the stages are detuned, or the crystal is not oscillating, and the tube may be damaged if operated in this condition for appreciable periods of time. The amplifier should not be operated without a load, even when working correctly and tuned to resonance, for such operation may result in excessive screen current and injury to the tube.

If you have a d.c. voltmeter you can check voltages at the tube terminals against the values given on the schematic diagram. These readings should be taken under normal operating conditions, and they may be subject to some variation. Don't worry if differences of 10 percent or more are encountered, if the transmitter works normally. Large variations from the readings given on the diagram are, however, clues to the sources of trouble, if the rig does not work properly. Cathode current in the 6U8 pentode section (read in  $J_1$ ) should be about 15 ma.

In a pentode amplifier such as this one neutralization is usually not required to prevent oscillation, but the rig should be checked carefully to see that it is operating stably. With the power on, and the grid current meter connected, pull the crystal out of its socket. Tune the amplifier plate circuit through its range and watch the grid meter. There should be no sign of grid current at any setting. If the layout shown is followed closely there should be no oscillation trouble. If some develops, check screen bypassing and position of coils and leads. Do not run the transmitter with the crystal removed for any longer than necessary.

Another check on the stability of the transmitter can be made by listening in the receiver as the transmitter plate circuit is tuned with the crystal



Receiver (left) and transmitter mounted on the panel. Tube shields have been removed for clarity. Output transformer is at right. Microphone transformer is at the rear of the chassis. Send-receive and a.c. switches at the left.

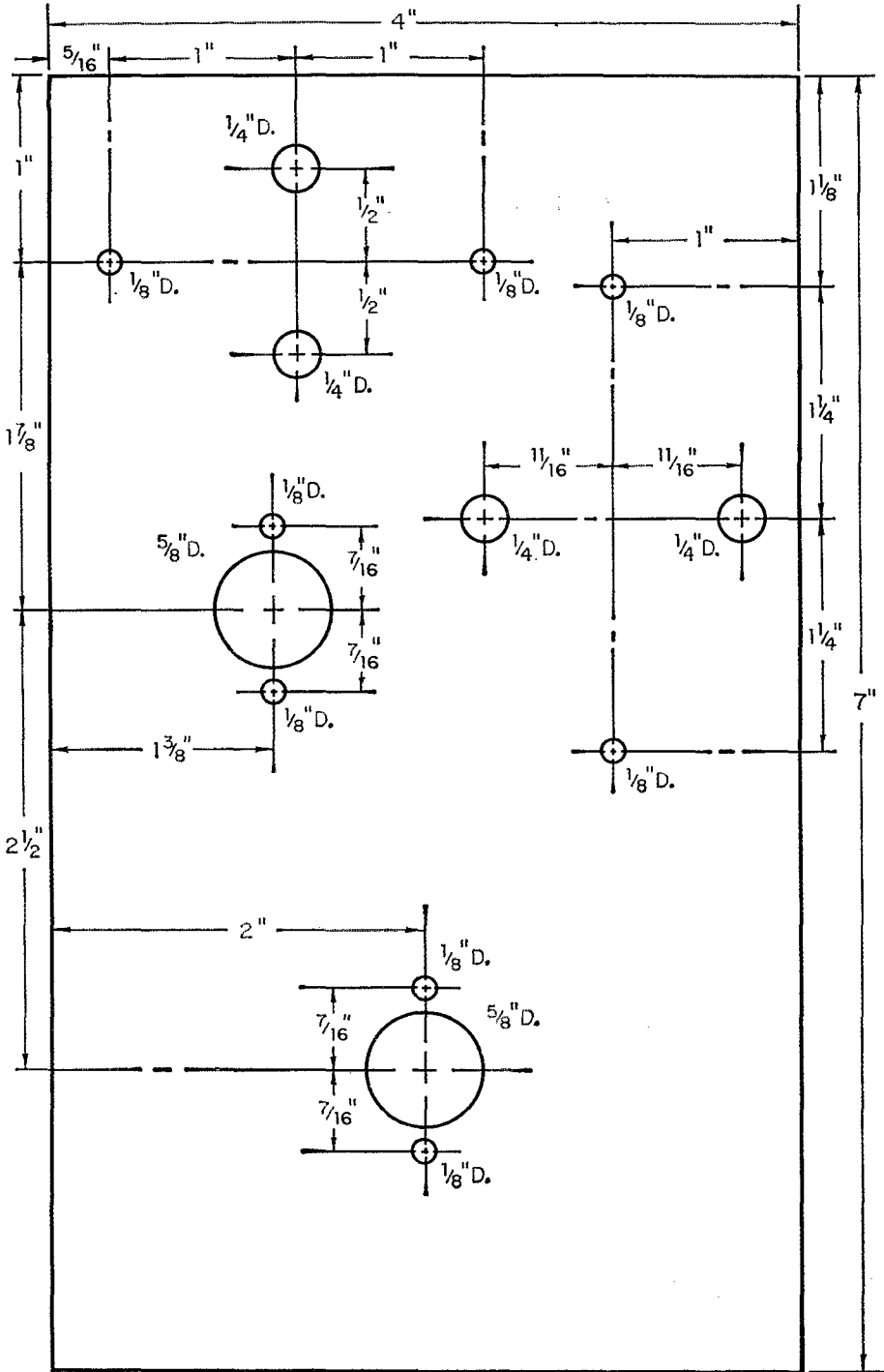


Fig. 4—Dimension drawing of the transmitter chassis.

removed. The toggle switch,  $S_3$ , in parallel with the main control switch, makes it possible to run the receiver and transmitter together. With the crystal removed, there should be no sign of a signal in the receiver at any point.

Being able to run the transmitter and receiver simultaneously is also useful in checking the

speech quality of the transmitter. Use headphones for this purpose, and set the receiver audio gain low enough so that there will not be audio feedback between the phones and the microphone. Turning down the regeneration control may be useful in getting a good check on the signal quality.

The amount of modulation can be checked roughly by watching the brilliance of the tuneup lamp while speaking into the microphone. There should be a noticeable brightening of the light on voice peaks. In on-the-air use, the lamp is a fair modulation indicator. Keep the voice level up to the point where the lamp brightens as each word is spoken, but do not speak louder or closer to the microphone than is necessary to achieve this. Observing the cathode current of the amplifier provides a better check on over-modulation. There should be no fluctuation on voice peaks.

### A Simple Antenna

When the station is checked out you'll be anxious to get it on the air and make some contacts. Just so you won't have a nervous breakdown while waiting to get a beam up, here is a simple dipole that you can make to give the rig a tryout. Such an antenna system is a makeshift, however, and the importance of putting up a good directional antenna cannot be overemphasized. Beam antennas are described in *The Handbook*, and in the ARRL *Antenna Book*, in the v.h.f. chapters. A beam should be a high-priority project as soon as the station itself is completed.

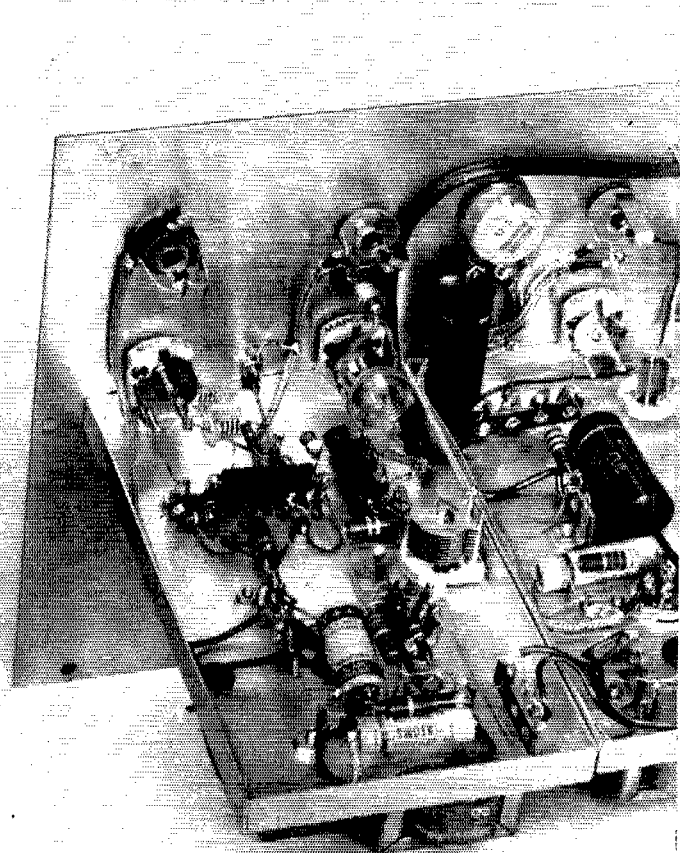
The dipole shown in Fig. 5 employs what is known as a "gamma match." The inner conductor coaxial line is tapped onto the dipole through a capacitor, at a point where the impedances match. The outer conductor (shield) is connected to the exact center of the dipole. Usually the point of attachment of the inner con-

ductor to the dipole is made adjustable, and a variable capacitor is inserted in the lead to tune out its reactance. Such a system can be made to take care of a wide range of antenna impedances, and is useful where the impedance of the antenna is not known. In this instance we thought that the beginner might have trouble making the necessary adjustments, so specific dimensions and a fixed capacitor are shown. The match should be close enough for all practical purposes, particularly since this is intended to be a temporary expedient.

Make the dipole out of No. 14 wire. If it is to be used indoors, as in an attic, insulators are not required. A small loop can be made in each end of the wire, and the dipole suspended on heavy string or twine. The antenna is bidirectional, with maximum power being radiated perpendicular to the dipole. This should be taken into account in placing the antenna. Suspend it in a north-south position if most of your activity is likely to be to the east and west.

### Final Adjustments

We now adjust the coupling so as to transfer as much power to the antenna as possible. To know when optimum adjustment is achieved requires some form of sensitive indication of radiated power. A simple field-strength indicating device is shown in Fig. 5B. Its antenna is placed parallel to the transmitting dipole, and about 10 feet away; farther, if a suitable indication can be obtained at a greater distance. Caution: do not



Bottom view of the transmitter. Notice that the two coils,  $L_1$  at the left and  $L_2$  at the right, are at right angles to each other, to prevent undesired coupling. Shielded wire is used for the microphone and cathode jack leads. Modulator components are at the back of the chassis.

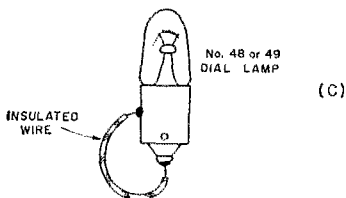
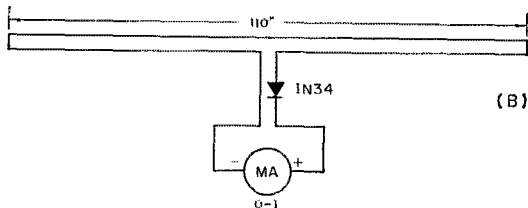
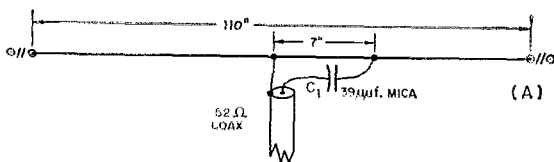


Fig. 5—Gamma-matched dipole for the 50-Mc. station (A) is made from No. 14 antenna wire, 110 inches long. The outer shield of the coax cable is soldered to the center of the antenna. Matching arm is a 5½-inch piece of No. 14 wire, soldered to the antenna at 7 inches from the dipole center, spaced about ½ inch from the antenna. Capacitor is soldered between the wire and the end of the inner conductor.

Field strength indicator (B) uses a folded dipole of wire or Twin-Lead. The IN34 diode and meter can be mounted at the antenna, or connected to a remote point with 300-ohm Twin-Lead.

The tune-up lamp and its pickup loop are shown at C. When permanently mounted on the panel, the loop is bent at right angles to the axis of the lamp.

attempt to use this device near a higher-powered transmitter, or close to an antenna system that is connected to such a transmitter, or the crystal will be burned out and the meter may be damaged.

We now may adjust our transmitter tuning and coupling adjustments for maximum indication on the field-strength indicator. Set the coupling loop adjacent to the last turn at the B+ end of the amplifier plate coil. Turn on the transmitter, and adjust the plate tuning and the output capacitor for maximum indication on the field-strength meter. Then move the coupling loop closer and retune, to see if a higher reading can be obtained. If not, try moving it in the other direction, re-adjusting both capacitors each time the loop is moved, until the highest meter reading is obtained.

If a field-strength meter is used in tuning up, the lamp may be dispensed with, and a slight increase in radiated power will result. This will be

of little significance in the strength of the signal at a distant point, however, so the tune-up loop can be left connected at all times, if you wish. See that it is coupled loosely, so that the lamp just shows a perceptible glow, if you want to radiate as much of your power as possible. Once the transmitter is tuned up it may be a good idea to remove the field-strength meter pick-up antenna too, as it may affect the pattern of your transmitting dipole.

This dipole installation will suffice for local work, and you may even make a DX contact with it now and then, when conditions are very good, but don't be satisfied without a good beam. It will make a world of difference in your results, and you'll be pleasantly surprised at the contacts you'll be able to make with this little station. You won't burn out the front ends of many local receivers, but you'll make contacts, and have fun. Good hunting!

## Strays

We don't know how many *QST* readers have built the HBR-14 receiver that was described last July by W6TC, but the author has received so much correspondence that he has started an "HBR-14 Fan Club" and is contemplating publishing a news letter to furnish tips, improvements, and the like. We've seen one news note listing 14 of the builders, and W6TC would like to hear from any others, too.

A Boy Scout "Jamboree-on-the-Air" will be held from midnight Friday, May 9, to midnight Sunday, May 11 (local times) on all amateur

bands. All radio amateurs who have an interest in the scouting movement are invited to make contact with each other to further international friendship and brotherhood. This is, however, not a contest, and there will be no prizes. The *Boys' Life* radio club station, K2BFW, will be on the air, and it is planned to have a station on from the International Scouters Training Center at Gilwell Park, England, using the call GB3BP.

W3ZYW discovered, after doodling some ham lingo on an examination paper, that his chemistry teacher is W3TNE.

# Cheap and Easy Side Band, 1958

## Circuit Modifications of a Popular Transmitter

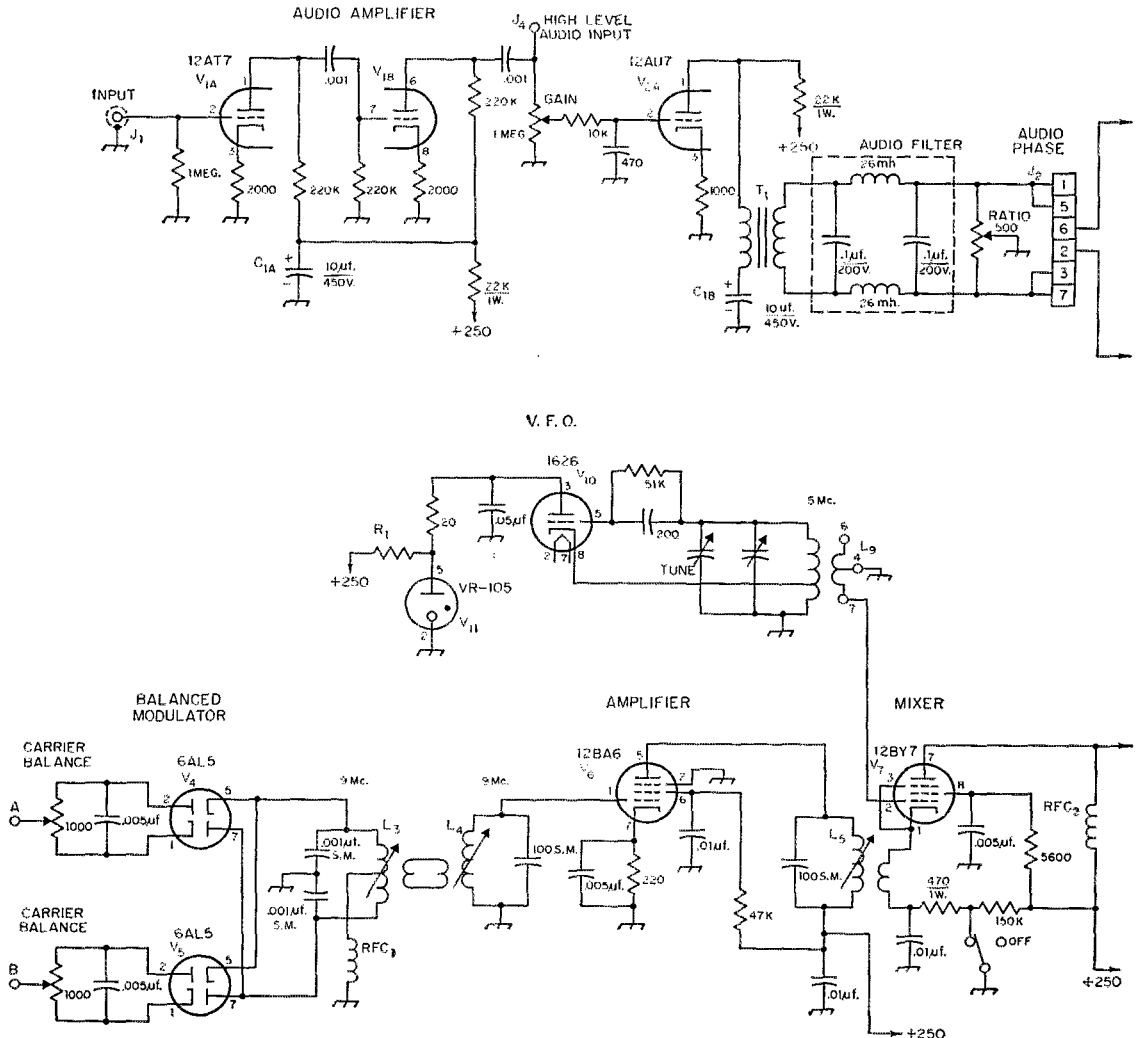
**B**ACK IN 1956 W2EWL put many new side-banders on the air with his description of a simple side-band transmitter.<sup>1</sup> The unit was built around a surplus transmitter, the BC-458, and it has been used as a station transmitter, a station exciter driving a big amplifier, or as a mobile side-band transmitter. Recently the author sent us a slightly revised schematic, to bring us up to date on changes in the basic design. The new schematic is shown in Fig. 1.

Actually, the changes are not too extensive. In the audio section a low-pass filter<sup>2</sup> has been added, to protect the phase-shift network from

high-frequency components that might be shifted other than the intended 90 degrees. The 26-mh. inductors are TV width/linearity coils (Stancor WC-5, 4-39 mh.) adjusted to resonate at 3120 cycles when connected in parallel with 0.1  $\mu$ f. An alternative audio input has been added, to provide a point where high-level audio can be introduced for test purposes. Revision of the side-band selector switching circuit at  $S_3$  eliminates a minor change in carrier balance when switching side bands. One more change replaces the original 12A6 mixer with a 12BY7, to provide a little more drive for the final stage, and an r.f. choke is eliminated in the final grid circuit through the use of series feed.

Anyone interested in the detailed construction

<sup>1</sup> Vitale, "Cheap and Easy S.S.B.," *QST*, March, 1956.  
<sup>2</sup> From Brown, "Single Side-band Techniques," published by Cowan Publishing Co., New York 36, N. Y.



of the transmitter should refer to the original article (copies of the March, 1956, *QST* can be obtained from the ARRL Circulation Department).

The original was shown in two forms: the two-band version shown in Fig. 1 and a single-band unit.

Fig. 1—Revised diagram of the W2EWL s.s.b. transmitter. Unless otherwise noted, resistors are 1/2 watt and capacitance values are in  $\mu\text{f}$ . SM = silver mica.

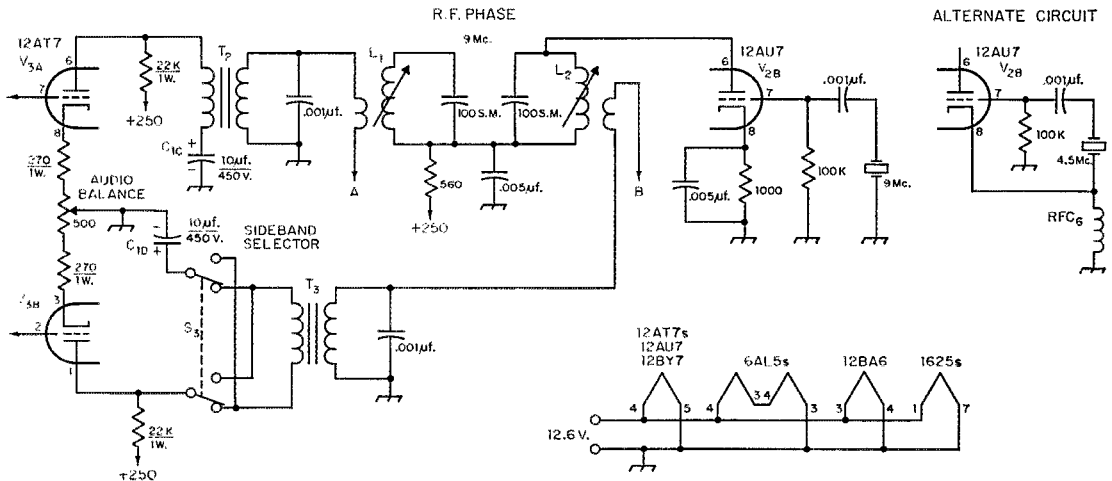
- C<sub>1</sub>—Quadruple electrolytic, 10-10-10-10  $\mu\text{f}$ . at 450 volts.
- C<sub>2</sub>, C<sub>3</sub>—140- $\mu\text{f}$ . midget variable (Hammarlund HF-140).
- C<sub>4</sub>—500- $\mu\text{f}$ . 20-kilovolt ceramic.
- I<sub>1</sub>—2-watt pilot lamp.
- J<sub>1</sub>—Microphone jack.
- J<sub>2</sub>—Octal socket for B&W 350 Phase shift network.
- J<sub>3</sub>—Coaxial cable receptacle, UG-290/U.
- J<sub>4</sub>—Pin jack.
- L<sub>1</sub>, L<sub>2</sub>, L<sub>4</sub>, L<sub>5</sub>—25 turns No. 22 enam. Link, 4 turns hook-up wire over cold end.
- L<sub>3</sub>—8 turns No. 16 enam. 1-turn link at center.
- L<sub>6</sub>—40 turns No. 26 enam.
- L<sub>7</sub>—25 turns No. 22 enam.
- L<sub>8</sub>—46 turns No. 20 bare, wound 16 turns per inch, 1-inch diam. Tap at 8 1/2 turns from C<sub>2</sub> end. (B&W 3015.) For 14 Mc. only, use 12 turns No. 14 wound to occupy 1 1/2 inches, 1 1/2 diam.

- R<sub>1</sub>—5000 ohms 5-watt when 250-volt supply used.
- R<sub>2</sub>—Adjust for full brilliance of I<sub>1</sub> at maximum plate current.
- Coils L<sub>1</sub> through L<sub>7</sub> are wound on slug-tuned forms 5/16 inch in diameter. L<sub>1</sub> L<sub>2</sub> spaced 3/4 inch on centers.
- RFC<sub>1</sub>—500  $\mu\text{h}$ .
- RFC<sub>2</sub>—2.5 mh.
- RFC<sub>3</sub>—1 or 2.5 mh., 300 ma.
- RFC<sub>4</sub>, RFC<sub>5</sub>—20 turns No. 22 enam., wound on 3/16-inch form (high-value resistor) and spaced to occupy 7/8-inch winding length.
- RFC<sub>6</sub>—30 turns No. 36 d.c.c. jumble-wound on 3/8-inch diameter form.
- T<sub>1</sub>—20,000 to 600-ohm transformer.
- T<sub>2</sub>, T<sub>3</sub>—20,000 to 200-ohm transformer. (Suitable compact transformers are often advertised in Ham Ads.)

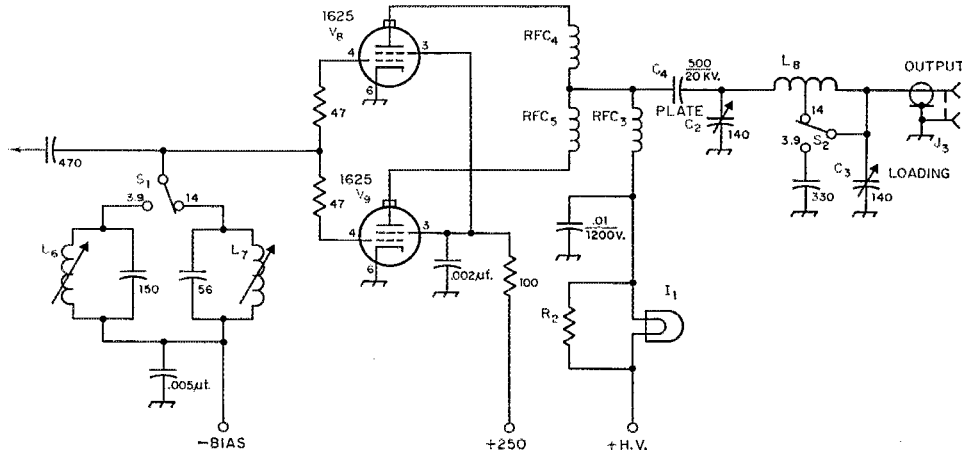
AUDIO AMPLIFIER

CRYSTAL OSC.

ALTERNATE CIRCUIT



OUTPUT AMPLIFIER



THE ARTICLE on the regulated power supply in the October, 1957 *QST*<sup>1</sup> aroused my interest very much. It recalled to mind a problem in design of a regulated supply for screen voltage which was solved several months ago in the construction of a linear amplifier.

The rig was to have two type 803 tubes in parallel, with 3000 volts on the plates. Some discussion with local hams convinced me this amount of plate voltage would be permissible in s.s.b. service, and a few told me "the more the merrier." Possession of a complete 3000-volt supply was no small factor contributing to this decision.

# Electronic High-Voltage Regulator

## Constant-Voltage Source for Amplifier Screens

BY RICHARD L. CLARK,\* WISUN/1

While the whole rig was still in the "thinking-about" stage, considerable attention was given to the question of the screen supply. A separate transformer-rectifier-filter type supply would begin to assume horrendous proportions by the time the rig was ready for the acid test. And some provision would have to be made for adjustment of screen voltage to achieve the proper linear operation I expected.

Past experience with electronically regulated supplies was rather limited, but the thought seemed impressive. The error amplifier would have to have high gain in order to properly regulate the output voltage. A string of gas regulator tubes would have to be put in the cathode circuit of the error amplifier with the resulting need for isolating its filament circuit, otherwise the error amplifier tube would have to be of such type as

The series voltage-regulator described in this article will hold the output voltage constant within less than three per cent over a range of 850 to 1500 volts with a current swing of 20 to 80 ma. It operates from the plate supply as a source.

to withstand the full value of regulated screen voltage between its plate and cathode. (Up to this point from 700 to 1200 volts was the planned value of screen voltage.) The 807 was chosen as filling the last requirement very easily and its cathode and heater circuits could be at ground potential.

The voltage-regulator tube should be able to pass full screen current at the regulated value of screen voltage without exceeding its plate dissipation rating. A quick inventory of tubes on hand turned up a good V70D and a good spare. The V70D requires 7.5 volts on the filament which was available as an extra winding on a filament transformer in use. Some rapid calculation said its dissipation rating would not be exceeded in this job. Actually, this rating may be exceeded rather badly with no serious ill effects on side band because screen-current peaks are of short duration and the duty cycle is short. The V70D has an advantage in this respect since it has a heavy carbon plate with its associated thermal inertia.

The circuit of the regulator is shown in Fig. 1. Screen voltage for the 807 error amplifier is picked off a tapped 50K 50-watt bleeder resistor fed by a small power transformer and a 5Y3GT rectifier. Varying the tap on this bleeder varies the output voltage range of the regulator. As the 807 screen voltage is increased the output voltage is decreased and vice versa. By switching taps on the bleeder to supply a choice of several screen voltages for the 807, the output could be made variable over an extremely wide range.

All electronic voltage regulators must have some source of reference voltage. In this case it is a type 5651 reference diode. This is a glow type tube, but it operates at about 3 ma. and does not have the ability to regulate over a wide load-current range as do the 0B2 or VR75 types. A high-impedance load must be used with this tube so as not to exceed its ratings (this one must be rated for continuous service), and a relatively high resistance to the voltage source must be used to limit the current to it. The source of negative voltage for this is taken from one side of the small power transformer mentioned earlier.

Because this is strictly a Class AB<sub>1</sub> rig, the bias for the final is stolen from the reference circuit. A 100K potentiometer provides variable bias from 0 to about 88 volts for the 803 grids. This certainly could not be called a "stiff" bias supply, but is perfectly adequate where no grid current will be drawn.

\* 21 Rock St., Middleboro, Mass.

<sup>1</sup> Chipman, "Combination Regulated Power Supply," *QST*, October 1957.



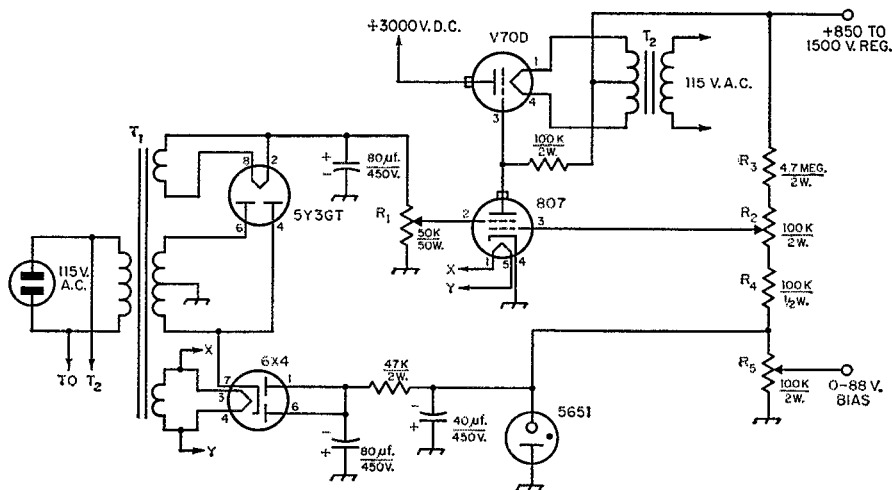


Fig. 1—Circuit of the regulated high-voltage screen supply. Unless otherwise marked, resistances are in ohms (K = 1000). Capacitors are electrolytic.

- $R_1$ —50,000-ohm 50-watt adjustable resistor.  
 $R_2, R_5$ —0.1-megohm 2-watt potentiometer.  
 $R_3$ —4.7 megohms, 2 watts.  
 $R_4$ —0.1 megohm, 1/2 watt.

- $T_1$ —Power transformer: 470 volts center tapped, 40 ma.; 5 volts 2 amp. (for 5Y3GT); 6.3 volts, 2 amp. (for 6X4 and 807) (Stancor PC-8401)  
 $T_2$ —Filament transformer: 7.5 volts, 3.25 amp.

It might be mentioned that voltages are such that the net current flow through  $R_5$  is in such a direction as to make the upper end negative in respect to ground.

The value of the potentiometer  $R_2$  in the grid circuit of the 807 is chosen to provide the range of adjustment desired from minimum to maximum voltage output. The value of  $R_3$  determines the low limit of output voltage and the value of  $R_4$  determines the high limit. Decreasing the value of  $R_2$  will drop the low limit and decreasing the value of  $R_4$  will raise the high limit. However, if  $R_4$  is made too small, the 807 can be driven into the cut-off region and this results in high output voltage with no regulation. This is noticed as a segment on the potentiometer where there is no

effect on the output voltage. Also, if  $R_3$  is decreased sufficiently the 807 will go into saturation with the resultant loss in control and regulation. A total resistance of  $R_2 + R_3 + R_4$  must be selected with dissipation of the string a prime consideration, while the relative values of the three will determine the extremes.

In some cases the 5651 may oscillate. This can be remedied by inserting a resistor of 1000 ohms or so in the lead between the 40- $\mu$ f. filter capacitor and the 5651.

This output, at 850 volts, does not vary enough to be seen on a Heathkit V-7A over a current swing of 20 to 80 ma., and there is a variation of less than 3 per cent at 1500 volts output with the same current swing.

## Strays

W6CSS did not feel like attending church one Sunday, but he did drive his wife to church and then parked around the corner to wait for her to come out. To keep himself occupied he turned on the mobile rig and for over an hour had a nice QSO with an east coast ham. At the appointed time he returned to church to pick up his wife, but was greeted with indignation not only by his wife but by the minister and entire congregation. Every word of the W6CSS transmissions had come in loud and clear over the church p.a. system, drowning out the organ music, the choir and — worst of all — the sermon.

— K6ZIP

They always come back! Forty-two years ago, with the coming of World War I, SDK drifted out of ham radio, and the bug didn't bite again until last year. He has just received his General Class ticket, and has been assigned his old call, W8DK.

— W8HSM

— . . . —

W1VG appears to be the low power champion at League Hq. Using less than 200 watts input, Pete has a total of 200 confirmed, with at least 100 confirmed on each of 7-, 14-, 21- and 28-Mc. bands. Recently, in just 46 days, Pete worked 100 countries using a 40-watt rig.

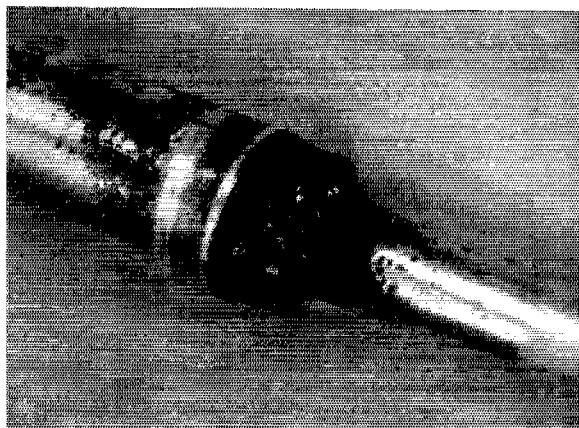
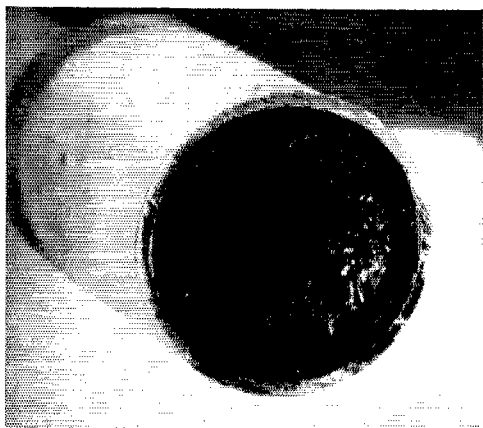


Fig. 1—Charred polystyrene in the original trap. The end was sawed off to reach this section. Fig. 2—This trap, made with thicker poly insulation in the capacitor, held up on the inside before arcing over on the outside.

# An End to Trap Troubles

## *Vacuum Capacitors for Overcoming Voltage Breakdown*

BY FRED L. MASON,\* KH6OR

The traps in multiband antenna systems have to take substantial voltage peaks when handling the power output of an a. m. kilowatt—a condition that isn't helped by the presence of such factors as weathering, humidity, and salt atmosphere. KH6OR's answer to blown traps is to use vacuum capacitors. This article describes the mechanics.

FOR the past several years a tri-band beam has been the only antenna in use at KH6OR.

There was too little space available at my QTH for the optimized rhombic farm installation—actually, too little space for more than a single supporting structure. And since there was some question as to just how much of a “Christmas tree” the neighbors would gracefully tolerate on this one small tower, a tri-band antenna appeared to be the only reasonable solution to the problem of operating with a measure of effectiveness on 10, 15 and 20 meters.

After considerable experience with the tri-bander, this decision has not been regretted. After all, the ability to switch at random between the three bands, have a single coax line entering the shack, and obtain really good performance on all three bands are certainly factors worthy of consideration.

On the debit side of the ledger, until very recently, was the fact that the traps that made tri-band operation possible imposed definite power restrictions. But let's start at the beginning and tell the whole story.

### *When a Trap Blows*

The first traps we used were hand built in W3DZZ's basement, and I well remember the old kitchen stove Buck used in casting the polystyrene for them. Unfortunately these traps had relatively short life expectancy. In my own

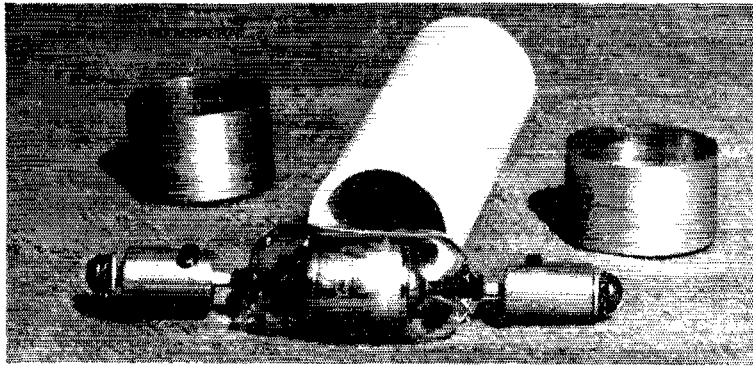
\*1449 Meyers St., Honolulu, Hawaii.

Fig. 3—Teflon wasn't the answer, as shown by these burned insulators—an expensive, but illuminating, experience.

**QST for**



Fig. 4—Principal components of the vacuum-capacitor trap. The capacitor differs from the regular Jennings Type X in having the exhaust tubulation brought out the end rather than on one side of the envelope, so it will go snugly inside the ceramic tube. End shells are aluminum spun into the cup shape on a lathe.



case, during the first venture on 21 Mc. one of the traps in the director blew. At this point let me advise all concerned that such an occurrence is real sneaky. For when a trap in a parasitic element lets loose there may be no immediate violent reaction. In fact, there may be little evidence in the shack that anything has happened. In my case the following events occurred in the order listed:

(a) A relatively minor shift in final plate current, which was easily brought back to normal by slight retuning of the pi network.

(b) A flood of TVI complaints, some delivered by irate neighbors.

(c) A phone call from a couple blocks away, advising something was on fire on top of my tower.

(d) KH6OR ceased operation.

It can of course be argued that either (a), (b) or (c) above should have caused (d) to take place. This, however, is not an effort to defend my reaction to the events; rather, this is simply a statement of the facts in the case.

The antenna was hauled down the next day and the offending device soon located. It was obvious from casual examination of the trap capacitor section that this would occur again unless the capacitors were beefed up. Fig. 1 is a close-up of the blown trap capacitor, with the end cut off so the charred insulation is exposed.

From this experience it was clearly evident that two things required change: First, the back of the capacitor required sealing to prevent moisture encroachment. Second, the insulation between the capacitor plates would have to be increased.

At this point, let me remind all interested parties that the r.f. voltage appearing across these traps at the resonant frequency is only slightly less than half the r.f. voltage in your unloaded final tank circuit!

#### ***A Redesign***

As a result both of my experience and trap failures experienced by others, the production-model traps were changed in design to provide a polystyrene casting with  $\frac{1}{16}$  inch greater wall thickness, and a back was cast into the poly to prevent moisture from gathering across the ends

of the capacitor plates. What can happen to this model trap is shown in Fig. 2. As clearly shown in the picture, this flashover occurred externally. Such breakdowns are probably aided by the normal accumulations of dust and dirt on the polystyrene insulation. Further acceleration toward destruction of the trap can be attributed to moisture from rain, sleet, snow or even fog. It is certain that the crazing which occurs in polystyrene exposed to the sun's rays provides an excellent foothold for both moisture and dirt accumulations on the external portions of the trap capacitor.

Just to keep the record straight and not create the impression that trap casualties are suffered only by the a.m. gentry, the blown trap shown in Fig. 2 was contributed by Ed Willis, W6TS, who by his own admission wouldn't be caught dead on phone. The s.s.b. lads have also had their share of trouble on trap antennas.

Despite these unfortunate experiences the tremendous convenience of the tri-bander and its genuinely good performance had convinced me the device was worthwhile. It was, however, necessary to do something about the traps if trouble free performance with a kilowatt input on a.m. on all three bands was to be expected.

#### ***Another Attempt***

It was reasoned that the insulation crazing on the poly traps may have had a large part in their ultimate failure. So, maybe a change in insulating material would correct this problem. After looking over the specs on all readily available insulating materials, Teflon seemed to be the best bet. So a sufficient amount of 2-inch Teflon rod was obtained — at a price resembling the war debt — to make up traps for the driven element and director.

For a few days after the Teflon traps were installed, it appeared that the problem was solved. Then bingo, it happened!! A 15-meter trap in the radiator blew. This, it was reasoned, might have been a random occurrence and insufficient cause for giving up, so the blown trap was replaced with another Teflon trap and we started over. In another three or four days another Teflon trap blew, this time in the director. This second casualty convinced me Teflon

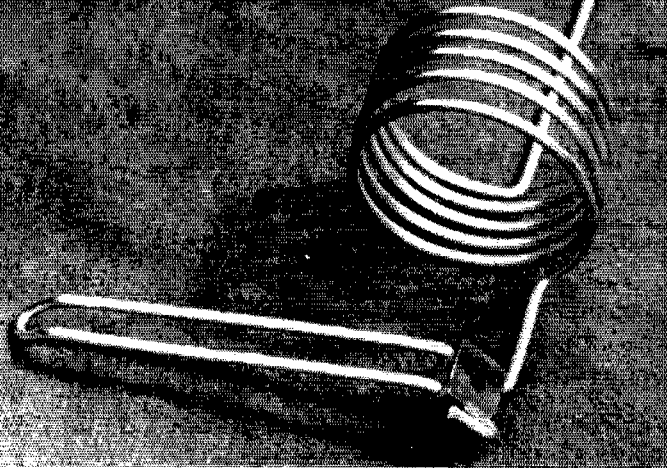


Fig. 5—Trap coil and clamp. The coil is made of aluminum TV ground wire.

was not the answer to the problem.

The two blown Teflon traps are shown in Fig. 3. As is evident in the picture, one flashed over the end and the other flashed through the Teflon about one inch from the back end, which "melted" the back out of the Teflon.

#### Finally — The Answer

More study on the subject brought the decision to abandon the old capacitor design completely and give up trying to find a puncture-proof dielectric material for the trap capacitors. Instead, it was decided to try a design using a vacuum capacitor with a ceramic insulator dividing the element at the point where the trap was inserted. To employ such an arrangement and still use most of the tubing in the original beam it

was reasoned that if a ceramic tube  $1\frac{3}{8}$  inches in diameter,  $4\frac{1}{2}$  inches long, with a  $\frac{1}{8}$ -inch wall, could be obtained and if Jo Jennings could be prevailed upon to make a "slight modification" in his Type X fixed vacuum capacitor, such a trap would be practical.

Fortunately all the ifs in the problem worked out. Coors Ceramics<sup>1</sup> provided the ceramic tubes and Jo Jennings moved the exhaust tip on his Type X capacitor from the side to the end of the envelope.<sup>2</sup> Aluminum end pieces for the

<sup>1</sup> Coors Ceramics, Golden, Colo. The tubes are high-alumina ceramic. Since there are no "standard" shapes, the tubes are manufactured to the buyer's dimensions on special order.

<sup>2</sup> The Type X capacitors will be modified as described here by the Jennings Radio Manufacturing Corp., San Jose, Calif., on special order at no increase in cost.

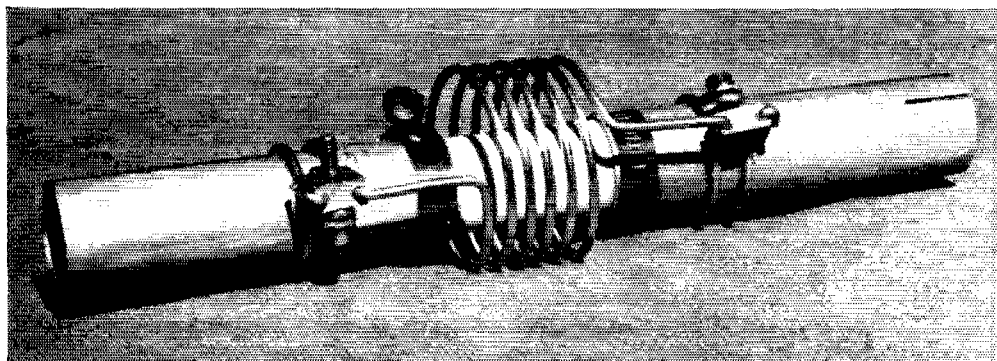
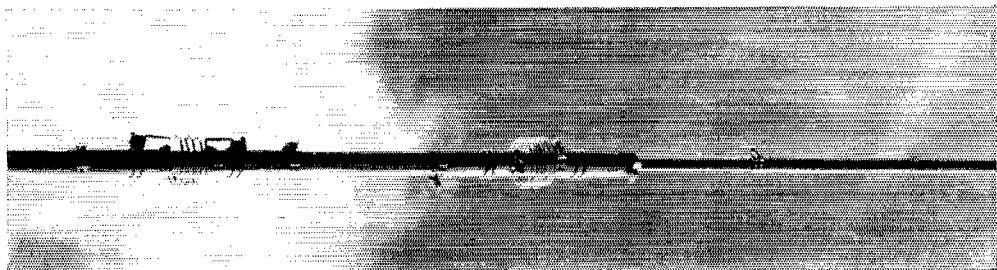


Fig. 6—Complete trap assembly with aluminum-tubing end pieces for fitting to beam elements.

Fig. 7—The 10- and 15-meter traps mounted in an antenna element.



ceramic tubes were spun out of  $\frac{1}{16}$ -inch soft aluminum sheet stock and the parts for the new trap capacitor, as shown in Fig. 4, were in hand.

This spinning job, by the way, is easily accomplished on a lathe. It is first necessary to prepare a steel mandrel of the proper dimensions over which the aluminum is spun. On the sides, the aluminum is worked down to 0.008 inch and then the sides are cut off 1 inch long. The finished end piece looks like a cup with a bottom  $\frac{1}{16}$ -inch thick, with a hole in the center of the bottom to pass a 10-32 screw, and sides 1 inch high. The 10-32 screw is used as the electrical connection to the capacitor in addition to holding the capacitor in place.

New trap coils were wound up out of aluminum TV ground wire or "clothes-line" wire, and the same ingenious clamp design devised by W3DZZ and shown in Fig. 5 was employed. New coils were necessary for two reasons. First, the new trap design required a coil capable of being clamped on  $1\frac{1}{2}$ -inch tubing at both ends, while the old coils clamped on  $1\frac{1}{8}$ -inch tubing on one end and  $\frac{7}{8}$ -inch tubing on the other. Second, it was thought that the  $Q$  of the 15-meter trap could be improved by raising the trap capacitance and lowering the inductance. The original antenna employed capacitors of approximately 20  $\mu\text{f}$ . in both the 15- and 10-meter traps. The new traps for 15 meters use 25- $\mu\text{f}$ . capacitors. The capacitance in the new 10-meter trap remains unchanged at 20  $\mu\text{f}$ . So, the new 15-meter coils have only 6 turns 3 inches in diameter, as compared with 7 turns in the old traps. The new 10-meter coils have 5 turns 3 inches in diameter; this is the same as the old 10-meter coils, and only the change in clamp size is necessary. Fig. 6 shows the new 15-meter trap.

A list of material required to make this modification is given in the accompanying table. Details of further interest regarding assembly of the elements can be found in Fig. 7, which shows how the  $1\frac{3}{8}$ -inch tubing is used for the extension between the 10- and 15-meter traps. This picture also shows the 20-meter extension, which is the

### Material List

- |    |  |
|----|--|
| 4  | Jennings type X Vacuum capacitors 20 $\mu\text{f}$ . (modified as described) for 10-meter traps.                                       |
| 4  | Jennings type X Vacuum capacitors 25 $\mu\text{f}$ . (modified as described) for 15-meter traps.                                       |
| 8  | Ceramic tubes $1\frac{3}{8}$ inch x $4\frac{1}{2}$ x $\frac{1}{8}$ -inch (Coors Ceramics)  |
| 16 | Spun aluminum end caps for ceramic tubes (see text)  |
| 4  | Stainless steel adjustable tubing clamps, 1 inch   |
| 36 | Stainless steel adjustable tubing clamps $1\frac{1}{2}$ inch   |
| 1  | 12-foot length 61ST6 aluminum tubing $1\frac{3}{8}$ inches $\times$ .058 inch wall (used for extensions between 10 and 15 meter traps) |
| 16 | Pieces $1\frac{3}{8}$ -inch tubing $5\frac{1}{2}$ inches long  |

The quantity of tubing clamps listed above may seem very large but is required to provide the necessary new clamps plus replacements for the old clamps on the radiator and director; the original clamps will have deteriorated to the point where they are of no further practical use. The trap assembly in Fig. 6 clearly shows use of the  $5\frac{1}{2}$ -inch pieces of  $1\frac{3}{8}$ -inch tubing listed above; two are required per trap assembly.

original extension equipped with new clamps.

So far as performance goes these traps have been given the "hammer test." Under any condition of power which I can generate it has been impossible to flash them either internally or externally. Nor has the normally high humidity (liquid sunshine) here in the Islands had the slightest effect on their performance. The new traps were installed only in the radiator and director. The original traps were left in the reflector since it is inconceivable that these could ever deteriorate to the point that the voltage present in this element could damage them.



This actually happened to E. W. Farley, W0DAK, of St. Paul, Minn. A 6AN4 in the t.r. switch in his station went bad, and upon checking the pins of the tube with an ohmmeter it was found that the tube had developed a heater-to-grid short, as indicated by continuity between pins 3 (heater) and 6 (grid). Pin 5 (cathode) showed no continuity to these pins. How can you have a heater-to-grid short circuit without involving the cathode?

The only answer the author of last month's Quist Quiz involving three resistors could come up with was to run enough current into a pair of connections until something burned out. Then measurements between terminals would quickly indicate whether the original connection was the delta or the Y. This solution to the problem has the endorsement of every resistor manufacturer we mentioned it to, but we wonder if there is a less destructive solution. Do you have one?

# Simple, Cheap Antenna Bridges

*All-Resistance S.W.R. Bridge that will Handle Power*

BY DAVID T. GEISER\*, WIZEO

ANTENNA bridges to adjust matching between antenna and coaxial cable fall into two classes: delicate and relatively expensive units suitable only for low power measurements, and units designed for full-power use. The "full-power" bridge described here is cheap in contrast to many commercial units.

## Theory

The Jones Micromatch<sup>1</sup> and the True-Match<sup>2</sup> accustomed hams to think in terms of "1-ohm resistor" bridges where ten 10-ohm resistors are paralleled to make a one-ohm bridge leg. This is a "1-ohm resistor" bridge design that may accommodate any common coaxial line.

The basic bridge is composed of three legs and the load — antenna, coax cable, or antenna tuner. The load target resistance is called  $R_L$  in Fig. 1 and, except for the one-ohm resistor, all

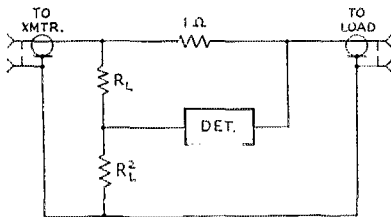


Fig. 1—Fundamental bridge circuit.

other resistances are proportioned to it. When balance is achieved with this bridge, the transmitter sees the exact resistances represented by the antenna, so insertion at any spot in a coaxial line will cause no mismatch if the bridge is designed for the line impedance. (Strictly, coax line impedance itself does vary slightly from its nominal value, with or without the bridge. Use of the bridge does not hurt s.w.r. and may help, completely aside from the benefits of measurement.)

## Construction

Table I lists some combinations of values suitable for use with common coaxial cables in the circuit of Fig. 2.

The capacitors and r.f. choke block d.c. and r.f., respectively, and at balance show very little frequency effect.

When making up a high resistance value from more than one series resistor, the low resistance of the group should be located on the ground

\* 275 Kemp Ave., North Adams, Mass.

<sup>1</sup> Jones and Sontheimer, "The Micromatch," *QST*, April, 1947.

<sup>2</sup> Hay, "The True-Matcher," *CQ*, Dec., 1952.

S.w.r. bridges having all resistance arms are generally restricted to handling low power — a few watts — because they are ordinarily designed for a 1-to-1 ratio of resistances. By using a high ratio the bridge described here avoids excessive power dissipation in arms formed from ordinary composition resistors.

Since resistors in the several-thousand-ohms range are known to depart considerably at high frequencies from their d.c. values and show pronounced reactive effects in addition, some readers might be inclined to question the usefulness of a bridge based on such unknown quantities. The second part of the article demonstrates that because of a fortunate combination of circumstances there is a certain degree of built-in compensation for errors so introduced.

end of the string to minimize the effects of body and lead capacitance. If the high resistance end of the string is grounded, the effective shunting capacitance may more than double.

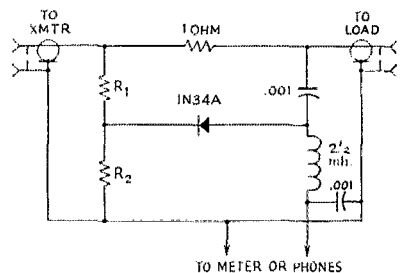


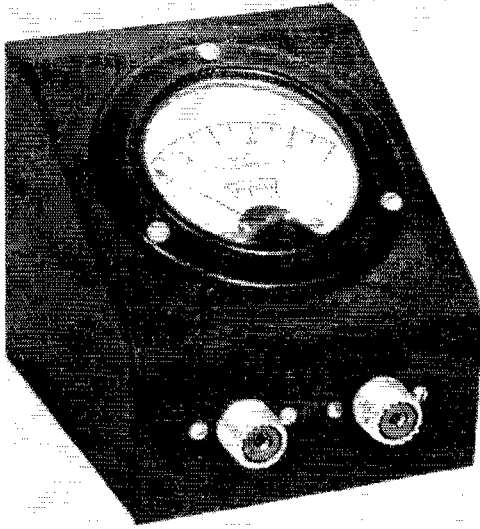
Fig. 2—Practical circuit using all resistance arms.  $R_1$  is equal to the line characteristic resistance.

See Table I for  $R_2$ .

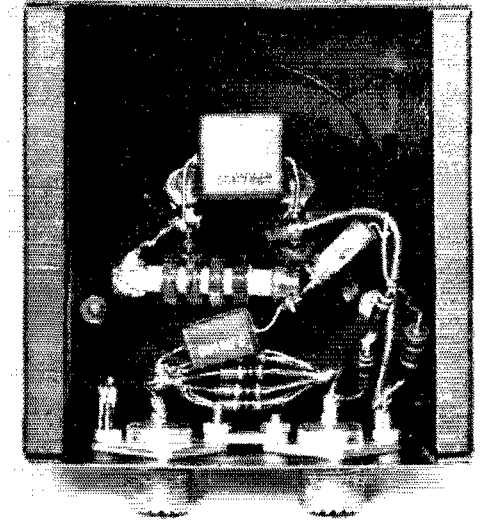
TABLE I

Load	R. F. Watts	$R_1$	$R_2$	1 Ohm
51 ohms	100	51 ohms, 1W	2700 ohms, 2 watts	Ten 10-ohm 1 watt paralleled
51 ohms	200	51 ohms, 1W	1200 ohms in series with 1500 ohms (2 watts)	
75 ohms	150	75 ohms, 1W	5600 ohms, 2 watts	
75 ohms	300	75 ohms, 1W	2 series 2700 ohms, 2 watts	

Resistors are composition (Ohmite or Allen-Bradley)



A 75-ohm bridge built in a meter case. This is a low-power version using half-watt resistors except for the 5600-ohm 1-watt unit ( $R_2$ ) at the right in the bottom view. The comparison resistor,  $R_1$ , is made up of a 33- and a 39-ohm resistor in series.



**Use**

Bridge use is simple. Either a meter or, if the transmitter is keyed or modulated, a pair of headphones may be used to monitor the bridge detector output.<sup>3</sup>

The ideal is to reduce the bridge detector output to zero, so adjust the antenna tuning or dimensions to decrease detector output from the bridge. At zero output the bridge is looking at the desired load, and maximum power at that load is going to the antenna.

Fig. 3 shows a trap circuit found necessary at this location to minimize antenna pickup of a local broadcast station. To the best of the writer's knowledge, this is the first mention in amateur publications of broadcast station interference of this type to amateurs.

Fig. 4 shows the actual loss of transmitted power in the bridge at balance. For loads of 50

ohms or greater, loss is negligible from a communications standpoint, although high power will certainly warm the bridge resistors.

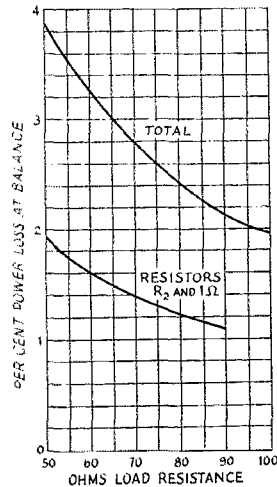


Fig. 4—Power loss in the bridge as a percentage of the total input power and the impedance for which the bridge is designed.

<sup>3</sup> Geiser, "AM System Tunes Aircraft Antennas." *Electronics*, August, 1955.

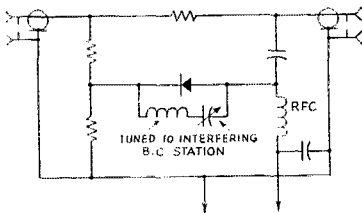


Fig. 3—Trap circuit for eliminating interference from broadcast stations in the vicinity. The  $L/C$  ratio of the tuned circuit is not critical, but the circuit must be adjustable to the frequency of the interfering station.

#### More Data and Theory

The description above carried the reader through the steps found necessary to make working bridges from stock parts. Stock parts, however are rarely *very* near marked values and always have some inductance and capacitance as well as a possibly changing resistance at high frequencies. Measurements by the writer seem to show that composition resistors less than 100 ohms also show inductance, while much greater resistances show resistance and capacitance decrease at high frequencies. Happily, the nature

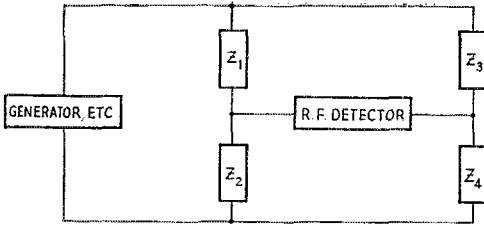


Fig. 5—Generalized bridge circuit.

of a measuring bridge does much to compensate for these effects.

The general measuring bridge circuit is shown in Fig. 5. Impedance  $Z_1$  corresponds to  $R_1$  of Fig. 2,  $Z_2$  to  $R_2$ ,  $Z_3$  to the 1-ohm resistor, and  $Z_4$  to the load. The expression describing zero detector output (bridge balance) is

$$Z_1 Z_4 = Z_2 Z_3 \quad (1)$$

Inspection of the product of  $Z_2$  and  $Z_3$  shows:

$$Z_2 Z_3 = R_2 R_3 + X_{C2} X_{L3} + j(R_2 X_{L3} - R_3 X_{C2}) \quad (2)$$

$$\text{where } Z_2 = R_2 - jX_{C2} \text{ and} \quad (3)$$

$$Z_3 = R_3 + jX_{L3} \quad (4)$$

If the reactive term in the  $Z_2 Z_3$  product (following the  $j$ ) is zero, the other two terms become pure resistances whose independence of frequency depends only on the character of the components, for

$$X_{C2} X_{L3} = \frac{\omega L_3}{\omega C_2} = \frac{L_3}{C_2}, \quad (\omega = 2\pi f) \quad (5)$$

If, however,  $Z_3$  is made up of paralleled resistance and capacitance  $R_p$  and  $C_p$

$$R_2 = \frac{X_p^2 R_p}{R_p^2 + X_p^2} = \frac{R_p}{\omega^2 R_p^2 C_p^2 + 1} \quad (6)$$

$$X_2 = \frac{X_p R_p^2}{R_p^2 + X_p^2} = \frac{\omega C_p R_p^2}{\omega^2 R_p^2 C_p^2 + 1} \quad (7)$$

Then

$$Z_2 Z_3 = \frac{R_p R_3}{\omega^2 R_p^2 C_p^2 + 1} + \frac{\omega^2 L_3 C_p R_p^2}{\omega^2 R_p^2 C_p^2 + 1} + \frac{j R_p \omega L_3 - \omega C_p R_p^2 R_3}{\omega^2 R_p^2 C_p^2 + 1} \quad (8)$$

Again, if the reactive term is zero,

$$L_3 = C_p R_p R_3 \text{ and} \quad (9)$$

$$Z_2 Z_3 = R_p R_3 \quad (10)$$

Measurements on composition resistors around 2000 to 6000 ohms from 3.5 to 28 megacycles showed a decrease in parallel capacitance and corresponding decrease in effective series capacitance with frequency. Expressions (2) and (5) show that this decrease in capacitance (combined with an accompanying decrease in resistance) tends to keep the *resistance* term of  $Z_2 Z_3$  constant, although the reactance term may be significant at some frequencies.

Up to this point it has been assumed that  $Z_2$  was made up of resistance and capacitance that decreased as frequency increased and  $Z_3$  was made of a fairly stable series resistance and inductance. These assumptions are essentially true to 30 Mc. The next step is to examine the effect of  $Z_1$ .

The impedance of  $Z_1$  (like  $Z_3$ ) is a fairly stable

series resistance and inductance. If expression (1) is rewritten

$$Z_4 = \frac{Z_2 Z_3}{Z_1} \quad (11)$$

an expression for a value of  $Z_4$  that will balance (or "null") the bridge appears.

Expressing all impedances in series connection form:

$$Z_4 = \frac{R_1 R_2 R_3 + R_1 X_2 X_3 + X_1 X_3 R_2 - X_1 X_2 R_3}{X_1^2 + R_1^2} + j \frac{R_1 R_2 X_3 - R_1 R_3 X_2 - R_2 R_3 X_1 - X_1 X_2 X_3}{X_1^2 + R_1^2}$$

Reactances  $X_1$  and  $X_3$  are the small inductances associated with the short leads of the  $R_1$  and 1-ohm resistors. Typical inductive reactance values are 2.0 and 0.5 ohms respectively at 28 megacycles. In one 75-ohm system, a typical and random-selected nominal 5600-ohm resistor whose series characteristics were:

$f$ (Mc.)	$R_2$	$X_2$
3.5	5830	-j433
7.0	5710	-j850
14.0	5330	-j1578
21.0	4960	-j2000
28.0	4580	-j2230

gave experimental values for  $Z_4$  in good agreement with the calculated values.

$f$ (Mc.)	$R_4$	$X_4$	V.S.W.R.
3.5	77.95	-j5.67	1.09
7.0	76.81	-j11.1	1.16
14.0	73.62	-j20.6	1.32
21.0	72.66	-j11.1	1.18
28.0	75.95	-j1.23	1.02

It is emphasized that the bridge indicated zero at these values of v.s.w.r. and did not indicate these standing-wave ratios. *This is an error.* Fig. 6 plots these data on an impedance chart as a function of frequency. Other bridges simi-

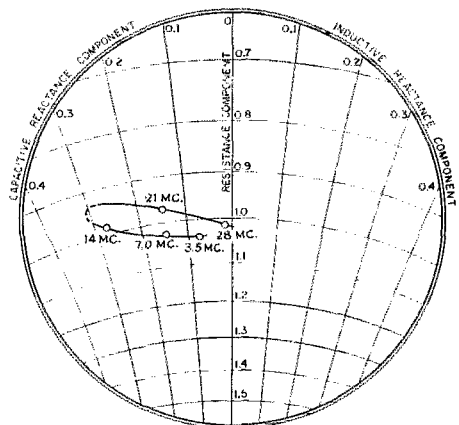
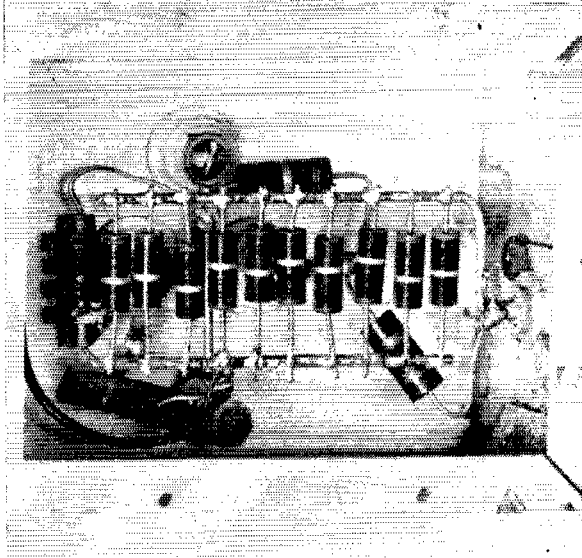


Fig. 6—Normalized values of load impedance at which null indication would occur, using a randomly-selected resistor for  $R_2$  having the measured characteristics given in the text.



A different physical arrangement is used in this 52-ohm bridge built for installation at the antenna. The meter is remotely located. This unit had been in use in an outdoor "doghouse" for three years before this photograph was taken.



larly plotted will not have this exact shape because of difference in inductance, capacitance, or resistance. Bridges may be "trimmed" by bringing metal sheets near  $R_1$  and the one-ohm resistance to decrease their inductances.

### The Meaning and Use of Errors

Errors of this size are usually unimportant for most antenna filters, transmission lines, and other equipment will accommodate a v.s.w.r. of 2 to 1 without difficulty unless some limit is approached in normal operation. The v.s.w.r. is only the ratio of maximum to minimum voltage or current possible on a transmission line  $\frac{1}{4}$  or more wavelengths long. It does not describe an impedance, but rather all possible impedances that yield a certain v.s.w.r. (Each v.s.w.r. would have its own circle centered in Fig. 6, with larger circles for larger v.s.w.r.'s.)

Any bridge, with or without error, may be used to match exactly any antenna and transmission line. If approximately  $\frac{1}{4}$  wavelength of the same transmission line is available, the method of Fig. 7 may be used with any bridge or simple r.f. voltmeter. Matched bridge or voltmeter readings indicate perfect antenna matching. If the matched bridge readings are each zero, the bridge has no error. If the readings do not match, adjust *only* the antenna tuning until they do. This procedure is accurate under all conditions for the bridge, but one should also measure at the middle of the added quarter-wave section when using the voltmeter method.

The 28-Mc. null points of six "untrimmed" 72-ohm bridges and one (starred) 52-ohm bridge built (besides the one of Fig. 6) are shown in Fig. 8. The 1.1, 1.2, and 1.3 v.s.w.r. circles are drawn in for reference. These bridges were made of stock, unmeasured parts which on later measure-

ment showed *minimum* errors of eight percent with maximum errors of  $-27\%$  to  $+20\%$ . All errors in the No. 6 bridge were negative and show the effect of this rare situation, yet the resulting null-point v.s.w.r. was very close to 1.2.

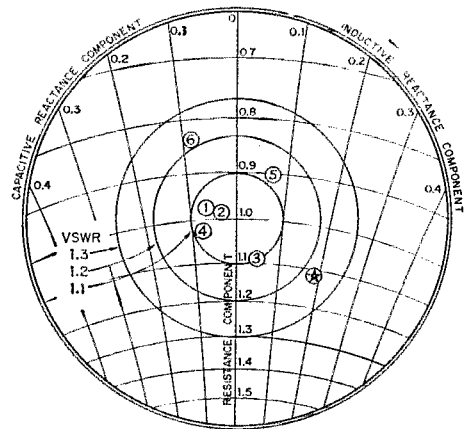


Fig. 8—Spread of seven bridges made up from randomly-selected resistors, measured at 28 Mc., in terms of actual v.s.w.r. on transmission line when a null was indicated by the bridge. Note that the majority fall within the 1.1-to-1 v.s.w.r. circle.

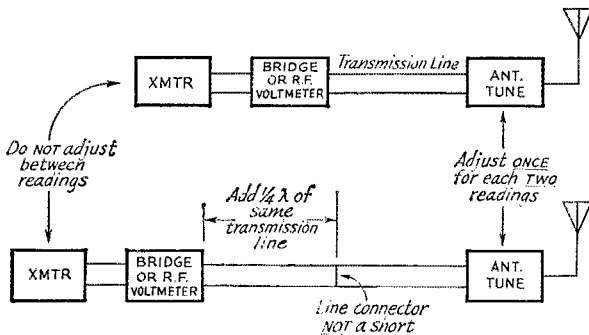
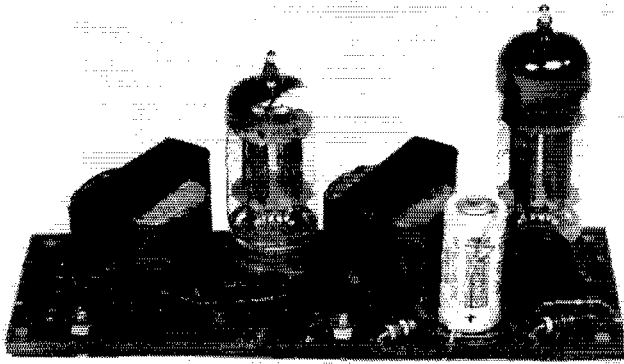


Fig. 7—Test set-up for bridge operation.



The assembled modulator. The transformer at the left is  $T_2$ , with  $V_2$  alongside. Continuing to the right are  $T_1$ ,  $C_2$ , and  $V_1$ . The resistor in front of  $T_1$  is  $R_3$ .  $C_1$  is in front of  $V_1$ ;  $R_2$  is next to it, and  $R_1$  is in front of  $R_2$ .

# 12AX7 Modulator Unit Utilizing Printed Circuit Techniques

BY A. D. MIDDLETON,\* W5CA AND J. M. STUEBER,\* W5UOZ

ONE OF THE most popular modulators for low-power applications (such as in mobiles and portables) is the so-called "12AX7 Modulator" which has had wide usage.

Two different *QST* transmitters<sup>1,2</sup> have used this circuitry (Fig. 1) and it has been included in at least one other mobile transmitter.<sup>3</sup>

The modulator herein described utilizes standard commercial components assembled on a printed-circuit card. A compact, simple assembly is thus made possible. Operation with either 6- or 12-volt filaments is provided. Mounting arrangements can be adapted to suit the individual application.

With the technique herein described, one can merely use the printed-circuit layout (Fig. 2) and exactly duplicate the original layout.

\* Sandia Corporation, Albuquerque, New Mexico.  
<sup>1</sup> Chambers, "A Two-Band Miniature Mobile Transmitter," *QST*, Sept., 1952.

<sup>2</sup> Deane, "A Four-Band Miniature Phone-C.W. Rig," *QST*, Aug., 1953.

<sup>3</sup> *Radio Amateur's Mobile Handbook* (1st ed.), Chapter 5.4, page 85, "A 12AX7 Modulator."

*As a simple constructional project to get your hand in etched-circuit techniques, this is a useful low-power modulator for mobile work or for modulating a small transmitter of any type. Depending on the plate voltage available, it can modulate r.f. plate inputs up to nearly 20 watts.*

For information on procurement of printed-circuit materials and techniques reference is made to the excellent series of articles by W4UHN in *CQ* during 1956,<sup>4</sup> plus the article in August 1954 *QST* by W5CA and W5RFF.<sup>5</sup>

## Card Preparation and Fabrication

The card is fabricated utilizing materials contained in any of the available "printed-circuit" kits. Either the "hand-inked" or "tape-resist" method may be employed.

1) After thoroughly scrubbing the copper laminate with "Ajax" or "Dutch Cleanser," place a piece of carbon paper face down on the copper side of the laminate, which may be either  $\frac{1}{16}$  or  $\frac{1}{8}$  inch thick.

Note: Do not permit the layout to shift location during steps 2, 3, and 4.

2) Place the layout over the carbon and laminate, and carefully prick the center locating holes in all "eyes" using a sharp center punch.

3) Check to determine that all holes have been pricked.

4) With a straightedge and a sharp pencil draw in the center line of all the patterns. It is not necessary to pencil in the full width of the lines. Draw in the outline of the heavy ground bus and the socket terminals.

5) Carefully remove layout and carbon paper to prevent smudging.

6) Drill all holes with a No. 60 or No. 61 drill. De-burr all holes with a slightly larger drill.

<sup>4</sup> *CQ*, Feb., Mar., April, Sept., Nov., 1956.

<sup>5</sup> Middleton and Marshall, "Etched Circuitry for the Ham — Now!" *QST*, Aug., 1951.

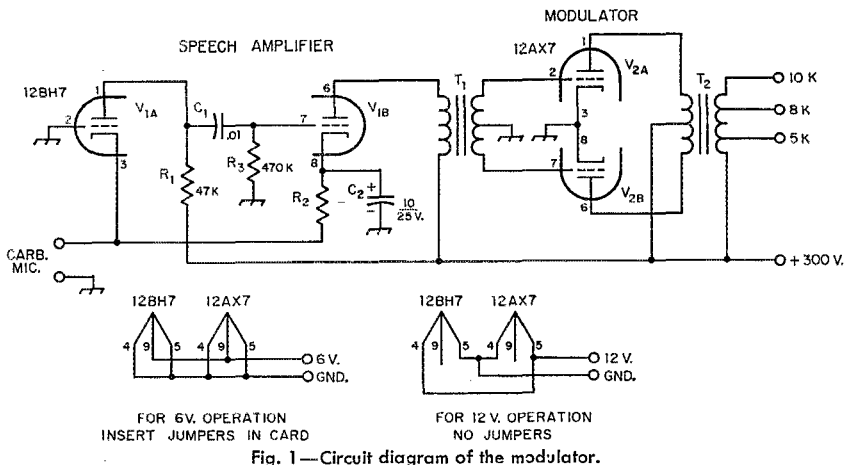


Fig. 1—Circuit diagram of the modulator.

- $C_1$ —0.01- $\mu$ f. disk ceramic.  
 $C_2$ —10- $\mu$ f., 25-v. electrolytic (Pyramid Type TD-10-25).  
 $R_1$ —47,000 ohms,  $\frac{1}{2}$  watt.  
 $R_2$ —750 ohms,  $\frac{1}{2}$  watt (for 200-ohm carbon microphone T17-T126).  
 $R_3$ —0.47 megohm,  $\frac{1}{2}$  watt.

- $T_1$ —Driver transformer; 2.66 to 1, single plate to push-pull grids (Triad A-81X).  
 $T_2$ —Modulation transformer; 5 watts, 50-ma. sec. (Triad M-1X).  
 $V_1$ —12BH7.  
 $V_2$ —12AX7.  
 Sockets are 9-pin miniature (Amphenol 59-410).

7) Remove all drill chips by carefully brushing the copper surface with a fine hairbrush. This will eliminate trouble while inking.

8) Ink in all lines, using resist ink. Lines should be at least  $\frac{1}{16}$  inch wide. Fill in socket terminals and ground bus. If the "tape-resist" method is used, place lines and "eyes" in place.

9) Etch the card and remove resist ink or tape from lines.

10) Drill 4 corner mounting holes with No. 27 drill (for 6-32 screw).

Drill 4 transformer mounting holes with No. 32 drill (for 4-10 screw).

Drill, ream or punch the two  $\frac{3}{8}$ -inch diameter socket holes.

### Mounting of Components

**Jumper**—Insert a U-shaped wire, connected between Pin 5 of  $V_2$  (12AX7) and the 12-volt bus.

**Sockets**—Insert socket in the card so that terminals protrude through the hole and touch the

copper wiring. Orient socket to proper position. Hold socket in place and bend over socket terminals. Solder in place. Center ground stem is not used.

**Resistors**—Bend resistor leads, insert in proper holes, and bend over on wiring side. Clip off excess lead. Solder in place.

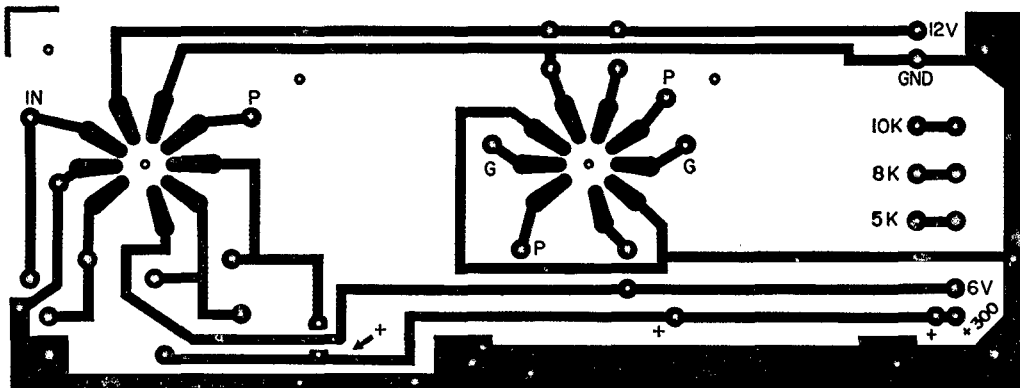
**Disc Capacitor ( $C_1$ )**—Mount same as resistors.

**Electrolytic Capacitor ( $C_2$ )**—Mount vertically with "Positive (+)" end toward card. Bend "Negative (-)" lead over and down alongside capacitor. Insert lead in hole. Solder in place. Cement  $C_2$  to the card using model airplane or "Duco" cement.

**Transformers**—Mount driver transformer  $T_1$ . Strip leads to length and insert in proper holes. Plate lead "P" connects to Pin 6 of  $V_1$  (12BH7); "+" lead connects to an "eye" marked "+" on "+300" bus. "G" leads connect to Pins 2 and 7 of  $V_2$  (12AX7). "Ground center tap" connects

(Continued on page 176)

Fig. 2—Full-size printed-wiring layout. The finished card size is  $5\frac{1}{2}$  by 2 inches. Either  $\frac{1}{16}$  or  $\frac{1}{8}$  inch card thickness may be used.



## ● Technical Correspondence

### THE IMPORTANCE OF METERING SCREEN-GRID CURRENT

426 Northumberland  
Redwood City, Calif.

Technical Editor, *QST*:

As mentioned in the Hallcrafters advertisement in *QST* for February, overlooking screen grid dissipation is a common error in the design of many transmitters employing tetrode or pentode finals. It is regrettable that the majority of commercially built ham transmitters make no provision for monitoring screen grid current. Where the screen voltage is supplied from the plate supply through a dropping resistor, the situation is not quite so critical; but with the increasing use of s.s.b. and linear amplifiers, the screen voltage is apt to be supplied from a regulated source.

Excessive dissipation is much more apt to occur on the screen grid than on any other tube electrode, and excessive screen dissipation can shorten tube life more rapidly than by moderately exceeding the plate dissipation. This is especially true of the newer oxide-cathode tetrodes, with their gold-plated grids; it is not uncommon to find the gold "boiled off" the grids of such tubes. In the older glass tetrodes, the screen dissipation does not have to be exceeded by very much before outgassing occurs, which is apt to "poison" the filament.

An almost equally important second reason for incorporating a screen grid current meter in your final is its usefulness as a tuning and loading indicator. Most hams are familiar with the excessive screen current that occurs when the final is tuned up with insufficient or no load. Also, most of us have observed that tuning for screen-current maximum is often a more sensitive and accurate indication of resonance than tuning for plate current "dip."

What a screen grid current meter actually supplies us with is a very good indicator of a.c. plate voltage swing. Screen grid current depends not only on the screen grid voltage and bias but on the plate voltage as well. As far as the fundamental component of the plate current pulse is concerned, the plate "sees" the tank circuit as a resistor (assuming resonance). The plate voltage varies from a maximum at no plate current (equal to the d.c. plate supply voltage) to a minimum at the time of maximum plate current. As the instantaneous plate voltage decreases, the screen grid current begins to rise, and if the plate voltage should drop to the screen voltage the screen current might reach an instantaneous value of ten times or more that read on the screen current meter.

Power output from the final is equal to  $\frac{1}{2}$  the peak fundamental current times the peak a.c. plate voltage. Peak fundamental current may be anything from 1.5 to 2 times the d.c. plate current as read on the meter. As the final is loaded heavier for more plate current, the plate voltage swing becomes less, since the tube "sees" a smaller resistance under these conditions. This is indicated on the screen grid current meter by a drop in screen current. We thus have one factor working against the other, and a point may be reached where increasing the plate current with heavier loading may actually result in less output. There is little point in loading the final to the point where an extra fifty watts input only yields something like ten watts more output.

The preceding was written with Class C operation in mind, but the usefulness of the screen current meter as an indication of the plate load impedance applies equally well to Class B or AB operation.

A good tune-up procedure is to load the transmitter with a dummy load, using some kind of power output indicator. Light bulbs of appropriate wattage are perhaps the easiest to come by. A light meter, if available, is an aid in detecting small increments of power. Adjust the loading for optimum power output; that is, increase the loading until an increase

in plate power input yields little more output, with the plate and screen maximum dissipation ratings not exceeded. At this point, note the screen current as well as the plate current.

If the transmitter is now loaded by an antenna, obtaining the same plate and screen current, the efficiency will be the same as with the dummy load. If the screen current is too high, couple more closely with the link coil, or decrease the output capacity if a pi net is used. Conversely, if the screen current is too low, poor efficiency is indicated, and the plate is apt to be running hot. The same amount of grid drive or grid current when working into the dummy or regular antenna is assumed.

— W. S. Skora, W6YRQ, ex-W7EPM

### RADIATION WITH DUMMY LOADS

612 5th Avenue  
Sibley, Iowa

Technical Editor, *QST*:

This might be of interest to you and it might also be of some help to other amateurs who have been in the habit of using a light bulb as a dummy load when tuning up the rig, feeling certain that the signals were not going very far beyond the edge of town. I have used a dummy load for many years, and usually use the dummy when talking to the other two stations (about four blocks away) here in Sibley.

Several months ago I heard a station in the east tuning up. I zeroed my carrier on his frequency and as soon as he stood by I gave him a call. He came right back but seemed to be surprised. He stated he was using a dummy load only, a light bulb. I was receiving him Q5, about S4 to 5. He wrote me a letter later, telling me that he checked his rig and the dummy load (bulb) was about five inches from the antenna lead.

Thinking about his experience, I thought I had best give my system a check and find out if it would radiate any distance with enough strength to make it possible to copy. This I did today, with the following results:

I was QSO W3YIW and W3YEA in Pennsylvania. Signals were very strong and steady, so I thought it would be a good time to check. I told them what I was going to do and then put the rig on the dummy. I am using a Valiant, and load it to about 185 watts. They gave me a Q5 and an S4 to 5 on the dummy; I was 40 over 9 with the 10-meter beam.

I am using a B & W coaxial switch, with the dummy load connected to the switch, which leaves the ground (coaxial shield) connected to the antenna as well as to the switch. My thought was that the antenna was doing some radiating, which I proved to be the case by disconnecting the switch from the transmitter and connecting the light bulb direct to the transmitter, with no connection to the coaxial cable. After a transmission of about one minute I listened for W3YIW to come back. He didn't, so I again put on the beam and gave him a call. He came right back and said there was no indication of a signal while I was using the light bulb.

I know it is best to use a non-inductive resistance as a dummy load, but I do not believe this would eliminate the radiation from the antenna, as long as the coaxial switch is being used. However, I intend to try it and see what the results are.

I like the idea of having the dummy load on the coaxial switch, as it is very easy to change from it to the antenna, but I do not like the idea of a Q5 signal when using the dummy and I am at a loss to figure out a system that is quick and easy to change, and yet will keep the signals within a reasonable distance.

I wonder if you have had any other reports on the radiation of dummy loads when used with a coaxial switch?

— George J. Trumble, W0FYC



K6YTC has a YL friend whose phone number ends with the numbers 8-7373. (He won't reveal the exchange!)

## • Recent Equipment—

### The Pierson KE-93 Receiver

**T**HERE are some receivers on the market these days that a patient ham could come close to duplicating in a home workshop without too many special tools, but the KE-93 isn't one of them. This "little" receiver is little only in physical size; in many other respects it is a "big" receiver. For example, it is the only U. S. communications receiver in many years that uses a turret assembly to house the r.f., mixer and oscillator coils. Anyone who has ever thought about designing a receiver is probably familiar with the circuit advantages (short leads, positive reset) that are obtained with a turret, but the evidence is that manufacturers don't like to fuss with them. The KE-93 uses an i.f. noise silencer that works equally well with the b.f.o. on or off, and squelch operation is available for those who recognize its usefulness.

To fill you in at the start, just in case you haven't been reading the ads for this new receiver, it is a double-conversion receiver that tunes the broadcast band and the ham bands 160 through 10 meters (excluding 11). A slide-rule dial is used, and only the band in use is displayed. You can switch from 10 meters to the broadcast band in a single step; it isn't necessary to back up around the band switch. The KE-93 is intended for use in the car or in the home, and two different power supplies are available. One power supply uses 115-volt a.c. input; this supply includes a built-in loudspeaker and an S meter. The supply for mobile work can handle either 6.3- or 12.6-volt batteries; it includes a speaker but no S meter. (Any driver who misses the S meter in a mobile rig should have a heart-to-heart talk with his local committee on highway safety.) No changes are required in the receiver when using one or the other of the supplies; it is merely a matter of unplugging the connectors from one supply and

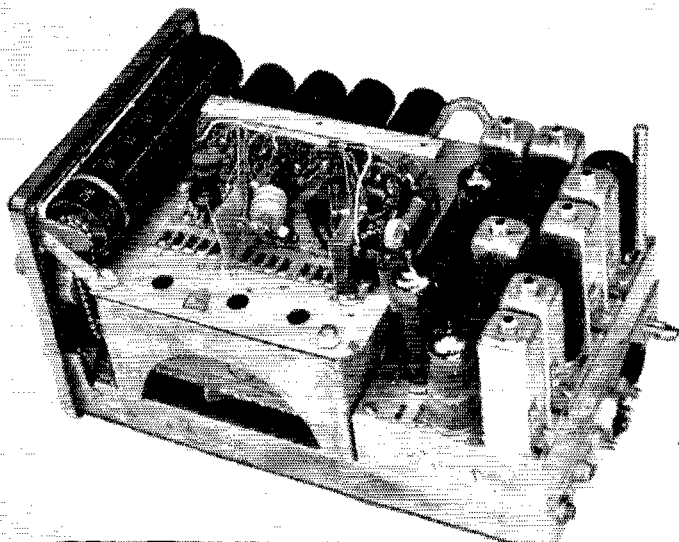
plugging in those from the other.

Electrically the front end of the KE-93 is fairly conventional, as can be surmised from the block diagram in Fig. 1. A 6BZ6 is used in the r.f. stage; one point of departure is that the input circuits are designed for a 50-ohm impedance level rather than the usual "300 ohms" compromise level found in quite a few receivers. The thinking at this point is that since the transmitter probably wants a load of around 50 ohms, the antenna will be adjusted to look like 50 ohms, so why not give the receiver a break? Single exception is the high-impedance input on the broadcast band, and that is logical enough until we are allowed to transmit in that band.

A 6BE6 mixer is driven by a 3CB6 oscillator. The oscillator tube, if you aren't familiar with that type number, is merely a 3.15-volt-heater version of the 6CB6. Using the lower-voltage heater allows the use of a 7HTF ballast tube in series with the heater, and wide variations in heater supply voltage should have little effect on the cathode (and tube) temperature. From the 6BE6 mixer the signal passes through two tuned circuits at 2.2 Mc. to a crystal-controlled 6BE6 converter and from there to the 265-kc. second i.f. The second i.f. doesn't skimp on tuned circuits; there are four between the 6BE6 and the 6BA6 i.f. stage, three between 6BA6 and the 6BE6 i.f. amplifier (more about this stage later) and two between the 6BE6 and the 6AL5 detector. The selectivity of 3 kc. with a shape factor of 2.3 (3.0 kc. at -6 db., 6.9 kc. at -60 db.) is just about right for phone reception and is even good enough for single-signal c.w. reception (our pet qualitative test).

From the detector a 12AX7 builds up the audio to kick a 6AQ5 output stage. The other 12AX7 triode is used as the b.f.o., but this b.f.o.

The KE-93 receiver packs a lot of equipment in a small space. For this view a cover has been removed to show the turret contacts and the interstage shielding for the receiver "front end" (horizontally-mounted tubes). Blackened tube shields are used to disperse the heat more rapidly and thus reduce the temperature rise.



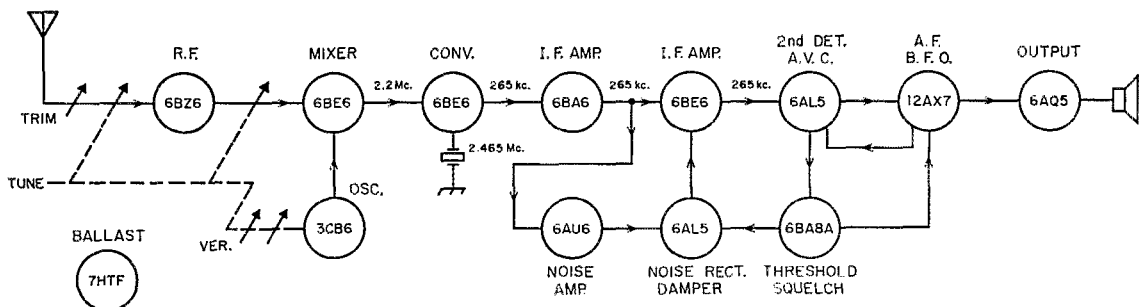


Fig. 1—Block diagram of the KE-93 receiver. This double-conversion receiver is intended for either home or mobile use. Power supplies are separate.

has a couple of variations from the norm. The panel control for the b.f.o. frequency is a variable resistor! The LC circuit of the grounded-plate b.f.o. uses across the inductance a 330- $\mu\text{f}$ . capacitor in series with a 0.002  $\mu\text{f}$ . to ground. The 500-ohm variable resistor b.f.o. control has one side grounded and the other side goes through a 0.005- $\mu\text{f}$ . capacitor to the junction of the 330- $\mu\text{f}$ . and 0.002- $\mu\text{f}$ . capacitors. When the resistance is minimum the two large capacitors are in parallel; increasing the resistance tends to remove the 0.005- $\mu\text{f}$ . capacitor from the circuit. The other variation is that when a function switch is thrown from s.s.b. to c.w. the b.f.o. voltage is reduced. This may be for c.w. limiting action.

The noise silencer circuit is similar to the Lamb silencer of the middle 1930s but with several important variations. (The Lamb is James J., then

the technical editor of *QST*). The original circuit used substantially the same tube configuration as shown in Fig. 2. A sample of the signals in the i.f. strip is tapped off, amplified in a noise (and signal) amplifier and rectified in a noise rectifier. In the original circuit a manual control of bias on the noise amplifier was provided, and it was set so that an incoming signal wasn't rectified but the "spikes" of loud noise riding above the signal were. These rectified noise spikes, or pulses, were then used in the i.f. amplifier to cut off an amplifier tube during the existence of the pulse.

The KE-93 circuit uses several modifications that improve the operation or make it more automatic. Referring to Fig. 2, it can be seen that the bias on the silencer is not set manually but is determined automatically by the level

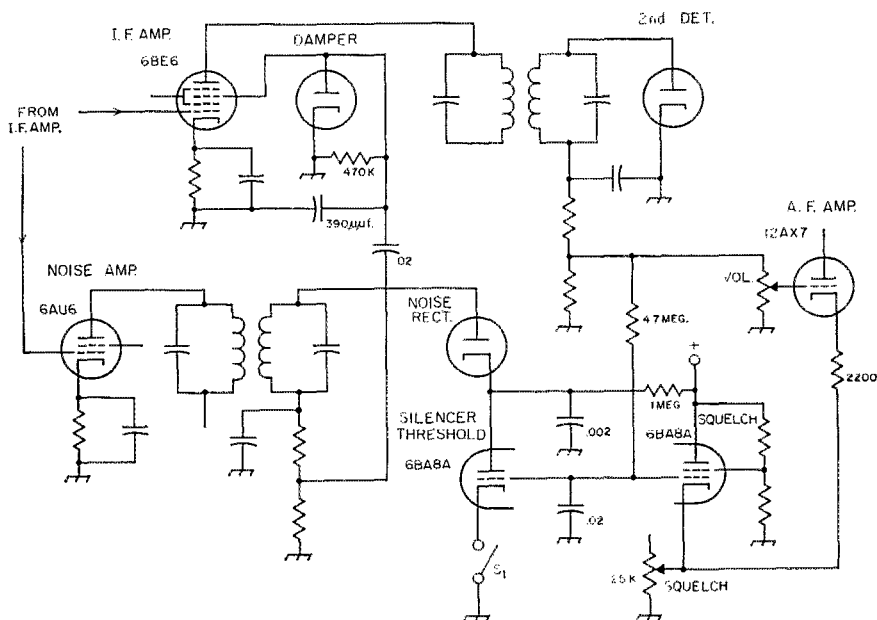
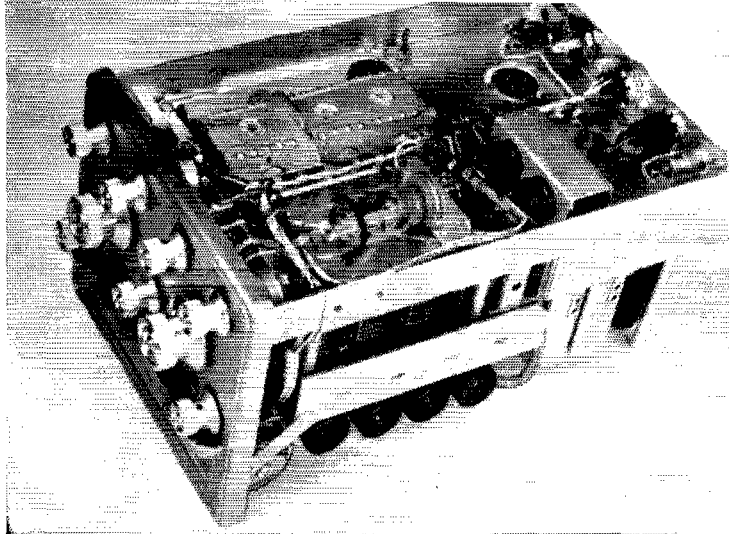


Fig. 2—Circuit details of the noise silencer and squelch. Noise-silencer circuit is a modification of the Lamb circuit using a.c. coupling, automatic threshold set and a damper tube.

The use of sub-assemblies reduces the wiring under the chassis, and the most prominent feature here is the ballast tube used in series with the oscillator heater. Speaker and head-phone connections are at the rear of the receiver.



of an incoming signal. The bias is obtained from the drop across the triode section of the 6B8A; this drop increases as the level of an incoming signal increases. In the original Lamb circuit, d.c. coupling was used between the noise rectifier and the controlled i.f. amplifier (6BE6 in Fig. 2), and this permitted strong adjacent-channel carriers to "lock up" the i.f. The KE-93 uses a.c. coupling (the 0.02- $\mu$ f. capacitor) and permits only pulses to be transmitted to the grid of the i.f. stage. To avoid driving the grid of the 6BE6 positive at any time, a 6AL5 diode is used as a damper. The big advantage of an i.f. silencer like this is that it has no apparent effect on the quality of the observed signal; switching it in merely makes the ignition noise disappear.

As indicated in Fig. 1, squelch is incorporated in the KE-93, and a portion of Fig. 2 shows how it is obtained. The cathode bias of the 12AX7 audio amplifier is determined by the plate current and the total resistance in its cathode circuit, just as long as there is enough signal coming in to bias the 6B8A squelch tetrode to cut off. When the incoming signal is removed, the squelch tube draws current which can develop a sizable voltage across the portion of the 25K squelch control if the arm is up high enough. This voltage can be enough to cut off the 12AX7 and silence the receiver. In operation the squelch action is quite smooth. The switch  $S_1$ , which turns the i.f. silencer on or off, is part of the squelch potentiometer assembly, so that the silencer is on any time the squelch is being used, but the silencer can be turned on without making the squelch operative, merely by turning the control just far enough to flick on the switch.

The use of the i.f. silencer improves the performance of the squelch. The usual squelch circuits will open on noise, and this fact limits the threshold at which they can be set without opening on noise. Silencing in the i.f. makes the squelch considerably less vulnerable to noise.

The a.c. power supply has the S meter on the front panel, and the S-meter circuit uses a 6BJ6

to meter the a.v.c. bus and furnish a variable voltage for the S meter. This power supply also has a switch on it to cut the B+ without turning off the heater voltages, a "communication switch."

Rounding out the circuit details, manual gain is applied to the r.f. stage and the first i.f. amplifier, and the a.v.c. controls the r.f. stage, the converter stage and the two i.f. stages. The a.v.c. is switched out when the b.f.o. is on.

#### Mechanical Features

The turret assembly housing the front-end inductors has already been mentioned briefly. Mica-filled phenolic parts are used for the strips, and the sections adjacent to the active one are always shorted out through additional contacts. On the broadcast and 160-meter bands single conversion is used, and on these bands a cam on the turret assembly actuates a pair of switches to jump the converter stage. A chain drive between the turret shaft and the slide-rule dial changes the scale as the band is changed. One local wit observed that this was the first receiver he had seen that could be repaired with a key chain, but he normally takes a negative attitude and doesn't appreciate the positive action the chain gives. The detents on the turret are smooth and definite.

Another mechanical feature is the die-cast panel, with all the labels in bas-relief. A nice stunt is the overhang just under the dial scale; it reflects light down on the controls without taking away from the illumination of the dial scale. The tuning capacitor and dial pointer are string driven:  $7\frac{1}{2}$  turns of the tuning knob carries you across any band. While this tuning rate is slow enough to permit direct tuning of side-band signals on some of the smaller bands, it becomes a bit tricky on 10 meters. This is no great detriment, however, because when you do run across a side-band signal there (and you want to tune it in), it is an easy matter to do the tuning with the vernier tuning control, a small

trimmer across the oscillator section that serves as a vernier tune control or a calibration reset.

A four-position panel switch is marked A.M., CAL, S.S.B. and C.W. The CAL position permits setting your transmitter on frequency; in this position the b.f.o. and a.v.c. are on. The squelch circuit is operative only in the A.M. position.

If you want to see a lot of circuits well laid out in a package only 5 inches high, 6 inches wide and 9 inches deep, take a look at the accompanying photographs of their receiver.

The Pierson KE-93 is manufactured by Automation Electronics, Inc., Burbank, Calif.

— B. G.

## The Viking Navigator

**I**F YOU have ever operated in an ARRL Field Day (and you're missing a lot if you haven't), your first reaction to the new E. F. Johnson Navigator may be, "Hey! There's my next Field Day rig!" It certainly would seem that the manufacturer had the Field Day c.w. men in mind when he built the Navigator, because it is a natural for the job. Rated at 40 watts input, it is only a few watts over the low-power FD classification, and unloading it to the right input should be no problem. Complete coverage of the ham bands 160 through 10 meters, with full break-in operation, makes the Navigator a very likely candidate for FD popularity.

Referring to the block diagram in Fig. 1, a 6AU6 v.f.o. drives a 6CL6 buffer amplifier which in turn drives the 6146 output stage. The 6146 is neutralized and always works straight through, leaving the frequency-multiplying job to the 6CL6 and/or the 6AU6. As in the other Johnson v.f.o. units, the v.f.o. grid is tuned in the 160-meter range for final output on 160 or 80 meters, and it is tuned around 40 meters for all other operation. The plate circuit of the 6AU6 is broadly peaked by switching suitable inductors. Crystal-controlled operation is provided for through the optional use of the 6CL6 as a crystal oscillator stage; up to two crystals can be plugged into the unit at any one time, via a hole in the front panel, and either of these crystals or the v.f.o. can be brought into use by the flip of a panel switch. A pi-network plate circuit in the 6146 stage provides for coupling to unbalanced loads in the normal range of transmission lines.

When v.f.o. control is used, the 6CL6 buffer stage is grid-block keyed, and a 12AU7 keyer serves to turn on the v.f.o. ahead of the 6CL6 and turn off the v.f.o. after the 6CL6. This timed-

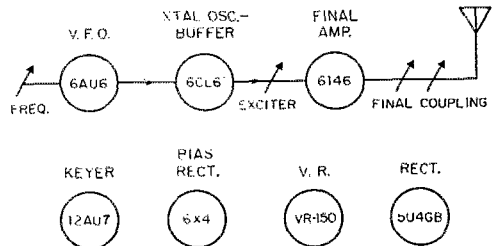


Fig. 1—Block diagram of the Viking Navigator 40-watt transmitter.

sequence keying circuit<sup>1</sup> is used with v.f.o. throughout the Johnson line. When the frequency control is switched to crystal, the keying is switched to the cathode of the 6CL6 crystal oscillator. With either type of frequency control, protective grid bias for the 6146 is obtained from a small bias supply (6X4 rectifier), and the screen of the 6146 is held at 150 volts by the VR-150.

Non-r.f. circuits leaving the Navigator, such as the a.c. line and key lead, are filtered by chokes and capacitors, to minimize the chances of TVI.

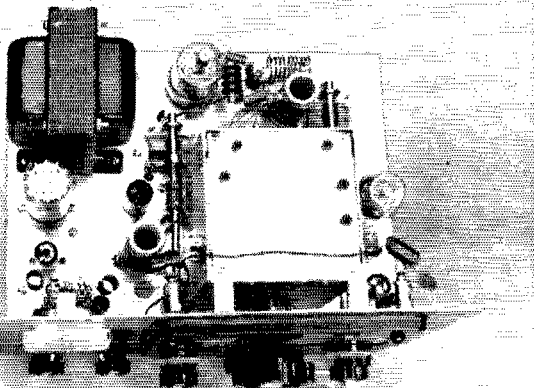
### Physical

If your gang uses a Navigator on Field Day, you can be a big man and volunteer to carry it to the site, because the complete transmitter weighs only 22 pounds. The Navigator is 13¼ inches wide, 9½ inches high and 10 deep.

Panel controls include the usual for this type of gear: v.f.o., final plate, loading (coarse and fine) exciter (final grid tuning), band switch and an operate switch. A panel milliammeter can be switched to either grid or plate of the 6146, and

(Continued on page 174)

<sup>1</sup> Puckett, "'De Luxe' Keying Without Relays," *QST* September, 1953.



The Navigator uses the basic v.f.o. unit of the Johnson line of transmitters to drive a 6146 output tube. Timed-sequence keying provides for good break-in operation without sacrificing keying characteristics. R.f. chokes on meter and dial lamps prevent leaks that might cause TVI.

**QST** for



*The interesting development described in this article may well start a new trend in mobile antennas and small beams. Although the antennas are commercially available, there is no reason why an industrious amateur cannot take the information given here and arrive at his own version of the antenna.*

RECENT studies of mobile antennas around 30 Mc. indicate that the ground-return path can be a more important factor than the over-all length in determining efficiency. For example, when tested on an infinite, high-conductivity ground system the quarter-wave vertical shows better performance (of the order of 2 db.) than a loaded .125-wavelength radiator fed with the same power. But when the two antennas are again compared on a ground plane such as the average automobile it is difficult to discern much difference between them in efficiency of radiation. However, the longer quarter-wave radiator must usually be mounted on a bumper or other low point on the vehicle, whereas the loaded .125-wave length radiator can be mounted higher up on the trunk lid, hood or cowl. For frequencies below 30 Mc. it is especially important to obtain the maximum amount of metal ground return under the whip antenna even though it represents only a small fraction of a wave length. Pattern considerations also indicate a mounting position for the whip high up on the vehicle.

Initial work in the development of a continuous-loading design was done with a helical whip configuration; the pitch of the helix was kept constant throughout the entire length, as in Fig. 1. By adjusting the helix pitch for any given length it is possible to arrive at resonance for a particular frequency.

A first analysis of the short whip and the resonant helical antenna must be considered as above a perfect ground. The radiation resistances for the two cases are given below:<sup>1</sup>

$$R_r = (20 h/\lambda)^2 \quad \text{for the short dipole (such as short whip and base loading coil)}$$

$$R_r = (25.3 h/\lambda)^2 \quad \text{for the resonant helix}$$

The higher value is obtained for the helical whip antenna because the current distribution is sinusoidal instead of linear. The popular center-

loaded whip is a rough approach to this condition; however, the continuously-loaded antenna is more efficient than either the base-loaded or center-loaded antenna. To allow for mountings on the upper portions of the vehicle, arbitrary dimensions of 4 feet for the 10-meter and 15-meter units and 6 feet for the 20-meter and 40-meter units have been chosen. On a theoretical basis which takes into consideration only the perfect ground:

Band (meters)	Length (feet)	$R_r$ (ohms)	
		Short Dipole	Resonant Helix
10	4 (.12 $\lambda$ )	5.75	9.2
15	4 (.086 $\lambda$ )	3.0	4.8
20	6 (.087 $\lambda$ )	3.03	4.85
40	6 (.043 $\lambda$ )	0.075	1.21

## Continuously Loaded Whip Antennas

### Improved Small Antennas for Mobile and Fixed Use

BY E. F. HARRIS,\* W9KNK

This shows the rise in radiation resistance of the continuously-loaded design. When considered along with the finite loss resistances of a practical system, the rise in  $R_r$  can mean an appreciable increase in efficiency. It has been found experimentally that the above values are not accurate in actual mobile installations with a finite ground plane. For instance, with a hood-mounted continuously-loaded 0.12 $\lambda$  whip antenna, the s.w.r. on a 50-ohm line was 2.5, which indicates a termination of 20 ohms or about twice the predicted value. Of course there are loss and coil resistances that cannot be separated from the radiation resistance component. Extensive field measure-

\* Mark Products Co., 6412 West Lincoln Ave., Morton Grove, Ill.

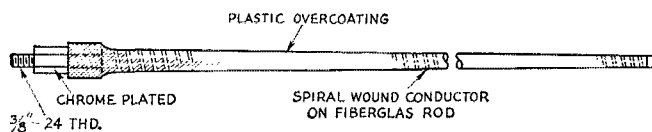


Fig. 1—A uniform-pitch helical whip uses constant spacing of the loading winding throughout the entire length.

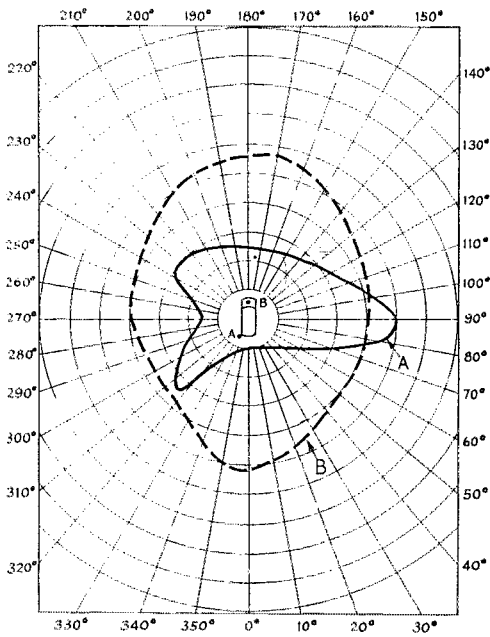


Fig. 2—Measured radiation pattern of (A) quarter-wavelength whip mounted on left rear bumper and (B) 4-foot continuously-loaded whip mounted on center of hood. Measurements made at 30 Mc.

ments showed this 4-foot continuously-loaded hood-mounted antenna to be equal or superior to a bumper-mounted 8-foot quarter wave radiator in *all* directions. Measured radiation patterns for the two cases are shown in Fig. 2.

### Tapered Pitch

On frequencies below 28 Mc. the radiation resistance falls off so rapidly that for the desired 4- and 6-foot whip lengths the resistance values are not suitable for direct operation with 50-ohm lines. It is desirable to raise the feed-point  $R$  to a value approaching 50 ohms so that a matched line condition will exist. Based on extensive experimentation, a *tapered-pitch* continuous-loading antenna design was evolved. Since it was not feasible to wind the helix with continuously-varying pitch, a "step-tapered" design was worked out. A typical step-tapering technique for a variable-pitch helical whip antenna is to divide the total length of the radiator, say 4 feet, into 6 equal parts of 8 inches each. The helix is then wound with a 2-inch pitch for the first 8 inches, pitches of  $1\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{1}{8}$  inch respectively for the next four 8-inch sections, and finished with close winding of the final section. The resonant frequency will depend upon the rod diameter, wire size and number of turns. However, the variable-pitch 6-step taper approaches the ideal continuously-variable condition closely enough to give a good 50-ohm match with a 4-foot antenna at frequencies between 20 and 30 Mc.

With this design it is difficult to adjust the resonance frequency by changing the turns near the base; however, the frequency may be adjusted very readily by cutting off sections of the tightly-wound portion near the top of the whip. The technique to follow is to design for a frequency slightly lower than desired and then to bring the unit in on frequency by cutting small sections off the top until the unit resonates at the desired frequency. Resonance can be checked either by the use of a grid-dip meter or by the use of a variable oscillator and reflectometer as shown in Fig. 3. Reflected power as low as 2 to 5 percent can easily be obtained with the units properly resonated, even though it may mean cutting an inch or two off the top closely-wound section to bring the unit in on frequency. These values can be obtained in the 10- and 15-meter bands with overall lengths of 4 feet and in the 20- and 40-meter bands with a length of 6 ft. In the 75-meter band it has been possible to obtain an s.w.r. of 1.5 using a 6-foot tapered-pitch helical winding, although the bandwidth is restricted to about 60 kc. This affords operation comparable to the center coil loaded 12-foot whips. In general the longer the radiator (in wavelengths) the greater the bandwidth. By arbitrarily restricting the physical length to 6 feet or less, we obtain the following results:

Band	Length	Resonant Freq.	S.W.R.	Bandwidth for S.W.R. = 2.0
10 meters	4 feet	29.0 Mc.	1.3	800 kc.
15 meters	4 feet	21.3 Mc.	1.4	500 kc.
20 meters	6 feet	14.25 Mc.	1.35	350 kc.
40 meters	6 feet	7.25 Mc.	1.5	100 kc.
75 meters	6 feet	3.90 Mc.	1.5	60 kc.

In the 15-, 20- and 40-meter phone bands the bandwidths of the taper-pitch designs are good enough to cover the entire phone portions of the bands. The bandwidth has been arbitrarily selected as that frequency spread at which the s.w.r. becomes 2.0 on a 50-ohm line, although with most equipment s.w.r. values up to 2.5 can be tolerated and loading accomplished with ease. It has been found in practice that the 10-meter unit will load well over the entire phone band even though resonated at 29 Mc. However, it is a simple matter to adjust for a different resonant frequency in the band and select any 800-kc. spread desired. In the 75-meter band the 60-kc. spread is the maximum possible with only a 6-foot antenna, and it will be necessary to adjust for other portions of the 75-meter phone band. As an example of its versatility the 20-meter 6-foot unit has been operated for many months over the full 100-kc. phone band with no necessity for retuning the pi output loading on the transmitter; redipping the final tank capacitor is all that is necessary over the band. It has been a real pleasure to listen to comments from the other end such as "Yours is the strongest mobile we have ever heard" or "You are overriding the QRM with ease." It has been hard to believe, since we have been running a maximum of only 60 watts, but evidently on 20 phone the com-

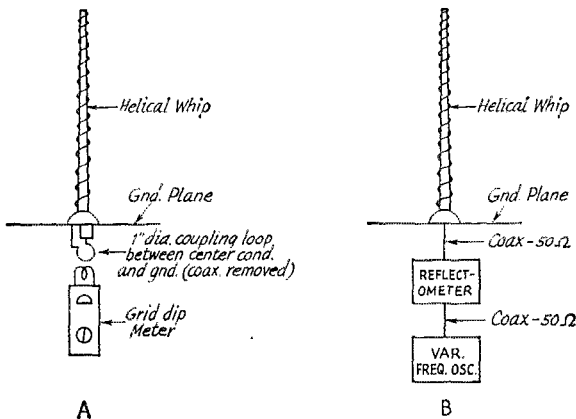
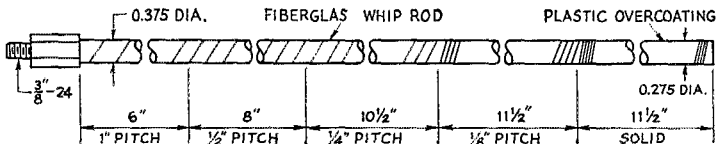


Fig. 3—The resonant frequency of the antenna can be checked (A) with a grid-dip meter or (B) by finding the frequency at which minimum feed-line s.w.r. occurs. The latter method is more accurate at high frequencies because it eliminates the effect of the coupling loop required in (A).

Fig. 4—Dimensions for a 15-meter stepped-pitch whip, wound with No. 20 enameled wire.



bination of the 6-foot taper-pitch helical whip mounted on the hood of the car makes this a highly efficient system.

A detailed drawing of the final design for a 4-foot 15-meter antenna is shown in Fig. 4.

#### Fixed Station Use

The step-pitch design also opens up many possibilities for applications for fixed station use. For instance, the whip can be mounted on a base mount at the top of a pole, tower, or roof and fed as a ground-plane antenna against quarter-wave ground radials, as shown in Fig. 5-A.

Experiments are in progress which show great promise for the use of two of the loaded whips in a dipole configuration. A dipole has been constructed using two 4-foot continuously wound helical whips for a total length of 8 feet. When resonated at 29 Mc. and fed with 50-ohm line (RG-8/U) the total bandwidth measured was 1 Mc. total. Thus its use as a shortened dipole is a definite possibility although for proper impedance matching it is necessary to utilize different tapering when operated as a dipole than when operated as a whip radiator against a ground plane. The use of these as elements in beam antennas, especially in arrays of fed elements such as the W8JK end-fire array, is especially attractive and development work is now in progress toward this end.

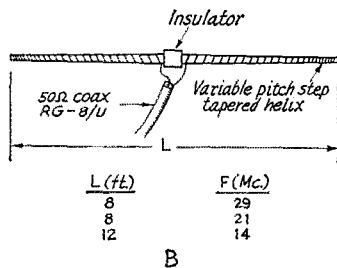
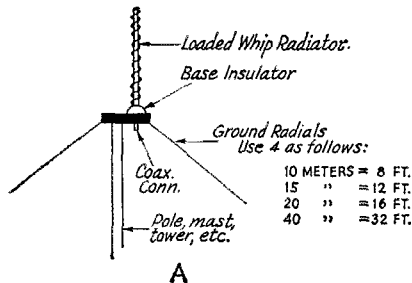


Fig. 5—The helical whips can be used (A) as ground-plane elements or (B) combined to form a dipole antenna.

## Strays

We ran a Stray on page 38 of the March issue to the effect that the weekly comic magazine *Treasure Chest*, a publication used in Roman Catholic schools, recently dealt with a situation

involving K2TMI and that the editor was KN8ERZ. Now, to top it all off, we learn that one of the pressmen who worked on printing the comic is also a ham, W0TEQ.



THEY THROW a Sweepstakes over in Ireland. You plunk down \$3 for a ticket and if it's drawn from the hopper and if your nag comes in, you may win a hundred grand. This is enough to start a collection of kilowatt transmitters, 100-foot towers, wide-spaced rotaries and triple-conversion superhets, with loot to spare for a solid-gold Cad mobile and a fashionable shack in Beverly Hills or Greenwich. Those are big ifs, however. At best the odds are 1,000,000 to one. It's strictly a game of chance.

ARRL also schedules a Sweepstakes. The name's the same, a ticket is essential, and a hundred grand can be won. There the similarity ends because (besides having a VE8 or KZ5 answer a CQ SS) this one is strictly a game of skill. Winning a section award depends on equipment and antennas that can wring the last decibel from any input, on talent, on perseverance, on operating experience, on close acquaintance with the framework of the rules.

Participation is a whale of a lot of fun too. Little wonder that the SS is to amateur radio what the world series is to baseball and what the Kentucky Derby is to the sport of kings. Little wonder that the 24th SS vaulted 12.2 per cent past its 1956 counterpart with 1576 c.w. reports (plus 9.8 per cent) and 623 phones (plus 18.7 per cent), thus becoming the largest League contest from the standpoint of logs received, the sole spot activity surpassing the 2000-entry level postwar, and probably the world's biggest home station contest.

Preparation of the winners' equipment tabulation brings to light certain absorbing facts, e.g.:

BY PHIL SIMMONS,\* W1ZDP

1) The long-preferred 20-40-80 combination is old hat these sunspot peak days. To get a respectable sections-contacted total, the contemporary S8er has learned to crowd the m.u.f. by putting 10 and 15 meters to greater use.

2) Low-power champ was North Dakota's dearly-sought 40-watt K0CNC, after which came Maritime's 50-watt VE1PA, New Hampshire's 55-watt W1DYE, Alabama's 60-watt K4OQE, Sac Valley's 65-watt K6SXA, West New York's 75-watt K2KCE, Vermont's 75-watt W2OTC/1, Kansas' 75-watt W0YFT, and Mississippi's 80-watt W5FPI.

3) W1JYH K4BAI W5LW W6EYY W6YK W7HAH W7HRM W7JQU W7TML W0SMV KH6IJ KL7MF VE2YA and VE5DZ bravely forsook the 1.25 multiplier to run from 200 watts to a full gallon.

4) Everyone else used 100 to 150 watts.

5) VE5DZ was the only lady winner.  
 Year after year the seasoned stalwarts return to inhale great draughts of beloved SSing. They know its shrewd to QSY without swooshing, to junk any dilapidated gear, to stabilize wobbly receivers, to refurbish pre-Cambrian QRIs, to have at finger tip an assortment of spare parts. They know the tricks of the trade. The thrudub of QRM may goad others to surly mouthings but these enlightened fellows greet the pile-ups happily. To them, jangling QRM spells more hams, higher QSO totals, bigger scores. So here are the tallies above 175,000: W2IOP 236,246,

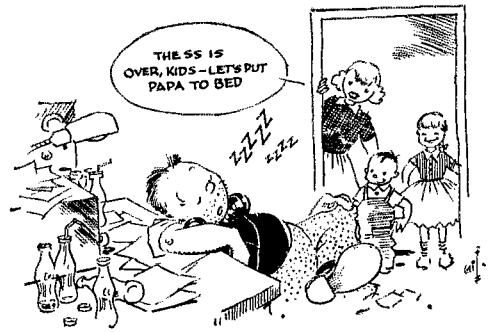
\* Asst. Communications Mgr., C.W., ARRL.

K4LPW 222,468, W4KFC 220,369, W3JNQ 201,663, W9YFV 201,662, W3EIS 199,980, W9RQM 191,430, W3GAU 190,710, W9APY 190,369, W3FYS (multiop) 189,000, K9GGT 187,975, W4PNK 183,330, W7KEV 183,180, W3ALB 183,048, W3MSR 182,044, W3GHM 179,945, W3VKD and W6ZVQ 179,580, W8LQA 179,364, W0CDP 177,755.

For across-the-board geographical comparisons, here are the 22 call area leaders:

W1JYH.....171,988	KL7MF.....69,696
W2IOP.....236,246	KZ5IF.....31,350
W3JNQ.....201,663	VE1PA.....59,318
K4LPW.....222,468	VE2YA.....55,624
K5DGI.....158,550	VE3DSU.....127,750
W6ZVQ.....179,580	VE4FS.....71,200
W7KEV.....183,180	VE5DZ.....36,766
W8LQA.....179,364	VE6NX.....134,190
W9YFV.....201,662	VE7EH.....113,400
W0CDP.....177,755	VE8JW.....86,263
KH6IJ.....118,266	VO2NA.....38,920

These 59 brasspounders landed all 73 ARRL Sections: W1s EOB JTD JYH, W2s AYJ AZL EMW FEB GND HQL IOP IVS IWC, K2s FC KCE, W3s ALB BES DRD EBG EQA GHM GJY IYE JNQ MSR NOH PZW TMZ VKD WJD WV, W4s AHY BQY CC CVI KFC ZKU, K4s LPW PDV, W5s FPI YDC, W6s NJU ZVQ, K6SXA, W7GWD, W8s DJN EV QVU RQ SDJ, W9s AMU YFV YYG ZAB ZRG, K9GGT, W0CDP, VE2NI/3, VE3s DSU ES. The bird dogs though were Connecticut's W1JTD with 73 worked in precisely 73 20-meter QSOs and Los Angeles' W6NJU who duplicated the feat in a 16-hour stint on 7, 14, 21 and 28 Mc. K4PDV, W2AZL, W8EV, and W8RQ (Rog pursued sections regularly as W1RY prior to transferring operations to Michigan) were clean-sweep artists with 173, 177, 205 and 236 contacts. Using a Heath v.f.o. driving a modified Lyseo rig at only 25 watts, QRP sharpshooter VE2NI/3 got all 73 in 401 exchanges. Marksmen who missed: W6CIS with 70 out of 71, W2TKO with 69 in 69, W4YK



with 65 in 66, W2OAE with 60 in 60, K1CUD with 60 in 67.

There were 152 Novices present and accounted for, a whopping 40 per cent increase in new blood over 1956's 109. These 19 won special wallpaper in those sections where the three-or-more entries requirement was met: KN1ASJ KN1CAU KN1CNZ KN2BIG WN2OPE KN2YJN KN2YMB WN3KAZ KN4OKZ KN5JCI KN5JPB KN5LZO (top Novice with 37,740 points) KN6ZDL KN8GPI (20,475 points and second highest KN/WN) KN8GTO KN9HCK KN9HOL KN9IND KN0KVT. If you doubt that the K's threaten to take over the SS from the W's, observe that 17 of the 19 calls start with dahdidah.

### Sidelights

You're doing FB, see? After 30 hours, judging from incoming numbers you're en route to a certificate. Suddenly some joker hands you NR 1498 and you get all shook up. Foolishly you toss in the sponge, don't even submit a log. What became of five of 1957's "experts"? A W4 and a W7 who gaily dispensed numbers in the 1400-1500 block didn't file logs and the checking indicates neither made 500 contacts. Entries of two more were received too late to be deemed valid. A fifth was disqualified for logging "irregularities." It thus behooves you to take everything heard on the air with a grain of salt. Do your level best, observe all rules, get your log postmarked by the deadline, then QRX for the official results. Play it smart, see? . . . If the thousands



Left: Larry LeKashman, W2IOP  
Center: Mel Wardell, K4LPW  
Right: Vic Clark, W4KFC

Like Hollywood, the contest set has its stars. Meet 1957's Big Three, a trio with hundreds of hours of Sweepstake experience. Larry has ticked off monstrous tallies as IOP in W2, W8 and W9, outdid himself by setting new contact and scoring records of 1298 and 236,246 in the 24th SS. Mel long demonstrated prowess as Frankford Radio Club's W3-DGM and a recent move to Tennessee cramped his style not one iota. As W6KFC in the mid-1930s, Vic first earned recognition, since 1946 has served as shining light for Potomac Valley Radio Club in high-on every activity.

who have taken part in the 2½ holdings were lumped together, here's how the picture would look:

All-Time High Scorers			W7KVU 231,593 1955			W4KFC 220,369 1957			W7KVU 202,210 1954		
Call	Score	Year	W9IOP 227,851 1955			W4KFC 208,871 1955			W3JNQ 201,663 1957		
W2IOP	236,246	1957	W4KVX 227,213 1956			W9IOP 208,506 1954			W9YFV 201,662 1957		
			K4LPW 222,468 1957			K4LPW 201,660 1956			W3EIS 199,980 1957		
						W4KFC 203,850 1954			W9IOP 199,199 1953		
									W3DGM 198,743 1955		
									W6BJU 198,000 1956		

### C. W. WINNERS, 24TH A.R.R.L. SWEEPSTAKES

Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3JNQ	201,663	Ranger-813	HRO60	80, 40, 20, 15
Md.-Del.-D. C.	W3EIS	199,980	Ranger-813	51J	80, 40, 20, 15, 10
S. N. J.	W2HDW	141,485	DX100	HQ140X, Heath Q multiplier	80, 40, 20
W. N. Y.	K2KCE	131,948	Ranger	S76	80, 40, 20, 15, 10
W. Penna.	W3VKD	179,580	32V3	75A3	80, 40, 20, 15, 10
Illinois	W9YFV	201,662	5100B	75A2A	80, 40, 20, 15
Indiana	W9APY	190,369	VFO-807-837s	NC300	80, 40, 20, 15
Wisconsin	W9RQM	191,430	VFO-807-813	HR050T	80, 40, 20, 15, 10
No. Dakota	K9CNC	68,173	Heath VFO-6AG7-6146	HQ100, QF1	80, 40, 20, 15, 10
So. Dakota	W0SMV	85,960	6AG7s-2E26-813	HR050T	80, 10, 20, 15
Minnesota	W0WDW	167,153	VFO-Viking I	SX28	80, 10, 20, 15, 10
Arkansas	K5HYB	55,575	Viking II	SX100	40, 20, 15, 10
Louisiana	K5DGI	158,550	Viking II	SX100	80, 40, 20, 15, 10
Mississippi	W5FPI	89,425	Heath VFO-TBSS00	SX96	40, 20, 15
Tennessee	K4LPW	222,468	HT32	HR050T1	80, 40, 20, 15
Kentucky	W4CVI	127,476	32V2	75A4	80, 40, 20, 15
Michigan	W8DJN	161,878	32V3	75A3, DB23	80, 40, 20, 15
Ohio	W8LQA	179,364	VFO-807-813	HQ129X	80, 40, 20, 15, 10
E. N. Y.	W2IOP	236,246	VFO-6AQ5s-4-65A	RME 4350	80, 40, 20, 15
N. Y. C.-L. I.	W2IWC	168,813	VFO-Viking II	75A1	80, 40, 20, 15
N. N. J.	W2OIB	149,633	VFO-Viking II	HQ129X	80, 40, 20, 15, 10
Iowa	W0FZO	142,625	Cyclemaster-813	HQ129X	80, 40, 20, 15
Kansas	W0YFT	127,970	Ranger	HQ140XA	80, 40, 20, 15
Missouri	W0ETV	109,964	VFO-Viking I	BC348 (conv. 10)	80, 40, 20, 10
Nebraska	W0URB	116,106	VFO-6AU6-Viking II	SX71	40, 20
Connecticut	W1BIH	160,290	5100B	NC300	80, 40, 20, 15, 10
Maine	W1GKJ	91,166	Viking VFO-Viking II	HR060	80, 40, 20, 15, 10
E. Mass.	W1CWX	125,820	6AC7-6SJ7s-6AG7-6V6-1-125A	HQ120X (modified), BC453s	80, 10, 20
W. Mass.	W1JYH	171,988	VFO-4-250A	Homebuilt	80, 40, 20, 15
N. H.	W1DYE	76,950	DX35	NC183	80, 40, 20, 15
R. I.	W1CJH	121,181	VFO-807s	75A1, Q5er	80, 40, 20, 15, 10
Vermont	W2OTC/1	52,063	Ranger	75A4	80, 40, 20, 15, 10
Alaska	KL7MF	69,696	AF67-813	SX25, SX101	20, 15, 10
Idaho	W7ASA	95,937	BC457-1625-809s	Homebuilt	80, 40, 20, 15, 10
Moutana	W7HAH	89,308	Valiant	HQ140X	80, 40, 20, 15
Oregon	W7FML	117,150	VF1-AT1-813s	SX71	80, 40, 20, 15
Washington	W7GWD	139,156	DX100	Super Pro	40, 20, 15
Hawaii	KH6LJ	118,266	VFO-4-250As; VFO-1-1000A	75A4s	40, 20, 15, 10
Nevada	W7KEV	183,180	VFO-807-4-65A	HQ129X	10, 20, 15
Santa Clara V.	W6MVQ	157,320	6SJ7-6AU6-6AQ5s-4E27	NC101X (modified), Q5er	40, 20, 15
East Bay	W6TTF	151,200	32V3	75A4	80, 40, 20, 15, 10
San Francisco	W6EYY	107,304	6AU6 VFO-6AQ5s-4-65A-4-250As	75A3	40, 20, 15
Sacramento V.	K6SXA	135,233	Ranger	NC300	80, 40, 20, 15, 10
San Joaquin V.	W6BVM	73,015	Viking I	75A2	40, 20, 15
No. Carolina	W4AHY	113,606	DX100	HQ129X, SX28	80, 40, 20, 15, 10
So. Carolina	W4HGW	112,728	VFO-Viking I	HQ129X	80, 40, 20, 15
Virginia	W4KFC	220,369	VFO-807-4E27	75A2	80, 40, 20, 15, 10
West Virginia	W8DIE	72,765	VFO-Viking II	HR07	80, 40, 20
Colorado	W0CDP	177,755	Valiant	NC300	80, 40, 20, 15, 10
Utah	W7JQU	90,860	Ranger-811As	NC300	80, 40, 20, 15, 10
New Mexico	W5CK	123,274	DX100	RME 4350	80, 40, 20, 15, 10
Wyoming	W7HRM	52,000	VFO-2E26-813	NC200, DB20	80, 40, 20, 15
Alabama	K4OQE	68,075	Sig. Shifter-5763-807	BC348 (conv.), Q5er	80, 40, 20, 15
E. Florida	K4DAS	135,810	DX100	SX24	40, 20, 15, 10
W. Florida	W4WKQ	99,000	Lysco 600-813	HQ140X	80, 40, 20, 15
Georgia	K4BAI	113,022	VFO-807s-100THs	SP400X	80, 40, 20, 15
Catal Zone	KZ5IF	31,350	Viking I	S76	80, 20
Los Angeles	W61XK	137,550	DX100	75A4	80, 40, 20, 15
Arizona	W7CJZ	132,480	VFO-5763s-807s-813s	Homebuilt (dual conv.)	40, 20, 15
San Diego	W6ZVQ	179,580	Sig. Shifter-4E27	75A3	40, 20, 15
Santa Barbara	W6YK	98,803	6V6s VFO-807-811-304TLs	NC183D	20
No. Texas	W5MCT	123,570	Viking I	HQ140X	40, 20, 15
Oklahoma	W5LW	79,005	Ranger-HK54s	HR050T	40, 20, 10
So. Texas	W5LGG	152,600	32V2	NC240	40, 20, 15, 10
Maritime	VE1PA	59,318	DX35	NC183D	40, 20, 15
Quebec	VE2YA	55,624	6AG6-6L6-807-813s	Homebuilt	80, 40, 20, 15
Ontario	VE3DSU	127,750	DX100	HR07	80, 40, 20, 10
Manitoba	VE4FS	71,200	6SJ7 VFO-6AG7s-2E26-813	SX25, R9er preamp	20
Saskatchewan	VE5DZ	36,766	6AG7-6L6-807-803	HRO	40, 20, 15
Alberta	VE8NX	134,190	Viking I	NC300	80, 40, 20, 15, 10
B. C.	VE7EH	113,400	DX100	AR88	80, 40, 20, 15, 10
Yukon	VE8JW	86,263	12A7-6AG7s-1625s	75A2, Q5er	20, 15, 10

W9RQM	191,430	1957	W4KFC	1183	1953
W6BJU	191,250	1951	W1JYH	1178	1957
W3GAU	190,710	1957	W9IOP	1151	1954
W9APY	190,369	1957	W4KFC	1149	1955
W6BJU	189,990	1955	W4KVX	1147	1954
W3FYS	189,000	1957	K4LPW	1138	1956
			W4KFC	1137	1954
			W3EIS	1111	1957
			W1EOB	1107	1957
			W6BJU	1107	1956
			W3JNQ	1105	1957
			W9YFV	1105	1957
			W9IOP	1103	1953
			W8IOP	1100	1951
			W3DGM	1091	1955
			W6YMD	1079	1956
			W3GAU	1076	1957
			W1AW	1075	1957

*All-Time  
QSO Leaders*

<i>Call</i>	<i>QSOs</i>	<i>Year</i>
W2IOP	1298	1957
W7KVU	1270	1955
W9IOP	1258	1955
W4KVX	1246	1956
K4LPW	1220	1957
W4KFC	1212	1957
W4KFC	1205	1956

W3s ALB BES JTK MSR, W4s FU PNK, W7KEY, W8FGX and K9GGT have also scored over 180,000 at least once, and W3s ALB BES FYS, W4s FU PNK, W7KEY, W8s FGX LQA, W9s APY OCB RQM and K9GGT have managed 1000 or more contacts. We are indebted to W0LUB for creating this project a couple of years back. . . . Another statistician has popped up, presumably after plenty of blood, sweat and tears. K6QCI has sorted the 22nd SS from sectional to national standings. One learns if his numerical ranking was 15th, 150th or 1500th by forwarding a statement of final score (from May 1956 *QST*) and self-addressed postal card to K6QCI, 1944 Foxworthy Road, San Jose, Cal. If many requests are received, he will work out similar figures on the 23rd and 24th SS but only brasspounders need apply. "Some other poor soul can have the job of finding the phone standings," Hal avers. . . . Poets too are appearing on the scene. First an offering by W0SGG:

Soon the struggle will begin,  
This year, by gosh, I've got to win.  
Ready now with supple fist,  
Pencils sharp and check-off list.

4KFC, 8LQA,  
Listen to them making hay.  
I must try with all my might  
To match them in their speedy flight.

There's IOP — man how he goes,  
I'll catch him though, I'm on my toes.  
Whoops, too late, he worked an Eight  
While I am trying to switch the plate.

My old receiver gets so hot  
The h.f.o.'s clear off the slot.  
None of the signals seem to peak,  
The side-tone tube is getting weak.

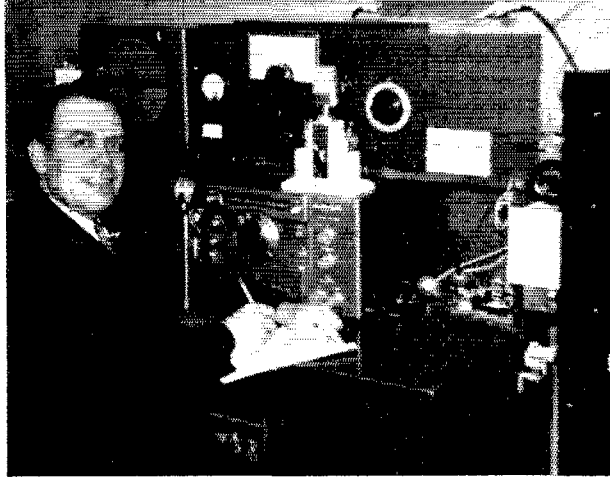
Now what's the matter with this bug?  
Why, there's the paddle on the rug.  
I'll have to key it with the blade,  
My competition's got it made.

Is that the sun? By gosh it is,  
No wonder that I'm slightly diz.  
Swollen feet in bursting shoes,  
Man, I've got those Sweepstakes Blues!

And now DXer W6MUR:

As I sit here and ponder how happens success  
A contest to win through skill and finesse  
I reflect rather sadly on the bands so congested  
With nary a cycle that isn't molested  
By thousands of hams each other assailing  
Their daggers poised ready for neighbors' impaling  
And I think to myself what fun it would be  
If contests were held on just one frequency.

So this novel idea I propose to the League  
Not so much as a means of insuring fatigue  
But as practice and training for that possible day  
When a band could be taken and given away.



Wisconsin's W9RQM netted 122,230 points in 1946, teeter-tottered betwixt 136 and 172K the ensuing decade, then capped previous efforts with 191,430 in 1957. Altogether Reno has accumulated 1,861,614 points in postwar Sweepstakes and scampered off with a dozen straight section certificates.

Please sponsor a contest of the usual kind  
But with frequency-band narrowed and sharply defined  
With the bandwidth subjected to such a constriction  
I'll venture to give you a brazen prediction:  
As a means of combating such great interference  
There will result from some ham's perseverance  
Techniques and equipment as now are unknown  
Which will permit perfect copy of one signal alone!

Hmmm. . . . Kids were plunging en masse into their first contest but were any younger than 12-year-old KN6DJC, son of W6BIP? . . . Another new face: jean-aged KN4OKZ, W4KFC-jr. Writes OM Vic: "Mama was kept busy ferrying goodies both to me — as of yore — and to Ken, taking part in his first SS, in his own shack at the other end of the house. He has his own antennas (three dipoles) and a rig which he laid out and built himself. We found we could work within 50 kc. of each other on the same band after a click-reducing program." KN4OKZ fanned his wings in the SS but didn't hit full stride until the 1958 Novice Roundup which *QST* soon will cover. In this connection W4KFC wants it known that Ken's score is entirely the result of his own efforts with no help from Papa outside of pre-contest advice on time-budgeting. . . . Following the customary flood of "Wait till next years," "Where was such-and-such section?" and suggestions for rules changes, acid remarks concerning the incidence of Asian flu were next in prominence. . . . One die-hard demands six SS's a year. That dull thud you heard was caused by the falling bodies of W1YYM and W1ZDP who slaved nearly five months to process this one little-old set-to. *QST* Managing Editor W1KE also turned blue at the thought of annually assigning another 100 pages to contests. . . . A couple of requests have been received for amplification of Rule 6, which reads in part, "only the score of a bona fide club member, operating a station in local club territory, may be included in club entries." For some time we have needed this rule because of the tendency of certain



W1BIH parlayed 892 contacts to 160,290 points and the Connecticut award. Like many another SSer, John is an ardent DXer, often cops plaudits in the February-March Competition. At DXCC-250, W1BIH is currently a scant 15 cards shy of Honor Roll status. Besides the 5100B and NC300, a neat homespun final featuring 4-125As can be brought to bear.



gavel-bent groups to sign up members all over the country or to ask that scores of ex-members be counted for "past services rendered," even after they had moved hundreds or thousands of miles away. Clubs publishing newsy bulletins on v.h.f., DX, contests *et al* have picked up delighted subscribers around the world, a most notable pursuit. For purposes of ARRL contests, however, remote receivers of such bulletins cannot be considered valid club entries. A "hona fide member" is one who attends meetings, pays his dues, and takes part in club affairs. The intent of "local club territory" is crystal clear. If you can't jump in the jalopy after dinner and arrive at the meeting in an hour or so, you ain't in local club territory. Okay? . . . Let's turn for a moment to a general discussion of contest know-how. In the 1958 V.H.F. SS a Technician did extraordinarily well on 6 meters. He's a rarity in his license class in that he's an extremely competent c.w. man. He made scads of contacts via backscatter and would have earned a tremendous score except that he was completely unfamiliar with the contest rules and the ARRL field organization. He worked Pennsylvania Section, California Section, Central Section, Midwest Section and other nonexistent multipliers and neglected to record times received. Final score zero. Every year thousands of multipliers and score points are lost in contests for such reasons. Any reader who believes Northern New York and Southern California are ARRL Sections should switch to page 6, where the dope is listed monthly for all to see. . . . VESOW finds many fellows don't dig for the weak, second-layer sigs, claiming he called hundreds of stations only to hear them CQ SS again. . . . A KN4 penned ARRL thus: "For two weeks I have heard an increasing number of stations calling CQ SS. Is this some sort of new procedure?" On the same tack, when his CQ SS was answered by a KN9, W4BUU sent the preamble and heard "Don't know what you mean." Said BUU, "Read latest QST," whereupon the KN9 dropped from sight. Subsequently the KN9 called CQ SS and on being asked for a message reported, "Sorry have not been assigned a number." BUU's proposed solution to the dilemma: FCC Novice exams might include the question "What does SS mean?" . . . Southpaw W4BTZ, whose offbeat keying arm still aches, proudly observes he has risen from 12 to 86K in three tries. . . . K6CQM believes that the perennial hot-shot probably can send with his right hand, log with his left and sip coffee through a straw all the while. He's not far wrong. At least three ambidextrous types we know of transmit and write simultaneously. Another courageous creature hunts-and-pecks on an antiquated Underwood as he sends tolerable code. . . . Having returned to California after years of gadding about, W6KG (ex-DL4ZC, W4KE, etc.) recalls that two decades back he battled hard to win for East Bay but was second to W6TT. Ditto 1957. . . . W3EIS sorrowfully points out that one measly QSO would have elevated his score beyond 200K. Just seven amateurs have cracked that barrier at this writing. . . . In the swim again after 15 years of silence, one OT was amazed at how the 24-hour clock has caught on. In these enlightened days use of 6:01 P.M. in lieu of 1801 may bring manifold requests for repeats. More than 95 per cent of SSers currently favor the 0001-

2400 method. . . . Following week-end one, a noon bull session at 38 La Salle Road resulted in friendly wagers as to who could QSO 48 states during the November 16 to 18 leg. When the smoke cleared, W1s LVQ TS and VG had made the grade, and ICP and ZDP had 45 apiece. Headquarters' high scorer though was W1WPR. Chuck somehow negotiated 152,508 points at W1AW notwithstanding code practice, bulletin transmissions, traffic schedules, telephone calls, visitors, and what-have-you. . . . The experts lurch into action like a jet on take-off. In the 60 minutes following the opening gun W2IOP belted out a cool 51 contacts, W3JNQ 50, W4KFC 47, W1EOB 45, K4LPW 42. Whew! . . . Answering the question "What's Wrong With Delaware?" posed in February QST, the experienced SS fan would logically venture "Absolutely nothing." Frankford's W3GAU, W3DRD and W3IYE provided 2310 Diamond State contacts in the 1957 affair, and the trio has been performing similarly for years. . . . Poor KL7CDF/9 and VE3DQB/W9 were saddled with two of history's most strenuous calls. . . . W8OAF and W8BUM missed each other. . . . W3JNQ touched off a fire when he changed hands with full power on but interlock protection kept the supply from blowing up completely. . . . W3BQA is going to schedule every Utah ham he works from now until the 25th SS. . . . W3VDV wonders if the SS gets publicized in Canal Zone. According to the membership files 51 K75s receive QST, but don't ask us why just KZ5IF was active. . . . K2HVN/2 was happy to break in an electronic key but couldn't locate SJV. . . . Can-you-top-this department: W3VKD snagged 38 Sixes in a row during November 10 wee hours, all eight California Sections represented. K9GGT snapped the skein. Art is famed for the W3VKD-on-vacation bit in August 1956 QST, *The Ham Register*, and assorted DX and contest exploits. . . . Deafening pile-ups greeted delighted North Dakotan K6CNC who relished the temporary status of rare DX. . . . YL KN5LKC eagerly anticipates the score improvement that will come with General and v.f.o. . . . A solemn tut-tut to the KN8 who flunked English. Quoting point five of Mr. Segal's Amateur's Code: "The amateur is balanced. Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community." . . . K6DON, whose name is Dean, intended to put in 40 hours but once in the sack he couldn't get up. You weren't the only one, Don — ulp, Dean. . . . A bushed W4 announced a time-on-air total of 34 hours and 65 minutes. . . . K4PDV was out for all states and sections. After landing the 73 he closed down, only to discover later he had missed Delaware. He racked up 31 brand new states, though. . . . Was W4ORB the only c.w. mobile entrant? . . . "Antenna fell down, v.f.o. started drifting, an 807 and a cathode resistor burned up" when Murphy's Law (December 1956 QST, p. 60) vigorously attacked W4HKB's first SS. . . . Breaking down his 479 QSOs by states, W6JNX learned Illinois at 34 was most common. . . . A component failure in the high-powered final enabled W2EUP to derive these thought-provoking statistics with two widely varying inputs;



Strength Report Received	Percentage of Total Reports	
	At 600 Watts	At 30 Watts
S9	2.3%	2.8%
S8	21	18
S7	69	71
S6	7	8.1
S5 and below	0.8	0.5

Power makes a microscopic difference, it would seem. Any-  
one for RST 579?

### Soapbox

"No earth-shaking score but it stands for the last half-watt squeezed from the weary war-surplus 807 and the doggonest pair of ringing ears this OAI ever had. Question: Is the 1.25 multiplier worth while or should I go to higher power?" — *W8LSJ*. . . "Thanks for one of the best times in amateur radio, though it will take weeks to recover and longer to write out QSLs. Am now a confirmed contest addict." — *KNZZIS*. . . "Never amass a terrific total but enjoy this wonderful activity as much as anybody. Everyone who competes is a winner for having been there. Prediction for 1958: My friend K2ULB will be among the front runners and push me to a higher score in trying to keep pace with him." — *W2WRG*. . . "With ringing ears and weary bottom, I'm still tired. My first SS since 1953 and there have been plenty of changes. There seemed only a handful of outstanding sigs and operators then so was happily amazed at the tremendous number of both encountered in 1957. Also, the competition is much tougher." — *W5LGG*. . . "First time for me and it was really exciting. Only intended to make a few contacts and ended up spending 13 pleasant hours." — *W9BIZ*. . . "This contest would have given T.O.M. some good raw material for another Rotten Radio story." — *W7BAJ*. . . "Enjoyed hearing KFC and IOP giving numbers in the 1200s and hope to be up with them soon. I'll be back with more power and better antennas, just you wait! Thanks for two wonderful week ends." — *W8QZR*. . . "Many said 'first SANK' or 'rare VE5' and W2EMW was happy when I made his 73rd. Started out just to work VE7EH but the way they called couldn't get away until 41 QSOs later." — *VE5HR*. . . "The first half I sat around cussing because no ragchews were available. The second I decided 'if you can't fight em, join em,' and after nine years of ducking contests, what a whale of a time! Next year, watch my smoke, I hope." — *W0KON*. . . "Learned rapidly to concentrate through QRM and added seven states to boot." — *KNICNZ*. . . "Enjoyed every minute and expect to be in there again with more savvy, more power, more antennas, and much more coffee." — *VE1YR*. . . "The fist and ear are faster and a v.f.o.-exciter is already under construction. Would appreciate a public notice to the effect that SJV means San Joaquin Valley." — *K6LZU*. . . "The QRM on 40 was murder but as the old saying goes, 'the more the merrier.'" — *W3WKK*. . . "Plenty of snappy operating and very few lids." — *W3NVL/3*. . . "The SS is the hottest contest on the bands. A real thrill pulling a KL7 out of the 21-Mc. QRM." — *W3JXS*. . . "Glad to give W2IOP a point. Getting us QRP boys through the QRM must be how the leaders rack up scores." — *W3UIU*. . . "The older I get the more I realize that all contests should be limited to ten hours on each of two week ends." — *W3AEL*. . . "First SS and why didn't I do it before? Landed six of eight states needed. Certainly appreciated the patience shown when repeats were requested—truly in the fraternal spirit!" — *K6IDZ*. . . "My faith in low power is restored but oh for a CQ-SS wheel." — *K3CBQ*. . . "Finally got Wyoming, my 48th. God bless W7GS!" — *W3ARB*. . . "Second only to Field Day in enjoyment. Very surprised to hear KH6s, KL7, VE6, VE7 answer my 30 watts." — *K2KJF*. . . "For over 20 years attempted the clean sweep and made it at last. Believe active participation in the quarterly CD Parties (open to ARRL officials and appointees) to be a big help. You get to know the locations of the regulars, therefore can spot sections faster in the SS." — *W2EMW*. . . "I put up all my antennas the first Saturday. Finished one hour before zero hour, a procedure I don't recommend to anyone as requisite to a high score." — *W9APY*. . . "Guess 90 watts still packs some punch. Finished off WAS, had a barrel of fun, and made 615 times my Novice score." — *K9ELT*. . . "Enjoyed pinpointing several new states." — *KN9GYW*.

. . . "Best SS ever, though I was soundly defeated by tough competition from a batch of expert new ops out to break records in Minnesota." — *W0TKX*. . . "I found ARRL Operating Aid 6 indispensable. Wish everybody would use it." — *K4CWS*. . . "Most fun since I got my ticket. A year is a long time to wait." — *K4MUL*. . . "Marvelous conditions and excellent operating procedures. Thrilled to nab KV4AA for the last section, 1000 QSOs in 1958?" — *W8DJV*. . . "Not knowing about the SS, my teachers really threw on the assignments. Only had time for seven hours but wait till next year!" — *W8RVZ*. . . "The largest number came from that impressive old pro W2IOP. All in all I enjoyed it, but have run 50 watts for the final time." — *W8IBX*. . . "My last state thanks to W7KEV. Basketball practice limited my participation but with the experience gained, I am shooting for first in Ohio next year." — *K8BPN*. . . "Worked the hard ones but missed three normally considered easy (Quebec, Alabama, Mississippi). Hope the few with creeping signals get em anchored down before November so they don't drift right into the QRM again." — *W8APC*. . . "After 23 years, 73 sections at last!" — *W3GJY*. . . "Will return in 1958 with General ticket and v.f.o. to triple my score." — *KN8GPI*. . . "Enjoyed every minute and even got in some DX between 8Sings. Since no one seems to care about DX then, it's easy pickings." — *K2TBU*. . . "A wonderful time! Was trying for 100,000 and made it in first SS." — *K2LGN*. . . "Terrific conditions and a borrowed 75A4 helped boost my score." — *W7FEA*. . . "Got a laugh out of one excited fellow who sent his number four times, made three mistakes in his own call, and took two minutes getting the time straight." — *W1ODW*. . . "Where the heck were the KZ5s?" — *W1FTX*. . . "Was surprised to succeed in working 73 sections in as many QSOs using 150 watts and 14 Mc. In 1958 will try the same thing on 40 meters." — *W1JTD*. . . "FB time but tried to convert my oscillator coil to work three Novice bands and then the trouble began. My meter turned green and so did a few resistors." — *KN1BTE*. . . "With time restricted it was a distinct pleasure not to worry about making every minute count as was the case when I was out for tops in East Mass." — *W1BOD*. . . "Best thing the SS did for me was to complete my WAS. Maine's W1HAG promptly sent me a QSL, saying I was her first KL7. Needless to say, my card and 88s are on the way." — *KL7BPK*. . . "Did better than expected in my first all-out effort. With break-in and 150 watts in 1958, hope maybe to take the Oregon sheepskin." — *W7YKT*. . . "Conditions near perfect. Think I QSOed every ham in Los Angeles." — *W7YJK*. . . "Have never even heard Vermont in 21 years of Sweepstak-  
ing. Are there any hams in Vermont? If so why don't they crawl out of the woodwork?" — *W7FZZB*. . . "Forty hours of the most fun in the hobby. Band conditions were superb and finally cracked that 1000 contacts." — *W7KEY*. . . "Winner Washington Section 52-53-54-55 but afraid not for SCV in 1957." — *W6NLI (ex-W7NLI)*. . . "Chagrined to miss a section in my own state (SJV) and failed to WAS as never found West Virginia. Would have

In a Southern Texas tug o' war between young KN5LZO (below) and KN5JEH, LZO emerged triumphantly 37,740 to 20,093. Maybe sparked by such rugged local competition, Chuck established brand new contact and score records for KN/WN people.



preferred to use under 150 watts but couldn't reduce power enough. The antenna was too efficient, it seems." — *W6YC*. . . . "No idea I could work so much with a 50-watt rig and a 65-foot windom. Second SS but certainly not my last." — *W4DXF/L*. . . . "Two KLTs and two VEs but not a single VE5, KZ5 or North Dakota. Suggest clubs in those sections put themselves on the map with around-the-clock multiplier stations." — *W4BZE*. . . . "My score improves each year but how in the world do those 1200-contact boys do it?" — *K4GMX*. . . . "In three Sweepstakes I have yet to hear either Utah or VE5. Any recommendations?" — *W4ZM*. . . . "Wasted time looking for Idaho and Canal Zone for the full 73. Surprised to work WIDIE, K2DIE and W8DIE within an hour." — *K4JKK*. . . . "Schools should be dismissed or the SS moved to the Christmas holidays. A real brawl but great fun." — *W4APM*. . . . "Received 44 requests for Colorado QSL cards out of 300 stations worked although slowed by QRM, QRN, QSB, TVI, BCI plus 23 blown fuses. Maybe next year." — *W0KTX*. . . . "WAS for first time in a contest." — *K4HOU*. . . . "Had visions of 1000 contacts until a 24-volt relay transformer went *kaput* and lost seven good hours the first period. Next year 110-volt relays or knife switches operated by the left foot." — *W6SBB*. . . . "This is the best contest in ham radio but wish you would put the maximum power for the 1.25 multiplier back down to 100 watts where it belongs." — *K6LBE*. . . . "Some day I'm gonna break 100 grand." — *W6YK*. . . . "Conditions FB first week end but second part variable and had to dig everything out on 14 Mc. through short skip, long skip, no skip, etc. Thanks to everyone who stayed long enough to make an exchange. Am putting the big supply back on the rig to start chasing DX where it's relatively quiet and peaceful." — *W5A77*. . . . "FB tussle." — *V62BX*. . . . "77 W6s but no Santa Barbara." — *V8JW*. . . . "Because of a good new triband beam, spent most of the second week end on 14 Mc. In fact the last Monday I worked 60 stations from midnight to 3:00 A.M. EST. I can remember past years when contacts were very hard to locate toward the end. Also, it's going to take some doing to beat Frankford Radio Club (for the gavel) this time." — *W3LEZ*. . . . "Emerging from retirement to enjoy it more than ever, although this is my first consistent operating since 1951 and was pretty rusty. There should be two SS's — one to work out the bugs and one to compete in, hi." — *W9WEN*. . . . "Everyone should be in it. It separates the men from the boys." — *KV2YJN*. . . . "Pleased to double my 1956 tally. Two things I want to know: How does W2IQP make so many QSOs and what became of North Dakota?" — *W0YFT*. . . . "Hung out mostly on 14 Mc. which was in tremendous shape with all WVE areas available. Certainly look forward to these November shindigs." — *V8ACB*. . . . "Best contest of the year; the SS of course. Though this is my top score, I still see room for improvement in my technique. My only complaint is the amount of clicks, chirps, and rough notes. These sloppy signals make it difficult for everyone." — *W4CVI*. . . . "It's great fun to get the weights off the bug once in a while and to meet so many old friends." — *VEIEP* (ex-*VO6EP*). . . . "Forced to admit I never had more fun as a ham. My only regret is the 12-month wait for the next one. I'm sure lots of people will agree there should be more of this type contest." — *K0IDV*. . . . "Can't get over the utterly fantastic wonderful conditions; 14 Mc. stayed open around the clock. Despite the multitude of stations, I don't feel QRM was a problem. Realizing from my Junior YL's list that she (*W7EHX*) was not an expert, many slowed down so that she needed few repeats. In skill and courtesy they proved themselves a credit to the fraternity and to ARRL." — *W7POU*. . . . "With the first week end preceding Armistice Day the dates chosen were excellent, providing a chance to rest up before the return to work. If they are similar in the future, believe I'll try the entire 40 hours again. After making every SS possible since 1937 it's awfully hard to refrain, but it's difficult to attempt such concentrated operating while keeping on the good side of the family and the boss." — *W0YCR*. . . . "On receiving a notice of clicks from Official Observer W2QQ, I promptly built a differential keyer from QNT and cleaned up the trouble. Herring breakdowns I hope to join the 100,000-plus club in 1958." — *W4VGH/L*. . . . "The SS is everything it's cracked up to be. My only regrets: Just two crystals on 40 meters and not enough other Novices in on the fun. Will be ready in the future with Q multiplier, v.f.o., etc." — *W3ESXV*. . . . "Was forced to cut final-amp power due to something smelling in the rig. Am now

trying some of the de-TVII steps as per *Handbook*. Going out for 73 sections only next year and maybe by then I'll even get the ground plane percolating as it should." — *V7CQ*. . . . "Those who don't enter simply don't know what they're missing. I got two new states and a new country and continent." — *KN8DTZ*. . . . "A thriller right from the start! Most fruitful band was 20 meters which was always chock-full of sigs. Wish more fellows used cross-checks because at least fifty tried to work me twice or more." — *W3WJD*. . . . "Been trying for years to get 1000 QSOs and finally made the grade with a few to spare. Conditions in the Midwest were tops with 15 meters more productive than ever before. Still enjoy the SS most. The rules are FB as is." — *W9RQM*. . . . "I picked up three new states and ten countries for various awards. My only regret was pushing that old Army key. I have already remedied the situation with a bug and maybe by next SS I will be able to use it decently." — *K2UZJ*. . . . "Typing the log was more back-breaking than the contest itself. I shudder to think what a job W2IQP, W4KFC, W9RQM and others had after the annual 'hog rassel.' My ambition has been to go above 100,000 which I was lucky enough to do but even with 105K doubt if I'll place in Kentucky's first five. I did better than previously but so did everyone else." — *W4HOJ*. . . . "Amazed to learn how QRP will get out." — *K5BSZ*. . . . "The competition surely sharpens the fist and the pile-ups sharpen ye olde eardrums too." — *W7ZLC*. . . . "Wait till I get out of college and I'll hit the SS the way I'd like!" — *W1WEP/L*. . . . "Whew, wotta rat race!" — *W6NEC*. . . . "Best contest of them all. Please keep it up." — *K2QDD*. . . . "The granddaddy of all the contests." — *W0GCI*. . . . "In my latest attempt to solve the SS riddle, learned not to let two hours go by unused. It should be emphasized that in most cases the exchange need only be sent once and a check sheet is a 'must.' Some guys called me four or five times. Others who got 5999 replied with four R's, two QSLs, then repeated everything three times including my call and the date. It was a thrill to hear KV4AA answer my CQ for number 73 and to go over 100 contacts, yet having W1EOB on my heels all the way." — *W1JYH*. . . . "Never again without perfect break-in." — *W1DYE*. . . . "The greatest consolation about my miserable total is that I was short of time. Teaching keeps me occupied, I suffer ITV, QRM from electric typewriter, electric refrigerators (two), spark burner in oil furnace, noise from fluorescent lamps, and nasty corrosion on the electronic-keyer contacts. I will rack up a half-million score when I get a good location, good antennas, build my dream transmitter, etc." — *K4CQA*. . . . "Fervently resolved not to be bothered but zero hour approached, the fever rose and away I went. Nothing spectacular in score but had the usual terrific bang-up time." — *W1LLV*. . . . "Due to lack of time and my principal interest being DX, doubt seriously if I will ever again enter an SS. Believe that its usefulness has been outdated. Besides, am getting too old to spend hours on end humped over the operating table. Hi." — *W6BYH*. . . . "The finest institution in ham radio. Long may that insistent, mauiacal Dididid-Dididid ring out across the air waves! One day I'll have real break-in, 149 watts, antennas for all hands, a comfortable chair and lots of log sheets. And then . . ." — *W1PTH/S*.

Phone and club standings next month.

## C. W. SCORES

### Twenty-Fourth Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 150 watts (multiplier of 1.25, c.w.), B over 150 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3JNQ 201,663-1105-73-A-38, or final score 201,663, number of stations 1105, number of sections 73, power factor of 1.25, total operating time 38 hours. . . . An asterisk denotes Novice certificate winners in sections where at least 3 Novice logs were submitted. . . .











I did not work Sweepstakes this past year. Up to this year it has been my delight to include my call in the Autumn Madness. However, I laid off just to see the effect and thus found myself approaching the holiday season in a sane mood.

As a Novice I took a crack at SS and worked those few daring souls who invaded the crowded Novice band hunting Western Pennsylvania, and got my feet well wet and my taste buds sharpened for the day when I could really get into the act, sans N and crystal shackles. To top it off, when I passed General (in the late summer) the kind, nice fella in the FCC sanctum said, "Now you'll be able to work Sweepstakes!" And from his expression I could tell that he was an addict of the November Virus.

As a matter of fact, I am not a true SS fiend. I have always done it strictly for kicks. Outside of the required (FCC, you know) logging, I have never burdened Headquarters with my record of

## No SS—

## No Regrets

BY LOUISE RAMSEY MOREAU,\* W3WRE

effort. The first year I spilled ink all over the contest log, and was too lazy to make up another set so I just didn't bother. However, I have more



fun just working the contest itself than trying to add up, and remember, multipliers, and cut this, and when all is finished and ready to mail see there is a duplicate here. Another copy. Find the typewriter can't spell any better than my key, and make another copy. Find I gave credit where credit wasn't due, say a few well chosen words over the whole, stick it in File 13 and forget it.

I have had a lot of fun in Sweepstakes. First time that I truly immersed myself in the QRM, I

\* 639 Russell Avenue, Johnstown, Pennsylvania.



THE ASH TRAYS DO FILL UP

sat erect, three switches to throw (that was in the pre-relay days) key set just so. I spent hours setting that key. Pencils piled up. Hands poised before the rig, v.f.o., and receiver. Probably the fastest that my hands have ever moved were during those two week ends. I spent them counter punching by answering the CQ SS rather than bucking the mob. Pretty soon I found that it took too much time to hunt for the place I had dropped the pencil, so I spent the rest of the time snaking it in and out from between my teeth. We used rough pencils for some months after that. I still find that in times of stress I talk through clenched teeth, with my speech a bit garbled as if something impeded the free flow of words.

I found out I could no longer stay married to my favorite 80 meters. It took just one night to see that my log looked like a one track mind — E. Pa.; S. N. J., E. Mass. — over and over. Then I got smart and moved to where skip was long and new words began to appear on my work sheets.

Band switching, of course, takes time. I had to change antennas and lost valuable seconds while I switched. Who knows what rare one I lost that called in that time lapse?

Seems to me that much time is wasted. Time that could well be spent catching some elusive section. But all the warnings in *QST* are right. The ash trays *do* fill up. They also get messy. Now I am not one to quail before a tray full of ashes and dead butts. However, the cigarette that is laid down while logging or changing frequency, or dipping a final, burns away. So do the following ones and soon the one that is laid down and picked up again tastes foully of tobacco tar. This requires extra seconds to push the full ash tray aside and reach for one of the spare clean ones. Time lost. Same with coffee. I dote on the stuff but it takes precious seconds to pour it and lift the cup. Takes even more when it scalds the tongue, tilts (due to pain) and floods hands, shirt, and work sheet.

That coffee and cigarette deal brings in the economy angle. Every year the OM is sure I may burn down the house before the contest ends. He checks the number of cigarette burns on the desk before and after each weekend. I have filled the house with vile smelling smoke twice by sticking the coffee pot on the stove without first checking to see if there was anything left to reheat. This

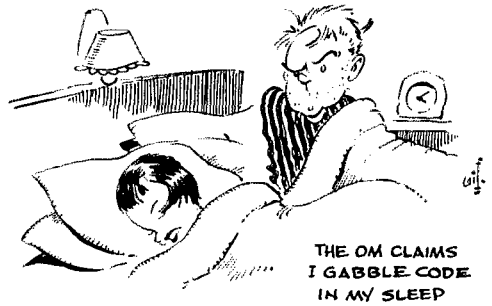


has, of course, necessitated new coffee pots. The last one is electric and far better since I can plug it in right in the shack.

Other than that things have been fairly normal. There was the one incident when I worked through the wickedest QRN ever spawned in any season let alone November. It was one big smash, but the receiver was pulling them in and 40 was really hot and the tough sections were there and I was happy. Around four A.M. I surrendered, and said "O.K., static, take over." Then from habit, I guess, pulled the plugs out of the wall and even disconnected the antenna, although it was grounded. So I hit the mattress and about half an hour later came out of my dreams of winning as lightning hit the house right behind us. How, and why it missed our sky full of iron (five antennas) we'll never know. Made a tidy little mess.

Then there was the SS we got the new pup. Got him the week before the big contest. I was unaware of his preference for my shoes and slippers then. However, the second Sunday morning, as I staggered groggily (with two hours sleep under my belt) down to get the OM's breakfast at six A.M. the effect of puppy teeth on satin became a very real thing and I rolled down to the foot of the stairs. This disturbed the dog, who hollered as if he had been scalded. The OM came galloping to the head of the stairs yelling "What happened to the pup?" My answer is among those things that the FCC frowns upon during transmissions.

The OM claims that by the second Sunday night when the last switch is thrown, instead of being a normal gabby dame in my sleep, I gabble code. That all night he hears "Dahdidahdit



dahdahdidah dididit dididit," over and over again. That I even sign my call. It's entirely possible. This sort of thing, along with quick and badly prepared meals, not to mention his own enforced silence on his pet rag-chewers nets, could lead to strained marital relations.

So came 1957. I did not check the tube supply of paper, nor prepare a cord of well-sharpened pencils, an extra pile of clean ash trays, percolator filled and waiting, receiver and rig on hours ahead of time for warm up, clock checked every half hour with WWV, lighter filled and plenty of matches in case . . . At five I began dinner preparations. We had a well-prepared meal. I spent the evening checking over my power supply. The OM planned a new antenna.

Came Sunday, I picked up a piece of traffic for a local ham on the Penna. CD Net. I called him to deliver it. "Aren't you working SS?" he asked. Nope, not this year. Sure was a relaxing week end. I think I really enjoyed the change.

## Strays FROM

The street addresses of both W4DRD and K4DRD start with the same number 2314. (No, not the same street! One lives in Jacksonville, the other in Miami.)

There's a new book out entitled "TV Interference Troubles Made Easy." K2BDU says he doesn't need any instruction to make TV interference troubles.

"Heard a real FB QSO this week — W5FB working W7FB!" — W4UW1/2.

K2YHD has a familiar problem, in reverse. She is a ham, her OM is not. He just barely tolerates ham radio and won't baby sit for the junior ops while she goes on the air. She'd like suggestions!

Two members of the Wingates H. S. Amateur Radio Society are KN2LAM and KN2MAL.

The Spiderweb Amateur Radio Association, of Albert Lea, Minn., conducts a regular class in radio fundamentals and code instruction. Here are activities at one of the meetings, at the home of W0FIT.



# Armed Forces Day—1958

**A**MATEUR radio operators are invited by the Army, Navy and Air Force to participate in Armed Forces Day communication exercises May 17, 1958. Sponsors are the Director, Naval Communications, and MARS representing the Army and the Air Force. The amateur radio activities will be conducted in four categories.

Category I consists of a c.w. receiving contest. A certificate of merit signed by the Secretary of Defense will be awarded any listener who submits a perfect copy.

Category II consists of a radioteletypewriter test of receiving proficiency. A certificate of merit signed by the Secretary of Defense will be awarded to those who submit perfect copies of a special Armed Forces Day message.

Messages copied in the contest should be submitted to: Armed Forces Day Contest, Room BE1000, The Pentagon, Washington 25, D. C.

Category III consists of military-to-amateur transmitting and receiving contacts, for all U. S. amateur radio licenses. Headquarters stations of the Army, Navy, and Air Force in Washington, D. C., will make contact with amateur stations and will acknowledge contacts with QSL cards.

Category IV provides an opportunity for holders of novice amateur licenses to compete without interference from the general class licensees. Certain Navy, Army, and Air Force stations outside the Washington area will make contact with novice amateur radio stations and will acknowledge contacts with QSL cards.

(I) A c.w. receiving competition will feature a message from the Secretary of Defense. Each participant with a perfect copy will receive a certificate of merit. Transmissions will be at 25 w.p.m. on the following schedules:

Time, 17 May 1958	Call Sign	Frequencies
180300Z (2200 EST)	WAR AIR Army & Air Force radio, Wash., D. C.	3347, 14,405, 20,994
180300Z (2200 EST)	NSS (Navy radio, Washington, D. C.)	3319, 4010, 7375, 14,480
180300Z (1900 PST)	A6USA (Army radio, San Francisco, Calif.)	6997.5
	NPG (Navy radio, San Francisco, Calif.)	3319, 7595, 14,927.5
	AF6AIR (Hamilton, AFB Calif.)	7832.5
1100 GCT (2000 India)	NDT (Navy radio, Yokosuka)	2287.5, 4545, 9427.5, 13,471.5, 16,445, 23,010

Each transmission will begin with a five-minute CQ call. It is not necessary to copy more than one station. Transcriptions should be submitted "as received." No attempt should be made to correct possible transmission errors. Indicate time, frequency, and call sign of the station copied and the name, call sign (if any) and address of the individual submitting the copy.

(II) A radioteletypewriter receiving competition will feature a special message from the Secretary of Defense. A certificate of merit will be issued to each participant who makes a perfect copy. Transmission will be at 60 w.p.m.:

Time, 17 May 1958	Call Sign	Frequencies (kc.)
180330Z (2230 EST)	WAR (Wash., D. C.)	3347
	NSS (Wash., D. C.)	6970
	AIR (Wash., D. C.)	7915
180330Z (2130 CST)	A5USA (Pt. Sam Houston, Texas)	5302.5
	NDS (Great Lakes, Ill.)	7375
180330Z (1930 PST)	AF6AIR (Hamilton AFB, Calif.)	7832.5
	A6USA (Army radio, San Francisco, Calif.)	6997.5
180345Z (2145 CST)	NDF (New Orleans, La.)	6970
	NDS (Great Lakes, Ill.)	7375
180345Z (1945 PST)	NDW (Treasure Island, Cal.)	3319

Each transmission will begin with ten minutes of test and station identification to permit amateurs to adjust their equipment. At the end of the test period, the message will be transmitted. It is not necessary to copy more than one station. The message should be submitted as received. No attempt should be made to correct possible transmission errors. Indicate time, frequency, and call sign of the station copied, and the name, call sign and address of the amateur concerned.

(III) Military stations WAR, NSS and AIR will be on the air from 171800Z (1300 EST) to 180500Z (2400 EST) to contact and test with amateur radio stations. Amateur contacts will be discontinued from 180245Z to 180400Z to allow Armed Forces Day c.w. and RTTY broadcast competitions. Military stations will operate on spot frequencies outside the amateur bands as follows:

Station	Military Frequencies (kc.)	Appropriate Amateur Band (Mc.)
WAR (Army radio, Washington, D. C.)	4020 (voice) 6997.5 (c.w.) 20,994 (s.s.b.-a.m.)	3.8 to 4.0 7.0 to 7.2 21.25 to 21.45
NSS (Navy radio, Washington, D. C.)	4010 (c.w.) 3319 (RTTY) 6970 (RTTY) 7375 (c.w.) 14,385 (s.s.b.-a.m.) 14,480 (c.w.) 20,075 (c.w.)	3.5 to 3.8 3.5 to 3.8 7.0 to 7.2 7.0 to 7.2 14.2 to 14.3 14.0 to 14.2 21.0 to 21.25
AIR (Air Force radio, Washington, D. C.)	*20,050 (RTTY) 3347 (c.w.) 7635 (a.m.) 14,405 (s.s.b.- a.m.)	3.5 to 3.8 7.2 to 7.3 14.2 to 14.3

Military stations will listen for calls from amateurs within the appropriate amateur bands. Contacts will consist of an exchange of location and signal report. This is a test of military-to-amateur communications and no traffic handling or message exchange will be permitted. QSL cards will be sent to each amateur station worked.

(IV) In a new phase of the program for novice operators, military stations will operate on spot c.w. frequencies outside the amateur bands and cover appropriate novice frequencies as listed. QSL cards will be sent to each amateur station worked.

(Continued on page 180)

\* NSS will key 20,050 kc. simultaneously with one of the RTTY frequencies listed above. This frequency will be utilized as frequency propagation conditions dictate.

JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

# Hamfest Calendar

**Illinois** — The Western Illinois Radio Club invites all interested amateurs to attend a banquet meeting to be held at Durst's Flamingo Room in Quincy on Saturday night, May 24. Guest speaker, entertainment, etc. Reservations \$2.75. Contact Olin Shuler, W9PQD, 2533 Broadway, Quincy.

**Indiana** — The Clifty Falls picnic, sponsored by the Madison Amateur Radio Club will be held at Poplar Grove, Clifty Falls State Park, near Madison, on Sunday, May 25. No Registration fee, just the usual state park admission charge. This will be a family affair from 10 A.M. to 4 P.M. Everyone to bring his own lunch. Plenty of shelter in case of rain. For further information contact Paul Needler, W9HMR, RR #5, North Madison Station, Madison, Ind.

**Iowa** — The annual Mississippi Valley Hamfest is again being sponsored by the Quad-City ARC on Sunday, May 25, at the Isaac Walton League grounds near Davenport. There will be prizes, all sorts of contests (including mobile). This is a family affair with plenty of picnic area and inexpensive meals available. Special events for v.h.f., YLs, and Novices. Free transportation from the Davenport airport for fly-ins. Both 29.5 Mc. and 6 meters will be monitored. Tickets in advance \$1.50; \$1.75 at the gate. For information and reservations contact Bernard G. Holm, K9JDF, 1109 3rd St., Moline, Ill.

**Kansas** — The 9th annual Hi Plains hamfest will be held May 18 in Plains. For further information contact Lenora Ballard, W9GID, Plains.

**Massachusetts** — The Central Massachusetts ARA will hold its Annual Gabfest Sunday, May 25, at the Svea Gille, 190 South Quinsigamond Ave., Shrewsbury. There will be a storgasbord supper, entertainment, and prizes. Tickets in advance are \$3.50; at the door \$4.00. For tickets and information contact Harry Miller, jr., W1DRD, 141 Austin St., Worcester.

**Missouri** — The North Missouri ARC will hold its annual ham picnic at Moberly in the Rothwell Park, Sunday, May 25. Registration is \$1.00, starting at 0800. Bring your own lunch. Soft drinks and coffee furnished. Games and entertainment. For further information contact Jennie Knight, NMARC, Box 343, Dalton.

**New York** — The Crystal Radio Club is holding its 27th Anniversary Dinner at the Wayside Inn, Route 9W, Stony Point, on May 10, at 7:30 P.M. Tickets are \$4.00 per person. Dancing. Reservations from Tony Maiorano, W2EHZ, 14 Peck St. West Haverstraw.

**New York** — The Western New York Hamfest will be sponsored by the Rochester Amateur Radio Ass'n on Saturday, May 17, at the DoudPost American Legion, Buffalo Road, Rochester. Advance reservations are \$3.75 from RARA, Box 1388, Rochester, or \$4.00 at the door. FCC General Class examinations will be held at noon if there are sufficient applicants. Hamfest registration starts at 1300. Speakers include W1CTW and W1DX. Further

details from Edson B. Snow, W2BZN, 139 Edgeview Lane, Rochester 18.

**North Carolina** — The Charlotte Swapfest will be held at Charlotte on Sunday, May 25. Prizes and surprises. \$2.50 each. For further info contact Frank Dowd, K4BVQ, 1855 Maryland Ave., Charlotte.

**Ohio** — The Ohio MARS/Army Spring meeting will be held at Ft. Hayes, Columbus, on May 11. Registration at 1100 in Building 61, Luncheon in a nearby restaurant at 1200, with the meeting continuing at 1300. Anyone interested in MARS is welcome. Registrations for the luncheon are required and may be made by mail to Major R. B. Jeffrey, RFD 1, Nashport.

**Pennsylvania** — The fourth annual Breeze Shooters Net hamfest will be held Sunday, May 25, at "The Ledge," North Park, Allegheny County. No registration charge. Last year there were 1350 in attendance. Sandwiches, coffee and soft drinks will be available. For further information contact John R. Sproat, jr., W3ZWI, 928 Pennsylvania Ave., Oakmont.

**South Carolina** — The Charleston ARC is sponsoring a hamfest on May 3-4. Activities for all. Tickets are \$2.50 for hams, \$1.50 for XYLs and YLs, and 50¢ for children. Reservations may be made with K4GRW, W4UOQ, W4CNG, W4PQJ, or KN4RJZ.

**Tennessee** — The Jackson Radio Club will sponsor the annual West Tennessee ham picnic on Sunday, June 1, at Dr. Webb's Quinlac Farm, six miles out Old Medina Road. Stations will be on 3980 kc, and 29.1 Mc. to direct mobiles to the site. Barbecue plates available at \$1.25 per person, plus soft drinks, coffee, and ice cream. There will be a trading post. For further information contact Herman Williams, W4UAW, 172 Summer Drive, Jackson.

**Texas** — The Cypress ARC will sponsor a hamfest at Dellwood Park in Mt. Pleasant on Memorial Day, May 30. Pre-registration is \$1.00, or \$1.25 at the gate. This is a family affair. For further information and reservations contact Chuck Yingling, jr., K5GFM, 1102 West 12th St., Mt. Pleasant.

**Washington** — The annual Bremerton hamfest will be held at the American Legion Hall Post #68, 2809 Spruce, Bremerton, on May 24. Advance tickets \$3.50, \$4.00 at the door. For further information and reservations contact Ray McCausland, jr., W7UWT, 3236 Wright Ave., Bremerton.

**Wisconsin** — The Wausau Hamfest, sponsored by the Wisconsin Valley RA will be held on Saturday, May 17, at St. Theresa's Hall, Schofield. Registration begins at 9 A.M., with a full day of displays and meetings for those interested in s.s.b., DX, v.h.f., MARS, traffic and AREC/RACES. Banquet at 6 P.M., followed by speakers and entertainment. Guest speaker is ARRL President W0TSN. Club station W9NUW will monitor 29,620 and 3950 kc. Registrations for \$3.50 may be obtained from the Wisconsin Valley Radio Association, P. O. Box 363, Wausau.

## Strays

Is QST trying to start another feud? April QST has Hatfield on page 28, followed by McCoy on page 30! — W8MAT

— . . . —  
K4MJZ and K4HTA really chewed the rag on

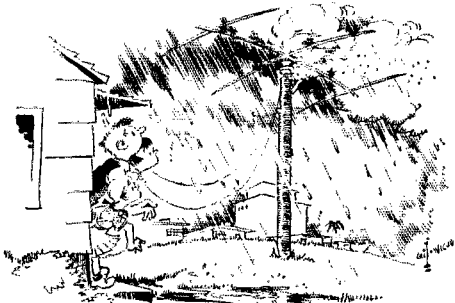
10 phone when they went at it for 17 hours and 6 minutes, on March 22, 1958. This is still topped by the 1932 record of W7WY and W7HD (see page 180 of this issue, in the column headed "In QST 25 years ago").

# A Hot Contest

BY LLOYD D. COLVIN,\* W6KG

Colonel Colvin has operated in many ARRL DX contests. His most hectic 48 hours of contest operation are described in the following true story which took place at W6KG, Alameda, California, during the last half of the e.w. portion of the 23rd annual ARRL DX competition, March 22-23, 1958.

CONTEST starts at 4 P.M., PST. I check rig, all O.K. Check log, record sheets, etc. All set for big contest. At one minute past 4 P.M. PST work VK9XK. Receive RST 599 report. FB, everything O.K. Hear ZD7SA. Push rotator switch to swing beam on him. Nothing happens. Raining cats and dogs outside. Rush out in rain with no coat on. Look at beam. Seems O.K. but won't rotate. Go back in house and operate switch again. No rotation of beam. Phone my regular



lineman and antenna helper. He is in hospital and just been operated on. Phone City Electric office. After talking to several people, convince them this is real emergency. Finally talk to Superintendent of Electric Distribution. Tell him my troubles. Promise to pay linemen double time plus bonus. Pace floor until linemen arrive. They climb pole in cloudburst. I watch from ground with rain in face. One hour later tired lineman report my brand new \$350.00 antenna rotator has jammed gears. Can't be fixed. Dark outside. I pay off linemen. Say to H — with contest and try to look at television. Feel low as a worm. Keep thinking how can I get back in contest — at 11 P.M. phone another lineman. Explain situation is desperate. Can he come over, climb pole, cut rotator loose, and tie rope to beam so I can rotate from ground by pulling rope? He says it is raining. I say I know but this is terrific emergency. He comes over, climbs pole in dark with

rain coming down in sheets. He swings rope over antenna boom. Rope gets stuck. Finally gets it loose. I can pull antenna around with rope from ground but must walk through a pool of water one foot deep. Shoes already sopping wet so no bother. Pay off lineman. Swing beam by hand on ZK2AB. Smell smoke. Everything in shack O.K. Still smell smoke. Look outside. My rotator afire and burning up. In excitement had left rotator motor on with gears stuck. Fire spreads to rotator housing and cover. I get my wife and daughter out of bed. Flames getting higher and higher. Am afraid entire pole will burn down. Phone fire department. Rain has conveniently stopped for few minutes. Run to front of house for garden hose. Pull it around back of house near antenna. Attach hose to water outlet and turn on water. Hose has leak. Water sprays all over me, wife and daughter. Water will not reach flames. Fire department arrives and put out fire. Neighbors awake and wonder what the radio amateur has done now. Fire department leaves at 3 A.M. Rotator total loss. All wires and cables burned up. Go to bed for few hours. Up early. Get linemen back. Work all day cutting control cables, taking down remains of rotator, etc. Agent from fire insurance company arrives and says loss not covered by insurance policy. Back on air again by evening. Band conditions poor. Go to bed. Up early. Work a few but have to run in and out of house all the time to swing antenna. Worst storm this year. Winds and rains at all time record high. Floors of house covered with mud. Wet all over. Have missed most meals. Have not shaved, but working a few.

Early afternoon there is a knock on door. FCC representative complete with portable receiver and transmitter says he is conducting examination during contest to see if any amateurs are exceeding legal power limits. He enters



house and asks me not to operate my antenna rotator (Ha — as if I could!) and not to change any controls or output of transmitter. He explains he has assistant few blocks away with field strength meter and would I please operate my

\* Lt. Col., Signal Corps, U. S. Army, PO Box 30, Alameda, California. Ex-W6TG, FA8JD, W6ANS, W6IPF, KL7KG, JA2KG, W6KFD, K2CC, J2AHL, W2USA, K4WAB, W7YA, J2USA, W6AHL, W7KG, JA2US, W4KE, DL4ZC.

transmitter exactly as I had been doing a few minutes earlier. I comply with instructions and FCC men talk together by portable radios. They agree field strength reading at remote site has not changed. Other FCC agent then comes to house and the two of them carefully check plate voltage and current of final stage of transmitter. They announce input to final stage mathematically figures to be 1075 watts and as this exceeds legal limit I will receive a notice of violation of FCC rules. I think fast and point out to inspectors that my plate current meter also reads the screen current and will they consider the screen power at 75 watts? Inspectors talk it over and reluctantly agree to put on report that my power input is exactly 1000 watts (whew). FCC men then look at my log. In all the confusion I was

not too certain what day it was and my log showed all entries one day behind time. FCC inspectors kindly let me change date in log. They then ask to see my station license. I search through hundreds of papers in my desk. My important document file. My wallet. No license to be found. FCC inspectors inform me this will require them to issue a violation of rules notice. FCC men prepare to leave. I beg them to stay a few more minutes while I again go through all my papers. With trembling fingers I start through the pile with one inspector at each shoulder. Hurray! I find the license. Inspectors point out license is not signed. This is violation but they willing to give me pen to sign license and to forget it was not signed. FCC inspectors leave house. Contest is over. I collapse.

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## Strays

K6ADA, chief announcer at KSON, San Diego, sneaks in a "CQ de K6ADA" at 10 w.p.m. before each newscast.

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For his first 80-meter QSO, KNØLOW worked KNØOFF. (You supply the editorial comment!)

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The February issue of *Popular Mechanics* mentions the 1898 Columbia Mark VIII, which was designed by the League's first president, Hiram Percy Maxim. — K4OGY

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Romance quickens in the spring air of Colorado. KØDTK (male, age 15) is "going steady" with KNØMOJ (female, age 14). Oh, to be young again.

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K9EDI has an unusual antenna tuning indicator. He listens to the background noise of his intercom and tunes for the loudest buzz.

-----

Going to Europe this summer? Hams visiting there are invited to attend the 4th International Hamfest sponsored by the Savez Radioamatera Jugoslavije, July 12-15, at Iledza, near Sarajevo. One of the features will be "foxhunts" on 3.5 Mc. c.w. and 144 Mc. phone, with instructions in Serbo-Croate and English. Participants in the competition must register their intentions with SRJ by June 15. Prizes in each class. Accommodations at the hamfest are very reasonable, and reservations can be made through SRJ, Box 324, Belgrade.

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We have a note from W4YVL which reports a rather radical item. "Recently a QSO was held in which neither operator knew the other, there was no similarity in the addresses, and there was no relationship whatsoever between call signs." Whoever heard of such a thing!

C. W. Key is a member of the Bloomington ARC. He doesn't have a call as yet. — W9GHK

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Among the members of the Aerojet Radio Amateur Club are W6QOC and K6QOC, also W6MCK and W6MKC. This could get confusing!

-----

K4LCE is a Licensed Civil Engineer.

— K4LCD

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K6JUI is entering the U. S. Naval Academy in June, and would like to correspond with any other amateurs who have received appointment to Annapolis.

-----

F8OL, well-known v.h.f. experimenter on the Continent, has recently been appointed a general in the French Army Signal Corps. He has for a long time been one of the technical editors of *Radio REF*. F8OL and W1HDQ made the first France-U. S. A. 50-Mc. QSO in November, 1947.

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Did you note the piece of Technical Correspondence on page 42 of this issue? KØASR, checking a 50-watt transmitter into a dummy load and tuned to about 7500 kc., was heard RST 589 by ARRL OO W2BLP. The dummy load consisted of a 60-watt lamp bulb and two feet of RG-8/U coax cable.

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K6CJH, K6PJG, and K6BEP are all on the track team at the Alexander Hamilton High School in Los Angeles.

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During the DX contest, one of the beleaguered DX stations, in order to move the pile-up off his frequency, specified that he would "now listen up 5 kc." Immediately some eager W station began to call "UP5KC UP5KC." — K2FG

# "Customizing" the 6L6GB Handbook Transmitter

*A New Look Using Available Components*

GEORGE W. KORPER, JR.,\* WICFE

HAVING FOLLOWED this transmitter with interest from its initial appearance in *QST*<sup>1</sup> and its subsequent modification,<sup>2</sup> the thought took form that this transmitter would make an ideal subject to prove out the premise that there are still quite a number of ham builders, who, as they advance in the construction art and become exposed to commercially manufactured gear, want a unit that is comparable in appearance and convenience of layout to "store bought" apparatus. A little familiarity with the components field shows that there are enclosures and other parts available in the open market that can change a run of the mill rig into one that can be a continuing source of pleasure to the eye and shown to visitors with pride.

With the following exceptions and additions all parts and circuitry were closely followed from the original articles.

The original c.w. transmitter, in the interest of compactness and symmetry, was mounted on a  $7 \times 9 \times 2$  aluminum chassis without undue crowding of parts. This smaller chassis was centered at the front edge of a  $10 \times 17 \times 2$  chassis as shown in the photograph. A cut-out in the larger chassis directly beneath the r.f. portion allows access to all components. An additional benefit is that the unit may be handled conveniently in its separated form for wiring and then positioned accurately and fastened with 6-32 spade bolts. Incidentally, it might be mentioned that the rather large opening for the cut-out was accomplished handily and in a few moments with the use of a nibbling tool<sup>3</sup> made by the Adel Tool Company and available for a modest price from Harrison Radio in New York City. It makes an excellent addition to your shop for use on other projects.

The meter switch,  $S_4$ , in the original version was eliminated in favor of separate meters for simultaneous grid and plate readings.

A d.p.d.t., 110 v.a.c. relay was added to perform a dual function. One set of contacts switches the antenna from the rear coaxial receptacle for the receiver to the transmitter output. The other pair controls the 6.3 volts to the stand-by pilot light. The switch,  $S_2$  in the modified version was changed from s.p.d.t. to d.p.d.t. One side, as previously mentioned, cuts out the h.v. center-tap and the other the 110 v.a.c. to the relay coil.

The crystal selector switch,  $S_1$  of the original



WICFE's version of the Novice-General rig is a thing of beauty. Using readily available components he has built a transmitter which is a real eye-catcher.

c.w. rig was changed to an identical double wafer type. When in v.f.o. position a .01- $\mu$ f. capacitor is simultaneously switched into circuit from the 6AG7 cathode to ground. This capacity may vary with different v.f.o.s and in this particular unit was eliminated when used with a Heath VF-1.

An r.f. output indicator meter which gives a relative reading of the transmission line's r.f. voltage is located at the upper right of the panel, with its adjustable shunt for calibrating to convenient reference levels directly below. All components for this unit were mounted in a small Minibox which is held to the rear of the panel by the hexagonal nut on the shunt rheostat.

The particular enclosure used has a 4-degree forward slant to the front panel. Since the chassis are mounted flush against the rear of the panel, the resultant elevation at the rear of the chassis was compensated and weight support obtained by the use of adjustable "legs." These are Superior Electric 5-Way Binding Posts, mounted upside down at the rear of the chassis bottom plate. In this way the threaded insulator portion may be run in or out to adjust the pitch of the chassis so that the cabinet cover meets flush with the case at the parting line and no weight is sustained by the front panel.

The external v.f.o. socket on the rear is a worthwhile addition. High voltage for the v.f.o. is dropped to the proper value by a 6500-ohm, 10-watt vitreous resistor and the remaining contacts provide ground return and 6.3 v.a.c. for the v.f.o. filament which is delivered by a separate transformer located between the rectifier tube and the left front panel.

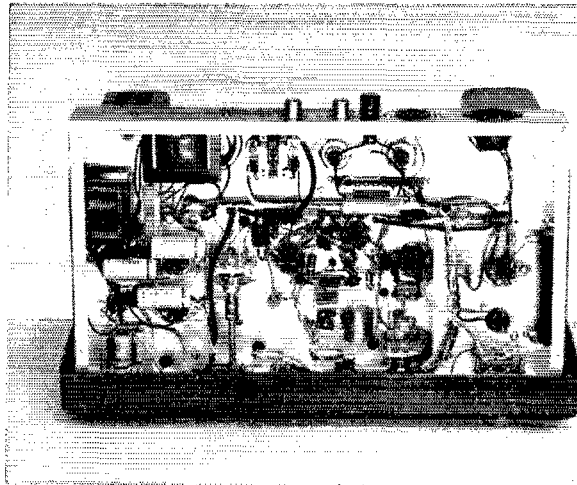
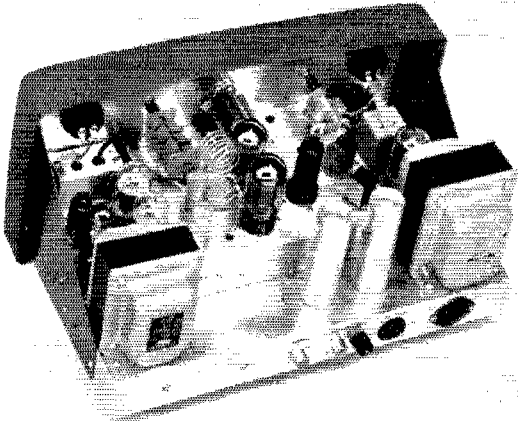
The space at the rear of the chassis between the two tubular capacitors and the filter choke

\* C/o CGS Laboratories, Inc., 391 Ludlow St., Stamford, Connecticut.

<sup>1</sup> 6L6GBs In A Two Stage Novice Rig, McCoy, *QST* Jan. 1957, p. 30.

<sup>2</sup> "Generalizing" The 6L6GB Novice Rig, McCoy, *QST*, May 1957, p. 35.

<sup>3</sup> *QST*, September, 1956, p. 60.



Some rigs look good on the outside, but on the inside—what a rat's nest! Not so in the case of this job. Everything here is perfectly straightforward, but oh, so neatly done. Take a look at these photos, and browse through the text, and see if you can't pick up an idea or two. And say, is it any small wonder that the fellow who can build gear like this takes so much pride in his ham station?

is provided for a small ventilating fan or blower. Since the particular cabinet used has rear ventilating louvres there is no bothersome heat rise. In the interests of a tight r.f. seal it might be advisable to use the solid type case which would make ventilation mandatory.

Control knobs in the photograph are National Type HRS-3 and HRS-4. A dressier effect could be obtained by the use of the Raytheon types 70-3-2 and 125-3-2 black phenolic for contrast with the gray wrinkle finish of the enclosure.

The cabinet is a standard stock version available in many size and style variations from stock. Maker is the Zero Manufacturing Company of 1121 Chestnut Street, Burbank, California. The illustrated unit is their ZIC-318-140 instrument case and ZICF-318-32 cover which have

a combined depth of 10¾ inches, just right for this particular job. The overall height is nine inches.

The meters are standard Type 150, 1½ inch diameter, single hole mounting made by International Instruments of New Haven, Connecticut. The 0-1 m.a.d.c. range was as specified in the original circuit.

While appearance does nothing for the electrical performance of a rig, everyone will recognize that good looks are an outside reflection of careful workmanship and obvious care in assembly. It is the one evidence of quality readily apparent to the viewer's eye. Whether it is a small a.m.-c.w. rig or a "full gallon" s.s.b. linear, it is very worthwhile to create something that will have individuality (and incidentally, re-sale value), so why not try it?

## Strays

There's QRM even in outer space. W4ZQ is one of those who has noted Vanguard being QRMed by Explorer on 108 Mc.

-----

Because of a power failure, the Aero ARC held its March meeting by candlelight. — KN3CXB (Where was the Field Day generator? — Ed.)

-----

For 26 years W9ICT had been trying to work Asia for his WAC award. Finally, during a period of convalescence, he made it. What illness was he recovering from? Asian flu, naturally!

-----

W7ZZW called CQ on 10 phone and was answered by both W2IOU and W3IOU, neither of whom could hear the other.

W9ONY, operating mobile, worked WIIP and W2IP, one right after the other.

-----

W1RFQ discovered that his transmitter chassis was "hot," 115 volts above ground. Investigation revealed that one of the by-pass capacitors across the 115-volt line had shorted. Another excellent argument for grounding every piece of gear in the shack. Safety first, OMs!

-----

W1LIG saw a commercial on TV which said that the reason for the fan in the oven of a microwave stove was to spread the microwaves around evenly!

-----

We still see ads for geranium diodes!

# Microlock

## *A Club Activity of the San Gabriel Valley RC*

THE San Gabriel Valley Radio Club was originally organized in 1953 with civil defense activity being the common interest that held the club together. The club members were so active that when the county built a new sheriff's building in Temple City, a specially designed room was provided for the use of the club. Here they set up their c.d. communications equipment, as shown in some of the accompanying photographs.

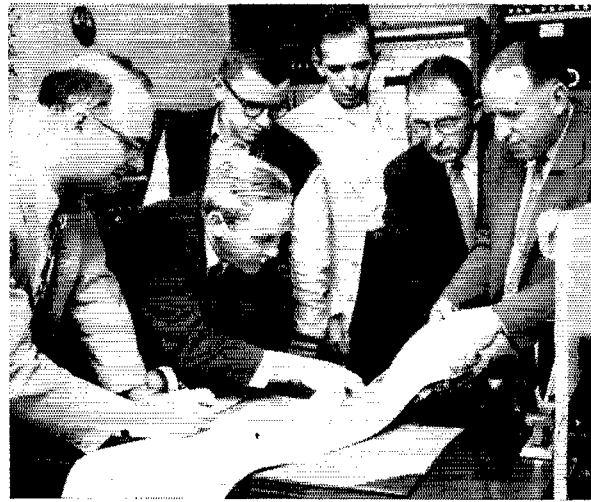
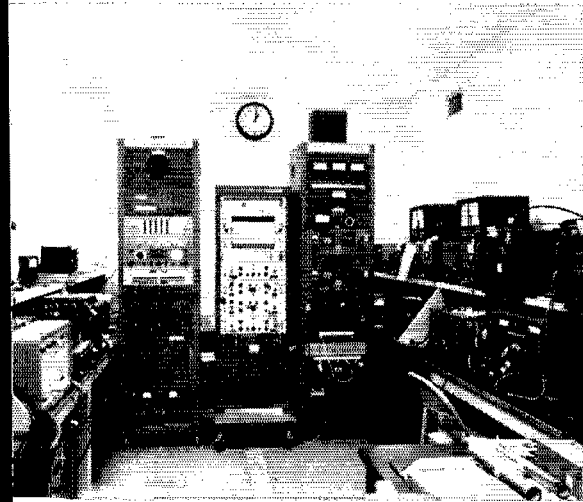
Along came the satellites, and another interest was fanned among the club members. In December, 1957, *QST*, club member Dr. Henry Richter, W6VZA, described Microlock. Gear was assembled by the club members, sponsors were lined up, and the San Gabriel Valley RC has the only Microlock set up that we know of.

While some of the receiving gear was built by

club members, suitable credit must also go to the dozen or more labs and manufacturers that have loaned some \$80,000 worth of tape recorders, frequency meters, receivers, and the like. Among these sponsors are Beckman, Consolidated Electrodynamics, Bircher, Hoffman, Specific Products, Bel Canto, Radiophone, Hewlett-Packard, Ampex, and the CalTech Jet Propulsion Lab.

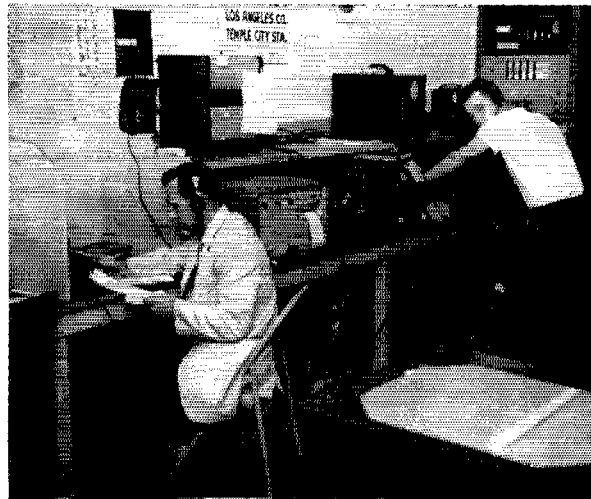
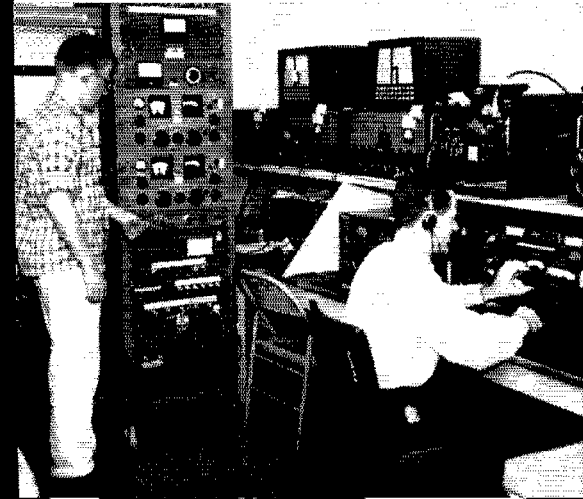
The San Gabriel Valley RC has 100 paid-up members, and continues to be active in civil defense matters in addition to the satellite tracking. They hold roll call every Monday night at 7 P.M. local time, on 2, 6 and 10 meters, and hold club meetings on the first Tuesday of every month at the Arcadia Bowling Green club house.

The SGVRC has made a solid contribution to the history of amateur satellite tracking.

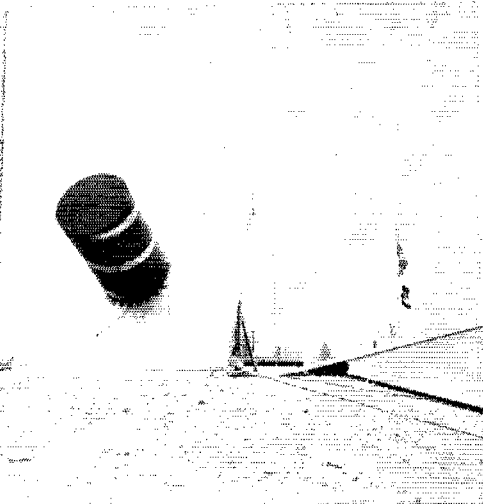


Club members have promoted a prodigious amount of equipment for their tracking activities, as witness left above. Almost all of the equipment has been loaned for the duration of satellite activity. At the right, examining a Sanborn recorder chart and checking Explorer doppler, are club members W6QYY, W6DTQ, K6GKU, W6PFR, W6BUK, W6SRE. Absent when the photo was taken was W6VZA, who authored the December, 1957, *QST* article on Microlock.

Here below are closeups of the operating positions, showing both the Microlock gear and the c.d. control positions.







The San Gabriel Valley Radio Club was originally organized for civil defense activities, but got into the satellite tracking business with a vengeance. At the left above is their tracking antenna, while at the right is club prexy W6DTQ with some of the 25 miles of tape recordings made on the Explorer and Vanguard passes.  
(All photos by K6LOX)

## Strays PROW

Whoops!—It's W9CPV who is the editor of *Atomics*. Last month's Stray on page 70 had the call wrong. Our apologies, OM.

The "Little Monster" automatic key described in the November 1956, *QST*, used a simple circuit and a somewhat-complicated double-winding relay. Sigma Instruments, 170 Pearl Street, South Braintree, Boston 85, Mass., has had so many inquiries about the relay that they have set up a special specification for it: No. 92521. The price is \$5.00 postpaid.

»

Not much needed here in the way of additional information, except that our sources indicated that there would be about 200 of the license plates issued this year. Also, that's K5HVA himself kneeling, explaining the whole thing to accident investigator H. J. Bradshaw of the Oklahoma City Traffic Police. Only nine states are left not issuing call letter license plates, and of these seven are east of the Mississippi! Oh sure, we Easterners certainly are reactionary!

May 1958

Dot Evans, W1FTJ, has been issued certificate number 73 in the American Spaniel Club.

—W1HUR

The W1DBM (Phil Rand) book on TVI problems is no longer available from Remington Rand in New York, and they ask that you do not send them any more two-bit pieces. (There's an ad for his new book on page 148 of April *QST*.)



## WA2ABC de WV6DEF

### FCC Announces New System for Future Call Signs

THE NUMERICAL growth of amateur stations in the continental United States has been so great, particularly in the second and sixth call districts, that the system of call sign allocation set up right after World War II simply does not provide enough available calls. (See this month's editorial for background.) FCC in recent months has been studying this problem of a call-letter shortage and now has announced details of a new scheme. It is likely that it will be put into effect about the time you read this.

Where W and K calls are exhausted, new amateur calls, other than Novice, will be issued with a WA prefix. It is probable that such calls will be issued at first in only the sixth and second areas, and extended to other districts later when no more calls are available under the old system. In those two areas Novice licenses will be issued with a WV prefix; upon graduation the prefix will change to WA, with of course the same suffix letters. WNs will still be issued in areas where the supply of such calls is sufficient to make it practicable; upon graduation, such licensees in some districts will get a WA and in other districts a W prefix, depending upon what is available. Presently licensed WNs will, however, obtain W calls (and KNs will go to straight K).

FCC can no longer issue counterpart calls; the workload is simply too great. By "counterpart" we mean, for example, that if W1LVQ moves to Ohio, in the past he has been able to obtain W8LVQ if it was unassigned. This is not provided for in the regulations, but has been only a courtesy procedure on FCC's part, largely at ARRL request some years ago. However, the work involved is getting out of hand, and with limited personnel the Commission's staff has found itself bogged down and getting behind in the issuance of new licenses because of the time required for detailed handling of such special requests. If you move to another district henceforth, you will get an entirely different call suffix, and perhaps even one with a WA prefix, depending upon what sequence the Commission happens to be using in the district to which you move. If it happens, you're stuck. *Don't* write FCC with a complaint, or a request, for a call sign or prefix change because you don't like the one assigned; it will do you no good and only clutter up FCC desks. Ham radio is simply growing so big that these special requests can no longer be considered. (There are, of course, unusual cases where particular call signs can be made available, as indicated in the rules reprinted below.)

As you'll see from the quoted text, FCC also serves notice that it won't always be able to hold

vacant calls for as long as five years before reissuance.

The FCC notice is published herewith:

#### NEW CALL SIGN PREFIX TO BE ASSIGNED AMATEUR STATIONS

Amateur radio station call signs having the K and W prefix available for assignment in the second and sixth call areas of the continental United States will be exhausted in a short time. The Department of the Navy does not concur in the use of N calls for amateur stations because of its use of such call signs for the identification of certain military reserve radio stations. Consequently, the N call sign block, which is the only remaining call sign block allocated internationally to the United States from which a single-letter prefix amateur call sign can be derived, is not available for assignment to amateur stations. Therefore, when single-letter K or W prefixes are no longer available for assignment in a continental call area, such as the second and sixth call areas referred to above, two-letter prefixes will be assigned in accordance with the following:

1. The WA prefix will be assigned to all amateur stations except the stations of Novice Class operators.
2. When practicable, the WN prefix will be assigned to the stations of Novice Class operators, otherwise the WV prefix will be assigned to such stations.
3. Call signs with a two-letter prefix and a two-letter suffix will not be assigned to amateur stations located in the continental United States.

#### THE CALL SIGN RULE AND EXAMPLES OF ITS APPLICATION

Section 12.81(a) of the Commission's Amateur Radio Service Rules provides that:

"The call signs of amateur stations will be assigned systematically by the Commission with the following exceptions:

- (1) A specific unassigned call sign may be reassigned to the most recent holder thereof;
- (2) A specific unassigned call sign may be assigned to a previous holder if not under license during the past 5 years;
- (3) A specific unassigned call sign may be assigned to an amateur organization in memoriam to a deceased member and former holder thereof;
- (4) A specific call sign may be temporarily assigned to a station connected with an event, or events, of general public interest;
- (5) An unassigned 'two-letter call sign' (a call sign having two letters following the numeral) may be assigned to a previous holder of a two-letter call sign the prefix of which consisted of not more than a single letter."

All assignments of amateur station call signs will be strictly in accordance with Rule Section 12.81. The following requests are not deemed to be in accordance with this rule:

1. Requests specifying a certain one of the prefixes (i.e., K, W, WA) assigned in the pertinent call area; and
2. requests for specific suffix letters, except where the entire call sign requested in accordance with Section 12.81(a) (1) or (2) is identical in prefix letter(s), number and suffix letters to one previously held by the applicant

#### REASSIGNMENT PRACTICE REGARDING "EXPIRED" CALL SIGNS

While the established practice of assigning a call sign having the same suffix letters to the station of a Novice Class licensee who qualifies for a higher class of operator

license prior to the end of his Novice license term will be continued, the call signs of other Novice licensees will be subject to immediate reassignment to other applicants upon expiration of the Novice license.

The call signs of the stations of all operator classes other than Novice will be subject to immediate reassignment to other applicants unless an application for renewal has been received at the Commission's Washington, D. C., office prior to 1 year after the expiration date.

### ARRL FILES ON MM PROPOSAL

Last month in this department we published the text of an FCC proposal to permit maritime-mobile operation by amateurs in all bands between 7 and 148 Mc. while the vessel was within the boundaries of Region II — roughly, the western hemisphere. The ARRL Executive Committee considered this proposal at a meeting in March and decided to request Board authority, which was promptly granted, to ask FCC to postpone the comment date so that the matter could receive full discussion at the regular May meeting of the Board. While appearing generally in sympathy with the principles in the proposal, the Committee felt that severe problems could arise because of the great differences in phone-c.w. allocations among the various countries in this hemisphere, particularly in South America. The Committee noted, for example, that if Latin countries adopted the same regulations as the U. S. now proposes, their amateurs could operate maritime-mobile off both our coasts with A-3 emission in bands where U. S. amateurs are restricted to A-1. The Committee felt that the potential problems were of sufficient scope to require adequate consideration by the entire Board.

### STAFF ANNIVERSARY

We are happy to announce the addition to membership in the ARRL Hq. Ten Year Club of Dorothea S. Bailey, who has the responsibility

of handling all League award certificates, except DXCC, issued by the Communications Department. With the rapid growth of ham activity, this has been quite a job in recent years. Take the 5400 Rag Chewer's Club applications processed last year, the meticulous checking of 3500 code-proficiency papers plus the issuance of certificates of endorsements in addition to maintaining the records. Dottie takes all this in her stride, and still somehow finds time to handle the Old Timer's Club, A-1 Operator Club matters, computations on submissions in the Frequency-Measuring Tests, and issuance of WAS certificates after card-checking elsewhere in the department. Dottie's welcome addition brings the club membership total to 22 — with an aggregate of 444 years service.

### Ray Harding Cornell, W6JZ

It is with extreme regret that we report the passing of Ray Cornell, W6JZ, former Pacific Director and long an active supporter of the League. Starting as Oakland City Manager of ARRL in the early 20s, Ray served as SCM of the East Bay Section, president of East Bay Radio Club, radio officer Area 11, California Civil Defense, ORS, OO, OTC, A-1 Operator Club, MARS-Army, and transmitted scheduled code-practice broadcasts for the past several years. W6JZ was also very active in traffic work, having been the first Pacific Area Director of the Transcontinental Corps, first chairman of the Pacific Area Staff, FCC, and a manager of the Sixth Regional Net, all parts of the National Traffic System. His passing at the age of 55 leaves a gap in the ranks of ARRL and amateur radio which will be hard to fill.

**FLASH!** Because of a further expansion of the Loran navigation service, effective at midnight EST May 10, 1958, the band segments 1875-1900 and 1900-1925 kc. are removed from the present sharing arrangements by amateurs. Only the segments 1800-1825 and 1975-2000 kc. may still be used by amateurs in the geographical areas as at present. Details next month.

## Strays

An early April visitor to the Headquarters was SM5AZO, C. E. Tottie, who is vice president of the Swedish amateur radio society. Mr. Tottie, who was accompanied by his wife, spent the better part of a day touring the League's offices and W1AW, discussing IARU problems, and giving us a first-hand account of amateur radio activities in Sweden. He paused briefly in the League's lab to permit our photographer to catch him and Technical Editor W1DF (right) examining a new piece of gear that is being built for future description in QST.

May 1958



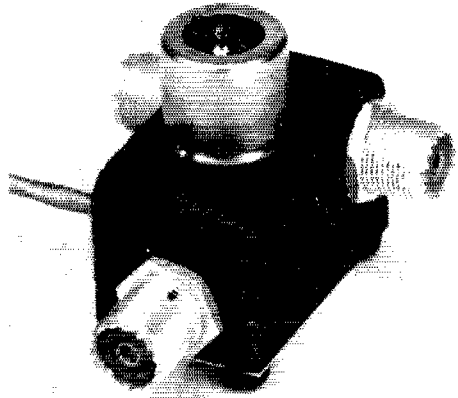
# • *New Apparatus*

## Electronic Coax Relay

COMPARING the size of the coax fittings with the complete Dow-Key Model DKC-TR electronic send-receive switch in the accompanying picture will show just how far miniaturization has been carried in this unit. Components are assembled on and in an aluminum casting measuring  $1\frac{3}{4}$  by  $1\frac{3}{4}$  by  $2\frac{3}{4}$  inches. The switch uses a 6AH6 tube for coupling the receiver to the coax transmission line, using a broad-band transformer in its plate circuit for matching the input impedance of the line to the receiver. When transmitter power is present on the line, rectification in the grid circuit of the 6AH6 blocks off the grid and holds the r.f. output of the tube to a value that can cause no damage to the input circuits of the receiver.

The 6AH6 requires a heater supply of 0.45 amp. at 6.3 volts and about 6 ma. d.c. at 125 to 150 volts on the plate. These must be supplied from an external source such as the receiver accessory socket.

The new r.f. switch is a product of the Dow Key Co., Inc., Thief River Falls, Minn.



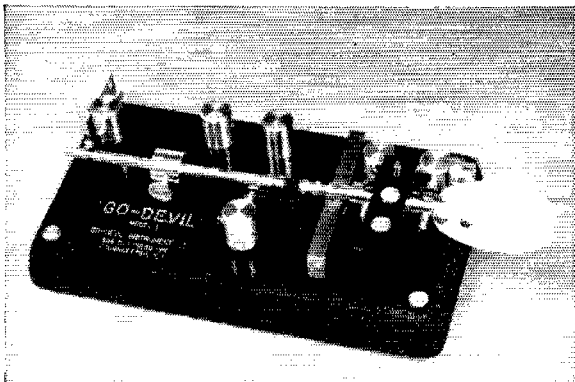
## New Semi-Automatic Key

THE "bug" has been a part of the telegraphing picture for so many years that novelty in design is seldom considered as a possibility. The new Model U "Go-Devil" shown here, however, does have some interesting innovations — including, of all things, provision for changing it into a "sideswiper" by the flick of a finger. This is done by throwing over the small lever mounted on the rear stop so it locks the vibrator arm in place. This feature would be useful, too, in a key used

to operate an electronic keyer, although the Model U as built has no separate external connections for the dot and dash circuits.

The new key uses a solid arm for both dots and dashes, and the spring tension is a screw-driver adjustment rather than the customary thumb screw and lock nut arrangement. The adjusting screws and springs are in the crosswise-mounted bar shown just to the left of the pivot bridge.

Contacts are  $\frac{3}{16}$ -inch silver and the vibrator reed is phosphor bronze. All working parts are machined. The entire assembly is mounted on an engraved metal plate, no connections being made to the hollow base casting. The vibrator arm is rather longer than usual, making slower speeds readily obtainable. The new key is made by the Go-Devil Instrument Co., 624 Dutchess Turnpike, Poughkeepsie, N. Y.





# Correspondence From Members -

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

## S.W.L.

Indio, California

Editor *QST*:

Instead of ignoring SWLs completely, I think that they ought to be cultivated by the ARRL. There is a tendency for hams to look down their noses at SWLs. Instead the SWL ought to be treated as an auxiliary arm of the amateur radio fraternity.

Amateurs understandably have an urge to convert anyone to becoming an amateur. It is like a missionary making a convert; like a lodge member interesting someone in joining his lodge. An SWL to the mind of the amateur should be a likely convert and there is no good reason why amateurs should not try to make amateurs out of SWLs. Failing that, there still remains many reasons why amateurs should also encourage people to become SWLs and going a step farther, fraternize and work closely with SWLs.

The ARRL seems to emphasize the importance of amateurs belonging to the League. The League gives the impression that the more support it receives from amateurs the stronger the League, the better the treatment of the amateur by any agency, governmental or other, that comes into contact with amateurs.

Presuming that there are about 160,000 licensed amateurs, I wonder what percentage are members of the ARRL.

Is there any estimate of the number of SWLs in the United States? How many of these belong to the ARRL? Would not membership in the League by SWLs be desirable for the League? These are questions that occur to me.

The ardent SWL can do all the good for the cause of amateur radio that the licensed ham can. And he has one added contribution to make, namely that he does not help clutter up the air lanes.

I think that the ARRL ought to foster a SWL division. It ought to carry a section in *QST* devoted to SWLs. It ought to organize activities among the SWLs just as it does among the licensed amateurs. By doing so it probably would develop considerably more ham material.

There is an organization in New Jersey that I believe is entirely devoted to SWL activities. It does an excellent job. However, for the SWL it means paying dues to an additional organization if he also wishes to belong to the ARRL.

We know that the SWL is not the same as a licensed amateur. He lacks qualifications that the licensee has. Yet, I believe that tying him in closer to the ham fraternity would be desirable from the licensed operators' point of view.

— William Fisher

## FREE-FOR-ALL

39-20 — 220th Street.  
Bayside 61, L. I., N. Y.

Editor, *QST*:

I'd like to see some discussion on the matter of opening the complete bands to both A1 and A3. I can see no reason why phone shouldn't compete with c.w. over the entire width of each of the bands. We've been educated and instilled with tradition for these many years to think of the c.w. portions and the phone portions of the bands as a set device for keeping the alleged rivalry separated by rules of our own making. I'm sure that the FCC doesn't give a hoot whether we use A1 or A3 just as long as we don't stick out over the ends of the bands.

I work about 75% phone (a.m. and a.s.b.) and about 25% c.w. and the ratio is declining to the point where the c.w. will approach zero soon. The principal reason for the reduced activity in the c.w. is the fact that a good 18- to 25-w.p.m. rag chew these days is very hard to find unless you're just plain lucky and run across an operator who

really enjoys his key-pushing. Just a cursory glance on 80 or 40 will show that the larger portion of the c.w. band is occupied with traffic nets, with the balance filled up with fellows who just want a quick contact, a signal report, and maybe a QSL. I lay no claim to being a hot-shot operator but I do like a QSO where I am aware that the other end is really reading me and not just giving me the "R" treatment. Rag chewing on c.w. is rapidly becoming a lost art and it's too bad.

In view of this situation I'd like to see all the bands open completely to both A1 and A3, including of course s.s.b., d.s.b., et al. Let's throw tradition out the window and take stock of ourselves here in 1958.

— Charles E. Gardiner, W2TB

## DOG BISCUITS . . .

467 Minnesota Avenue  
Buffalo 15, New York

Editor *QST*:

Congratulations to W4QT (December 1957) for his excellent letter concerning signal strength reports. He put the signal strength scale in proper proportion, as far as "Dog Biscuits" (db. to the cw operators) over S-9 are concerned. I have listened to many a strong signal, from 75 to 2 meters and I hope I never run across a 30 or 40 db. over S-9 signal, for fear that the receiver would be permanently damaged.

One thing I have noticed in particular: that as one operates the higher bands, the higher he goes the more accurate the signal reports. On two meters, for example, a strength of S-7 is quite respectable, and a typical report is S-5 for the fellows without a beam. When a rock crushing signal is on the air, and you accidentally point your beam in its direction, the signal reports is usually simply S-9 plus. Plus what? Who cares!

— Skip Aubry, K2LXC

## . . . DOG X-RAYS . . .

930 Fallen Leaf Way  
Redwood City, California

Editor *QST*:

Perhaps the readers of *QST* will be interested to hear of the formation of the Northern California Dog X-ray club, composed, naturally, of veterinarians who are interested in taking X-rays of dogs. This club is just getting organized and welcomes applications from qualified radio amateurs who have had Dog X-ray experience. So far, a club emblem has been designed which features the skeletal structure of a canine as seen in an X-ray. The club intends to award a DXCC certificate — handsomely designed — to those who submit evidence of having X-rayed 100 dogs. Duly receipted bills from customers will be accepted as evidence.

— Rexford G. Fido, alias G. B.

## . . . AND MUTNIK

336 Lexington Drive  
Menlo Park, California

Editor *QST*:

Don Eberlein passed on to me a carbon of Mr. Handy's letter to him of Feb. 12 regarding passages of satellite Explorer.

I have been getting predictions for 57B or "Mutnik" direct from the Smithsonian Astronomical Observatory and since about the middle of January their predictions have been steadily improving. I have been able to get a number of phototracks with timed interruptions which I have forwarded to the Smithsonian. This project of obtain-

(Continued on page 182)



# Hints and Kinks

## For the Experimenter



### AUDIO MUTING FOR THE COLLINS 75A-4

WHEN THE Collins 75A-4 receiver became available, many hams — particularly s.s.b. enthusiasts — were happy to find a provision for audio muting built into the receiver. The receiver has, in fact, provisions for two separate methods of receiver silencing. The first entails an “open the circuit while transmitting” means of biasing the r.f. amplifiers past cutoff. This method is quite satisfactory and requires no change in the average send-receive control circuit. However, the arrangement requires the application of positive 20 volts or more to the receiver’s audio-muting circuit. Some hams have found existing sources of d.c. in their shacks for this purpose. The only change necessary, then, was to change the contacts on the station’s transmit-receive relay from “open” to “close” while transmitting. This is necessary because the 20 volts has to be applied to the receiver during transmitting periods. Others were forced either to build a suitable power supply or drag out a number of dry cells. Both of these alternatives, unfortunately, leave something to be desired.

In looking for another suitable arrangement, I found that the 75A-4 could provide the 20 volts d.c. needed for the audio-muting circuit and, also, retain the “open the circuit while transmitting” feature. At first, I simply opened the cathode-to-ground connection on the audio-output tube. However, to keep the pops caused by switching to a minimum, it was necessary to connect a filter capacitor across this circuit. This, in turn, brought up another problem. When the receiver’s audio gain was turned up past the midpoint, modulation peaks blasted through with a monkey-talk quality (probably caused by leakage in the filter capacitor).

In any event, the voltage appearing across the capacitor while the silencing circuit was in the transmit position measured 21 volts. It was necessary only to run a jumper between this source and the regular audio-muting circuit and the problem was solved.

In case anyone should like to use this simple built-in power supply to silence their own 75A-4’s audio, here is a step-by-step description of the modification.

1) For purposes of orientation, place the receiver, upside down, with the front panel toward you. Locate  $R_{98}$  and disconnect the wire that comes from the panel wiring harness and connects to the left (ungrounded) side of that resistor. Run a bare wire jumper between the terminal you just removed the wire from (the left terminal) and the ground terminal on the same strip (third terminal from the left). This disconnects

the r.f. gain silencing circuit and leaves it in the “on” position.

2) Now locate the socket for the audio output tube,  $V_{22}$ , right below the terminal strip, and disconnect the bare wire running from Pins 2 and 3 to the ground lug on the terminal strip. Run a new wire between Pin 3 of the tube socket and ground. Then connect the free wire you originally disconnected from  $R_{98}$  to Pin 2 of the tube socket. Solder all these new connections.

3) Locate the “muting” terminal strip on the rear of the receiver. Connect a 10- $\mu$ f. 150-volt capacitor between Terminals 2 and 3, the positive end of the capacitor on Terminal 2. Now connect a jumper wire between Terminals 2 and M for the final step in the modification.

The receiver will now mute completely when no connection exists between Terminals 1 and 2 of the muting strip. Thus the normal “open while transmitting” breed of control circuit will perform nicely. Just connect this circuit to Terminals 1 and 2, and you are in business. (Note: If one side of your control circuit happens to be grounded, be sure to connect that side to Terminal 1).

One more thing. In the more recent 75A-4 receivers, a small subchassis has been added near the socket for  $V_{22}$ . This chassis mounts the potentiometers for S-meter zero and scale adjustment. In order to get at the terminal strip and audio output tube socket, it is necessary to remove the two chassis mounting screws and flop the chassis out of the way. Have no fears about moving the chassis, but be sure to remount it when the modification is completed.

Finally, operate the receiver with the combination power switch in the “standby” position. Otherwise, the silencing circuit will be bypassed and the receiver will remain on all the time.

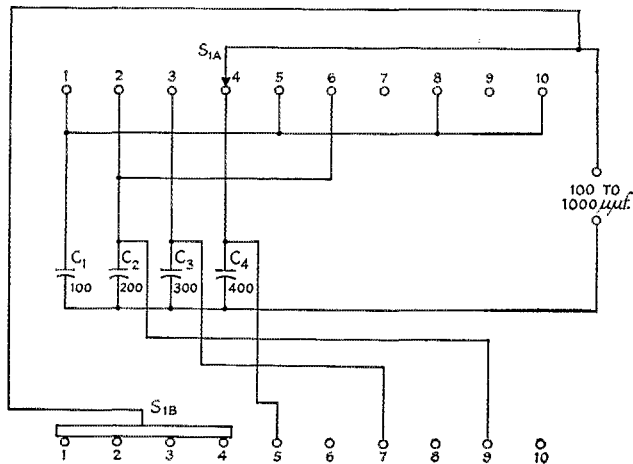
— Lawrence H. Mitchell, W7BAS

### WIDE RANGE LOADING CAPACITANCE USING ONLY FOUR CAPACITORS

ALTHOUGH the circuit shown in Fig. 1 is not new, it has not recently been presented in connection with the popular pi-section tank circuit. Its versatility should make it useful in the output portion of a pi-section tank or in other applications where a wide range of capacitance is required. The novel feature of the arrangement is that only four fixed capacitors are required for a ten-step capacitance range covering 100 to 1000  $\mu$ mf. in steps of 100  $\mu$ mf. each.

$S_{1A}$  and  $S_{1B}$  are mounted on a common index and therefore rotate together. Switch positions 1, 2, 3 and 4 connect the output terminals across capacitors  $C_1$ ,  $C_2$ ,  $C_3$  and  $C_4$ , respectively, giving a

Fig. 1—Circuit diagram of the ten-step capacitance system described by W2RIZ. Capacitances are in  $\mu\text{mf}$ .  $S_{1A}$  is Centralab type Y wafer and  $S_{1B}$  is a type P15 progressively-shortening section. Both switches are mounted on a type P121 index assembly.  $C_1$  through  $C_4$  are discussed in the text.



total capacitance determined by the particular capacitor in use. Notice that the capacitance of  $C_2$  is twice that of  $C_1$ , and that  $C_3$  and  $C_4$  have a capacitance of 300 and 400  $\mu\text{mf}$ , respectively. Switch positions 5 through 10 connect to various parallel combinations that provide 100- $\mu\text{mf}$ . steps from 500 up to and including 1000  $\mu\text{mf}$ .

Naturally, other ranges of capacitance may be obtained by using proper values of fixed capacitance. For instance, the range will be 200 to 2000  $\mu\text{mf}$ ., in steps of 200  $\mu\text{mf}$ . each, if  $C_1$  through  $C_4$  have capacitances of 200, 400, 600 and 800  $\mu\text{mf}$ . in that order.

— H. E. Preston, W2RIZ

### VARIABLE BAND WIDTH FOR THE HEATHKIT Q MULTIPLIER

AFTER reading "Variable Band Width Q Multiplier," *QST*, April, 1957, I converted my Heathkit Q Multiplier for variable band width in less than 15 minutes. All that was needed was a 2-inch piece of wire, and the entire job consisted of cutting and reconnecting one wire and ungrounding one terminal.

Results were excellent in that adequate band width for phone reception was obtained. Also, the ability to change band width to meeting varying conditions made some signals readable where otherwise they would have been lost.

Basically, the modification allows the NULL control to operate on both PEAK and NULL and connects the PEAK pot across the series resistor in the *broad* position of the switch. The *broad* position then becomes variable, with the PEAK pot acting as the variation control while the NULL pot acts as the regeneration control for both the NULL and PEAK condition.

A complete description — Heathkit style — of the modification follows:

- 1) The wire running from the switch (Terminal 7) to the PEAK adjustment control is cut at a point about  $\frac{3}{4}$  inch from the switch.
- 2) The  $\frac{3}{4}$ -inch piece of wire (from Terminal 7) is then soldered to Terminal 6 of the switch.
- 3) The 1-inch piece of wire (from the PEAK

control) is now soldered to Terminal 9 of the switch.

4) Next, connect a 2-inch piece of wire between the outside terminal of the PEAK control (this terminal previously unused) and Terminal 11 of the switch.

5) Remove the lead between the outside terminal of the PEAK control and ground.

Incidentally, the reason why the connection from switch Terminal 9 is not made to the previously grounded end of the potentiometer is that the span to the other end is much shorter.

— Cal Enix, W8ZVC

### MOLDING CLAY TOOL HOLDER

A SMALL sphere or cone fashioned from children's modeling clay makes a good holder for small screw drivers, drills, scribes, etc.

— Harley L. Christ, W9ALU

### STREAMLINING ANTENNA BOOMS

Hollow booms used in the construction of beam antennas frequently act as air scoops during high winds. This scoop- or air-trap action can lead to free turning or other undesirable motion of the beam.

Booms made with round tubing can be streamlined to suppress wind-driven movement by inserting a rubber ball in each end of the tube. Most dime stores carry a large variety of rubber balls — the type children play with — and you can usually find a size that will force-fit into the ends of the boom.

— William C. Martin, W6PLK

### WAX PAPER IN THE WORKSHOP AND SHACK

Try wiping tools with wax paper occasionally. This gives them a rust preventive coating without involving the messiness of grease or oil.

Wax paper is also used here at W2IEP to improve the appearance of crackle-finish cabinets.

— Jerome Blaisdell, W2IEP

## KEYING THE VIKING MOBILE TRANSMITTER

THE use of c.w. in mobile operation is becoming increasingly popular because it usually assures reliable communication even when the bands are badly crowded. Although several of the commercial transmitters provide keying facilities, the popular Johnson "Viking" was designed solely for phone operation. Fortunately, it is a relatively simple job to revamp this rig for c.w. In my own particular case, the job was speeded up by the assistance of Bill Karsten, K4BUR.

The Viking has a bias supply which delivers about 25 volts negative to the grids of the 6AQ5 buffer/frequency multiplier, 807 final and modulator tubes. This bias prevents excessive plate current when excitation is removed from the final and, as a result, the transmitter may be keyed by opening and closing the cathode circuit of the buffer/multiplier. Fig. 2A shows how a closed circuit key jack,  $J_1$ , may be wired into the cathode circuit of the 6AQ5. The jack must be insulated from ground and should be shunted with a 0.01- $\mu$ f. disk capacitor.

Fig. 2B shows how a d.p.s.t. toggle switch may be connected for use as a phone-c.w. switch. In the c.w. position, the switch grounds the high side of the audio gain control and shorts the sec-

ondary of the modulation transformer. In 6-volt models of the transmitter, it is practical to use  $S_{1A}$  as a heater on-off control for the audio tubes instead of connecting it across the gain control. However, the wiring arrangement of 12-volt models makes it difficult to install  $S_{1A}$  as a heater switch and the circuit of Fig. 2B should therefore be used.

$J_1$  may be mounted on the front panel directly to the right of drive control, and  $S_1$  may be placed just to the left of the coupling control. Drill the necessary mounting holes with care so as not to damage components already mounted in the panel area, and be sure to provide clearance between the new parts and the outer edges of the panel so that the chassis can be slipped back into the cabinet when the modification is completed.

Signal reports received while using c.w. with the Viking have all been T9. There is some feed-through from the oscillator with the key open, but it is noticeable only at extremely close range. Both v.f.o. and crystal control have been used and, even under the most trying road conditions, the stability leaves nothing to be desired.

— Cdr. Gay E. Milius, jr., W4NJF

*Editor's note:* With improper wire dress, it is conceivable that the installation of  $J_1$  will result in either transmitter instability or decreased output from the buffer/multiplier. Should either of these difficulties occur, it will be advisable to move  $C_8$  (original component) directly over to the cathode pin of the 6AQ5, or to install a new disk capacitor between Pin 2 of the socket and ground.

## NEUTRALIZING HINTS

AN ordinary vacuum-tube voltmeter, coupled by means of an r.f. probe to the output circuit of a transmitter, serves well as a sensitive "feed-through" indicator while neutralization adjustments are being made. With excitation and filament voltage applied to the final amplifier tube (be sure to kill the plate and screen voltages), adjust the neutralizing capacitor for minimum reading on the v.t.v.m.

If the transmitter is completely shielded and coupled to a coaxial output line, insert a coax Tee-coupler between the amplifier and the line to provide a tap point for r.f. probe.

— V. L. Clark, W6ZW

When experimentally determining values for a capacitive neutralizing system, it is extremely convenient if both the grid by-pass and grid-plate capacitors can be of variable design. The variable grid-plate capacitor, usually a tab of aluminum or a commercial unit, presents no problem, but a 1000- $\mu$ f. variable for the grid bypass may be a bit hard to locate, unless you happen to remember that a 3-section broadcast tuning capacitor, used with all three sections connections in parallel, will give a total capacitance of better than 1000  $\mu$ f.

After adjusting the circuit for neutralization of the amplifier, the capacitance of the large variable may be estimated so that the unit may be replaced with fixed capacitor.

— Charles R. Brown, W1HZE

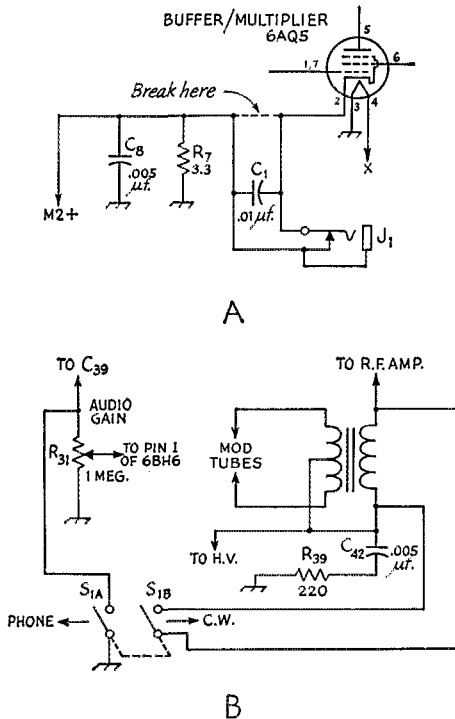


Fig. 2—Circuit diagrams showing the connections to a key jack (A) and a phone-c.w. switch (B) for the Viking mobile transmitter. Components other than  $C_1$ ,  $J_1$  and  $S_1$  are all original parts of the transmitter and are labeled with Johnson identifications (see operating manual for the transmitter).



## TIME-DELAY PROTECTIVE CIRCUIT FOR HIGH-VOLTAGE POWER SUPPLIES

A WELL designed power supply using mercury-vapor tubes includes protective circuitry which assures adequate filament warm-up time for the rectifiers. The simple circuit shown in Fig. 3 will, with the thermal relay specified, provide a thirty-second delay or warm-up period before the high-voltage transformer is turned. The circuit is used here at VE3AXC with an 866 supply and functions as follows.

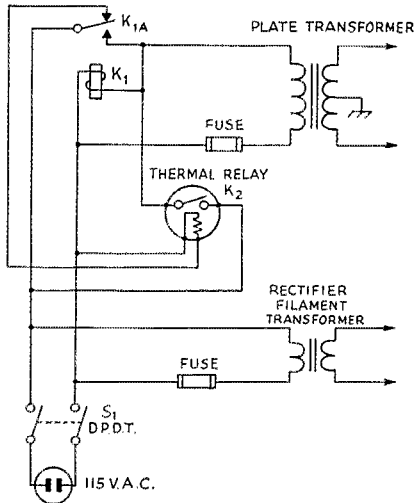


Fig. 3—Schematic diagram of VE3AXC's time-delay protective circuit for high-voltage power supplies.

$K_1$ —S.p.s.t. normally-open 115-volt a.c. relay.  
 $K_2$ —S.p.s.t. normally-open 115-volt a.c. thermostatic delay relay (Amperite 115N030).  
 $S_1$ —S.p.d.t. power switch.

When  $S_1$  is closed, 115 volts a.c. is applied to the heater of the thermal relay,  $K_2$ , through the normally-closed contacts of  $K_1$ . The rectifier-tube filament transformer also receives primary power with the closing of  $S_1$ .  $K_2$  closes thirty seconds later and completes the a.c. circuit for the solenoid of  $K_1$ .  $K_1$  now closes, feeds power through its normally-open contacts to the primary of the plate transformer, and breaks the 115-volt connection to  $K_2$ . The thermal relay cools off and opens, but  $K_1$  remains closed to complete primary wiring for the plate transformer.

A break in a.c. primary power (power failure or accidental unplugging of the line cord) will open  $K_1$  and disconnect primary voltage from the plate transformer. When a.c. power is restored the complete cycle of relay operation will repeat itself as long as  $S_1$  is closed.

—T. R. Baker, VE3AXC

## HOMEMADE LIGHTNING ARRESTERS

HEAVY-DUTY industrial fuses that have outlived their intended purpose may be quickly modified for use as lightning arresters. High-

current (70 to 600 amperes) 250-volt cartridge fuses with copper blade terminals are best for the job, and it should be possible to obtain one or more of them from an electrician or the caretaker of an apartment house, a store or a factory.

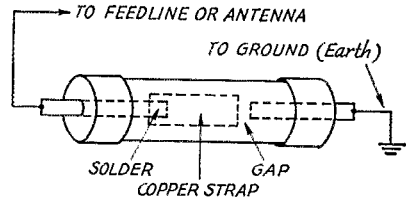


Fig. 4—Drawing of the homemade lightning arrester. A blown cartridge fuse and a small scrap of copper are the only materials required.

Fig. 4 illustrates a blown fuse revamped for arrester duty. The fuse element normally supported between the copper blades has been removed and a copper strap soldered to the terminal at the left. Notice the gap between the right end of the copper strap and the adjacent fuse terminal. Maximum protection against lightning is afforded by a gap of minimum width. On the other hand, the gap must be wide enough to prevent the arrester from flashing over when transmitter power is fed to the antenna. It is advisable to start out with a real narrow gap and then, by clipping short sections from the strap, adjust for a width that will stand up with the amplifier operating at full input.

The end bells for the fuses are fastened to the main cartridge by either rivets or self-tapping screws and, of course, these must be removed before the fuse can be opened for modification. Have a wastebasket handy during the opening-up operation so that you'll have a place to dump the lime dust packed inside of the fuse. If rivets are used in the original assembly, these may be replaced with self-tapping screws when the bells are refastened to the cartridge.

To give the arrester a real chance to work, use a short heavy lead between the ground terminal and a good ground system (earth).

—James A. Keesler, K8EXF

[Editor's Note: Newcomers to amateur radio may have missed a previous suggestion about using blown fuses in ham gear. W6TEN uses them as mobile loading-coil forms. See *QST*, April, 1953, p. 71, for details.]

## A SOURCE OF SHIM STOCK

Shim stock for enlarging the diameter of an undersized control shaft may be obtained from almost any empty toothpaste or shaving cream tube. Strips of metal cut from these tubes are pliable enough to be easily and tightly wrapped around a shaft, yet not so soft that coupler set screws will bite too deeply into it.

—Charles J. Boutell, W5FSC/9

# Invasion of Crete

BY STEWART E. FASON,\* SV0WQ, DL4AAP, W6GHM

I WONDER what it's like to go on a real DXpedition." Those were the words I spoke to Bill, W6GEB, back in 1949 shortly after we received our licenses. Little did I know that some eight years later I'd be right in the middle of one of the most widely worked DXpeditions of all time.

Last August while working my old pal Bill, W6SAI, he asked if there was any activity on Crete. I got to thinking that if a DX man like Bill who had two-hundred and sixty some odd countries needed Crete how many others would too. I fired up DL4AAP and started taking a survey of the DX men throughout the world. It seemed like the only guy (that sent QSL cards) who had ever been there was SV6UN in 1949. The only guy who didn't need Crete on c.w. or phone was Charlie, W1 u-no-hoo. "O.K. Schmedley," a wee small voice said, "whydontcha go to Crete." Sounds easy, huh? Thanks to the full cooperation of the Army and the Air Force it was a snap.

I contacted Larry, SV0WP/W3JTC, in Athens and asked if he could help with the licensing, etc. He treated me like a long lost brother. It seemed Larry was hoping that someone would operate from Crete in order to get the mob off his neck because every time he got on the air

people were always asking "Who is on Crete?" Larry handled all the red tape from that end and on the evening of October 3 my plane landed in Athens. Larry was right there to meet me, so we loaded the gear into his station wagon and headed for his place. Larry has a swell station consisting of a Ranger driving a BC-610. His receiver is a Collins 51J and the antenna is a tri-band quad. Sleeping was difficult that night, because for me "Twas the nite before Christmas."

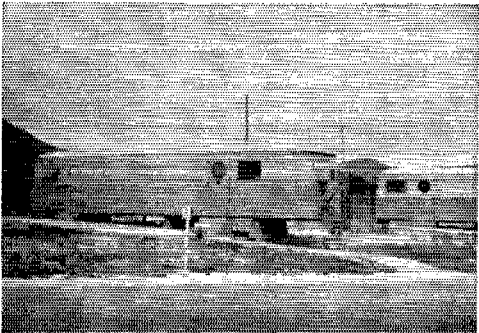
At 1000 I arrived at the Iraklion airport. I call it an airport because that is what the sign said. Actually, it was an open field with corrugated steel strips for a runway. The only building in sight was a small house at the end of the runway. There were a few of the natives standing around, so I approached and asked where the American Air Base was, and how could I get there. They mumbled to each other in Greek as if they didn't understand. After a little sign language I gave up and produced 100 drachmas and said in my best English that I'd give it to the first person that took me to the Air Base. One of the men with whom I'd been trying to converse said, "Oh, you mean that you want to go to the Air Base." He found me a taxi and I was on the last leg of my trip.

The island of Crete, as I learned from the taxi driver, is rich in legend but very poor ma-

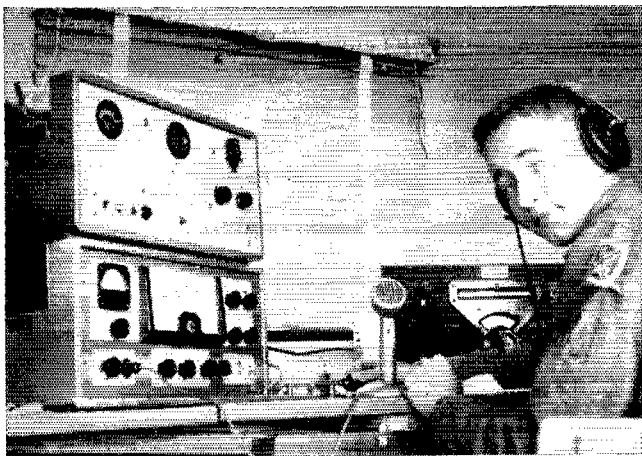
\* 6212 West 82nd St., Los Angeles 45, California.



At the upper left, in the usual order—SV0WR, SV0WQ and SV0WP. Below, at the left, is the air-conditioned trailer from which SV0WQ operated, while at the right are SV0WQ and SV0WN.



SVØWQ and his "home" station. This is the gear he took along to Crete, plus an electronic key



terially. Many of the people live in small adobe shelters (I hesitate to call them houses) that reflect an ancient origin. There is no mechanization among the common people and they till the soil in a manner that is thousands of years old.

Upon arriving at the base I contacted the only person I knew, who was Wes, SVØWN. He took me to the base commander and explained why I was there. The Air Force really laid out the red carpet. It seems they used house trailers for their dependent housing and there was a new one that was unoccupied. The Colonel gave his O.K. and at 1400 I was ready to start setting up shop. I really had to "rough" it in my new air-conditioned shack. "How about that," I thought to myself, "a DXpedition with all the comforts of home."

I surveyed the antenna situation and came up with the only possibility. There were two poles some 15 feet high and about 120 feet apart, so I strung up a single wire with the end running into the shack. It was almost time for my schedule with Larry, and the gear wasn't set up. The transmitter consisted of a Geloso 30-watt all-band exciter driving a 500-watt all-band final. I brought a Geloso receiver with me, but when the Air Force offered a new Collins 51J to the cause, I thought "Never look a gift horse in the etc., etc.", and took it. That red hot fist you heard from Crete came from my new Eldico model EE-3 electronic key. All I did was press the lil' red handle.

At 1400Z the last wire was in place, so I fired up on 7 Mc. and gave Larry a call. I was elated, to say the least, when he came right back with 599. I worked Ole, SVØWR, next with the same report. Every time I pressed the key, a little neon bulb lying next to the transmitter lit up. Upon close inspection, I found that the shack was hotter than the antenna. I hastily grounded everything but the B-plus and tried again. Amazing, it worked. The shack was cooler'n W6AM calling a ZL.

At 1458Z I called CQ on ten meters. Hooray, the antenna works. W1GAC came right back with 5/9. He was followed in quick succession by

WILLE, ØQGI, SDAW, and PY4FQ. The band went flat at 1605Z, so I went down to twenty meters. The band sounded good and a short CQ produced W6ALQ 559, W6CYV, K6EVR, W6FOZ, 6UED, 6AGO, 6GQB, K6BAG, and UYC. I'm convinced that those sixes sleep with one eye open. At 1640Z, OK1MB asked if I would like to work JT1AA. Whatdoyano, been on Crete for one hour, and the rest of all falls into my lap. From that moment on I had my sights set on making DXCC. On 20 c.w. I averaged about one per minute until I took my first break at 2355Z.

At 0005Z the 5th of October, I called CQ up ten kc. on 14060. The gang was up ten kc. all right. As a matter of fact, it sounded like about a thousand were up ten. I turned the speed control on my key up a notch and went to work. At 0006Z I logged W1RAN 579. One hour and 141 QSOs later I logged W9GRV 579. As it was, this turned out to be my best hour. During this record hour I worked, as expected, Good old Charlie Brown. I think he was trying to make RCC because he told me the story of his life and said I was his first SVØ (he didn't know I was on Crete) and pse QSL, ad infinitum. While "GOCB" was making RCC, seven other sharp ops were working Crete. Signals were good, and all I needed was your call sign once. Most of my c.w. QSOs went like this "de W8DUS K" . . . . "W8DUS 589 BK" . . . . "de W8DUS r ur 579 BK" . . . . "de SVØWQ rr SK". I have received some criticism about my rubber stamp operating technique, but the nice comments have upheld my methods. I was on Crete for the sole purpose of making as many QSOs as possible in ten days and couldn't care less what your name was, or how the weather was in "South Podunk." *Moral:* When working a DXpedition, do exactly as he does. If he doesn't give you his name, rig, wx, etc., don't give him yours — he is not interested.

The fine art of tail ending (and believe me, it is an art) was utilized as much as possible. Signals were good most of the time and I encouraged it. It's by far the fastest way ever

invented to work stations if it is used right. It's also the quickest way to make a DX station go QRT if he is not accustomed to it. While on Crete I listened to the best DX men in the world tail end, and this is how it's done. Placement of your signal is the most important. The station being worked may be S8, but your S5 signal will be heard if it is in the right place. Do not zero beat the station being worked, move up or down a few hundred cycles. Wait until the station being worked has sent the report and then sign only your call no more than twice at 10 w.p.m.

"Pse QRX for my friend W9XYZ. He is vy QRP es needs Crete." You and I have heard that sort of thing a million times and it strikes me the same way each time I hear it. Nuts! One night a W station called to say that ZK2AD was calling. That was the exception to piggy-backing. I wanted to work him as much as he wanted to work me, but as for W9XYZ mebbe next time he will build a beam. I can't figure out why a station should have priority just because he is QRP. W0QGI runs 25 watts and doesn't need any favors from his buddy who has 2 kw. Why, because Lloyd is a 1/C operator. Please forget this when you hear W6GHM call and ask you to pse QRW to CR8AC. Rules are made for other people, not me. Hi!

At 2335 Oct. 7 I tried 7 Mc. I worked W2DGW 579, but no one else seemed interested. After a few minutes W1JYH and W2OTC took the bait. Signals were good both ways, but no pile-ups. I made a few skeds on 3.5 Mc. with the states, but not a peep until the 12th when Vic, W4KFC, gave me a call on 14 Mc. and asked to try eighty. I told Vic about the previous failures of eighty meter skeds with stateside but said, "I'm game if you are." At 0200Z I called Vic on 569 and we ragchewed for a few minutes. His signal was very good, but try as I might he was the only one coming through. Europe was S7, so I spent a few minutes dishing out the QSOs. I

managed to work G3FPQ on eighty fone and c.w. to complete our try at working on all five bands both fone and c.w.

Prior to going to Crete I had equipped my rig to operate d.s.b. (I was under the impression that it counted, but alas, I had just one side-band too many). The high end of twenty was really jumping for a few minutes until I mentioned d.s.b. The boys who had already worked me on A-3 went away and things quieted down somewhat.

Reports on 21 Mc. left something to be desired so I made a vertical out of wire. The base was right on the ground and it had only two radials, but the reports would have indicated that it was a rhombic. It was three S units better than the wire. At 2100Z the 11th the West Coast had about the only shot at me on fone. 15 meters was wide open to the west coast for twenty minutes. It was lunch time on the west coast, and the boys must have been eating, 'cause only five were worked: VE7AIH 5/9 K6SED 5/8, and W6's BSY, AED, and SAI 5/5. The band closed as fast as it had opened.

Time was drawing to a close and after working UI8KAE for my last new country, I called one last CQ on 14 Mc. at 0340Z on the 11th of October. W4AH answered and when we finished our QSO for the first time on twenty meters there was no one else calling. My plane was due to leave for Athens in just six hours and I was dead tired. With a little regret, I pulled the big switch and SV0WQ/Crete QRT for keeps.

The rig worked slicker'n a greased pig and I made 3502 QSOs in 119 countries and 40 zones. SV0WQ worked DXCC, WAC on four bands c.w. and three bands fone, WAS on c.w. and WAZ. I received FOC for my Crete efforts which made me very proud. One award I'm sure I won't get for SV0WQ is RCC.

My deepest thanks to the thousands of hams throughout the world that made my DX dreams come true.

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## Strays

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Residents of the same town and members of the same club are KN8EKJ and KN8IKJ, together with KN8EKI and KN8IKI.

K5MGR has found a way to have inexpensive but colorful QSL cards. He buys in quantity picture post cards (paying about \$5.00 per 500) and then has a friend overprint them with his call.

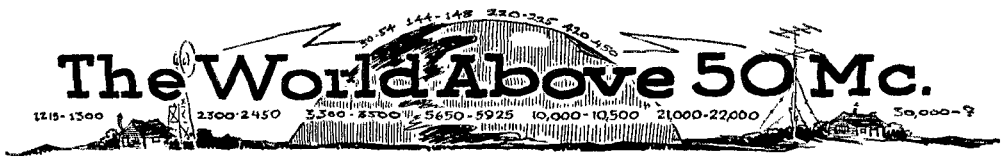
When KN5LZB and KN5LZD went down to take their Novice exams, they discovered that they had been born on the same day, both being 13 years old. They now plan to take the Conditional exam together.

W2RSR snagged postoffice box 73 in his town.

VK4PR reminds us of a Queensland convention on June 7 and extends an invitation to all of QST's well-heeled readers.

W5WMT reports that he, K5JFM, K5IXG, K5EHIK, K5EKQ, W5ZAT and W5YFC carried on a QSO in a drive-in theater, using their auto horns and c.w. He doesn't mention what the other movie patrons thought of the racket.

We hope everyone enjoyed the qualifying run from W1AW on Feb. 18, as announced on page 91 of Feb. QST.



CONDUCTED BY EDWARD P. TILTON,\* W1HDQ

**R**IPPING April from the calendar probably has more significance for v.h.f. men than for any other breed of amateur. DX via the  $F_2$  layer, so prolific these past few months on 50 Mc., has been fine, but we all know that it can't last forever. On the other hand, we know that come high or low sunspot numbers, May will bring us conditions we all enjoy. The first skip signals on 6 are no less welcome than the first spring birds and flowers, and the rising trend of tropospheric bending on 144 Mc. and higher bands is equally good news.

Let's talk about the sporadic-E skip for a moment. Though we've been working E-layer DX for nearly 25 years now, there's something about those signals suddenly booming in out of nowhere that provides a thrill not found elsewhere. Perhaps it's because, even now, we know so little about it all. Can any of us, regardless of how closely he may have studied the antics of the ionosphere, predict with any degree of certainty where and when the band is going to open?

Let 2-meter men think that this is entirely a 6-meter man's game, it should be said that we also do not yet know the highest frequency that can be bounced back to earth from the E region of the ionosphere. Once we thought it to be not much above 60-Mc. When f.m. broadcasting moved into the 100-Mc. region we had to revise our ideas, for almost at once the new stations began to be heard over paths that strongly suggested sporadic-E propagation. TV DX records added further evidence. Though TV loggings over distances beyond 500 miles show a decrease with increasing frequency, there is plenty of sporadic-E skip in all low-band channels.

How about 144 Mc. then? A good question, and one that may be closer to being answered when evidence being gathered during the IGY is studied thoroughly. Over the years a handful of DX contacts have been made on 144 Mc. that look like E-layer doings. The long-standing 1400-mile record set by W6ZL and W5QNI, and several other contacts made at the same time over slightly lesser distances, seem chargeable to the E layer. So does the 1200-mile work of W5VY and W8WXX that preceded it. Both breaks came when 6 was loaded with sporadic-E skip and ionization densities were known to be very high. There have been other examples, almost entirely in the southwestern part of the country.

On the other hand there have been many instances of 2-meter DX over paths that are the

right length for E-layer propagation, but at times when there was little or no evidence of sporadic-E skip on 6. The two contacts made across the Pa-



1 W0ZJB	11 W2IDZ	21 K6EDX	31 K0GQG
2 W0BJV	12 W1LLL	22 W5SFW	32 W7FFE
3 W0CJS	13 W0DZM	23 W0ORE	33 W0PEP
4 W5AJG	14 W0HVW	24 W9ALU	34 W6BJI
5 W9ZHL	15 W0WKB	25 W8CMS	35 W2MEU
6 W9OCA	16 W0SMJ	26 W0MVG	36 W1CLS
7 W6OB	17 W0OGW	27 W0CNM	37 W6PUZ
8 W0INI	18 W7ERA	28 W1VNH	38 W7ILL
9 W1HDQ	19 W3JUJ	29 W00LY	
10 W5MJD	20 W6TMI	30 W7HEA	

W1FOS	47	W4QN	44	W7JRG	44	W2TKX	47
W1CGY	46	W4AKX	42	W7BOC	42	W2KYF	47
W1LSN	46	W4RPE	42	W7FV	41	W0ZTW	47
W1AEP	46	K4DNG	41	W7CAM	40	K0JJA	47
W1RFU	45	W40XC	41	W7MKW	40	W8JOT	46
W1SUZ	44	W4ZBO	41	W7YJE	38	W0USQ	45
W1ELP	44	K4GYZ	41	W7QDJ	34	W0FKY	45
W1KHL	44	W4FNR	40	W7UFB	33	W0QVZ	45
W1LGE	42	W5VY	48	W8WPD	47	W0FPZ	44
W1PZ	42	W5LFQ	47	W8NOH	47	W0YJP	44
W1FVZ	41	W5GNQ	46	W80JN	46	W0URQ	44
W1HKO	40	W5FSC	45	W8SQU	46	K0GKR	43
W1CLH	40	W5ONS	45	W8HTX	46	W0JHS	43
W2RGV	47	W5JLY	45	W8NQD	45	W0LPI	43
K2JNS	16	W5ML	44	W8UZ	45	W0WNU	42
W2AMJ	16	W5XZX	43	W8RFW	45	K0DXS	42
W2BYM	46	W5VY	43	W8LPD	44	W0PHD	41
W2FHH	45	W5FXN	43	W8HJR	44	K0AKJ	40
K2CBA	45	W5JME	42	K8ACC	43	V63AET	47
W2SHV	45	W5CYW	41	W8ESZ	42	VE7CN	47
K2AXQ	43	W5FAL	41	K8CUC	42	VE1EF	38
K2ITQ	43	W5HEZ	41	W8EVH	42	VE3AIB	37
K2ITP	43	W5BXA	41	W8YLS	41	E12V	41
K2LTV	41	K5ABW	40	W8INQ	40	VE3BX	35
W2ORA	40	W6WNN	48	W9BRN	48	VE3BHQ	32
W3TIF	47	W6UXN	48	W9ZHB	48	VE1OY	32
W3KKN	45	W6HAZ	47	W9QUV	48	VE1PO	31
W3KMY	45	K6JCA	47	W9VZP	47	VE2AOM	31
W3RUE	42	W6JKN	46	W9RQM	47	VE3DER	31
W3NKM	41	W6ANN	45	W9QKM	47	SM7ZN	29
W3MQU	41	W6NDP	45	W9JFP	47	CO2ZX	27
W3MXW	41	W6ABN	45	W9DSP	47	XE1GE	27
W3OTC	41	K6GTC	44	W8AAG	46	VE1WL	26
W3FPH	40	W6OCG	43	W8UIA	45	P21AE	26
W3LFC	40	K6HTY	43	W8UNS	45	SM6ANR	24
W4EQM	47	W6NIT	42	W8MHP	43	SM6BTT	23
W4UCH	47	K6RNG	41	W8SWH	43	VE1ZR	23
W4UMF	47	W6TWS	41	W8MHP	43	VE3OJ	22
W4FBH	46	W6CAN	40	W8KLR	43	CO6WW	21
K4DJO	46	K6FRG	40	K9MJD	43	LA9T	20
W4QOR	46	W6SWG	40	W8JCT	42	VF4HS	20
W4AZC	45	W7BQM	47	W8MFP	42	KH6UK	17
W4LNG	45	W7DYD	47	W8SWH	42	JAI4UH	16
W4CPZ	45	W7INX	47	W9EPT	41	LU9MA	16
W4FLW	45	W7ACD	46	W9IMG	41	JA8BU	14
W4MS	44	W7FDJ	46	W0QIN	17	ZE2JV	12
K4HOB	44	W7JPA	44	W0NFM	47	JAI4AT	12
						VQ2PL	11

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



revolving to v.h.f. ears, so Jack went to 80, c.w. and s.s.b. This was fun for a while, for it afforded a chance to work some old friends from his former stint in Germany.

But 80 is a mess in Europe, too, and Jack was starting work on a new 2-meter s.s.b. job when he learned that his gear from the States was finally on the way. The 4-125As should be on the air with 144-Mc. s.s.b. by the time this appears in print. Jack has a high location, and with a big antenna and the maximum permissible power, 500 watts, he hopes to work some real DX with both s.s.b. and c.w. on 2. There'll be some aiming at U.S.A. before long, too.

Anyone want meteor-scatter skeds with Kansas? WØZJB, Wichita, now has a 10-over-10 up for 144-Mc. DX work, and it is showing better results than any previous array.

A fairly high level of local activity always helps to keep things interesting on a v.h.f. band, but it is not necessary. W4AIB, Aiken, S. C., has few stations to work within the local range, yet an examination of his log recently showed that he had worked 87 different stations on 144 Mc. Jess uses a 4X250B at 500 watts, AB1 s.s.b. or c.w.

Promotion of v.h.f. activity through the framework of the ARRL Field Organization is going on in many areas. Section Communications Managers are appointing VHF PAMs, and as a result, v.h.f. men (often remote from ARRL ties) are becoming more closely allied with the setup that has been such an important part of the amateur picture on lower bands all these years. The worth of 50 and 144 Mc. for emergency and c.d. work is an important factor here, for to be of greatest value v.h.f. men should be familiar with AREC organization and procedure.

In the East Bay Section, SCM W6OJW is promoting semi-annual v.h.f. contests, the first of which will be held May 31 to June 2. Rules and scoring are set up to fit local needs within the Section. Copies of the rules are available from Bill Southwell, W6OJW, 200 South 7th St., Dixon, Calif. Certificate awards go to top-scoring mobile and home stations. Here's a fine chance to warm up for the June V.h.f. Party and Field Day, as well as to promote v.h.f. interest locally.

### 50-Mc. DX News

Last month we had it all written that transcontinental DX ran out after early February, but we had to lift the statement before press time. There was more work between the coasts sporadically, not only through February, but well into March. We're not saying that it's over, any more, in view of current guesses about the state of the solar cycle, but the record after early March does show plenty of blanks. North-south and other transequatorial DX was going strong in many quarters up to press time, however.

South American contacts were reported from every section of the country. These were mainly in the morning hours, but W4FNR, W4GJO and W4RAMU, among others, worked some evening stuff — true transequatorial scatter. But probably the most interesting development was the appear-

ance of ZLs and VKs in the worked lists of many stations in the west. K6RNQ, Oakland, Cal., reports New Zealand heard or worked on March 1, 2, 4, 5, 7, 10, 11, 12, 13 and 15. Bob also heard the IGY stations in South America March 3, 5, 6, 7, 10, 11, 12, 13 and 15. He worked CE2AX, LU8-MAO, LU9AT, and heard CX2RE on the 12th.

W6BJI, Fresno, says that ZLs came through about half the days in March, usually between 1230 and 1430 PST. Most consistently heard are ZL1DE AHQ MQ MF WN and 2DS. Gib worked LU, CE and CX in a 2-hour opening on the 13th. His big surprise came on the 15th, when he worked VK4NG at 1622 PST. This was a "first" for both parties. VK4NG, believe it or not, was having trouble raising Ws, because they were so busy working sporadic-E skip, between California and Texas, New Mexico, Arizona, Colorado, Utah, Wyoming, Oklahoma and Louisiana!

The most common DX for the Australians, according to VK4NG, is to Japan. He had worked 465 different JAs, up to March 15! VK4NG is on 50,23 Mc.

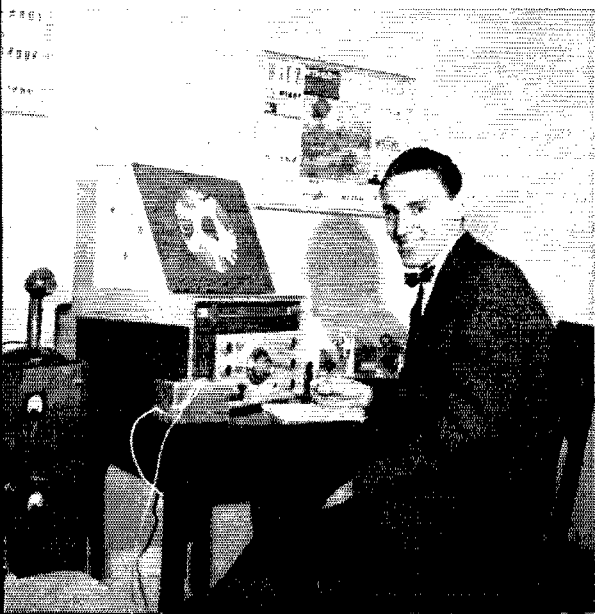
ZL1BJ writes that he made his first U.S. contacts Feb. 20, and worked W6s the next 5 days. His only contact outside of California, up to the end of the month, was with W5VY.

The Northwest got into the act with South America and New Zealand. W7RT, Seattle, worked 4 JUs March 2, and his first New Zealand station, ZL1MQ, the same day. Many others from both countries were heard. John tried hard for a European contact during the time that other sections of the country were working across the Atlantic, but the closest he came was a heard report from G2BVN, Dec. 22, 1957. The RSGB Bulletin also reported reception of W7RT by G4LX. The only northwestern W7-Europe QSO that we know of was pulled off by W7ILL, Big Piney, Wyo., and E12W.

Some rare QSOs, believed to be firsts: W6ABN — KP4-ACII and ABN, Feb. 22. Feb. 23: VP5RS (W8HRV at mike) worked K6JJK, 0915 PST. This is believed to be the first VP5 QSO from this country on 50 Mc. Also a real rare one on any band until recently: FS7RT, reported by WØWNU and others, Feb. 18: VU2EJ, Poona, India, worked 4X4IX crossband, with 4X4IX on 28 Mc. VU2EJ runs 25 watts to an 807 on 50,216. Antenna is a cubical quad.

One trouble with the ARRL IGY project: we get so many reports that digesting them into something sensible that will fit into our space allotment is all but impossible. We have written nothing here, for instance, of the work done by ZS3G, ZS9C, the several ZEs and VQ2PL, noteworthy as the work of these stalwarts has been. About all we can hope to do is to pick out a few highlights. When one of these columns is completed, we send it to the printer certain that it's going to look to a lot of v.h.f. enthusiasts as if their letters never reached your conductor's desk. They are appreciated, especially where you take the trouble to give interesting and complete detail. They are invaluable in giving us perspective, even though they may not always make the pages of *QST*. Keep 'em coming, by all means!

Two Swedish amateurs who have done much to make life interesting for American 50-Mc. enthusiasts are, left, SM6ANR and SM7ZN. Details of their stations are given on the next page.





There was QRM on 3300 Mc. when members of the San Bernardino Microwave Society gathered at the home of W6VIX. Each of these setups was in working order at the time this picture was made. Left to right: W6OYJ, W6IFE, W6SDE, W6VIX, K6LZF, K6MBL and W6BGK.

SM6BTT brings us up to date on the achievements of the 6-meter group in Sweden. It seems that all the SMs who have been working on 6 are also old hands at 144 Mc. as well. SM6ANR is one of the 2-meter pioneers, and holder of the European 2-meter record of 752 miles. This was for a March, 1953, QSO with G5UF. He is also one of the first European 2-meter men to have worked aurora DX. On 6 he runs only 20 watts, and his antenna is a quarter-wave rod working against an iron rail 11 stories above ground — but he has worked 134 different stations in 24 states, in a total of 210 DX QSOs.

Leader in the SM DX on 6 is SM7ZN. He has a splendid rural location, 550 feet above sea level. He uses long V antennas, and 150 watts to an 807. SM7ZN has worked 29 states, all call areas except W6 and 7, and 190 different stations.

Len, SM6BTT, has not been able to be on as much as the rest, but he has worked 122 stations in 23 states, also lacking on W6 and 7. His rig has a 5894 final, 75 watts c.w., 50 watts phone. A crystal-controlled converter is used with an NC-300. The antenna is a 6-element Long Yagi, similar to the one described in October QST.

Also from Sweden, SM5KV writes that beginning early in March a signal was on 6 from Spitzbergen. SM5AQT/LA/P, 50.03, c.w. operates daily at 1530 and 1830 GMT. May be late for transatlantic work, but at that far-north position, who can tell?

The farthest-north 6-meter station, W21DZ VE8, summarizes his work in a PRP report. Jan. 16 saw Ed make his first contact, with W5SPW, as reported last month. His biggest day was Jan. 19, when he worked 71 different stations in W2, 3, 4, 8, 9 and 0, between 1228 and 1449 MST. On Jan. 28, Ed set up at 69° 30' N, 121° W, and worked W4, 5, 6 and 7 between 1451 and 1528. All this was done with one of Ed's famous "Little Lulu" rigs, running 4 watts, and feeding an 80-meter doublet.

### Clubs and Nets

**Cleveland Area** — W8KBL announces the formation of the Greater Cleveland 6-Meter Club. Purposes: To encourage operation in upper portions of the 50-Mc. band. To assist Technician-class ticket holders to progress to General or higher grade, through code practice and more c.w. operating. To exchange information of a technical nature that will be helpful to other members. To experiment with various types of equipment to improve techniques generally in use. To provide a medium for purchase, sale or exchange of v.h.f. gear. To work with other 6-meter groups throughout Ohio. To cooperate to the fullest extent with ARRL to improve the standards of amateur radio generally.

First-on-the-air meeting was held March 17, at 2100 EST, with K8GJW as net control. Crystals are being furnished for the net frequency, 50.85 Mc., for \$1.00 each.

The Two Meter and Down Club of Los Angeles is promoting greater interest in 220 and 420. At the March 5 session, for example, K6YOX brought in his converted 522, 220-Mc. version, to show the gang how easy it is to put these still widely-available surplus jobs on 220. W6OJN demonstrated his 432-Mc. conversion of the Gonset Communi-

cator. This uses a tripler stage driven by the 2E26 in the Communicator. The receiving system is a simple converter working into the 6-Mc. i.f. system of the receiver. Club president W6MIU reported that a 432-Mc. Jamboree held Feb. 27 was a big success.

The Jamboree idea came about as a solution to the problem of activity on 432. Feeling that many are more interested in experimenting with u.h.f. gear than in using it on the air, the club sent out word to fellows known to have been active in recent years that Saturday, Feb. 27, would be 432-Mc. night. The result was the appearance of more than 20 stations when the Jamboree began at 2000 PST. Instead of the vast silence that so often greets the would-be operator on 420, there was actually QRM. More Jamborees coming up?

From the Northwest, the Valley Amateur Radio Club, Puyallup, Washington, announces that they are going for the June V.H.F. Party in a big way this year. A major effort in this department has been made in the past by W7PIJA, with the help of several other v.h.f. enthusiasts. The idea has been to head for a good location, with all the v.h.f. gear that a group can muster. This year VARC will take over the organizing of what promises to be a real Field-Day type expedition. Location will be a fire tower on a 2000-foot elevation in the Pack Mountain Demonstration Forest, 10 miles west of Mt. Ranier. Operation is planned for 50, 144, 220, 432, 1296 and 10,000 Mc., with high power on the lower bands and good beams for all. Schedules will be kept with interested parties, who should write W7OIV.

Here's a fellow who wants 220-Mc. skeds, and has the gear to back them up. K6GTG now has an 88-element array and a 1-kw. rig on 221.5 Mc. Any takers?

### OES Notes

**K1BML, Bethlehem, Conn.** — W1FHP and K1BML received V.H.F. Institute awards for contacts above 146 Mc. (See Jan. QST, p. 68 for details of the award.)

**W1HDQ, Canton, Conn.** — CE8AE, NBS experimental station at Antofagasta, Chile, 49.96 Mc. is heard on many occasions when no amateur DX is audible. With 20 kw. that's understandable, but good reception of this signal should mean that hams could be worked if they were on in the right places at the right time. Signal is heard during mornings following auroras, usually coming in around 0915. It often has a fast TE-type flutter, though it has been heard as a weak but steady signal. On March 12, when XE1GE and HC1JW were worked, CE8AE was 89-plus for a couple of hours. Backscatter signals were heard from all over Eastern USA, and the QSO with XE1GE was made with beams southeast at both ends.

**W1JWB, Westport, Conn.** — Informal get-together at 2200 supplements area net activity on 147 Mc.

**W3GKP, Spencerville, Md.** — Checking voltages developed on telephone line as indicator of aurora, as suggested some time ago by W3TDF. Talk with a retired Bell Engineer turned up info that one volt per mile of line corresponds to severe disturbance, with maximum developed on N-S lines. Now using recorder on v.t.v.m. connected to line, with pre-

(Continued on page 178)





CONDUCTED BY ROD NEWKIRK,\* W9BRD

**Wow:**

The countdown commenced just as moderator Mike Ruffoon splintered his gavel to open the 1958 plenum of our redoubtable DX Hoggery and Poetry Depreciation Society. We heard a sepulchral S9 voice intone, "*Minus one hour and thirty minutes.*" Volatile dispersions of Old Haywire began to cast their spell—it was May again, we were gay again, and Hy High charged forward to deliver our symposium's emetic keynote:

I vote them the rack, then the noose,  
After copious verbal abuse —  
All swine in the land  
Who sneak out of the band  
Or will stoop to some similar ruse.

The loudspeakers boomed, "*Minus one hour even.*" as Hal R. Lauder contributed this usable if inexcusable thought for the day:

One hog largely lacking in tact  
Was sorely perturbed by the fact  
That club mates grew cool  
In his presence, the fool —  
In due time this sad sack got sacked.

"*Minus one half hour.*" thundered the p.a. once more, and Les N. Sadley braved a shower of pre-heated Wouff Hongs to take his turn:

Young Chirpwell is noisiously hartassin'  
With click-spreadin' erud most embarrassin';  
His note is so foul,  
Such an ear-wrenchin' yowl,  
That static sounds sweet by comparison.

"*Minus fifteen minutes.*" rasped that fearsome voice — and did we hear muffled screams from below? Harry Uppensign next boldly opined:

I move they be quartered and drawn  
Or shot at the very next dawn,  
Those piggies who hold  
DX rarer than gold  
And yak till the signals are gone.

This murderous motion was noisily seconded as the voice blasted, "*Minus sixty seconds.*" Otto Sendbetter hurriedly howled:

Three jeers and a boo for MrGoog  
Who has nothing better to do  
Than send N-S-T  
Or sit on his key  
While spraying an earful at you.

The clamor increased to a shattering storm. Less fortified DXHPDS members fainted dead away as that doom-laden audio again shook the very walls: "*Minus five seconds — four — three — two — one —*"

A series of cataclysmic concussions silenced our stentor and felled us like so many tenpins. With a terrifying WHOOSH! up through the floor of the hall crashed a gigantic rocket bearing a contorted figure imprisoned in its transparent nose cone. Rising majestically on a sizzling stilt

of saffron fire, the massive missile roared through the roof and streaked for outer space. We regained our feet and senses just in time to bid a razzing farewell to our elected DX Hog of the Year, now off to the asteroids.

**What:**

And they are even rarer than Fort Sao Joao Baptista de Ajuda, by golly. But let's slip that morbid orbit, hop aboard our "How's" Bandwagon version of *Die Kleine Bimmelbahn*, and see what's cookin' in the slots. . . .

**20** c.w. churns its upstairs ions mightily as propagation conditions trend toward summer status up W K VE VO wct. W1s ARR (103 62 record), ECU MBX MLJ TS, W2s FXA (145 131), GVZ (226/216), HAZ HAJJ (248), W3s CMN (36-15), GRO (81/53), LOS (40/20), NCF, W5CAN, W6s CG (233), HPB KG ZZ, W7DJU W7GYR, W8s CSK (79-48), IBX YIN, W9s JIN URI, K1CCA, K2s QXG SBT VAB, K4s HIG HPR, IEX PHY, K6s ERT HFA KH (118-79), OWQ (128), SXA, K8DQI (120-04); 11ER and ON4KT (184) put the finger on CE9s AH AK, CN2AC, CN8s galore, CRs 5AC 6CK (14-019) 2 GMT, 7IZ 8AC 9AH, GT2s AI BO (42) 2, DL8AZ (ex-9S4AZ), DM2ANG, DU1 JFD 78V, EAs 8BF 9AP 9AY 23, 9BF, ET2US (66) 0, 9HVV FG, FAs in number, FB8s CB CE BX (88) 7, YY (20) 12 in Antarctica, ZZ of *Ile de Nouvelle-Amsterdam*. FF8BX, FK8s AS AT (20) 4-5, FL8AA (22), FO8AC (34) 5, FO8AJ (30) 20, FY7YF (68) 11, GG2FC, HA8 2MF (33) 3-7, 5AM 5AIR (80) 20, 5KBP 9KOB 7, HB4FE of the Swiss military, HG1LE 2, HE9LAC (95) 8, HH3L (98) 3, HK3JC (29) 12, HLs 2AJ (10) 19, 9KT 8KS, HR2FG (6), HS1C, HZ1s AB (22) 0-3, VB 23-0, IS1MM, JAs in profusion [Where dat, Boss? — *Jeeves*]. JZ0HA (33) 16, KA2s RB SH, KC4s USA USB (35) 6-9, USV, KC6JC (20) 4-5, KGs 1BB (51) 22, IDT, 4AQ (108) 1, 6AAV 6FAE, KP6AL, KR6BF, KS6AD (30) 5, KV4AA, KX6AF, Svabard's LA2JE P (23), far-south LUs 1ZE (70) 6, 3ZO (70) 8, 4ZI (48) 6, LX1SI (57), LZs IUR 2K3C (40) 8, OA4FT, OD5LX, OH0NC (100) of the Alands, OR4VY of the Belgian Antarctic, OX3s ET KW UD (45) 9, PJs 2AN 2AV 2ME (Sint Maarten), 3AB (80) 2, PZ1AP, a handful of SFs, ST2AC (93), SV0VP, TFs 2WC7 5, 3KG, UA9s CAI KCC KDL 22, KHA KJB, UA6s CT JB 23-0, KAG KAR of Dickson Isle, KFG KSA 0-1, a plethora's worth of European UAs and UB5s, UC2s CB (88) 0-7, KAB (68) 4, UD6AT 0, UF6AM (25) 5, UG6KAA (28) 16, UH8BA (30) 5-16, UI8KAA, UJ8AG, UO5IT (65) 3, UPOL6 (80) 0-8 up Santa's way, UP2s AT (65), KCB



\* 4822 West Berteau Avenue, Chicago, 41, Ill.

(40) 8, UO2s AB AJ AW (35) 6, KAB, UR2s AN (20) 7, BU 5, VK9VM (15), VK6s AS TC TR (40) 18, VPs IEE 5AR 7NG 7NM, VO2s 2AI (65) 23, 2EW 3CG 4AQ 5GJ (35) 21, 8AQR (30) 20-21, VR3s A M N, VS1s FZ GK HC HJ HU HZ (66) 11-12, JF 23, VSs 2DW (37) 0, 4BA (86) 13-16, 6AE 6DV 9AC, W9NTJ, KG6G, XW8AI (28), XZ2TH, YJ1DL (34) 12, YKIAT (now kaput), YN1AA, YO2s B2M (69) 22-23, 3KAG, YV6s GC HL, ZCs 4CB 4PN 6, 5AL (44) 10-11, ZDG 2CKH (37) 18, 3G (93) 8, ZEs 5IC 6JJ, ZK1s A (35) 5, AK (42) 12, ZP5HK, ZSs 2MI of Marion Island, 7C 8R (77) 5, 9Q, 457s NG WB (18) 2-3, 4X4s HK 6, IE 23, 5As 2TY 5TZ and 9K2AN (94) 23.

**20** phone reports are meager but we have 3CMN 5CAN 6YY 8YIN\* 9UBI\*, Ks 20XC\* 4HPR 4PHY 6ERT 6HFA 6KII (54 33 on A3) and HK7LZ record QSOs with such specimens as BVIUS, GR7AH, GT3AN, HK6AI of San Andres, HLs 2AJ 9KT, H1SWR, JA8 3MD 8AA, KA2s CU\* M1A\* MM (160), KC4s US\* USF, KR6s BN JN (170), KX6s CO CG, OA4HR\*, PZ1AP (189), UA3CR\*, VKs 9AD (140) of Norfolk Isle, 9YT (160), 6TC, VPs 2KAI 5AB\* of Turks & Caicos, 6LT\*, VO4s 8O Africa\* GX\*, VR2A\* in various Pacific spots, VS8s DJ DK, VU2s BY (160), ES (160), XW5AI (167) 16, W9WY/KW6, ZD6DT, ZETJR, ZK2AB (150), ZSs 3AC 8I 9G (175) 16, 3A2AI\* and 4X4DK\*, the asterisks denoting s.s.b.

**15** phone humbles 14-Mc. doings and stands out as the DX voice band at this stage of the game. This is confirmed by Ws 1PNR 3CMN 6KG 6ZZ 8DAW 8TTN 8YIN\* 9WHM, Ks 1CCA 2MRB 2TCD (101 80), 2TWS, 4BFN (106), 4LEX 4PHY 5JEH 5KMJ 6SXA 9HCP and ON4KT who tell of BVIUS, GN2WX, CN8s FV III, GR4s AD AS AU, EA8s BQ CF, EL2D, ET3s LF XY (270) 18, FB8CD (135) now on Comoros leave, FM7WS, FSR7R\* (497) 17, HC2AGI\* (432), HKs 3AI (25) 21, 7AB 7LX, HRs 2DK 3HL, JY1AA (30, 92) 14-15, KAs 2AL 0IJ 5 of Iwo, KP6AL (320), KX6s AF CG, OA5N, OD5s AV (270) 17, BZ, OK1MB, OO5BT, PJ2AY, PZ1AG SV0WP (W3JTC), TF2s WCJ WCZ, several TIs, UB5UW (215) 19, UR2s AR (180) 7, BU (210) 18, VE3BQL SU (267), VPs 1BS 1JH 2DC 2LB 3HAG 4WT 5CM 5RS 5WB 6FR 6LT 6MC 6ZX 7NF, VPs BF BS (210) 0, CJ (150) 0, CU, VP0RT\* VO3s 3DQ 4DT 4FK, VRs 3A 3B (200) 23, 6TC, VU2CQ, a dozen XEs, YN1s CJ TF, ZE2KR (200) 1, ZK1Bs (231), ZK2AB (227), ZSs 7C 9G and 9G1BV (200). But oncoming summer absorption may turn the tables!

**15** c.w. was challenged by upstart 28 Mc. for No. 2 band on this month's dit parade. Fifteen-meter men Wfs BIL MBX MJL, W2s FXA HMJ PSU, W3s GKO NCG YUW, W6s CG KG ZZ (139 on 15), W7s GYR QNI, W8s CSK IGH TTN (116 87), YGR YIN, W9s JIN YYG, W9s QGI (207), W1W: K1CCA, K2s PPV (40 29), SBT TCD (101 80), VAB, K4s HPR IEX JOS KES MIOF OTG PHY, K5JEH, K6s OWQ SXA, K9HCP: IER and ON4KT consorted with BVIUS, many CN8s, CE3AX, CR4As, CT3AB, DM2ADN, EA8BF (70) 20, FL1s K P (95) 17, F9QY FG (50), FF8BL (107) 20, HA5s AM BW DH KBP all 16-18, HB4s FE FF 13, H1ER, HK3JC (60) 23, HP1LO, HRIJZ, JAs IVX 3AB, JY1s AA (90) 15, YL, KC4UB (95) 1, KG1CK, KG4As (120) 0, KG6FAE, KP6AL (19) 3, KR6QW, LU0AC/mm, LZ1s AM KNB (34) 17, M1H, OO5s BT 21, EH, OX3DL, PJ2s AN AV (40) 18, ME, PZ1s AO AQ (70) 13, SPs 1KAA 6WM 9KAD all 12-18, SV0WR (55) 18, TF2s WBZ WCD WCG WCT all 20-23, TI2LA, UAs 9KDL (50) 11, 0GF, W8S EF 15, KAb (88) 15, UC2AX (60) 18, UO5AA (78) 18, UO2AN (106) 13, VE8MD (108) 21, VPs 3AD 3VN 5BL (170) 4, 6YB 7NG 7MI 8CR (78) 0, VO2RG, VS9AE (75) 19, VU2MD, WH6CIZ, WP4s AKG ALC ALI, XEs IAX 1YF 2FA 2FL, YN1AA (25) 23-2, YO3 3RF 8MS (107) 15, YV5BF (100) 23, ZB1s GU SS (70) 12, ZC5AL 4, ZD3s F G, ZEs 1JV (80) 18, 2JS, ZP9AY, ZS9G and one 4WIAB (80) 15.

**15** Novice frequencies unhappily turn temperamental next month when the younger set sets books aside for a serious DX ding. Meanwhile KN1s BJU CBR CEC, WN2OQH (25), KN4EJN (20 11), KN5s JZZ KMJ LMJ MYF, KN6s LFY and LT6 make away with such stuff as GE9AK, CN8N 23-0, CX2FD, DM2ABB, DU7SV (105)

2, EA8 8CA 9AY (115) 20, ET2US (140) 19, FA8TT (95) 20, FB8ZZ (110) 14, FF8BF (100) 20, GC2CNC (100) 14, HC1SK, HP5CC (110) 0, IT1ZND, KA2RB, KC4USA, KG4As, KP6AL, KX6AF, LJ2F, LUs in number, LZ1KNB, OA4s L V, OKs, OY1R, PJ2ME, PYs 2AJK 4LW, PZ1AO (125) 23, SPIKAA, SV0WB (105) 21, TI2LA, UAs 4NB 6KOB 8AA, UC2CB, UR2BU (110) 15, UO5AA (120) 18, shipboard VE0MC, VK9CK (90) 6, VPs 2SI 8CO 8CY, VO2FR, VR3A (140) 4, VS6DX, WH6s CIZ COV CRN, WD4s AJZ ALD ALV AMK, ZB1DC, ZC4BL (95) 16, ZP3s 20-21, ZLs 1AIT IAPM 2LZ and 9K2AX. We might mention here that at least two Novice DX hounds, who prefer for the present to retain their anonymity, verge on DXCC possibilities at this time. As has happened in the past, will summer 21-Mc. doldrums and Father Time deal their ambitions a lethal blow?

**10** c.w. DX developments now slacken pace and the nuuf. sinks lower. BVIUS 1-2, CE2CI, CN8s FM GU MI, CRs 4AD 6DA 7LU all 20-22, CT3s AB 19, AV, CXs 6CB 9AJ 23, DM2s ACA AEN 16, DU6AL, EA8s BF CF, EL1H, FARBG, FF8s AD 19, AJ, GD3UB 15, HA5s 5BW 5DD 8WS, HE9LAC, HI8BE, HR3s HH VAI, JAs IVX 3AB 3BS 3LK 8AA, KA2KS 23, KC4USEB, KG6FAE, KR6BE, KW6CA 21, LX1HM, LZ1WD, OA4s BP FA 16, OD5s AV BZ, OO5s GU IE RU, PJ2s AE AN AV ME, PZ1AO, SPs 3DG 5AA 5ZM all 15, SV0WP, TF2WCT, TG7JD, UA1DZ, UB5KAD, UC2-KAB, UR2BU, VPs 16B 5FH of Turks, 9CY 9DL, VO2s 2AS 17, 2RD 4FK 4KPB, VS1GL, VU2s LJ RA, XE2FA, YN1AA, YO2s 2BN 3ZA 16, YS1LA, ZB1HKO, ZCs 4F 5AL 0-1, ZD6RAL, ZD78A, 4X4IX (160) 15, 5As 2E 19 and TO stretched the season for QSOs with WIs ECH TS, W3s GRO YUW, W6s KG ZZ, W8s BMX (85 on 28 Mc.), CSK IBX KX (111 91 on 10), W9s FGX PJT YYG; K3AMH 4, K4PHY, K6SXA and I1ER.

**10** phone's spring fling flung BVIUS (he gets around), CE3s AGI (450) 4, CN8s FV HL, GP1AM, GR4As, GT3AF, CX9AJ, EA8CF (280) 23, ELs LD (400), 2F (400) 15, FB8AF, FSR7R (497) 17, KY7YT (480), HA8WS (370) 15, MC1HL (600) 4, HE9s LAA LAC, HI2CL (240) 22, H1FLS (240), HKs 4JC 7LX (470) 13, H19KT, HP3ON, HR3HL, HA4EW, KAs 2JA 365 (23), 2KAI (280) 1, 2RE 2ZZ 0LL, KG6AGW, KR6s BN, QW SF 80 all 22-23, KY4BL, KX6s AF (300) 1, CG, LX1DC (210) 18, OA4IGY (485) 20, YL, OE2YL, OD5BZ, OO5s AG DG (305) 17, PH1VKL (620) 12, SV2s 1AE (450) 0WS (400) 15, 0WU, TF2WQC, TI2OE, UO2AN (350), VPs 1EE 2LB (440) 22, 5AB (300) 17, 5BL 5RS GTR (278) 21, 7BL (310) 23, 8As (400) 23, VO2s 2C 17, 2DC 2RD (350), 4FK (300) 23, VR2s BIC (350) 2 who knocks off for leave this month, 3A, VS2DQ 4, YN1MAG, ZD3F, ZE2KR, ZK2AB, ZP5CG (400) 20, ZS3DP (230) 17, 5A4TO, 9G1s CD mm (300) 14 and CV (410) 23 into the waiting logs of WIs ECH MBX, W3LNE (66740), W6s KG ZZ, W8s BAIK IBX KX, W9PJT, W02QI (148 on A3 with a 2E26 final); K1CCA, K2s CMN EYZ VAB, K4s HPR IEX, K6s KH1 SXA VVD and HK7LX. . . . . Eleven meters quits down after giving phones FSR7R\*, HH2Z, HR3HL, KX6AF, PJ2AO, TI2HP, VK3ATN, VP5RS, YV5ABD, ZL1MQ, ZP5CG and ZS5JY to Ks 2TCD 6KII and 6SXA, plus coders CN8GU, CR6AI, KC4UJB, KP4KD, KX6AF, OA4FM, ZL1MQ and ZP9AY to Ws 6KG 6ZZ 8IBX and K6SXA.

**40** c.w. grows restive under sharpening barbs of QRN but don't let the expletives fool you: there's DX gold in them there 7-Mc. hills all year long. Ws IMBX 2HMIJ 3GYP 3YUW 7DUJ 4KBS 8TTN 8YGR 9JTN 9YNG, Ks 2UBC 2UZJ 4HPR 4KES 4MIOF and 6SXA enthusiastically agree because of CN8s GD GU, CR4AD, GT2BO (11) 0-1, CX1LO, DM2s ADL ADM 23-3, DU7SV, EA8 8BF 8BK 9AP, FA8LH, HA5KFN (3) 3, HI8BE (80) 3, ITLGA 1, JAs 1BI IVX 3AF 5AB, KG6FAE, KR6s BF CF, LZ2KDO 2, OH7NF, PJ2s ME SE 0, SP1s JV KBT 2, UB5KBV, VPs 6GT (30) 0-1, 7NN (40) 7, WH6-CIG, XE2FA (30) 8, ZP9AY (18) 9 and 4X4IO. . . . . KN6ZGI gives the Novice 7-Mc. rant: CE3RE, KH6CC, LU0LD and assorted XEs. . . . . On forty phone W1MBX cornered HP3FL, while K6KII surrounded JAICE and KX6AF (145) 10. An additional 7-Mc. A3 note comes from ARRL associate member C. V Edwards



FL8AC flicks a scarce key in Djibouti and occasionally flips the phone flock with deliciously rare 15- and 20 meter n.b.f.m. emanations. (Photo via W1VG and W9WHM)

QST for

Brother, it's cold outside, but radioman Mike Royle keeps comfy in the cozy cockpit of VP8BS at Base F, Argentine Islands, Grahamland. Those receivers are Eddystone 750s and the rig is an RCA 400-watter. (Photo via W3GLE)



who heard W2WWZ and W3PHL boiling through on the Demerara River, British Guiana, where he handles communications for a rugged exploring party in the high impenetrable vicinity of beautiful 741-foot Kieteur Falls.

**80** c.w. prepares to do hectic battle with OM Static in ensuing months, so WIs ECH FEA, W8YGR, K4ELG and K6SXA lost no time stashing EA8BF 8, FA8BG 7, KH6s AYI (50), IJ, KL7CDD, OX3DL (37) 8, PY7AN (20) 3, VP7s NG 8, NI (10), XEs IAF 2FA, VN1AA, ZC4IP (Asia, you know), ZL4IE and a stack of Continental brethren.

**160** c.w.'s propagational pallor is shattered on occasions when fleeting long-haul sunshine breaks through. Miscellaneous notes courtesy W1BB and W6KIP: KH6LJ worked as far east as W9NI and K9DCE this season. . . . W6KIP, in addition to his KP6AL triumph reported earlier, scored a 160-to-40-meter cutie with KM6BK. . . . W1BB is pulling s.w.l. cards out of the box from as far away as Leningrad, most of these bearing on 1957 1.8-Mc. activity. . . . G8FW QSOd SP9KBY on top band. . . . Recently heard by ZL8RB: W9s FIM NH NPC and PNE, TF2WCC and VP3AD have heard a lot of W1BB this year. . . . W6KIP provides this note of cheer for the 160-meter school: "Have been hearing Asian commercials that I heard at the time of my VS6CQ contact three years ago." Be alert!

### Where:

**Africa** — From VQ8AD: "After consultation with radio amateurs of long standing in Mauritius, our administration has decided to add a third letter to the suffix of each call sign for amateurs stationed in the Dependencies. Viz., A for Agalca, B for St. Brandon Group (also called Carriados Caraios archipelago), C for Chagos, and R for Rodriguez. On returning to Mauritius the third letter will be withdrawn." VQ8AQ quickly created a 14-Mc. to-do with his revamped label. . . . FA8RJ treats upon repeated revolting developments. He regularly receives IRCs which are incorrectly postmarked. Make sure that your post office doesn't inadvertently cancel out coupons upon issuing them to you. . . . From ex-ZD6BX, now VQ3HD: "I have a few ZD6 cards left, so you might let the gang know that I'll replace ZD6BX QSLs that may have gone astray."

**Asia** — HSIC advises WGDXC. "In planning to QSL 100 per cent I make out cards after each operating period. These are held for two months because many OMs send s.a.s.c. and/or postage for returns. Mail coming this way is not very fast — sometimes one month in transit. All cards I hold beyond two months are sent via bureaus." . . . A BVIUS spokesman emphasizes, "International Reply Coupons have no bearing at an APO address such as ours; U. S. postage rates apply." BVIUS QSLs 100 per cent upon receipt. *Note:* The station has never used frequencies below 14 Mc.

**Oceania** — According to W6TCQ, former KC6CG operator Phil now inhabits 23 Cheney St., Newport, N. H. . . . VR3A confirms via W6HS that there is no authentic VR3GA. . . . Engaged in JZ0DN QSL chores, W5FXN tells WGDXC mates that an IRC and self-addressed envelope should accompany each QSL request. . . . KX6AF, via NNRC, remarks: "We ship out about a thousand cards monthly here, so you can see that the postage bill is quite high, to say nothing of the price of blank QSLs."

**Europe** — SM5KV does QSL honors for SM8AQT: LA P of Murchison Bay, requiring two IRCs and an s.a.s.c. with each application. Olle receives the Svalbard log transcripts by radio. . . . NNRC has it that G. Crain, YO3RF, Box 73, Bucharest, Roumania, can relay pasteboards to UP2AS and UQ2AN. . . . From W6KG: "UA3AV, an ex-operator of Russian polar station UA1KAE, appears to have records of UA1KAE QSOs and may help you obtain QSLs." . . . Regarding his annual invasion of the Channels this month as GC3AAE, G3AAE writes, "All QSLs should be sent to my home address and every one received will be answered via bureau, or direct if an IRC is enclosed." . . . "I will assist with HV1CN's Stateside QSLing," volunteers WITYQ. "Those expecting cards should send me card-size self-addressed stamped envelopes." . . . CN8LF is apprised by Monaco QSL charge 3A2AH that cards incoming for ungood 28-Mc. 3A2CF activity are being returned to senders.

**Hereabouts** — Jamaica Amateur Radio Association informs WIUED that VP5RS now officially serves as Jamaica's QSL chief at 34 Port Royal St., Kingston. . . .

Contrary to our April conclusions, YS1MS fools the critics by coming through with verification wherehither for W3EQK's good offices. W7GBY assists in disposing of Miguel's backlog. Incidentally, in a note to W2JBL, YS1O declares YSs IAA 2AF and 2JJ illegitimate. . . . VP1HA assures W4HZZ that the c.w. VP1MC is spurious. VP1s DL EE GJG HA IL JH NC OLY and RL, all phone specialists, are British Honduras colleagues in good standing and Leo designates them 100-per-cent QSLers. . . . From the mill of ex-IR2WC: "All who sent me cards and have not received replies will get their deserved QSL when a new batch comes from the printer to my new Florida address [which follows]." . . . W2FXA, pleasing the W2 K2 gang with FY7YF QSL services, stresses that stamped envelopes must accompany all confirmation requests. Gene's new QTH: 72 S. Pierce St., Buffalo 6, N. Y. . . . The following roster of distinguished specific whereabouts appears through the courteous cooperation of contributors WIs BIL, ELO TS VJ, W2s ATC CTO GVZ JBL, W3s CMN GRO LNE, W5FTD, W6s CG KG TCQ YY ZZ, W7QNI, W8s BMX CSK GAK EX, W9s QGI WYI; K2s QXG TCD TSW, K4s IEX JOS MOP, K6s HWX JGN OWQ SXA VVD, KØENAL; ON4KT; DeRidder (La.) DX Club, Hamfesters (Ill.) Radio Club, Japan DX Radio Club, Motor City (Mich.) Radio Club, Newark News Radio Club, Northern California DX Club.

### Helvetia-22 DX Contest

May 17-18

Call CQ HB or CQ H22 any time from 1500 GMT May 17 through 1700 GMT May 18 and attempt to work as many amateurs in each of the 22 Swiss cantons as possible, using bands between 80 and 10 meters for c.w.-to-c.w. or voice-to-voice contacts. The exchange will be the customary 5- or 6-digit signal report plus QSO number (RST001, RST002, etc.). Each HB will indicate his canton by sending one of these suffixes after his call: ZII BE LU UR SZ NW GL ZG FR SO BS SH AR SG GR AG TG TI VD VS NE GE. Count 3 points for a contact with any Swiss station on each band. For final score, multiply the sum by the total of different cantons worked. The maximum possible multiplier *per band* is thus 44 (22 on c.w. plus 22 on phone). Entries are acceptable only when submitted on separate sheets for each band and accompanied by the following signed statement: "I certify that my station was operated strictly in accordance with the rules and spirit of the contest, and I agree that decisions of the council of the USKA will be final in all cases of dispute." Mail reports by June 7 to Franz Acklin, HB9NL, QSL Manager USKA, Knutwil, Switzerland. Entrants are invited either to pursue the contest certificates which will be issued to the two high scorers in each country and U. S. call area, or to fill in totals for the handsome H-22 Award, available to any amateur submitting proof of c.w. and/or phone QSOs since April 15, 1948, with stations in all the cantons. Write USKA Communications Manager HB9QO to learn the circumstances under which credit toward the H-22 Award can be obtained via contest logs.

Southern California DX Club, West Gulf DX Club and Willamette Valley DX Club:

**BVIUS**, Hq. MAAG, Taiwan, APO 63, San Francisco, Calif.  
**CEIAGI**, c/o U. S. Consulate, Antofagasta, Chile  
**CN2AK**, T. Ramon, c/o Indiana Technical College, 215 Washington Blvd., Fort Wayne, Ind.  
**CP1AM**, c/o U. S. Embassy, La Paz, Bolivia  
**EL6MJ/mm** (via VE1JX)  
**FQ8AJ**, J. Franco, Box 80, Bangui, Fr. Equatorial Africa  
**FY7FY** (via W3WPY)  
**HC1CW**, C. W. Price, P. O. Box 2598, Quito, Ecuador  
**HC1PJ**, P. O. Box 2186, Quito Ecuador  
**HC4IM**, P. O. Box 1881, Manta, Ecuador  
**HH2Z**, B. P. 72, Port-au-Prince, Haiti  
**ex-HR2WG**, W. W. Cooper, W6EWC/4, P. O. Box 810, Fort Lauderdale, Fla.  
**HVICN** (W/K VE/VOs via W1TYQ)  
**HZ1YB**, Box 167, Jerida, Saudi Arabia  
**JZ0IA**, Box 420, Sorong, N.N.G.  
**K2ILO/KG6**, Box 145, Agana, Guam, M.I.  
**K2MM**, M. B. Weronski (K2PAV), 6902nd Spec. Comm. Cp., Box 105, APO 73, San Francisco, Calif.  
**KA2ZZ**, S/Sgt. D. E. Earnest, 6011st Opns. Sqdn., Comm. Flt., Box 100, APO 994, San Francisco, Calif.  
**KA7GS**, C. Schaffer, 6143rd Air Base Gp., APO 929, San Francisco, Calif.  
**KC4AE** (via W8TJM)  
**KL7AZI**, June Welling, Sister's Island, Alaska  
**ex-KL7CAW**, J. Alexander, c/o Gaines H. S., Gaines, Mich.  
**KL7FLA**, Project Ice Skate, Ice Island A, APO 731, New York, N. Y.  
**KR6DE**, M. Sgt. R. E. Perkins, Box 161, 7th TDS, APO 239, San Francisco, Calif.  
**KR6DR**, G. Tolhurst, M.D., Box 37, APO 331, San Francisco, Calif.  
**KX6BX**, Bilikini Amateur Radio Club, APO 435, San Francisco, Calif.  
**KZ5UR**, R. S. Hursh, P. O. Box 431, Fort Amador, C. Z.  
**OK3KAB**, J. Sedlacek, Gajova 7, Bratislava, Czechoslovakia  
**ON4KT**, Ted Tesdale, 147 Ave. Marie-Jose, W.S.L.-Brussels, Belgium  
**PJ3AB**, V. Steele, 160 Lagoville, Aruba, N.W.I.  
**PY3DZ**, J. W. Brusius, P. O. Box 1111, Porto Alegre, R.G. do Sul, Brazil  
**PY7AFP**, P. O. Box 74, Recife, Pernambuco, Brazil  
**PY7YT**, P. O. Box 417, Fortaleza, Ceara, Brazil  
**SM8AOT/LA/P**, Murchison Bay (via SM5KV)  
**SP4KD**, Z. Gierloski, ul. Michkiewiczza 20 I, Bialystok, Poland  
**SV1AE**, S. Coutroubis, 4 Krinon St., Psychico, Athens, Greece  
**TF2WCG** (to W1ZMO)  
**TF2WCT**, APO 81, New York, N. Y.  
**UA9AA**, Radio Club, Chelyabinsk, U.S.S.R.  
**VP1BS**, B. Svan, Belize, British Honduras  
**VP3GN** (via VP3YG)  
**VP5CM** (via VP5AO)  
**VP8CR** (via RSGB)  
**VQ1SS** (to VQ3SS)  
**VQ3HD**, V. H. Thorne, c/o Barclay's Bank (DCO), Acacia Ave., Dar-es-Salaam, Tanganyika

**V05GF**, F. W. Unstead, P. O. Box 150, Entebbe, Uganda  
**V08AOR** (formerly VQ8AQR; see preceding text)  
**VR3M**, J. Eason, 31 Wyvern Ave., Chatswood, Sydney, N.S.W., Australia  
**VS6DY**, W. S. H. Cheung, 9 Caine Rd., Hong Kong, Asia  
**VS6DZ** (via HKARTS)  
**VS9AE**, Saltmans R.A.F. Khormaksar, Aden  
**VS9AP**, Sgt. E. G. Corlett, Sgts. Mess, R.A.F. Khormaksar, Aden  
**W3VNB/VO**, A. Anderson, 1883rd AACs Sqdn., APO 862, New York, N. Y.  
**W7AG/KL7**, H. W. Doe, St. Paul Island, Alaska  
**XE2FG**, P. O. Box 815, Tambico, Tamps., Mexico  
**XE8DTI** (to K5DTI)  
**XE8GZW** (to K5GZW)  
**XE8PJ** (to K6PJ)  
**XW8AJ** (via REI)  
**YN1FS**, P. O. Box 1604, Managua, Nicaragua  
**YV3BS**, P. O. Box 165, Barquisemeto, Venezuela  
**ZC4FL**, Cpl. D. R. Britten (G3KFL), 26th Signals Unit, R.A.F. BFPO 53  
**ZC4PN**, Sgt. Pitt, Air Tfc. Control Center, R.A.F. Nicosia, BFPO 53  
**ZD3F**, F. Buckley, P. O. Box 266, Cable & Wireless, Bathurst, Gambia  
**ZD7SA**, Bob Freese, Napoleon St., Jamestown, St. Helena  
**ZK1AK**, c/o Civil Aviation, Aitutaki, Cook Islands  
**ZL5AC** (via ZL2LB)  
**ZP6CA**, P. O. Box 405, Asuncion, Paraguay  
**ZS1AB** (W. Ks via K1BFN)  
**3A2CD** (via W4HYW)  
**3A2CE** (via W2 K2 bureau)  
**3V8BX**, P. O. Box 303, Tunis, Tunisia  
**9G1BL**, E. Lloyd, ex-ZD4BL, P. O. Box 565, Kumasi, Ashanti, Ghana  
**9G1CD/mm** (via W1WWA)  
**9G1CF** (formerly ZD4CF)  
**9G1CO**, D. Darker, ex-ZD4CO, Box 3445, Accra, Ghana  
**9K2AN**, Nasir Hussain Khan, Box 736, Kuwait, Persian Gulf  
**9K2AO** (via 9K2AN)

**Whence:**

**Africa** — Via W1VG from VQ3SS: "Am hoping to get a QRP signal out from Zanzibar soon on 21 Mc. My call over there is VQ1SS but so far I have not acquired a portable rig for the job. I visit VQ1-land every month." — **K9BVR** and **W1ELR** report **ZS8LF** planning a July DX excursion to Swaziland that may include stops in Basutoland and Bechuanaland. Watch for **ZS8LF** 7/8-9, c.w. only — **W8KX** observes that **ZS2ED**'s 10-meter 10-watt is well on its way toward **WAS** — **W1FTI**, based in Spain, files word that the prospect of Ifni amateur work grows increasingly dim because of local civil unrest. **EA8AC**, very active on voice around 14,300 kc., tells Marty that neighboring Spanish Guinea available includes **EA6s**, **AB AD AE** and **AF**. **EA8AB** sporting a potent 813 output. "The Spanish government allows no Americans, military or civilian, to obtain ham licenses or operate radio stations in Spain." — **W5CAN** was intrigued by a smooth British accent over **CT3AN**'s 14-Mc. phone not long ago. Turned out to be **G2DYM** vacationing in Madeira.



"DXCC<sup>2</sup> proved to be tougher than any QSL collection I've ever attempted!" declares **W6GPB** in submitting photographic and statistical evidence of communications with ARRL DX Century Club members in at least 100 DXCC Countries List areas (see p. 59, April 1957 QST). Joe's qualifiers include **CE3AG**, **CNs** 2AO 8EG, **CO2BA**, **CP5EK**, **CRs** 6AI 7LU 9AF, **Cts** 1JS 3AA, **CX6AD**, **DL7AA**, **DU7SV**, **EAs** 4CR 6AF 8BC 9AP 9DF 0AB, **E14X**, **ET2AB**, **F8EJ**, **FABDA**, **F8BAB**, **FF8AG**, **FG7XA**, **FQ8AP**, **G4CP**, **GC2FZC**, **G14RY**, **GM3CSM**, **GW3ZY**, **HA5KBA**, **HB9X**, **HC2JR**, **HP1BR**, **HZ1AB**, **Its** AIV BNU/T, **IS1AHK**, **JA1CR**, **K6ENX**, **KGs** 4AF 6GC, **KH6IJ**, **KL7PJ**, **KP4CC**, **KV4AA**, **KZ5WZ**, **LA7Y**, **LUSAQ**, **LX1AS**, **OA4ED**, **OD5AD**, **OE3RE**, **OH2RY**, **OK1CX**, **ON4AU**, **OQ5RA**, **OX3MG**, **OZ7BG**, **PA0VB**, **PJ2AA**, **PK4DA**, **PY2CK**, **SM5WI**, **SP5KAB**, **TA3GYU**, **TF35F**, **T12G**, **UC2AA**, **VE1EK**, **VK5SR**, **VPs** 2LU 5FR 6SD 7NM 9OO, **VQs** 2GW 4HK 8AD, **VR2BZ**, **Vs** 1DZ 2DB 6CG, **Y13BZL**, **YN4CB**, **YU3AC**, **YV5AE**, **YS10**, **YQ2BU**, **ZB1AJX**, **ZC4IP**, **ZDs** 2DCP 6RM, **ZE3JJ**, **ZL2GX**, **Zs** 3K 6FN 7C, **4S7NX**, **4X4RE** and **9S4AX**. **W6GPB**'s fling is the first from our West Coast and follows earlier DXCC<sup>2</sup> successes by **DL4ZC** (now **W6KG**) and **W4LVV**.

## USSR International Telegraphic Contest

May 10-11

Mr. Ernst Krenkel, president of USSR's Central Radio Club, invites all amateurs to take part in a world-wide c.w. contest which gets underway at 2100 GMT May 10 and lasts until 0900 GMT May 11. During the 12-hour period, exchange 579001-559002-type numbers with amateurs in any country except your own. Contacts must be made on 10-15-20-40-80 meters but the same station may be worked only once regardless of band. Logs must show date, band, GMT time, station QSO'd, control numbers sent and received, and claimed points. Score is simply the number of contacts multiplied by the total of countries worked. Keep your log carefully, however. The rules state, "If the control number or call sign received from the correspondent has a single mistake the QSO will be disregarded." Send your logs airmail too, because they must be received by late May. QTH: Central Empire Board, Central Radio Club, Box 88, Moscow USSR. Colorful certificates (of the sort shown in Strays, p. 43, QST for last March) will be awarded to the top ten scorers in countries from which sufficient entries are received.

F9FY reports partial (and we trust temporary) curtailment of 3V8 amateur activity in early '58 when stations of Tunisian REF members were silenced. From W8YIN concerning VQ4EO's springtime DXpeditionary s.s.b. safari: Paul struck port 14-Mc. Stateside conditions during his trek through Tanganyika and Uganda but propagation improved as he journeyed through the Congo and French Equatorial Africa, and was reasonably good from then on. W6YY notes that VQ4s AQ and KRL imply further Seychelles activations. How many times will you work CNSMIC between 1100 GMT, April 25th, and 2300, May 10th? Morocco's AAEM, in conjunction with the Casablanca International Fair being held over the same period, will award a trophy cup to the station scoring the most CNSMIC QSOs at the rate of no more than one contact per band per day. The station is available on 28 Mc. between 1600 and 1700 GMT; 21 Mc., 1700-1900; 14 Mc., 1900-2300; and 7 Mc., 1400-1600—specific frequencies and emissions undisclosed. On the 11th of this month CNSMIC will disseminate word of the outcome as indicated in its log. A cutie! VE3BQL/SU insists that he's in Asia but he still counts as Africa in WAC considerations. Elvin was impressed by the number of impatient W.K.VE operators who ignored his c.w. calls during the 1958 ARRL DX Fest. Evidently many didn't linger to hear the "SU" portion of his call! VE3BQL/SU has been hitting 15 meters fairly often of late and now hopes to increase his 7-Mc. activity. V63HD closed out his old ZD6BX log with a fine 202/181 DX record. Vic expects a short session of Tanganyika action with 100 watts and a 132-foot counterfed wire.

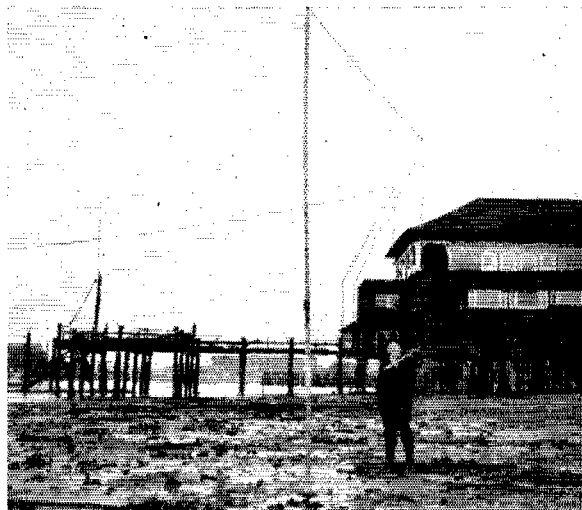
Asia — BVIUS puts Formosa on DX bands according to the following rough schedule: phone daily, usually on 14, 165 kc., otherwise anywhere between 14,150 and 14,200 kc.; c.w. between 14,015 and 14,050 kc., occasionally on the 33 spots. Fifteen meters is operated when conditions appear favorable, usually between 21,200 and 21,250 kc. Ten meters—28,100-kc. c.w., 28,400 to 28,500 kc. on voice (usually 28,470 kc.) — is used on week ends when operators are available. Custodian Ed Gaither adds: "We are also authorized the calls BVIUSA, EJan; BVIUSB, Tianan; and BVIUSC, Kaoshiung; but shortage of equipment and personnel so far has precluded operation from these QTHs. At all times we do try to give Statesiders the advantage in raising us. We would like to catch Del., Me., N. H., R. I., Vt. and Wyo. for our WAS. We hope to use more s.s.b., too." VS2DW was gratified to nail Vermont's W1ELR with the 20-meter assistance of W1HZ. Hong Kong chatter courtesy HKARTS secretary VS8DS: VS6s AE AZ and BJ are active on side band; VS6s DJ DK and DL have Heathkits on phone; RAF members VS6s DO DP and DX keep club station VS61V

The "How's" QTH of the Month shows W1BB servicing one of his 500-foot wires at low tide along the Atlantic shore. Stew persistently experiments with a variety of 1.8-Mc. radiators in a search for maximum antenna efficiency. One doesn't work 49 countries on 160 meters by merely dangling copper out one's window!

active on DX bands; VS6s DS DT DZ and EA are quite active on phone and/or c.w.; VS6CV is in the U.K. on leave and ex-VS6DA now signs ZC4DA; VS6s DE DI and DN recently shut down for U.K. return. In near-by Macao CR9s AH AI AK and AL all are active DXwise. K2PMV, custodian of KA2MM, reports that fat and juicy 14-Mc. DX phone roundtables occurred early this year featuring BV1US, KA8 2KM 2LC 2MF 2MJ 2MM 3LD 7CS 7KO 7MB 8AB 8FM 8JT 8LJ, KR6s AL BL BP CM DG and JO, KA2MJ kept order as NCS. W7YBI (ex-K0BQE), former operator of HZ1AB, now works 10, 15 and 20 meters at co-op KA2RB. Dave's personal tag is KA2ZZ. JA2JW will entertain requests for information on the Shizuoka-A DX certification, an award based on confirmed QSOs with at least five stations in Shizuoka prefecture, two of which must be included among Shizuoka Amateur Radio Club's 22 members, all contacts dating after July 29, 1952. K2QXG finds JASAA daily and diligently pursuing his WAS-YL diploma on 20 c.w. With OK1MB interpreting, W8DAW in late February scored what seems to be the first amateur radiophone QSO between the M.P.R. (JT1AA) and the United States, W8YIN, on s.s.b., followed Russ for No. 2. WGDXC has it that SM7BYG seeks to sign a Trucial Oman MP4 call. Through W1TYQ and K91JJ comes word from OK1MB that YK1AT closed down in late March after some 1700 contacts.

Oceania — VR3M's second QSO — the first was a local tune-up test with VR3A — went to W6CG on 14,135-kc. c.w. This fresh Fanning candidate schedules an early personal tour of VE7, W6/K6 and VK areas. W6CG's XYL, K00WQ, recently completed her WAC-YL quest thanks to listaffers 63YL, JA6KH, ZS1NQ, ZL3JO, LU4DMG and W8OVV. Oceania snippets courtesy W6YY: Op Charles of VK8AB returns to Australia after 13 months at Mawson Base. Reports of a VK0TR notwithstanding, Macquarie's VK0TC states that Heard's weather station is no more, thus foreclosing QSO possibilities with the place. VR2AP's VQ4EO-like Pacific DX odyssey scheduled probable hamming stops at Singapore, Labuan, Tawao, Dili, Darwin, Thursday Island, Port Moresby, Honiara and Port Vila. VK8OW monitored the 14,340-kc. spot to help clear the decks for A1s 2E26 40-watt and Eddystone 6-tube receiver. VR2AP tested a folded dipole, a long-wire, a two-element beam and kite antennae. W1TYH finds VK3CX specializing in New Englanders at 1200 GMT around 14,095 kc. in a hearty try for WANE certification. A 50-Mc. QSO (pardon, Mr. Tilton) makes it eight bands on which W6AM has worked ZL1MQ. K2QXG is understandably impressed by VK3-AEE's collection of 106 s.s.b. countries. WGDXC sleuths infer that ZL1ABZ of the Kermadecs can no longer accommodate cablegram requests for schedules. File your applications with ZL2GX instead.

Europe — Fresh from February DXertions as 3A2s CD and CE, CN8s FQ and IF now shoot for s.s.b. activity in such rarish African locales as Spanish Morocco. UB5TV writes W7DJU, "Our local television goes on the air at 1900 local time, so we can be on the air in the mornings and throughout the day." Hit UA1OZ, busily constructing a side-band sender, tells W8YIN to watch for UA3CR's s.s.b. from Moscow. European certification notes: SP5HS, in issuing W21M skin No. 3 to W2SAW, states: "All applications for PZK awards must now be sent to our P. O. Box 320, Warsaw 10 — not to Box 122!"



WIFII describes URE's *Diploma España* as available to DXers who confirm communications with 125 EAs in eight of the ten EA call areas (at least three in each of the eight) since January 1, 1952. For full details write the society at Apartado de Correos No. 220, Madrid. . . . YUIAG reports that WAYUR applications which include altered QSLs, and QSOs made under more than one call sign, no longer will be accepted. . . . No. 8 of OH2YY's Award Hunters Club certification series fell to ARRL staffer W1VG. . . . W8YIN finds HA5AM at the 14-Mc, key of HA5AIR and talking of more imminent HA5AM/ZA activity. . . . LA6CF undertook a veritable hamming marathon around Easter in efforts to clinch WAS and other pursuits before closing down in Sarpsburg for a stretch of naval duty. . . . On the 16th of this month G3AAE, abetted by G3s BQR BZG and JUL, will fire up GC3AAE on 14-, 21- and 28-Mc, c.w. and phone, anticipating an around-the-clock schedule until the 30th. *Some field day!* . . . WITYQ, winging the Atlantic run, visited personally with HV1CN and learns that Domenico expects to remain active in the Vatican "for a considerable length of time." . . . "DX great from up here," chortles TF2WCC (W1ZMO). "Worked all continents several times, 45 states, and about 75 countries without even trying hard." . . . 11FT submits a meticulously prepared list of over 1000 U. S. stations worked on 10, 15 and 20 meters with his homemade 25-wattter. Egone's "shack" is a genuine castle situated near the juncture of Gorizia, Trieste and Yugoslavia.



Operators Liebur, Petco, Anzo and Kosta put club-collective station LZ2KSB through its paces at Balic. This Bulgarian entry is available on phone more frequently than most LZs. (Photo via W9WHM)

**South America** — From Fernando de Noronha, mis-siler W0YJE/W0YJU reports that PY1CK/0's March DX-epeditional endeavor resulted in over 600 QSOs with 83 countries on 10-, 15- and 20-meter phone. A DX-100 and Phillips receiver did the trick. . . . WGDXC informants hint that Juan Fernandez Island, 18th-century hide-away of seaman Selkirk in inspiring, Defoe's epic *Robinson Crusoe*, soon will support ham activity by one CE0ZA. . . . HK7LX completed A3 WAS via 10 and 20 meters in piling up hundreds of North American QSOs during this year's ARRL DX jamboree. Oddity: VKs 3WL and 5WL recently answered the same HK7LX CQ, and both are named Jim. . . . PY7AN has set his sights for all California counties. . . . PY2AJK tells K0DQI of plans to visit California this year. . . . CE3DZ, at a stratospheric 247/239 on the DX ladder, counts an even 100 QSLs toward "DXCC 20", and punctilious W1VG claims 104 such unique pasteboards. . . . Brazilian Naval Academy station PY1BJN will celebrate the institution's sesquicentennial with an operational spree to run from 1200 GMT, May 3rd, to 1200 on the 5th. Special commemorative QSLs will be dispatched to all stations worked over this period on 20- and 40-meter phone. . . . Certificate-chasers will be interested in the 33 *Orientales* tapestry issued by RCU (Uruguay). Its basis is the collection of QSLs from thirty-three different CX stations for contacts dating after January 1, 1953. For complete data check with CX2AM at Box 37, Montevideo, forthwith. . . . W7ZOH finds that LU0DAB earned his WAS with a mere 20-watt mobile installation.

**Hereabouts** — "They always come back," as W2GVZ is wont to observe. OT DX addict W2ADP found his way back to the fold by way of an immobilizing broken leg. . . . Another DX comeback is made by W2GUR, seven years quiescent because of "marriage, etc." . . . Ex-KG6DG of 1947-'49 returns to the DX realm as W4PHY. . . . W6ANN, up to 199 'way back in 1951, is at it again and wonders where old KG6AW/VK9 of '48 can be located. . . . On the 3rd and 4th of this month W7DAA will

officiate as chairman of the DX Breakfast at Oregon Amateur Radio Association's 1958 convention in Salem. . . . Ex-V2PUE writes finis to his Windwards sojourn after some 8000 QSOs with 154 countries, 118 confirmed. Fred turned over his St. Lucia rig to resident VP2LB and tells W1VG of intentions to try life in PY0, VP5 and/or Leewards territory later this year. . . . ARRL Dakota Director W0PHR campaigns hard for hold-out QSLs after suddenly finding himself within a stone's throw of DXCC membership. . . . W2CTO and K2BU schedule a DX spree in Vermont from the 29th of May through June 1st using c.w. on 14,010 and 14,110 kc., s.s.b. on 14,270 kc. . . . K2QXG was greeted by QSLs from both Poles — KC4USN and UPOL6 — in the same day's mail. . . . Speaking of QRP DX, W8YGR worked K2AEQ's half-watt transistor juggernaut on 3510 kc. one night. So far the K2's best DX with this semiconductor sender is Florida. . . . W0s AGO LUX and WGF itch to initiate a DX-expedition this summer, possibly Galapagos-bound. . . . Ex-HR2WC now tries s.s.b. mobile work in sunny Fla. . . . Alaskan items from and there: K4MOF finds ex-KL7CAW active as W8GZF with a DX-35 on 15 and 20 c.w. . . . After a New England vacation KL7CAW will swap Nome diggings for an Aleutians hitch. . . . From floating ice-landers W6WNS and K0HEW, cooperators of KL7FLA: "At this time we are approximately 340 miles from the North Pole and 850 miles almost due north of Point Barrow, the most northerly point of Alaska. We'll be here for another three months with very little to do but put this KWS-1 through its paces. We live and sleep next to her 24 hours a day down in our little hole in the ice!" The boys keep in close touch with home through the fine traffic services of ace brasspounder W9NZZ. KL7FLA's Polar proximity beats the 449-mile record of VE8NS, by the way, although the VE8 is in the land-based class. The latter writes, "VE8AT may be a few feet north of me but it would take a tape measure to check this." . . . Father and son KP4KD and KN4PUJ recently issued each other rare certifications for their 150th scheduled QSO. A busy session in this year's YL-OM embroglio raised EV's YLs-worked tally to a respectable 109. . . . W8IBX seized upon spotty DX conditions to work all of Ohio's 88 counties. . . . W6IPB inveighs against the QSL-for-every-band approach to rare DX. This angle is superfluous for DXCC purposes but some non-ARRL awards cater to the kick. . . . W4RQR, accompanied by Wis DCQ and NZG, kicked off his spring Caribbean s.s.b. tour in mid-March with operation at VP5AB on South Caicos, and VP6LT. . . . W7s ANI and JEN operate 7-, 14- and 21-Mc. phone aboard a new Boeing 707, the archetype of a fleet of jet airliners being built for PAA passenger service. The radio layout is on the flight deck, remotely controlled from the cockpit, and will hop frequency and retune in fifteen (15) seconds.

**Ten Years Ago in "How's DX?"** — The DX pages of your May 1948 *QST* record 3.5-Mc. WAC claims by W9BMV and W4BRB. Folk like FA8s BG III, FM8AD, HP4Q, Js 2AHI 3AAD, Ks4s AF AH AI, MD5KW, UA0KAA, VP7NH, VR5PL, YN1AA, ZK1AL and ZS6DW excite the WVE 80-meter mob. . . . Prime 7-Mc. targets include EK1AA, J2SCS, KM6AA, OX3s MG RD, Tahiti's RV2, UA3BD,UC2, UG6WB, Ws 7JEF, KW6 9FYQ, KJ6 0MCF, C1 00ZW, Ks6, XAFQ, XU1RT and ZK1AS. . . . Reported on 20 c.w. are Cs 1DK 1JC 1MY 3LT 3YW 6HH 6PS 6YZ 7AT 7FP 7HY 7OK, EK1FP, ET1IB, FQ3AT, FE, FT4s AB AN BM, ILLIAN, KH6LX, VR1, MB9s AJ BA, MD4s 1E 1H 1I 2B 2G 3AB 5AM 7DA, M10s AB BC, MX2A, PK6XA, RAEM, Vss 4WL 7WN, Pakistan's VU2GH, Ws 2WNV, C9 6YOT, C6, ZCs 1AL 6AA GJ 6LA 6SM 6WA and ZD8B. Twenty phone finds C3CY, EK1AD, ET3AE, Sardimia's IIAYN, J2AGA, KG6AW, VK9, MB9AI, MT2E, PK2GA, TR1P, Trieste's XAFG and W6SQS two reusable. . . . Ten phone comes through with AR8AB, ILL1s AD AB AR AW, KS4AL, MT3Z, ST2CH, VR6AA, Ws 2EJV, PK3 3VT, C6 6FMZ, C6, 6JAI, C6, YR5W, ZCs 1AF 6JP and 6JS. . . . We note in "Tidbits" that Pakistan's official prefix becomes AP, and the month's art offering is spearheaded by a shot of PK4VD and operator.

#### MEMBERSHIP CHANGES OF ADDRESS

Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.

# YL News and Views

CONDUCTED BY ELEANOR WILSON,\* W1QON

## DXCC YLs

The following list contains the call letters of YLs who hold the Postwar DX Century Club award as of March 15, 1958. The number and date following the call letters is the number of the certificate and the date it was issued.

Phone	YL	Phone	YL	Phone	YL
W1MCW 18	4-21-48	ZP5JP 930	5-29-57	W5UCQ 1880	1-26-54
W2PBI 115	8- 4-49	W5JCY 960	7-12-57	W9QLH 2004	8-30-54
W8BFQ 222	4- 6-50	W3BIW 985	8- 2-57	W1RYJ 2024	10-14-54
LU4MG 290	9- 1-50	I1ZFF 994	8-12-57	P3YP 2041	11- 1-54
EA2CQ 363	4-25-51	ZELJE 1011	9-18-57	KZ5DG 2138	5-16-55
LU4DMG 504	6-24-53	I1SGZ 1018	10- 1-57	W3WUH 2171	7-15-55
CO2BK 547	1-16-54	W5HWK 1059	11-18-57	ZS6WJ 2204	8-24-55
IT1AFS 560	3-25-54	KL7ALZ 1080	12-19-57	KZ5KA 2347	3-12-56
W2FZO 604	1-31-55	W4VCB/3 1113	1-25-58	W7QGF 2388	4-16-56
KZ5DG 637	5-16-55			K6ENL 2451	6-20-56
W9QLH 662	7-19-55			W1VFK 2630	10-15-56
DL6VM 724	3- 2-56			W1YYM 2651	11- 1-56
W6QOG 737	5- 1-56			W8CXC 2700	4-29-56
E4ZEV 770	7-12-56				
W1VFK 772	7-16-56				
PY7BVG 797	9-18-56				
ZP5ET 810	9-28-56				
K5BEU 849	12-26-56				
W1RYJ 861	1-25-57				
W9CXC 897	4- 3-57				

### Phone and C. W.

### New DX-YL Award

To encourage YLs of all countries to contact each other, the Young Ladies Radio League announces its newest certificate, the DX-YL Award. The certificate will be issued to any YL who works 25 other licensed women operators outside of her own country on or after April 1, 1958.

Here are the rules:

Keep your log as usual. When you have worked 25 DX YLs, make a copy showing these contacts with the following information:

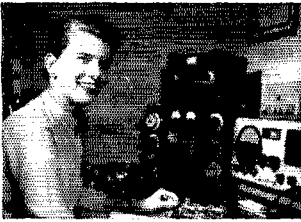
Date	Her	Ur	Her Name
Time	Station	Freq.	RPT RPT Phone/C.W. & QTH

All QSOs must be made from the same QTH or within a 25-

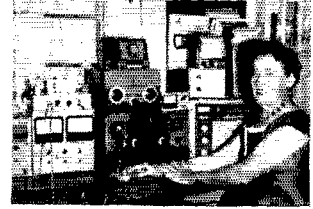
\*YL Editor, QST. Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.

Left: YLs and OMs, hearts, and flowers were all part of the usual successful combination of the annual YL-OM Valentine Dinner-Dance of the Los Angeles YLRC. Chairman Elsa, W6JZA, and her committee, W6CBA, QGX, and K6ACF were rewarded for their efforts with an attendance of some 40 YL-OM couples. Guests included Mr. Bernard Linden, FCC District Engineer, and Dr. Henry Richter, W6VZA, of Jet Propulsion Laboratories, who spoke on satellites. Those big smiles in the picture belong to Roxy, K6ELO, and her OM W6KW, and Irma, K6KCI, and Pat, K6PFY. Right: K5LIY is another of our YLs who has a private pilot's flying license. Not to be outdone by her OM in either ham radio or flying, Shirley Ariag got her ham ticket in 1952 and a pilot's license last year. Formerly W4WAP, Shirley operates K5LIY at her Dallas "ground QTH"—she hopes to be aeronautical mobile soon too. Between flying lessons and check-ins to the Texas YL Round-Up Net, Shirley works as a model.





Above, left: From Montreal, Quebec, Mary Groome, VE2YZ, operates 40 c.w. and 10 phone. A registered nurse, she would like to contact other YLs who are nurses too. Mary teaches code to beginners at the Montreal ARC. VE2YF is her OM. Above, center: Ruth Brundza, K2UBS, of Fair Lawn, New Jersey, crams in all of the operating on 10 meters that being a mother of three small jr. ops permits. The proud OM who submitted the photo says he used to be K2AUR but now is known only as the OM of K2UBS. Above, right: A member of the new southern YL club—the Georgia Peaches—Dot Mitchell, W4WFN, is a native of Atlanta. Since 1951 when she was licensed, Dot has spent her operating hours on 10, 15, and 40. A part-time PBX operator for Southern Railroad, Dot is the wife of W4TOS and the mother of two children, ages 10 and 13. Right: Since 1955 Peg Fruchey, K6JRL, of Burbank, Calif., has worked 50, 144, and 220 Mc. For antennas to use with the equipment shown here, Peg has a choice of ground planes and beams for the three bands, plus a DZZ tri-band and dipole. Peg wonders how many gals get a mike for Mother's Day, as she received the D104. Her OM is K6JOK.



mile radius. Send a copy of your log to YLRL Vice Pres. Kay Anderson, W4BLR, 5210 Raleigh Road, Richmond 23, Virginia. U. S. YLs may send postage stamps to help defray cost of mailing their certificate, if they wish.

Stickers will be awarded for each ten additional contacts. QSL cards are not necessary for confirmation; merely send a copy of your log, as indicated above. Contacts do not have to be with 25 different countries, just different YLs. Contacts will count if the YL holds an operator's license according to the rules governing amateur radio in her country. She may be operating her OM's station, club station, etc. The U. S. A. and its possessions are counted as separate countries for this award. Use the ARRL Countries List as a guide. Contacts made before April 1, 1958 will not count.

The above information was received from the YLRL vice president. Please send all inquiries and logs directly to W4BLR.

Professionally Russ and Pearl Miller of El Monte, Calif., work under the name of Russ Miller and Company, an entertainment and novelty act. At home Mr. and Mrs. Miller work 2 meters using the calls W6ERJ (his) and W6ETQ (hers). Home is a mobile unit—each drives a car which pulls a trailer; in fact, the idea of contact between the caravan is what initially interested the Millers in ham radio. Members of the Ramona Radio Club, Russ and Pearl attend meetings when not traveling about the country entertaining in theaters or on TV as trick cyclists, acrobats, and musical comedians.



### HELPING HAND

Thanks almost solely to the efforts of Bernice Schmidt, W9SJR, there are some two dozen girls and women in the Chicago area who are enjoying amateur radio today as licensed operators. The praise these YLs have for Bernice is unlimited, for they feel that she has given unselfishly of her time, her home, and herself during the past four years in an all-out effort to help them become amateur radio operators.



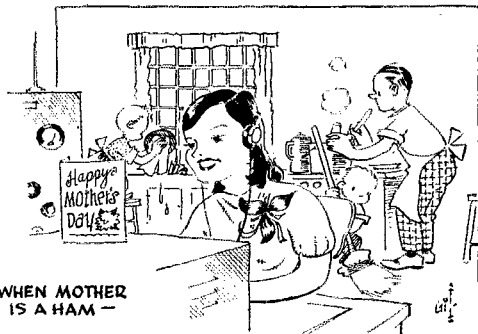
Teacher W9SJR explains a technical point to students W9IWP, K9BUS, (W9SJR) K9s EMP, KXO, EMS, and IVG.

With the majority starting as novices or technicians, most of Bernice's students have gone on to General Class licenses. Among the "graduate students" are K9s BUS, CZQ, EMP, EMS, IVG, KXO, and LDR and W9s BCA, IWP, LAS, LDY, QXI, RUJ, TDC, and YWH. Members of Bernice's present class are well on their way to tickets too. Modestly Bernice says that she has been many times rewarded for her efforts by the girls' eagerness to learn and the enthusiasm they show for ham radio.

Bernice was licensed first as a novice in February, 1952, one week after she started studying for a license. A technician license followed and



then a general license in July of that year. Bernice credits her OM, W9SSK, for her beginning and present status in the hobby. Currently she operates all bands from 2 through 80 meters. In 1952 she was the first secretary of the Ladies Amateur Radio Klub and in 1953 became its second president. In 1953 she was editor of *YLRL Harmonics*. Before she realized it Bernice says she found herself trying to help other girls obtain licenses too. Regular classes developed, and she continues to instruct in code and theory "in appreciation of discovering a hobby which has been an inspiration."



WHEN MOTHER IS A HAM -

### Coming YL Get-Togethers

*ARRL National Convention* — YL program

Aug. 15 thru 17, Sheraton-Park Hotel, Washington, D. C. Next month we'll have a full report of the many attractions of the convention program for YLs and XYLs being formulated by OM W3CN, Chairman, and his committee (see photo). General plans to date promise special breakfasts, luncheons, buffet supper, sight-seeing tours, fashion show, YLRL forum, SWOOP initiation, and entertainment. Licensed YLs won't want to miss the business

end of the convention, including technical sessions, lectures, and discussions. Nursery service will be available, plus a special program for junior ops ages 6 thru 12, so plan to bring the whole family!

*Women Radio Operators of New England*

The annual Spring luncheon will be held May 3 at the Hotel Touraine, Boston, Mass. Please contact Onie Woodward, W1ZEN, 14 Emmett St., Marlborough, Mass.

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That's not rouge — that's the color we turned after realizing that we gave the wrong impression in the February '58 column about the activities of the three charming senioritas from Brazil. Of course PY4s AUL, AUT, and APA aren't eligible to operate in this country, but they do like to listen on the ham bands and keep up their code speed.



An OM in charge of a YL program for a national convention in this day and age? Yep, and from the picture OM W3CN, Chairman of the YL Program for the forthcoming Tenth National ARRL Convention, appears to be enjoying his job too. Needless to say, Tex is getting heaps of help from committee members K4LMB and W4TVT (seated) and W3CDQ and W3RXJ (standing), and other members of the Washington Area YLRC.

## Strays

Those of us planning new towers should check the Bible, Luke 14:28.

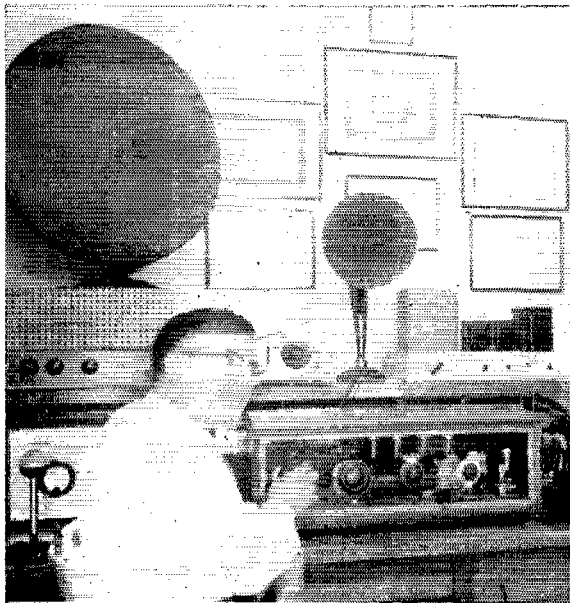
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Who says hams are odd ones? W1FGF inquired a couple of months ago about hams with odd occupations or hobbies (other than ham radio) and all the response he got was from a TV wrestler and some fellow who throws knives at his wife in a side show. No others? Last call!

»

W5ERY rushes us this photo of a receiver suitable for use with various types of Rapp emission and possibly for the Pickering system of n.s.b. described in April QST.

Then again, it may come in handy for receiving compatible color.





# Operating News



F. E. HANDY, WIBDI, Communications Mgr.  
GEORGE HART, WINJM, Natl. Emerg. Coordinator  
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, DXCC Awards  
LILLIAN M. SALTER, WIZJE, Administrative Aide  
ELLEN WHITE, WIYYM, Asst. Comm. Mgr. Phone

**The QSL Problem.** Always fraternal, the written confirmation card is sometimes hard to come by. But let's look at a quote from a current letter. "My last card representing Oklahoma arrived just today; the Utah card was the one before that. I tried for 48 states for nearly *five years* and worked many stations, nearly all of whom *said* they would QSL. But they did not. A frank "no" would have been appreciated more than the promise from those who did not intend to QSL." This letter goes on to point out that overseas, DX operators make a much better showing percentage-wise on QSL returns than do some parts of the U. S. A. For this complainant, 35 (77%) of 45 countries worked had already responded. This writer and many other amateurs (more than some Old Timers think!) are strong for a return to the days of 100%-QSL.

One suggestion or comment for the fellows starting to work for WAS: Swapping QSLs with Novices, even though some are waiting to get their first QSLs printed, may prove more productive than attempts to exchange cards with certain older amateurs whose enthusiasm has waned. Operators turned too casual in their hamming may pull down the average QSL returns for those so eager to get these tokens for WAS or other purposes. But the enthusiasm of those with fewer years experience in the game is perennial. Do work with some of them. You will find it rewarding. But with *all* groups of amateurs let it be remembered as true, even if it has been said before, that *the QSL is the final courtesy of any QSO.*

**The Test of Being an Operator.** What are the qualities here required? DX ability? Traffic knowledge? Judgment? Courtesy? Phonetics? Thoroughness and reliability? Speed? A keen ear? Accuracy? Experience? Every one of these factors, the code ability, procedure-ability and knowledge pertinent to one or another special type of operating in different bands and modes may enter into the progress of a given person in his specialized operating group. The newcomer or Novice probably feels that a *license* is the main or even the only test required to be an operator. The license necessarily is his aim both in his initial longing to get on the air, and in operating as he strives to complete the apprentice-year and become General Class. But to be a *top operator* takes the school of experience in traffic and DX and even for casual operating. All points of procedure are worth careful advance study to get the most out of Amateur Radio. Clubs can help improve our general abilities by scheduling some operating talks and demonstrations by the most skilled and experienced operators of their locale.

For all reasonably *new* to the game getting started *right* is the thing. All newcomers are invited to get our WIAW operating schedule and follow the code practice and bulletins for on-the-air practice. Monthly opportunities are given for having copy checked and certification of your ability to copy perfectly what you hear between speeds of 10 and thirty-five words per minute. Proficiency grows best through practice and regular use. We recommend that all comers continue to the very top in our code-program. However, we would caution that becoming a keen operator takes *more* than the code ability which is an essential foundation. After the license and first-contact thrills we really begin to dis-

## A.R.R.L. ACTIVITIES CALENDAR

May 1: CP Qualifying Run — W6OWP  
May 23: CP Qualifying Run — WIAW  
June 4: CP Qualifying Run — W6OWP  
June 14-15: V.H.F. QSO Party  
June 23: CP Qualifying Run — WIAW  
June 28-29: Field Day  
July 3: CP Qualifying Run — W6OWP  
July 19-20: CD QSO Party (c.w.)  
July 22: CP Qualifying Run — WIAW  
July 26-27: CD QSO Party (phone)  
Aug. 6: CP Qualifying Run — W6OWP  
Aug. 20: CP Qualifying Run — WIAW  
Sept. 1: CP Qualifying Run — W6OWP  
Sept. 17: Frequency Measuring Test  
Sept. 18: CP Qualifying Run — WIAW  
Sept. 20-21: V.H.F. QSO Party

## OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Apr. 26-27: PACC Contest (c.w.), VERON (p. 72, last month).

May 3-4: PACC Contest (phone), VERON (p. 72, last month).

May 6-7: Operation Alert, FCDA (p. 104, this issue).

May 10-11: USSR International C.W. Contest, Central Radio Club (p. 91, this issue).

May 17: Armed Forces Day Receiving Competition and QSO Party, Dept. of Defense (p. 64, this issue).

May 17-18: Helvetia-22 Contest, USKA (p. 89, this issue).

cover how much is entailed in the art of exchanging full and accurate intelligence! Do you ask for suggestions on making the grade as an all around good operator? If you will join a net, or handle traffic consistently you will soon become accurate in getting the words on paper when messages are sent through QRM and QRN and also can gain the ability to "copy behind." Getting weak DX and taking poor as well as good signals under trying conditions broadens the personal ability to communicate. In taking down voice-sent messages, use phonetics *only* as necessary. Besides following standard word lists for characters, proper transmission of word groupings or whole phrases aids voice intelligibility. The display of judgement in voice work or code is equally a criteria in the A-1 Operator Club rules permitting nominations of operators using phone, c.w. or any mode to the A-1 operator group. The A-1 OC rules in full are given in the operating booklet.

**About Observing FCC Regs.** Vulnerable is the proper word for amateurs who are either careless or willful in disregard of the amateur service FCC regulations these days. Carelessness with v.f.o.'s and band-edge off-frequency work is not nearly as common as it used to be. It is a fact that there are some necessary citations for speech products just beyond the phone band edges. *Harmonics* that get radiated from amateur stations, the larger number from Novices, are constantly being cited by FCC. Forty-one per cent of the 12,685 friendly notices, sent by ARRL Official Observers in '57 to keep amateurs out of FCC trouble, concerned harmonic-radiation. All amateurs, therefore, will do well to check for spurious emissions and harmonics each time a new tune-up or antenna arrangement is made.

#### NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

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

The following are the National Calling and Emergency Frequencies for Canada: c.w. — 3535, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.

The Commission's monitoring stations customarily rotate their attention to different regulations, so it is only the course of wisdom to know one's regulations and observe them. Currently we hear of considerable variety in FCC's monitoring, informal word for example, of a D1A-KH6-W6 phone patch in clear violation of Art. 42 that prohibits third-party international work.

This reportedly was made the subject of a full FCC monitoring routine, with all those concerned subject to official notices by appropriate authority.

**Field Day Nears.** The logging-report forms to use for the June 28-29 ARRL Field Day will be ready by mid-May. A radiogram or postal card request will bring them to you in time, if you place your request early. *FD planning* and individual preparation was stressed in this column in April *QST*. We hope that your emergency-powered stuff has had the advance pre-FD work-out by now, and that all your plans are in order for the biggest Field Day ever.

—F. E. H.

#### MEET THE SCMs

Wisconsin's SCM, George "Bud" Wolda, became licensed as W9KQB shortly after he adopted amateur radio as a hobby in 1931.

Following his election as SCM in May, 1957, Wolda dropped his Route Manager appointment, but is currently an Official Relay Station and an Assistant EC and has WAS, WAC, A-1 Operator, Old Timers Club, ROC, Wisconsin C.W. Net and Central Area Net certificates. Previously he was NCS of CAN Monday night sessions. W9KQB has been on the air for the Wisconsin QSO Parties in addition to the ARRL CD and LO Parties, Sweepstakes and DX Contests.



W9KQB's equipment consists of a Viking II, v.f.o. and Matchbox and SX-96 and BC-454 receivers, for use on 80 through 10 meters, phone and c.w. A 6AG7-807 transmitter is available as a spare. For antennas an end-fed half-wave and vertical folded dipole are used.

During the war Bud was a civilian radio and code instructor at Truax Field, Madison, Wisconsin. He has been a professional drummer since 1926 and has traveled throughout the Middle West and Canada with stage and dance bands. At present he is a member of a ten-piece orchestra playing clubs, hotels, schools and ballrooms throughout Eastern Wisconsin.

Bud manages to find time to indulge in a second hobby, stamp collecting. He enjoys fishing as well as softball, baseball, football and hockey games. Formerly a radio and appliance serviceman, he is now connected with Greenwoods TV and Appliance as a TV serviceman.



A series of snow and ice storms during February in various parts of the country brought many amateurs into the emergency picture. Some of the reports received are sketchy, but we'll do the best we can and hope the result is accurate. And since they will probably take up a lot of room, we'll dispense with any general palaver from this corner.

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First, a little feedback. In the writeup of the lost-girl search in Illinois (Mar. *QST*, p. 77), there were no mobiles on 75 meters, as reported about the middle of the second paragraph, second column. These mobiles were on 10 meters. Also, W9VTL was mistakenly listed as W9VYL. Thanks to W9BQC for calling these errors to our attention.

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Some time in early January, W7SSQ heard KL7USA trying to contact a MARS station at Fort Lewis with urgent traffic. Hearing no reply, SSQ broke in and asked if he could help. KL7USA gave him an urgent order for a special diet formula for a small baby. It appeared that heavy snows had cut off other communications and that the three-month-old baby's formula was rapidly dwindling. W7SSQ phoned the message to Fort Lewis but was unable to get an answer promptly because the formula was very difficult to obtain and was not readily available. By the time they were able to report that the special diet was available and would be sent, band conditions had changed and KL7USA was no longer audible. However, W7SSQ was able to contact a nearby KL7 on another band and relay the message that the formula was on its way by special plane. A nice job on the part of W7SSQ.

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A tornado hit Murphysboro and Mt. Vernon, Ill., on December 5, precipitating amateur activity throughout the state. Says W9PSP, "the heat was on" from 1730, Dec. 18 until 0430, Dec. 19. Target Net Control Station K9CLW was active the rest of the morning of December 19 handling emergency traffic from Region 4 FCDA headquarters to the FCDA warehouse at Carbondale, Ill., releasing emergency generators and other supplies for Murphysboro. Base station in the Murphysboro area was W9UHH. W9PSP was state net control, and K9IEY served as base station for Mt. Vernon.

Outstanding work was done by W9QNR of Centralia, who took a pocketful of messages at his home station and drove to Mt. Vernon to deliver them by telephone and get replies, which he sent from his car, shuttling back and forth from phone booth to car to repeat this process several times. Then he drove to a children's home that had been damaged and gave a complete description of the situation. He finally knocked off at 0400 Dec. 19 to be at work in Centralia by 0600. Assisting him to perform this service were W9UHH, K9IEY, K5MXW, W4HKK, W8JST 8 and W9PSP. Skip

conditions made some relays necessary, but not a word was missed.

K9IEY reports that the West Frankfort RACES was alerted at the very first storm warning. Units were sent to Mt. Vernon, but were recalled when West Frankfort itself was threatened. Later, units were sent to Murphysboro to assist at that point. K9IEY was on the air from 1800 Dec. 18 until about 0400 the next day, assisting many stations handle traffic in and out of various affected communities. Since so many of the services now have communications facilities of their own, K9IEY noticed that RACES units, to be fully effective, have to be there first.

W9PSP has compiled a complete list of stations known to have been active in this emergency (those already mentioned excluded): W4s NBS ZHY, W0s QMF RUF ZLN MSR KNL PTG, K0APN, W9s AEX BOV CAG DCG EBV ESB EZA HSH JLI, KCX KH MXM NFV PMN PQB PYL QNR RKY VWJ FAX TSS PRN JVS YL, K9s BML GUA GHO.

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A fire in Springhill, N. S., on December 26 brought amateur-c.d. units into action to supplement overloaded telephone lines. VE1NZ and VE1KK were dispatched to Springhill from Truro, maintaining contact with VE1TT while VE1s MY QM XK CV and DK stood by and other VE amateurs assisted in keeping the frequency clear. Arriving in Springhill the two amateurs contacted c.d. authorities and were put to work handling traffic through Truro to Halifax reporting the fire condition to the news circuits. Continuous contact was maintained with Truro throughout the night. VE1NZ and VE1KK left Springhill at 0630, but ran out of gas on the way, having run the car all night to keep their battery charged. They slept by the side of the road until help arrived. — VE1TT, EC Truro, N. S.

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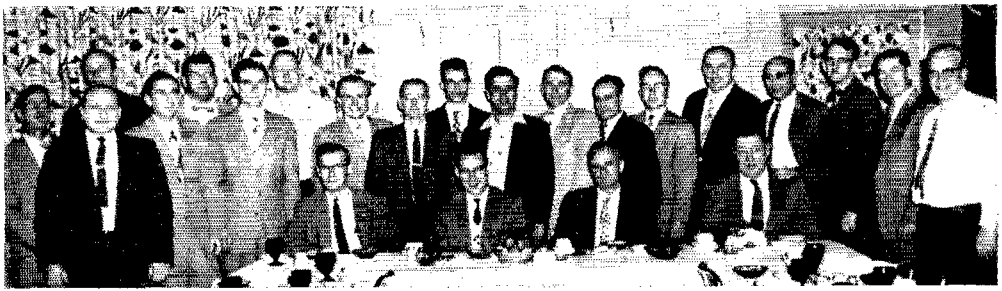
On January 18, an ice storm in the Bathurst, N. B., area, brought out the AREC under EC VE1VC in the persons and stations of VE1s UV VC WF and DJ to assist the New Brunswick Telephone Company in maintaining supplies and instructions from the Newcastle area. Approximately 26 messages were handled on 3700 kc. Assisting in the operation were VEs 1BL 1ZY 1GA 1ABQ 1ALJ and 3AWQ.

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On Feb. 10 the Eglin Air Force Base Fort Walton Beach Emergency Net was called into action to assist in the search for five missing children, ages 9-12. W4RKII, NCS, began checking stations in at 2150 CST, and within an hour there were ten local mobiles and several fixed stations in the net, many of them coming in without being notified. The search was concentrated in a small area near Fort Walton Beach, the various mobile units assisting a large search party covering the area on foot. The search was continued until 0900 the following day, when the children were found unharmed — which was a wonder, because it was raining and the temperature hovered just above freezing all night. Pensacola, 45 miles away, also furnished two mobiles and had a fixed station on the search frequency for liaison purposes. Mobiles: W4s BPI EWG MFY SMIM UXW, K4s BTT DDD GEV MTZ OPP SJJ, W7JPH 4. Fixed stations and other participants: W4s AOK LJK OOW



Three amateurs of Granby, Que., have promoted the service aspect of amateur radio during 1957. Activities included participation in search activities, demonstrations, picnics, hidden transmitter hunts, publicity and provision of communications facilities for many public and semi-public events. A small truck is available as a mobile communications unit, shown in the photo with (l. to r.) VE2JB and XYL, VE2HI and VE2ZZ. Picture was taken by W2HAQ on an impromptu visit.



On January 6, 1958, the Cuyahoga County (Ohio) RACES staff held a dinner meeting at which the county c.d. director and Radio Officer W8BUQ addressed the group. Shown in the picture, left to right seated: W8RAK (Asst. R.O.), C.D. Director J. J. Pokorny, R.O. W8BUQ, W8AJH (Asst. R.O.); standing, l. to r.: K8GQL, W8ITR, W8WJD, W8FKB, W8WZS, W8INO, W8NZC, W8YPT, W8ZJQ, W8PZR, W8BPN, W8MMO, W8DFV, W8SZF, W8PAL, W8YMV, K8AAG, W8OYS, W8DEV.

RKH SPP, K4s CUC MTQ. Thanks to W4RKH, Western Fla. SCUM, for a fine, concise report.

Northern Alabama was snowed in by 18 inches of snow on Feb. 15. Twenty-five or so families were stranded without fuel or food in the zero-degree cold for several days. Luckily, five amateurs who live on Green Mountain were able to contact W4YFN, Madison County EC, and K4GTQ at Redstone Arsenal. Needs of stranded families were radioed to Huntsville and the necessary supplies were brought in on Feb. 18 by an Army team in a full-track vehicle; this included a prescription for W4OVC's 9-month-old son who had been taken ill. The following day another emergency call was necessitated when a man fell and fractured his skull and had to be transported, again in the Army vehicle, to a hospital; this contact was from W4OVC to K4GTQ. Amateur radio was the sole means of communication from Green Mountain for a number of days. Members of AENS and AENR who participated in the emergency communications include W4s LHR LHV LHW WOF YFN TKL. K4s OCV GTQ SPP WMA. W4TKL had to wait to be dug out before mailing the above information report.

The snowstorm of Feb. 16 isolated 100 Boy Scouts at Camp Winnebago. N. J. Roads were impassable and the nearest telephone was over half a mile away. So KN2ZSQ and KN2KSL set up a rig on 80 meters and made contact with K2PIR and K2ZHK down on the home front, passing along innumerable messages to worried parents over this circuit. The scouts were from Rahway, N. J. and vicinity. — K2ZHK.

On the afternoon of Feb. 17 in Westfield, N. Y. a school bus collided with a car in a blinding snow storm and precipitated an accordion-like series of collisions between trucks and cars on the crowded highway. One of the truck drivers happened to be W3VNC, with a mobile rig in his truck. Without hesitation, realizing the difficulties in rescuing the school children, none of whom was hurt, he sent out a "mayday" call from his rig and was answered by a somewhat startled K6UGQ. K6UGQ thereupon contacted W8QGT in Warren, Ohio, who notified New York State police and rescue operations were under way almost immediately.

A Honesdale, Pa., amateur, W3QLW, performed an emergency service during the big storm on Feb. 19 when he was requested by W3FXX to make contact with W2EDM/3, a battery-operated portable rig in a barn near Cortez, Pa. Contact was made and information received that 8 families near Cortez were in need of food, fuel and medicine. The needed supplies were dropped there the following day. W3QLW also handled some other traffic for civil defense during the emergency.

We gather from a clipping sent in by W4YZC that W3LGY and W3IPO were involved in making arrangements for helicopter rescue of two expectant mothers in the Damascus and Dickerson areas of Maryland. W3LGY was on the air for 90 hours in the emergency net, and W3IPO kept after officials at Fort Meade until the helicopter service

could be arranged. That's all we know about it so far, but it seems worth mentioning.

When a newspaper heading reads "Ham Radio Sends Aid To Ill Boy," that's good publicity. In this case it was W4DVW, a doctor in Miami, who heard by ham radio of a sick boy on an island in the Caribbean and arranged to have medicine flown to him. Not only did he make all arrangements, but he also paid for the medicine. Just a small incident, but one that adds no small measure to the stature of amateur radio in the eyes of the public.

On Feb. 28 and Mar. 1, Newfoundland's capital city, St. John's, suffered a freezing rain that covered power and telephone lines, entirely disrupting electric distribution and communications, both internally and with any outside point. Naturally, in such a situation the AREC, under EC VO1AO, went to work. Bell Island, a suburbanite appendage of the capital city, was completely isolated until the AREC stepped in. At 1100 on Mar. 1, VO1AO alerted AREC members and an emergency power unit was installed at his home. Points covered were Bonavista, Harbour Grace, Bell Island and other outlying points. Stations at these places were also operated by AREC members using emergency power units on loan from civil defense. For several days this circuit was in operation, providing the only communication available, receiving and sending instructions for doctors, DOSCO officials, municipal council members, newsmen, worried relatives, etc. All in all, a superb job was done.

Equipment was installed and operated at Bell Island by VO1BE and W3IZJ with the cooperation of civil defense which supplied transportation and some of the gear. The call used was VO1BF. Those taking part in the circuit were VO1s CZ AK AI and BJ. Assisting in relay of traffic where needed were VO1s BY BV DI, W2ZRX and K5GXN. The operation, which lasted for three days without respite, got a fine writeup in the St. John's Evening Telegram.

On Feb. 28 the Chester County, Pa., Emergency Net was asked to assist with communications in connection with floods brought about by melting snows and heavy rains. From 0230 until 1100 there were four mobiles and four fixed stations, plus a control station at C.D. headquarters constantly available, after which members remained on standby until all danger was past. Mobiles were used to ascertain road and water conditions and relay this information to C.D. headquarters and state and local police via the fixed stations. All operation was on six meters. The following amateurs participated: W3s CFS DBL DBN EQR EQ FXX GKI GTS GUC GUD JRY YDY ZAT, K3CDR. — W3DBL, Radio Officer, Chester Co., Pa.

We start off the new year with twenty SEC reports for January, representing 5599 AREC members. This is three down from January of 1957, which was a good year and will be hard to beat. It is also over a thousand AREC members lower than the 1,577 record. C'mon, fellas! Sections reporting: Ala., Nevada, San Joaquin Valley, Santa Barbara, Mont., Va., Iowa, N.M., Colo., N.Y.C.-L.I., E. Fla., Tenn., Ga., Ont., N. Texas, Conn., E. Bay, Santa Clara Valley, Md.-Del.-D. C., Wis.

## RACES News

We don't like to raise premature hopes, but present indications are that the petition of the United States Civil Defense Amateur Radio Alliance for additional RACES frequencies in the high frequency amateur bands has made good progress and action by FCC on this petition appears to be imminent. USCDARA petitioned some time ago for additional RACES segments in the 75 and 80 meter bands, and for new segments in the 40 and 20 meter bands to take care of the obvious need for additional medium-distance and some

long-distance channels. The petition has had the support of the Federal Civil Defense Administration from the start. While it is not likely that RACES will get all that USCDARA requested, it begins to look as though some measure of relief for our harassed RACES circuits at statewide and interstate levels is in prospect. We're keeping our fingers crossed.

In last month's QST under this heading we reported an FCDA reorganization separating the Warning and Communications Office into two separate offices. A recent visit to Battle Creek revealed, much to our surprise, a still further reorganization that elevates Communications to a still higher level, as an FCDA Service under an Assistant FCDA Administrator. Now under the Communications Service are three Offices: Equipment and Systems, Warning, and Bomb Damage & Assessment. The Equipment & Systems Office (A. P. Miller, Director, and Henry Brown, Assistant) is divided into three Divisions: Communications Equipment, Operations, and Requirements. Charlie Dewey, W8LBM, is head of the Communications Equipment Division, but RACES still is handled by Jim MacGregor, W8DUA, who is now located in the Operations Division.

Are you still with us? Anyway, that's the setup for this week.

RACES in Streator, Ill., is sponsored mostly by the Streator Radio Club. The club station, K9CAU, is authorized for RACES, as are four other club-member calls, other members serving as RACES operators. The club also boasts a trailer with portable antenna and independent generating facilities for power.

DuPage County (Ill.) RACES will occupy, late in 1958, one of the most advanced buildings ever designed for civil defense purposes. It will house the net control stations of the RACES group which is under the sponsorship of the Radio Amateur Society of DuPage County and is assigned the call K9LEO. Provisions are made for ten operating positions, sleeping quarters, kitchen, food storage, diesel power-generating units, air filters and special air locks and

decontamination chambers for entry and exit under emergency conditions. The RACES group holds network drills each Monday night.

## RTTY NOTES

Based on logs received through March 1, W6AEE announces the results of the 5th Anniversary RTTY Sweepstakes of February 14-16. The contest's top score of 6039 came from W2RU1, with 33 sections and 183 contact points. Other leaders: W0BP 5460, W3PYW 5156, K1RRG 3720, W6MTJ 3000, W6AEE 2821, W0LZL/0 2392, W6HIF 2090, W4EHU 1750, W0KXB 1720, W0FQW 1656, W7PQJ 1600, K6CHR 1404, K6OUR 1216, W1BDI 1166, K0ASR 1156, W8CRY 1152.

## W1AW SUMMER SCHEDULE

(Effective April 27, 1958)

(All times given are Eastern Daylight Saving Time)

*Operating-Visiting Hours:*

Monday through Friday: 1300-0100 (following day).

Saturday: 1900-0230 (Sunday), Sunday: 1500-2230.

Exception: W1AW will be closed from 0100 May 30 to 1900 May 31 in observance of Memorial Day.

A map showing how to get from main highways (or from HQ. office) to W1AW will be sent to amateurs advising their intention to visit the station.

*Official ARRL Bulletin Schedule:* Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules.

*Frequencies (kc.):*

C.w.: 1885, 3555, 7080, 14,100, 21,010, 28,060, 50,900, 145,600.

Phone: 1885, 3945, 7255, 14,280, 21,330, 29,000, 50,900, 145,600.

Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibration purposes.

*Times:*

Sunday through Friday, 2000 by c.w., 2100 by phone.

Monday through Saturday, 2330 by phone, 2100 by c.w.

*General Operation:* Use the chart below for determining times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

*Code-Proficiency Program:* Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on the above-listed frequencies. Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On May 15 and 23 and June 23, instead of the regular code practice, W1AW will transmit certificate qualifying runs and a frequency measuring test.

## W1AW GENERAL-CONTACT SCHEDULE

(In Effect April 27, 1958)

W1AW welcomes calls from any amateur station. Starting April 27, W1AW will listen for calls in accordance with the following time-frequency chart.

Time (EDST)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0000-0100 <sup>1</sup>	.....	.....	3555 <sup>2</sup>	.....	3945	7080 <sup>3</sup>	.....
1300-1400 <sup>2</sup>	.....	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	.....
1500-1600	.....	7080	14,100	7255	14,100	7080	.....
1600-1700	.....	14,280	7080	14,100	14,280	14,100	.....
1800-1900	.....	14,280	14,280	14,280	14,100	7255	.....
1900-1930	.....	7255	.....	21,010 <sup>3</sup>	.....	14,280	.....
1930-2000	.....	14,100	.....	3555	.....	14,280	.....
2000-2030 <sup>1</sup>	14,280	3555 <sup>3</sup>	14,100	14,100	7080 <sup>3</sup>	14,100	.....
2030-2100	14,280	3555	14,100	14,100	7080	.....	.....
2100-2130 <sup>1</sup>	145.6 Mc.	21,330	145.6 Mc.	50.9 Mc.	21,330	.....	.....
2230-2300	.....	.....	1885	.....	1885	.....	.....
2300-2330	.....	.....	3555	.....	3945	.....	.....
2330-2400 <sup>1</sup>	.....	3945	7255	3945	7255	3945	.....

<sup>1</sup> Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin, on c.w. at 0000 and 2000, on phone at 2100 and 2330.

<sup>2</sup> Operation will be on 21,010, 21,330, 28,060 or 29,000 kc., depending on band and other conditions.

<sup>3</sup> W1AW will listen for Novice Class licensees on the Novice portion of this band before looking for other contacts.

At a meeting of Pacific Division section leaders on Jan. 11, 1958, Director W6HC snapped the above picture. Thought you might like to have a look at some of the divisional "brass." From left to right around the table are Sacramento Valley SCM K6CFF, Vice Director W6ZF, San Francisco SCM W6OPL, Santa Clara Valley SEC W6NVO (eclipsed), Santa Clara SCM W6YHM, East Bay SCM W6OJW, and East Bay SEC W6CAN.



## SUPPLEMENT TO NET DIRECTORY

The following list of nets will supplement and correct the listings on page 98, Nov. *QST*; page 83, Jan. *QST*; and page 81, March *QST*. This brings the record up to date as of Mar. 17, 1958. Since these additions and changes were made subsequent to publication of the cross-indexed Net Directory (CD-50), use this information to amend your copy of the directory. An asterisk (\*) indicates correction from one or more of the above-mentioned listings; otherwise, the net is a new addition. This is the last *QST* net supplement before fall re-registration. Don't forget to reregister your net as soon after August 1 as possible.

*Important note:* ARRL lists of nets are for information only. They do not carry any official significance. Nets are registered as closely as possible in accordance with information given by the registrant.

Name of Net	W'eq.	Time	Days
Akron CD and Disaster Net (Ohio)	51,000	1900	EST Mon.
Alberta Phone Net *	3770	1930	MST Mon., Wed., Fri.
Ames CW Net (Iowa)	3798	2000	CST Thu.
Bedford, Mass. AREC and CD Net *	29,120	1900	EST Mon.
Broome Co. (N. Y.) AREC Net	50,400	2100	EST Fri.
Chittenden Co. AREC Net	29,568	1900	EST Wed.
(CCEN) (Vt.)	145,800		
CQ Radio Club Net (Conn.) *	145,670	1900	EST Tue.
Eastern Ind. 2 MTR Net	144,500	0900	CST Sun., Mon.
Far East Rag (Chewer's Net (FERCN))	14,196	0100	GMT Sun.
Florida Net (Ex-Palmetto) (FN) *	3675	1900	EST Mon.-Sat.
Houston Drag-Net	3835	0715	CST Mon.-Fri.
Huntington Weather Net (HWN) (W. Va.)	50,550	1900	EST Mon.
Kentucky Phone Net (KPN)	3960	1930	CST Daily
Linn Co. (Iowa) Civil Defense Net *	50,400	2000	CST Wed.
Linn Co. (Iowa) Emerg. Net	29,600	1300	CST Sun.
Malibu Civil Defense Net (RACES) (Calif.)	1915	1930	PST Mon.
Metropolitan Teen-age Net	29,100	2100	EST Fri.
Michigan Teen-age Net	3880	1500	EST Sun.
Newfoundland Net	3750	1900	NST Daily
Nocturnal Interplanetary & Terrestrial Watchers of Interspace Transportation Services (NITWITS)	3869.8	2000	PST Daily
No. Dak. 15 Meter CW Net	21,192	1730	CST Mon., Wed., Fri.
North East VHF Net	145,360	1930	EST Daily

Old Gouls Net	7100	0800	EST	Daily
Post Party Net (PPN)	21,310	0100	EST	Sun.
Rochester Peanut Whistle Net	21,400	2100	EST	Sun.
SKETO Net (Calif.) *	3910	2000	PST	Mon., Wed., Fri.
Southwestern Teen-agers Net (SWTAN)	3633	1930	MST	Sun.
SWANI Emerg. Net (Ill.)	29,460	2000	CST	Mon.
Teenage Traffic Net *	3940	0730	CST	Mon.-Fri.
Tri-City Net (Tenn.)	29,000	2100	EST	Daily
West Mich. V.H.F. Emerg. Net *	145,260	2000	EST	Mon.
Winthrop Emerg. Radio Net (Mass.) *	146,520	1830	EST	Mon.

## BRIEF

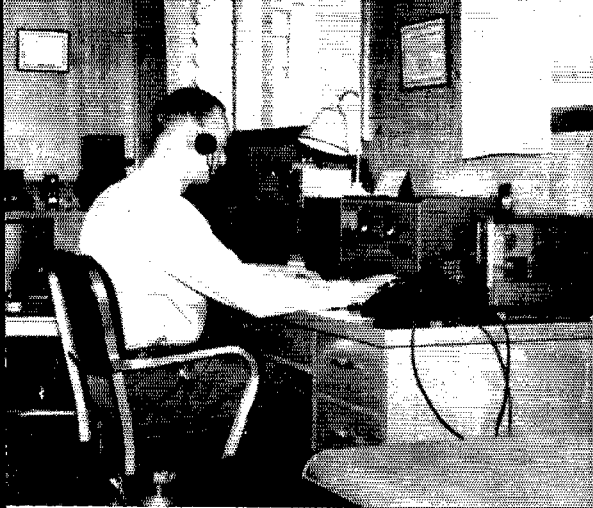
Our apologies for missing ORS W4RQR in the high claimed scores of the January CD Parties on page 81, last month. Bob's 201,190 points, 642 contacts, and 62 sections ranked third among all c.w. participants.

## TRAFFIC TOPICS

It seems that 1957, data on which has just been completed for Annual Report purposes, was one of our better traffic years, during which we handled more traffic than any other years except 1953 and 1954. We measure the traffic-handling index by taking samples of two months out of the year — one a low month and one a high month; specifically, September and December. For those two months each year we total all the traffic reports and all the traffic shown in *QST*'s "Station Activities" column to get national totals. You might be interested to know how this has fluctuated during the past few years.

Year	September			December		
	Reports	Traffic	Av.	Reports	Traffic	Av.
1946	158	3,607	22.8	372	19,798	53.2
1947	307	13,099	42.7	568	44,224	77.9
1948	392	28,334	72.3	658	33,821	81.7
1949	487	46,393	95.3	714	98,577	138.1
1950	516	64,305	120.7	798	118,558	148.7
1951	491	54,037	110.1	763	123,074	161.3
1952	515	61,534	112.9	785	144,727	184.4
1953	758	120,159	158.5	863	232,600	269.3
1954	924	101,190	109.5	1068	208,647	195.4
1955	926	79,438	85.8	1155	159,616	138.2
1956	897	79,802	89.0	1191	163,910	137.6
1957	939	82,750	88.1	1333	198,130	148.6

Let us know if you start getting tired of these statistics. We find them most interesting. For example, note that although we are a long way from the traffic-happy year of 1953, the number of amateurs handling traffic (or at least reporting it) has greatly increased since then. We can attribute the drop in traffic handled from 1953 to 1955 to a cutback in overseas traffic following the Korean business, both because of decreased personnel for whom to handle traffic at overseas bases and of tightening of regulations concerning handling of overseas traffic by amateurs both by the military and civilian governments. On the other hand note that in general the number of amateurs handling traffic has shown no appreciable decrease during this



Here's a traffic man you all ought to meet. It's W7AIB, long a mainstay of the Washington Section Net (NTS), at work in his neat station layout. Hap was associate manager of WSN for two years, manager for a year, and has been Washington RM since 1956. He has held the call W7AIB since 1922.

period; in fact, in some years significant increases were shown despite the decrease in traffic. This we can attribute to the levelling influence of the National Traffic System which gives the part-time traffic handler a regular place in traffic circles.

The net directory shows somewhat the same trend. The year-end-1957 directory has 526 net names listed on 578 spot frequencies, but of these 322 meet only once per week or less while 193 meet five times per week or more. And even those which meet every day do not contain the same stations day after day; rotation of NCS and check-ins to represent certain coverage areas or localities is rapidly becoming a commonplace practice. On NTS it is standard. This brings more amateurs into the traffic-handling picture even when there is not more traffic to handle. For example, it is interesting to note that although we handled more traffic in Sept. of 1957 than in Sept. of 1950, by almost 20,000, the traffic-per-station was considerably higher in 1950 (121) than in 1957 (88). Similarly, although we handled more traffic in Dec. of 1957 than in Dec. of 1952, the traffic-per-station was much higher in 1952 than in 1957. This is good, not bad. We want to keep the total traffic climbing and the traffic-per-station decreasing, because that means that more stations are handling more traffic, and that's what we want.

Oh, there are still some iron men (not to mention iron women) all right. You'll see their calls at the top of the BPL column each month. They're in there slaving away every night because they get a charge out of it and because they have the time. But it is no longer a requirement of a traffic man in good standing that he keep daily schedules. That day has passed.

Frequently we get asked for a list of countries with whom we may not handle third party traffic. It's easier to comply with such a request in reverse — by listing those with whom we *may* handle traffic. Here they are: Cuba, Costa Rica, Canada, Liberia, Ecuador, Peru, Chile, Panama, Nicaragua. With these countries, non-commercial third party traffic may be handled by amateur radio. With all others (and we mean *all*) it is forbidden by international law.

Too often it has come to our attention that some amateurs are winking at this regulation and gaily handling international phone patches with amateurs all over the world, either thinking that the third-party regulation doesn't apply to phone patches or being cocksure that they won't get cited for it. In the first place, it *does* apply to phone patches if any third party (other than the operators of the two stations in communication) is involved. On the second point, don't be too sure; FCC has been known to send

QSTs for this type of violation. But even more important than *your* being cited is the possibility of the whole amateur fraternity being indicted internationally because of this practice. With an international telecommunications conference coming up in the all-too-near future, our cause can suffer great damage from just such seemingly-minor infractions.

Most of this practice is perpetrated by Americans stationed in foreign countries where they have been granted amateur licenses — especially Germany (DL4) and Japan (KA). Usually, they will assure you that it is perfectly legal, that the regulation doesn't apply to them because they are Americans. Take our word for it, it is *not* legal and the regulation *does* apply. Now of course the only way you can stop them from doing it is by refusing to be a party to it yourself. FCC can't cite them, only you. It's natural for them to want to get traffic and phone patches through to their friends and relatives in the states — natural, understandable, and we can sympathize. If it's an emergency and no commercial service is available, we might even go out on a limb to help them out. But in ordinary circumstances, we strongly advise you to steer clear of them, and urge others to do likewise. It can get not only you in trouble, but all of us together.

*Net reports.* North Texas Oklahoma Net reports 28 sessions, 924 check-ins, traffic total of 392. Transcontinental Relay Net reports 28 sessions, average QNI of 9, traffic 1428. Transcontinental Phone Net reports as follows: First Call Area — 2923; Second Call Area — 1384; Fourth, Ninth and Zereth Call Areas — 896; Total — 5203. Early Bird Transcontinental Net reports 886 messages handled. Interstate SSB Net totalled 381 messages, average check-in 58, average time per session one hour 21 minutes. The 7290 Traffic Net had 41 sessions, 436 message handlings, 1171 check-ins.

*National Traffic System.* While we're in a year-end statistical mood, we thought we'd give you some data on how NTS did in 1957. The system produced 490 net reports at all levels during the year, reporting 14,892 net sessions and 203,576 message handlings. December was our best month, as always, and second-best was April, which is a little unusual. All figures were up considerably from 1956. A majority of the reports was from section-level nets (299), but most of the traffic was handled at regional and area level (105,885). Tenth Regional Net handled by far the most traffic during the year (23,259), followed by Central Area Net (15,487) and Pacific Area Net (14,098). Four regions made 100% representation in their area nets: 2RN, RN7, 9SN and TEN. No section was represented 100% in its regional net, but Md.-Del.-D. C. came close to it with 516 out of 517. Regional area net reporting was excellent, with 158 reports received out of a possible 168. Monthly reporting at this level is getting to be automatic.

All in all, a fine year, gang. Our felicitations. NTS is not yet perfect, but it keeps getting closer each year that we can show an improvement over the year previous, as we have each year so far.

The Transcontinental Corps made excellent organizational progress, mostly as a result of some example-setting by W0KQD. The TCC recorded 32,154 message handlings in out-of-net schedules during the year. February reports:

Net	Ses- sions	Traffic	Rate	Aver- age	Repre- sentation (%)
1RN	24	549	.420	22.9	95.2 <sup>1</sup>
2RN	48	405	.348	8.4	99.7
3RN	40	325	.346	8.1	95.0
4RN	47	578	.321	12.3	91.1
RN5	48	682	.437	14.1	81.5
RN6	39	485	.334	12.4	42.1
8RN	44	562	.578	12.8	89.4

### NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc.      7140 kc.



9RN	56	1229	.574	21.9	82.6
TEN	83	1176	.377	14.2	61.7
ECN	20	117	.248	1.7	83.3 <sup>1</sup>
EAN	23	1397	1.001	60.7	100.0
CAN	28	1132	.807	40.4	100.0
PAN	28	1279	.727	45.7	98.2
Sections <sup>2</sup>	846	8388			
TCC Eastern	60 <sup>3</sup>	184			
TCC Central	57 <sup>3</sup>	138			
TCC Pacific	88 <sup>3</sup>	982			
Summary	1374	19708	EAN	13.3	EAN/CAN
Record	1374	19708	....	19.1	100.0
Late Reports:					
8RN (Jan.)	51	72	....	1.4	87.6
Sections <sup>4</sup>	80	476			

<sup>1</sup> Regional net representation based on one session per night. Others are based on two or more sessions.

<sup>2</sup> Section nets reporting: NJN (N. J.); Iowa 75 Phone; QMN (Mich.); CN & CPN (Conn.); SCN (Cal.); LLN (Ill.); S. Dak. 30 Phone & So. Dak. 75 Phone; SCN (S. C.); MIPN Noon & Evening, MJN, & MSN (Minn.); STS (Texas); BN (Ohio); TLCN (Iowa); CSSN, Colo. Weather & HNN (Colo.); QKN & QKS (Kans.); KYN, KPN & KSN (Ky.); Fla. Mid-Day; WSN (Wash.); AENB, AENP & AENT (Ala.); RAN (Colo.-Ariz.-N. M.-Utah); WVN (W. Va.); Tenn. C.W.

<sup>3</sup> TCC schedules kept, not counted as net sessions.

<sup>4</sup> Section nets reporting late for January: QMN (Mich.); FN (Fla.).

Concessions to convenience in the scheduling of NTS net sessions and TCC schedules are all very well, and often necessary when it spells the difference between a working and a non-working organization, or an efficient and inefficient one. But let's not carry it too far, fellows and gals. Your NTS manager has always been a stickler for following the structure, and often has seemed, we know, to be unreasonably insistent on it. This is because if we let down the bars too far we'll get trampled by the thundering herd, and instead of a system we'll have an unmanageable mass of nets each going about its own business in its own way at its own convenience, without regard to such principles as liaison, systematic traffic flow, and unity of organization. This is just what NTS was set up to get away from. Amateur radio is getting bigger, more traffic is being handled, NTS is rapidly expanding and taking hold and getting more complex. We must be careful that our growing pains don't become our death throes. Are you with us in helping to hold the line?

W2ZRC notes considerable sentiment in 2RN that NTS should be put on a daily (seven days per week) basis and is taking steps to put 2RN on such a schedule. W4SHJ has issued 4RN certificates to W4s THM BXV and APM. Congratulations, boys! You earned 'em! W0TOL wants to get rid of Manitoba from TEN because it's spoiling his representation percentage; TEN is now operating on 3548 kc. to avoid ITV. The VE's have started a new c.w. net and send daily representatives to ECN. All six Eastern Area regions made 100% representation in EAN in Febru-

ary, quite an accomplishment. K6DYX submitted a detailed statistical analysis of PAN activities during the year he has been PAN manager.

Several of the net managers at the regional and area level are putting out net bulletins. They help a lot in holding the gang together and letting everyone know what's going on. Some of those we have received recently are Fourth Regional Net (W4SHJ-W4QDY), Ninth Regional Net (W4KKW), Eastern Area Net (W8SCW) and Pacific Area Net (K6DYX), although others have put out bulletins in the past and undoubtedly will in the future. Wish we had room to go over some of the things discussed, but all we can do is offer kudos to those net managers (not to mention section net managers, who *ought* to be mentioned) who take the initiative and spend the time, trouble and money to do this.

A new regional net seems to be in the offing. W5DWB and K5IPK, with the assistance of W0KQD, have organized the Rocky Mountain Net covering the states of Colorado, Arizona, New Mexico and Utah. At present it is operating at section level but reporting directly into PAN rather than RN6. Organization into an NTS regional net is under way, and we hope to be able to announce the formation of the Twelfth Regional Net as a third regional net reporting into Pacific Area Net in the next issue.

*Transcontinental Corps.* We're sorry that TCC data had to be chopped off the end of last month's copy. This foul deed was perpetrated during our absence on a field trip by a harrassed department editor, mostly because we weren't here to do our own column trimming. So, this month we're presenting data for both January and February:

#### January reports:

Area	Functions	% Successful	Traffic	Out-of-Net Traffic
Eastern	42	95.2	902	174
Central	62	96.8	1306	11
Pacific	99	97.0	1806	909
Total	203	96.6	4014	1094

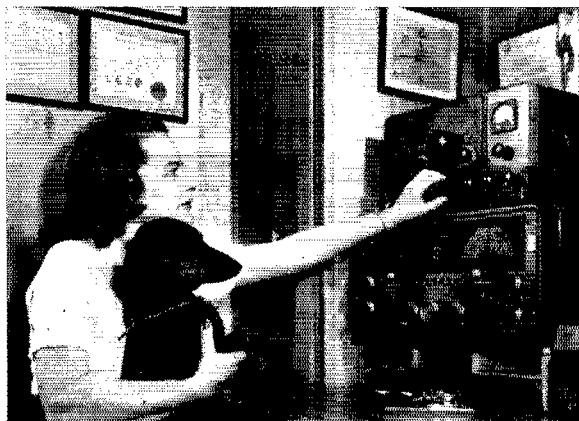
#### February reports:

Area	Functions	% Successful	Traffic	Out-of-Net Traffic
Eastern	60	95.0	1170	184
Central	57	94.7	1388	138
Pacific	88	92.6	1970	982
Total	205	94.1	4528	1304

The TCC roster: Eastern Area (W3WG) — W7s EMG AW NJM, W2s HDW ZRC VDT, K2KIR, W3s WG COK, K4KNP, W9DO; Central Area (W0BDR) — W9s CXY DO, W0s BDR LCS LGG SCA; Pacific Area (W6BPT) — W5s DWB IGO, W6s EOT ADB PLG VZT BPT HC, K6s DYX EWY GZ ORT GID, W7GMC, W0s WAK KQD.

Do you have a copy of CD-24? This printed circular contains all the dope you need on the National Traffic System. Drop us a line so you'll be "in the know."

KN9IXD, Doris "Butch" Singer, made BPL in December. She is not the first Novice or even the first YL novice to do so, but she is the first Novice BPL'er to get her picture in QST. No, the dog is not a traffic hound.



## BRASS POUNDERS LEAGUE

Winners of RPL Certificates for February traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3WIQ.....	89	2389	2380	98	4956
W3CUL.....	201	2229	1986	234	1650
W2KEB.....	264	1585	1271	418	3538
W0BDR.....	26	1033	356	3	1398
W4PL.....	10	908	864	23	1805
K4FCI.....	2	851	842	5	1705
W1UEQ.....	2	829	791	33	1655
K4MCL.....	10	719	615	98	1442
W8DJN.....	15	729	626	68	1438
W7AFP.....	13	701	700	1	1415
W4FRC.....	202	487	638	51	1378
W4FPC.....	2	659	637	22	1320
K6MCA.....	53	540	608	3	1234
W8GBF.....	14	609	591	1	1215
W7BA.....	14	571	558	12	1155
W41WM.....	5	22	1109	10	1143
W9JQZ.....	10	569	552	10	1141
W0CPI.....	11	556	600	56	1123
W9NZZ.....	306	399	3	395	1103
K4LVE.....	9	545	513	33	1100
W0PZO.....	6	540	502	21	1069
W5RCE.....	22	518	496	12	1048
W8UPH.....	10	499	441	51	1001
K4MLL.....	21	480	471	26	998
W0LGG.....	53	480	425	32	990
W4ETD.....	24	468	463	5	960
W9DO.....	20	456	399	77	952
W0LCX.....	31	424	389	35	879
W08CA.....	8	436	422	13	879
W0LA.....	28	408	396	5	822
K0BCQ.....	3	404	0	404	811
W8WGU.....	92	357	244	113	806
W9CXY.....	1	394	340	54	792
W1BXT.....	21	403	351	2	777
K2RIR.....	8	373	333	9	723
W9MAK.....	27	359	316	11	713
W0GAR.....	4	349	349	4	706
W6GYH.....	88	305	297	7	697
K48JH.....	48	333	268	22	671
K4AET.....	4	328	312	10	654
KL7BJD.....	9	81	365	158	611
W0ZWL.....	8	303	11	287	609
W6EPT.....	8	276	271	28	583
K2SIL.....	35	290	252	5	582
W7PGY.....	37	273	241	28	579
K6E6WY.....	164	190	180	10	544
W1EAM.....	3	271	245	18	537
K4OAH.....	32	250	237	11	530
W0CZ.....	7	261	243	18	529
W0OHL.....	15	253	247	6	521
K6UOD.....	6	247	191	77	521
W7FKK.....	107	224	105	85	517
W1YBH.....	103	199	141	58	506
W3CVP.....	108	238	246	6	505
W8NPL.....	15	254	239	4	505
W5DWB.....	8	246	214	29	503
W3UE.....	14	212	140	62	521

### More-Than-One-Operator Stations

W4DUG.....	4616	0	0	0	4616
KL7BJD/KL7	726	0	0	0	726
KG1DT.....	219	195	7	190	611
Late Report:					
KR6AF (Dec.)	108	153	805	47	1113

### RPL for 100 or more originations-plus-certificates

W9FAW.....	270	W0UOL	136	K2FVY	106
W4QDY.....	254	W1JFJ	130	K3IGDZ	105
W1YRZ/2.....	237	K1GAJF	129	W9CQZ	104
W6GQV.....	235	K6CLF	119	K2FCB	102
K9GDF.....	206	W3WFK	114	K0tJZ	102
W4HCQ.....	188	W1NZZ	112	W8QHWH	101
K2WAO.....	177	W0KJZ	110		
K6GZ.....	159	W5PPI	108	Late Reports:	
W6ZJB.....	147	W8DAE	107	K2FCB (Dec.)	355
W48JL.....	137	W8GPE	106	K1GAJF (Jan.)	170
KN9MMZ.....	137	K6YBV	106	W6ZJB (Jan.)	168
		K2RRH	106	K2FCB (Jan.)	145

### More-Than-One-Operator Stations K3WBJ 137

RPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: W1YRZ/2, K2TNJ, K6GK, K9GVD.

The RPL 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,

## 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 May 23 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 28,000, 50,900 and 115,600 kc. The next qualifying run from W6OWP only

## OPERATION ALERT, 1958 (May 6-7)

The part of the annual Federal Civil Defense exercise known as Operation Alert that concerns amateurs this year will occur earlier than heretofore — May 6 and 7. This is the first of three phases of the exercise, known as the Attack Phase, during which the emphasis will be at local and state level. Subsequent phases known as the Federal Action Phase and the Evaluation Phase will be held in mid-July and mid-September respectively and require no RACES action.

FCDA standards set down for this alert say little about radio communications and not a word about RACES. It is to be assumed that increasing international tension during the week preceding May 6 will have precipitated a serious situation, and on that date a direct attack will be launched on the United States preceded by a minimum of two and a maximum of four hours warning. The attack pattern will be developed and recommended by representatives of the State Directors Assn., Office of Defense Mobilization, Department of Defense and FCDA. Sealed envelopes will be placed in the hands of state and local civil defense directors through appropriate channels for opening at specified times describing the time of attack, ground zero, size and yield of weapon, type of burst and other pertinent information. Chemical, biological and sabotage attack may also be used. All civil defense functions will be affected, and public participation will be a part of the exercise.

During the first day, communications will be available as if there were no interruptions or damage. On the second day, communications breakdown resulting from attack damage and radioactive fallout, together with time required to restore service, will be simulated. This means that RACES and other means of emergency communications will come to the fore during the second day of the attack phase, while the first can be used to advantage in lining up facilities, chasing out bugs, and in general preparation for the full load. Your local civil defense director will have all the dope.

FCDA emphasizes that this year they would like to limit amateur participation to RACES members or prospective personnel, in order to arrive at a true estimate of capability. Thus, although amateurs not signed up for RACES will have no part in this exercise, which is strictly one dealing with enemy attack (in which non-RACES amateurs would not be able to participate in any event), it is most important that all RACES personnel be on hand to do their bit in order that we may effectively demonstrate the value of the amateur in civil defense communications. So if you are signed up in c.d., be sure to contact your RACES Radio Officer to know just what is expected of you. Also, make any necessary arrangements with your employer to put yourself at the disposal of your c.d. organization for the two days in question.

Amateurs not participating in Operation Alert "are expected to cooperate by not operating on RACES frequencies during the period of the exercise." This is a standing FCC instruction which was part of a Public Notice issued by the Commission in 1955.

Don't forget — Operation Alert, May 6 and 7. It is important that you be on hand if you have a RACES status.

will be transmitted on May 1 at 2100 PDST on 3590 and 7128 kc.

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

you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EDST. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

- Date** Subject of Practice Text from March QST  
 May 5: A New Receiver Tuning Principle, p. 15  
 May 8: Two Linear Amplifiers, p. 22  
 May 13: Telescoping Antenna Mast, p. 28  
 May 16: Feeding the Simple Antenna, p. 33  
 May 19: A "Mirror" for the Novice Fist, p. 50  
 May 21: "Do-It-Yourself" Club Newspapers, p. 54  
 May 27: 1957 VE/W Contest Results, p. 48

### DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Lord Howe Island. This island is located in the Pacific Ocean approximately 380 miles east of Port Macquarie, Australia. Addition is made by virtue of point 2 as explained in May 1955 QST, page 68.

DXCC credit will be given starting July 2, 1958 for creditable confirmations dated on or after November 15,

1945. This is to permit foreign amateurs to start receiving credits at the same time as those in the U.S.A. Confirmations received prior to July 2, 1958 for this country will be returned without credit.

**Net Invitation.** All amateurs are invited to send a radiogram for the ARRL Net Directory. This lists all ARRL-registered nets and by working in your Section Net a big communication job can be done in a short daily traffic session with the gang. The latch string is constantly out on all traffic handling nets. Be on the net frequency at the right time; have a message-origination to put on the net to be handled via the National Traffic System. Such will justify your presence and is the best answer to the Net's invitation to you to take part.

**Contest enthusiasts:** Check the Other Activities box for dates on the PACC, USSR, and Swiss DX Tests coming up in May. And whether out for Netherlands CC, Helvetia-22 or DXCC, don't miss the fun! Field Day June 28 and 29 too.

## DX CENTURY CLUB AWARDS

<b>HONOR ROLL</b>			
W1FH.....276	W8NBRK.....370	W3KT.....267	W2AZS.....195
W6AM.....276	W6SYG.....270	W6CUQ.....267	KH6LG.....194
KV4AA.....274	W2AGW.....269	W6TT.....266	W3LMM.....192
W8HGW.....272	W6DZZ.....269	W7AMX.....266	W4VYB.....191
W9NDA.....272	ZL2CX.....268	W3BBS.....266	W1BGA.....190
W3GHD.....272	W6RW.....268	W6TS.....266	W6GMF.....190
W8BRA.....271	W3JNN.....268	W2BXA.....265	W5AWT.....188
PY2CK.....271	W2HUQ.....268	W6EBG.....265	W1LHZ.....183
W6ENV.....271	G2PL.....267	G3AMM.....265	W9JUV.....183
W6MX.....270		W6GFE.....265	W4UXI.....181
			W6NJU.....181
			DL6MK.....181
			W1JMI.....180
			W2CWX.....180
			W7BGH.....180
			W9RKP.....180
			CX1BZ.....180
			KR6AC.....176
			W7MGT.....173
			IIT.....173
			W1PKV.....171
			SM3AKW.....171
			W1KXU.....170
			W2NOY.....170
			W5HJA.....170
			VE3DIF.....170
			Z55DJ.....170
			ON4AE.....166
			DJ2AE.....165
			W5LGG.....161
			W1RAN.....160
			W2ADP.....160
			W2BU1.....160
			W8VDJ.....211
			W9WHM.....211
			W8DMD.....200
			W68YG.....190
			ZL1KG.....190
			W4EEB.....184
			W7ADS.....180
			HB9ET.....176
			W9YSX.....172
			W7PHO.....171
			W3MAC.....170
			W5HIA.....163
			W7MGT.....162

### Radiotelephone

PY2CK.....269	Z8GBW.....269	W9RBI.....252
VQ4ERR.....263	W8HGW.....255	W3JNN.....251
W1FH.....262	CN8MM.....255	W8RF.....250
W8GZ.....261		W6AB.....248

From February 1. to March 1, 1958, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

### NEW MEMBERS

W6KZL.....215	W3LTN.....105	K4HXF.....101
W9WHM.....214	I,AIMB.....105	W5CE.....101
W3RUT.....181	W82YU.....105	W6KIQ.....101
Z85JM.....187	W2GBX.....104	W9AQa.....101
W7DJK.....136	W3KKB.....104	487MR.....101
W8J8U.....133	W4KYL.....104	W1AF.....100
W9MCK.....121	W4UXB.....104	W1WKK.....100
W5RHW.....122	GM3ABM.....104	W1DRA.....100
OH1SS.....121	J5AA.....104	K4COT.....100
W8FRP.....120	W2GKE.....103	K4OBM.....100
W5URU.....119	W8ZNO.....103	K5ALA.....100
W6CFB.....112	DJ2IV.....103	W9FYM.....100
LA1K.....111	W3EDJ.....102	W9PWM.....100
W4BIJ.....110	W4VOS.....102	W9QGR.....100
W9PCF.....110	W1IEB.....101	W9WHW.....100
W5GAH.....108	W1VWY.....101	DL3GM.....100
W7HNY.....107	W1YXD.....101	LA5DB.....100
JA1DO.....107	W2PCJ.....101	VE3BMB.....100
W3RUT.....117	DL4KD.....105	PA9CM.....101
W1MIA.....113	W2GBC.....102	W4WW.....100
W6YVY.....112	VQ4KRL.....102	W5URU.....100
F8TF.....111	W1TWU.....101	W6GVY.....100
K6CCY.....109	W1YXD.....101	W6ZZC.....100
W5GAH.....106	K9ACC.....101	W6HRY.....100

### Radiotelephone

W8BKP.....260	W5AFX.....230	W2JVU.....211
W9ELA.....253	W6CTL.....230	W8VDJ.....211
W2QHJ.....251	W4GNB.....225	W9QDF.....205
W7GBW.....251	W7ADS.....224	W9VIN.....204
W4KFC.....241	W2CYS.....222	W5LDS.....202
W5FFW.....241	W6ZBN.....222	W3PGB.....200
W3KDP.....240	W2BRV.....221	W6BLL.....200
OE1BR.....239	W7FA.....221	W7FAV.....200
W7PHO.....237	W6CHV.....213	YV5AE.....200
W7AH.....231	W6QNA.....213	W4DHz.....197

### ENDORSEMENTS

W8BKP.....260	W5AFX.....230	W2JVU.....211
W9ELA.....253	W6CTL.....230	W8VDJ.....211
W2QHJ.....251	W4GNB.....225	W9QDF.....205
W7GBW.....251	W7ADS.....224	W9VIN.....204
W4KFC.....241	W2CYS.....222	W5LDS.....202
W5FFW.....241	W6ZBN.....222	W3PGB.....200
W3KDP.....240	W2BRV.....221	W6BLL.....200
OE1BR.....239	W7FA.....221	W7FAV.....200
W7PHO.....237	W6CHV.....213	YV5AE.....200
W7AH.....231	W6QNA.....213	W4DHz.....197

W2AZS.....195	W6YMH.....180	DL3BK.....131
KH6LG.....194	VQ4KRL.....157	Z82U.....131
W3LMM.....192	ON4TX.....156	W2AXR.....130
W4VYB.....191	W4JAT.....154	K2LWR.....130
W1BGA.....190	W1LFR.....153	W4YGF.....130
W6GMF.....190	W02EW.....153	W5MY.....130
W5AWT.....188	ON4DM.....153	W9UCC.....130
W1LHZ.....183	OZ5PA.....153	W6OF.....129
W9JUV.....183	W9W10.....151	K6QNF.....123
W4UXI.....181	TG9AD.....151	W9MZP.....123
W6NJU.....181	W2CGJ.....150	W1LRK/VO1.....123
DL6MK.....181	K4GEZ.....150	
W1JMI.....180	W7CSW.....150	W1JLN.....122
W2CWX.....180	W4OPM.....149	W8AAI.....121
W7BGH.....180	Z81OU.....149	W9EHN.....121
W9RKP.....180	Z8IRM.....149	F8GB.....121
CX1BZ.....180	W0YPO.....143	OQ5HP.....121
KR6AC.....176	G3CSL.....143	W1PPN.....120
W7MGT.....173	W9WJH.....142	W6PZL.....120
IIT.....173	W1EFO.....141	W6GSL.....120
W1PKV.....171	W2KMZ.....141	W9WHY.....120
SM3AKW.....171	VEKTD.....141	IRMO.....120
W1KXU.....170	K6EDE.....141	SM5KG.....120
W2NOY.....170	W9OTS.....141	HB9RM.....119
W5HJA.....170	VE3HB.....141	W4WOG.....116
VE3DIF.....170	W8NJC.....140	W2NCI.....115
Z55DJ.....170	W8TUO.....140	W4OMW.....115
ON4AE.....166	OH8ST.....140	K6LGL.....114
DJ2AE.....165	ZL1CK.....140	W0CDV.....114
W5LGG.....161	W3HUS.....134	K6OWQ.....112
W1RAN.....160	G3IVJ.....134	VE3DKY.....112
W2ADP.....160	W4FFX.....131	W3DDV.....110
W2BU1.....160		W7YOA.....110

### Radiotelephone

W8VDJ.....211	W5KC.....160	W8JNM.....129
W9WHM.....211	W6CPM.....160	W6MCK.....126
W8DMD.....200	W6ZEN.....153	W9DSP.....123
W68YG.....190	ON4DM.....153	W9UCC.....122
ZL1KG.....190	W5PQA.....152	W4HKJ.....120
W4EEB.....184	W88YK.....150	W5RHW.....120
W7ADS.....180	TG9AD.....150	W9LTR.....120
HB9ET.....176	PY77S.....146	W0IGL.....120
W9YSX.....172	W8BGU.....140	W4GRP.....117
W7PHO.....171	W3LNL.....135	W6JWM.....113
W3MAC.....170	ZELFE.....134	W3OGR.....111
W5HIA.....163	W4FFX.....130	W9MIA.....110
W7MGT.....162		W5HAD.....110

### W/VE/VO Call Area and Continental Leaders

W4TM.....255	VE3QD.....210	VE7ZM.....235
W8ADZ.....263	VE4XO.....118	VE8AW.....195
W8A1W.....255	VE5QZ.....140	Z86BW.....261
VE1PB.....183	VE6NX.....194	4X4DK.....241
VE2WW.....210		V06EP.....190

### Radiotelephone

W2BXA.....215	VE1CR.....120	VE6NX.....110
W7HA.....212	VE2WW.....138	VE7ZI.....197
W5BGP.....224	VE3ATU.....170	C2PL.....239
W7HIA.....191	VE5RU.....116	4X4DK.....239
W8A1W.....233		ZLJHY.....238

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

### ATLANTIC DIVISION

**EASTERN PENNSYLVANIA**—SCM, Richard R. Mesirov, W3JNQ—SEC: DVB, RM: YAZ PAM; TEJ. PPN meets every night at 1800 on 3850 kc. The E. Pa. Net meets every night at 1830 on 3610 kc. HELP! We need Emergency Coordinators for the following counties: Bradford, Carbon, Columbia, Cumberland, Juniata, Lebanon, Lycoming, Montour, Perry, Pike, Snyder, Sullivan, Susquehanna, Tioga, Union, Wayne and Wyoming. If interested, please contact the SCM. New appointments: JYL as OES, KFI as OPS. EPL has a new pair of 813s and is QRO with 300 watts. BES has a new YL jr. operator. CMN broke 100 for his traffic total for the first time and is nearing DXCC. The Quakertown ARC's School, sponsored by E. Pa. Civil Defense, has 33 enrolled. WHK makes the BPL on deliveries, operating only on week ends. FLI means that his 108-Mc. receiver didn't pick up Explorer 1, but is good on f.m. K3ABK has a new Tri-Band beam which is building his DX total. TEJ was snowed in for six days during the big storm and has a good traffic total to show for it. WPG takes time off from working DX with his new Tri-Band beam to experiment with a cascade front end for 50 Mc. CUT hit the jackpot with traffic from two Florida and one KL7 Fairs, and was an interested spectator at this year's Edison Award Dinner. NF complains that being NCS of the EAN keeps his traffic total down; but the fun involved is compensation for the low total. ALB bought a new 75A-4 about four hours before the second week end of the DX Test, and put it in service just in the nick of time. KN3CTC has 16 states worked in a month, using only 80 and 40 meters. New officers of the Pottstown ARC are ARK, pres; ZYV, vice-pres.; K3AOH, treas.; YDY, secy.; FXX, act. mgr. DVB has a new 75A-4, and reports ZJD (the jr. operator) is building a 42" wing-span plane which will be radio-controlled. NOH reports that the winds wangled his 3-band quad so that it now rests against the house. UT reports the death of TCD. ZRQ's operations were curtailed by the illness of his XYL. K3BRL's wife presented him with a new YL jr. operator. GYP helped BES during the Phone DX Test. KN3AWP was drafted. JNQ has a new 75A-4. Traffic: W3CUL 4650, WHK 407, TEJ 267, DTK 102, CMN 101, PDJ 53, ZRQ 45, NF 34, HNK 33, ELI 32, BFF 31, FVT 23, BBM 27, DBN 23, DVB 19, AMC 18, BUR 18, NQB 14, EPL 11, FKE 11, BNR 10, FCI 8, PVE 7, WQL 4, UIW 4, ADE 2.

**MARYLAND-DELAWARE-DISTRICT OF COLUMBIA**—SCM, Louis T. Coneberger, W3CR—Asst. SCM for Delaware: Ray deCourcelle, 3DQC SEC: PKC, Section Nets: MDD, 3650 kc. M-S 1915 EST. MPEP 3820 kc. MWF 1830, SS 1300 EDST. Dr. Paul Siple and NAL were the speakers at the annual "Old Timers Night Dinner" sponsored by the Washington Chapter of QCWA and the Ozone Sniffers and held at the Onley Inn on Feb. 8. Dr. Siple spoke on his Antarctic work with IGY and NAL spoke on the White House Signal Agency which he heads. DF, former FCC commissioner, YA, Atlantic Div. Dir., and K2EAW, QCWA, secy. were among the 150 in attendance. ER and RE MCed the event, with 4DWD providing an interlude of magic tricks. The CARC elected KOU, pres.; LZZ, vice-pres.; NH, secy.; NQC, treas.; and BYY, sgt. at arms. YA spoke on "ARRL QSL Bureaus and Satellite Tracking" at the WRC's Feb. 7 meeting. The RCARA meeting of Feb. 14 had KN3CWX, who spoke on "Computers." JQN presented a talk illustrated with slides on the "Electron Microscope" at the Feb. 28 meeting of the

RCARA and EGI was presented with an Honorary Life Membership to RCARA for his continued support of the association under very trying conditions. The WAYLARC welcomed UTR to Washington at the home of K4LMB on Feb. 2. The Foundation of Radio Amateur Clubs had a display amateur radio station and satellite listening post in conjunction with the "Explorer I" exhibit at the Hetch Company's downtown Washington store Feb. 8 through 13. The following operated the station and answered questions on amateur radio: BFV, BNL, CKR, GNO, GSH, LXX, KCQ, MPG, MUA, NJT, UCR, VLR, K3ADT, KN3AUX and 4CVO. CKR and CZT helped install antennas and the station. UCR coordinated the activity and K3ADT made possible the amateur participation. More than 60 amateurs in Montgomery, Prince George and Frederick Co. operated on amateur and RACES frequencies during the snow emergencies of Feb. 15 through 19. The XYL of NOL is now KN3CWJ. AKJ now is General Class. His first phone QSO was England. K3ADT has General Class and his first phone QSO was NJT. Walt is using an 8B100F and a homemade linear on 20-meter s.s.b. 1AEO has been worked by many in the East while aero-mobile. K3AKK and KND also have been working 2 and 1 1/4 aero-mobile. SEY was their first 220.1-Mc. QSO. BJP is MARS director at Dover AFB. ZQL, the son of WG and ZQF, is attending Tri-State College at Angola, Ind. K5DKD is stationed at Ft. Meade. KTR, the former NCM of MPEP, was in from England for Old Timers Night. K4EYY, with the Navy and 60ET are both in the Washington Area. K6BALN is stationed with the AAA outfit near D.C. and is sporting a new Hy-Gain trap vertical. BKE was the March cover story of *Auto Call*. KN3CWJ is new in Baltimore. KN3CUO and KN3CSG are new in Wheaton. KN3BFH/0 is in Missouri on 15 meters. EQK is handling QSLs for YSIMS. BCB is on 2 meters with an ARC-1. KN3CSQ's first QSO was with RCN/3 at the "Explorer" display with a troop of cub scouts looking on. Emil is using a Lettine on 2 meter with a five-element beam. KQP is on 6 meters with a Communicator. VNT has a new two-element on 20 meters. CU at the MPEP Picnic July 13 at Braddock Heights Park and the ARRL National Convention Aug. 15-17 in Washington. Traffic: W3CYE 506, UE 503, K3WBJ 100, W3WV 134, HIZ 101, NNM 100, TN 90, WSE 72, AHQ 67, BUD 50, EKO 40, PQ 30, UCR 26, CN 22, JZY 5, HKE 4, MSR 3.

**SOUTHERN NEW JERSEY**—SCM, Herbert C. Brooks, K2BG—SEC: YRW, PAM: ZI. New appointees: K2BKG, Egg Harbor as EC for Atlantic County and K2HJJ, Paulsboro, as OBS. HDW, NJN manager, reports the section stations active in NJN are BZJ, K2EFA, RG, K2SOW, K2SOX and ZI. SXV, Brigantine, probably will be signing slant 4 during his Florida visit. SQR has been reporting Princeton Area activities. SCARA officers are K2YYB, pres.; and CYL, secy-treas. Damage to a Rancoes Creek dam resulted in a fine display of emergency operating under the direction of WKI, Burlington County RACES Officer. NJ Emerg. Phone and Traffic Nets *Bulletin* is an outstanding net paper. K2HJJ is editor and asst. net manager. K2LHE is technical editor of SJRA's *Harmonics*. The Gloucester County C.D. Net meets Fri. at 2130 on 29 Mc. BZJ, SUG and ZI man the RACES State Control station. K2SOL, Gloucester Co. EC has a MARS NCS appointment. K2MXN is the Burlington short-wave radio station. PAU is SJRA's Field Day chairman. YRZ/2 and K2WAO received the BPL award this month. All counties in the section except Cape May now have EC leadership. K2QOS, EBW and DMIR are recovering from recent illnesses. K2JKA, Woodbury, is active in the NJP&T Net. Fifteen Form 1 reports were received. Recent visitors were K2HKC, K2BWR and K2YYB. Traffic: (Feb.) W1YEZ/2 296, W2HDW 229, K2WAO 195, W2RG 142, K2SOW 125, JGU 79, W2ZI 71, K2PPT 48, W3BZJ 44, K2SOL 25, CBR 8, QOS 7, SOX 2. (Jan.) W2ZI 82, K2PPT 14.

**WESTERN NEW YORK**—SCM, Charles T. Hansen, K2HUK—SEC: PPY. PAMs: LXE, NAI and TEP. NYS C.W. meets on 3615 kc. at 1800. ESS on 3590 kc. at 1800. NYS Phone on 3925 kc. at 1800. NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun.; TCPN 2nd call area on

(Continued on page 128)

# TRANSISTORS AND THEIR FUTURE IN AMATEUR RADIO

**T**HE ADVENT of Transistors, as applied to the broad field of Electronics, has opened broad new vistas of development in research. At the present time, the possibilities of their use, as well as the advantages they offer, have only been touched. Nevertheless, it is our hope that the following notes on transistors and semi-conductors will not only be of interest to the average amateur, but will serve as a means of showing the areas of progress already established, besides those now being explored.

Certain types of transistors are now commercially available which when properly utilized make practical a completely transistorized high performance amateur band receiver. Performancewise these receivers can equal a vacuum tube set.

The frequency of all oscillator circuits, whether employing vacuum tubes or transistors, is to some extent affected by the applied voltage. More than adequate low voltage regulation for a transistor oscillator can be obtained by the use of a Zenner diode.

The circuit gains of most transistors vary with ambient temperature. High ambient temperatures can cause complete failure of the transistor. This effect can be controlled by the proper application of temperature sensitive resistors known as thermistors.

As with tubes, temperature compensating capacitors are used to frequency stabilize transistor oscillator circuits. However, as extremely small amounts of heat are generated by a transistor, actual compensation problems are generally less than with tubes. Also, a fully transistorized receiver has *essentially no warm-up drift*.

The expected life span of transistors and most other semi-conductors is fantastically great as compared to tubes. They are so new that actual life beyond about 30,000 operating hours hasn't been definitely determined. As the transistor generates little heat, requires low currents and voltages, other associated components also have greatly extended life spans. Thus transistors should provide greater reliability in communications equipment, than can be obtained with tubes.

Low impedance circuitry generally makes for extremely compact and stable packages. As transistors are low impedance devices the fullest advantage of this principal can be achieved. As tubes are high impedance devices, compact design generally poses problems with higher cost due to additional filtering, shielding and heat disposal requirements. Because of this basic impedance difference, radically new concepts of mechanical construction and configurations may soon be seen in amateur products.

Two transistors as audio amplifiers or modulators are capable of supplying about 50 watts of audio. As switching oscillators in DC to DC power supplies power outputs in the region of 125 watts can be obtained from a pair. However, at this date, as power devices, tubes are far ahead. Therefore in the higher level stages of transmitters, tubes are still pre-eminent.

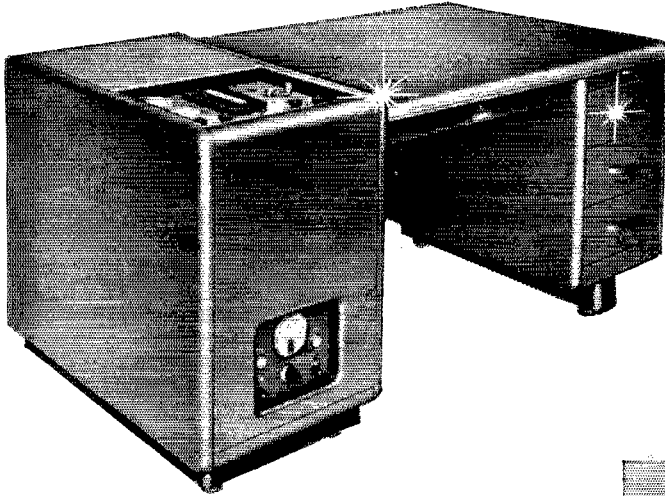
If in no other feature does a transistor excite interest, its power requirements should. Our SX-100 requires a total power of 85 watts to operate. A transistorized receiver of the same performance and supplying head phone level would require *.09 watts*. If we add a transistor 5 watt audio amplifier, the power required goes up to a total of only 12 watts on audio peaks.

Transistors are more costly than tubes but their prices are continually being reduced. Further, constant reduction in price can be expected as improved manufacturing processes are developed and production volume accelerates. However, it may be many years, if ever, that two transistors can compete on a price basis alone against one dual triode tube. All costs considered, transistors still place far ahead of tubes for certain applications.

*Buel Ballou Jr.* W. J. Halligan W9AC for **hallicrafters**

# Choose your next transmitter

## 1st choice\*



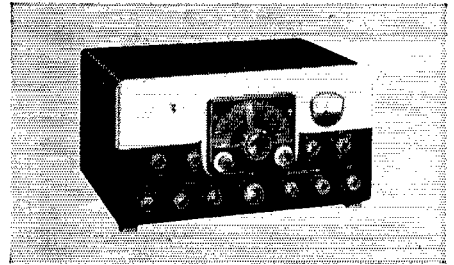
**VIKING "KILOWATT" AMPLIFIER**—Boldly styled, effectively TVI suppressed—contains every conceivable feature for safety, operating convenience, and peak performance. 2000 watts P.E.P.† on SSB—1000 watts CW and AM. Continuous tuning 3.5 to 30 mc.—no coil change necessary. Compact pedestal contains complete kilowatt—rolls out for adjustment or maintenance. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Completely wired and tested with tubes.

Cat. No. 240-1000..Wired and tested.....Amateur Net \$1595.00

Cat. No. 251-101-1..Matching accessory desk, top, back and three drawer pedestal.....FOB Corry, Pa. \$132.00

**DRIVE IT WITH THE "PACEMAKER"**—This exciting transmitter offers you the ultimate in single sideband... 90 watts SSB P.E.P. and CW input... 35 watts AM. Self-contained—effectively TVI suppressed. Instant bandswitching on 80, 40, 20, 15, and 10 meters. Excellent stability and suppression. Temperature compensated built-in VFO... separate crystal control provided for each band. VOX and anti-trip circuits provide excellent voice controlled operation. Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking Kilowatt or grounded-grid kilowatt amplifiers. (Requires use of Cat. No. 250-34 Power Divider when used with Viking Kilowatt.) With tubes and crystals, less key and microphone.

Cat. No. 240-301-2..Wired and tested.....Amateur Net \$495.00

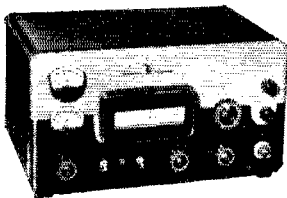


## New Power-packed Desk Top Linear Amplifiers!



**VIKING "COURIER" AMPLIFIER**—Rated a solid one-half kilowatt P.E.P. input with auxiliary SSB exciter as a Class B linear amplifier; one-half kilowatt input CW or 200 watts in AM linear mode. Completely self-contained desk-top package—may be driven by the Viking "Ranger", "Pacemaker", or other unit of comparable output. Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts depending upon mode and frequency desired. Pi-network output designed to match 40 to 600 ohm antenna loads. Fully TVI suppressed. Complete with tubes and built-in power supply.

Cat. No. 240-352-1..Kit.....Amateur Net \$244.50  
Cat. No. 240-352-2..Wired and tested.....Amateur Net \$289.50



**VIKING "THUNDERBOLT" AMPLIFIER**—The hottest linear amplifier on the market—delivers over 2000 watts P.E.P.† input SSB; 1000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. Continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Navigator", "Ranger", "Pacemaker", or other unit of comparable output. Drive requirements: approximately 10 watts in Class AB<sub>2</sub> linear, 20 watts Class C continuous wave. With tubes and power supply.

Cat. No. 240-353-1..Kit.....Amateur Net \$524.50  
Cat. No. 240-353-2..Wired and tested.....Amateur Net \$589.50

†The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.

\*Results of a recent nationwide survey conducted by an impartial organization prove that Johnson Viking transmitters in use outnumber those of any other manufacturer. Published copies of this survey available on request.

# from the line that's among the nation's amateurs!

**VIKING "RANGER" TRANSMITTER**—This outstanding amateur transmitter will also serve as an RF and audio exciter for high power equipment. As an exciter, it will drive any of the popular kilowatt level tubes. No internal changes necessary to switch from transmitter to exciter operation. Self-contained, 75 watts CW or 65 watts phone input . . . instant bandswitching 160, 80, 40, 20, 15, 11, and 10 meters. Extremely stable, built-in VFO or crystal control—effectively TVI suppressed—high gain audio—timed sequence (break-in) keying—adjustable wave shaping. Pi-network antenna load matching from 50 to 500 ohms. Easily assembled—with tubes, less crystals, key and microphone.

Cat. No. 240-161-1 . . .  
Kit . . . . . Amateur Net \$229.50

Cat. No. 240-161-2 . . . Wired and tested . . . . . Amateur Net \$329.50

**VIKING "VALIANT" TRANSMITTER**—Designed for outstanding flexibility and performance. 275 watts input on CW and SSB (P.E.P. with auxiliary SSB exciter). 200 watts AM. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network tank circuit will match antenna loads from 50 to 600 ohms—final tank coil is silver-plated. Other features: TVI suppressed—timed sequence (break-in) keying—high gain push-to-talk audio system—low level audio clipping—built-in low pass audio filter—self-contained power supplies. With tubes, less crystals, key, and microphone.

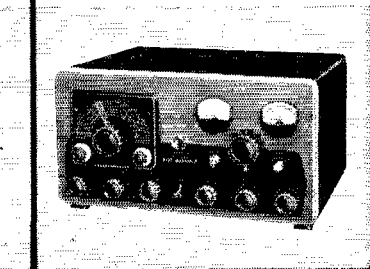
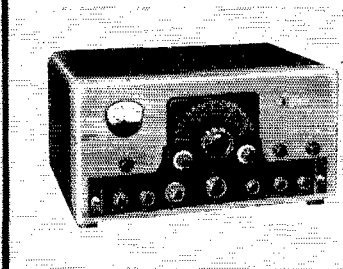
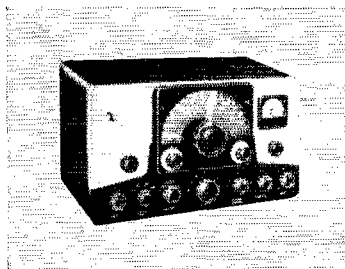
Cat. No. 240-104-1 . . .  
Kit . . . . . Amateur Net \$349.50

Cat. No. 240-104-2 . . . Wired and tested . . . . . Amateur Net \$439.50

**VIKING "FIVE HUNDRED" TRANSMITTER**—Rated a full 600 watts CW . . . 500 watts phone and SSB. (P.E.P. with auxiliary SSB exciter.) All exciter stages ganged to VFO tuning. Two compact units: RF unit small enough to place on your operating desk beside receiver—power supply/modulator unit may be placed in any convenient location. Crystal or built-in VFO control—instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. With tubes, less crystals, key, and microphone.

Cat. No. 240-500-1 . . .  
Kit . . . . . Amateur Net \$749.50

Cat. No. 240-500-2 . . . Wired and tested . . . . . Amateur Net \$949.50



**VIKING "ADVENTURER" 50 WATT TRANSMITTER**—Used to earn first Novice WAC! (Worked All Continents.) Self-contained, effectively TVI suppressed, instant bandswitching 80, 40, 20, 15, 11, and 10 meters. Operates by crystal or external VFO. An octal power receptacle located on the rear apron provides full 450 VDC at 150 ma. and 6.3 VAC at 2 amp. output of supply to power auxiliary equipment such as a VFO, signal monitor, or modulator for phone operation. This receptacle also permits using the full output of the supply to power other equipment when the transmitter is not operating. Wide range pi-network output handles virtually any antenna without separate antenna tuner. Break-in keying is clean and crisp. With tubes, less crystals and key.

Cat. No. 240-181-1 . . . Kit . . . . . Amateur Net \$54.95

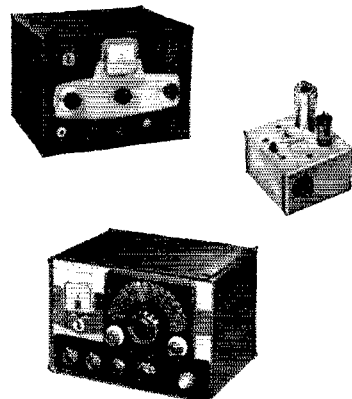
**SPEECH AMPLIFIER/SCREEN MODULATOR**—Designed to provide phone operation for the "Adventurer". High gain—use with either crystal or dynamic microphones. Simple installation—only minor wiring changes necessary in "Adventurer". With tubes.

Cat. No. 250-40 . . . Kit . . . . . Amateur Net \$12.25

**VIKING "NAVIGATOR" TRANSMITTER/EXCITER**—This compact, flexible CW transmitter has enough RF power to excite most high powered final amplifiers on CW and AM. 40 watts—bandswitching 160 through 10 meters. Highly stable, built-in VFO is temperature compensated and voltage regulated—may also be operated crystal control. Timed sequence keying—effectively TVI suppressed. Pi-network antenna load matching from 40 to 600 ohms. With tubes, less crystals and key.

Cat. No. 240-126-1 . . . Kit . . . . . Amateur Net \$149.50

Cat. No. 240-126-2 . . . Wired and tested . . . . . Amateur Net \$199.50

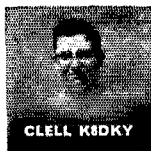


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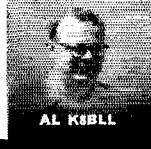
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WAYNE W8YRW



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AL K8BLI

All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

# HEATH *hams work to bring you*



CHUCK K8CJI

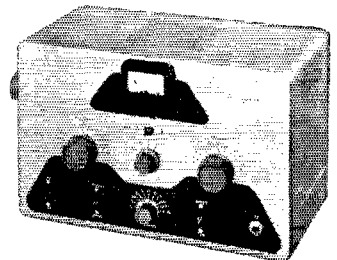


ROGER MACE (W8MWZ)  
SENIOR HAM ENGINEER  
HEATH COMPANY

## HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

**\$35<sup>95</sup>**



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 500 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 18 lbs.



# HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL  
DX-100

**\$189<sup>50</sup>**

Shipped motor freight unless  
otherwise specified. \$50.00 de-  
posit required on C.O.D. orders.

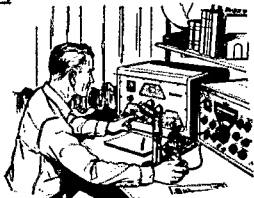
You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built in VFO, built in modulator, TVI suppression, Pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, Pi network interstage coupling, and high quality materials throughout. Copperplated No. 16 gauge steel chassis, ceramic switch and coil insulation, silver-plated or solid silver switch contacts, etc., are typical of the kind of parts you get, to use in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11, and 10 meters with a single band switch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final Amplifier, modulated by a pair of 1625 tubes in parallel. Other tubes featured are: 6AL5 bias rectifier, 5V4 low voltage rectifier, 2-5R4GY high voltage rectifiers, OA2 voltage regulator, 12AX7 speech amplifier, 12BY7 Audio driver, 6AV6 VFO, 12BY7 crystal oscillator-buffer, 5763 r.f. driver, and a 6AQ5 clamp tube. VFO tuning dial and panel meter are both illuminated



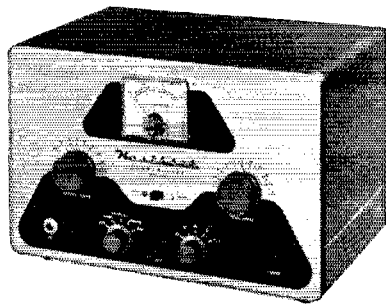
for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. The DX-100 was designed exclusively for easy step-by-step assembly, and no other transmitter in this power class combines high quality and real economy so effectively. Listen to any ham band between 160 meters and 10 meters and make a mental note of how many DX transmitters you hear! This kind of acceptance by the amateur fraternity testifies to the performance and quality of the rig. Its the kind of a transmitter you will be proud to own, and one that will give you a very respectable signal on the air. Time payments available! Shpg. Wt. 107 lbs.

*...top quality at lowest prices!*

## NEW HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL  
DX-40  
**\$64<sup>95</sup>**



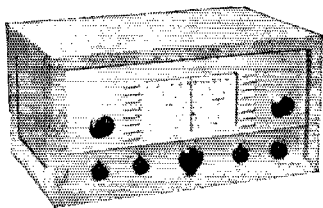
The new DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig, for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, controlled-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and Pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80 meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so the buffer stage can be pretuned before the final is on, and so

the operator can locate his own signal on the band. Tubes used are a 6CL6 Colpitts oscillator, a 6CL6 buffer, a 6146 final amplifier, a 12AX7 speech amplifier, a 6DE7 modulator, and 5U4GB rectifier. The modulator, incidentally, has plenty of "punch" for clear, strong phone operation. A switch selects any of three crystals, or a jack for external VFO. A high-quality meter with D'Arsonval movement mounts on the front panel for tuning. Whether you are a newcomer or an old-timer, you will find the DX-40 an ideal rig in its power class! Shpg. Wt. 26 lbs.

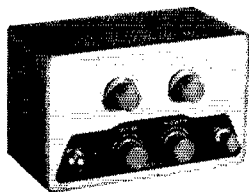
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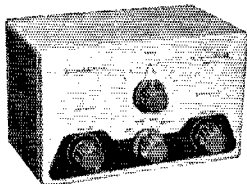
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ALL-BAND RECEIVER



ELECTRONIC VOICE CONTROL



"Q" MULTIPLIER

### HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma MODEL AR-3 and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs. Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. \$4.95 **\$29.95**

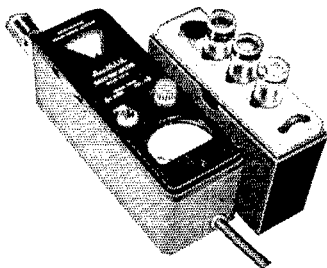
### HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. MODEL VX-1 **\$23.95** Shpg. Wt. 5 lbs.

### HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a heterodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. MODEL QF-1 Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs. **\$9.95**

*more fine ham gear from the pioneer*



GRID DIP METER

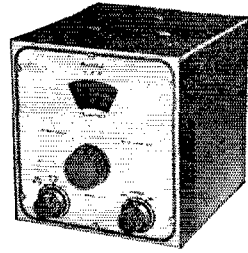
### HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pre-tuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designed procedures, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs. MODEL GD-18 Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **\$3.00** **\$21.95**

## HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1  
\$19<sup>50</sup>

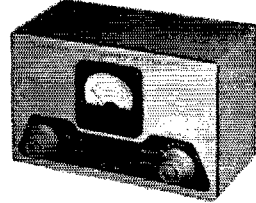


VARIABLE FREQUENCY OSCILLATOR

## HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2  
\$15<sup>95</sup>

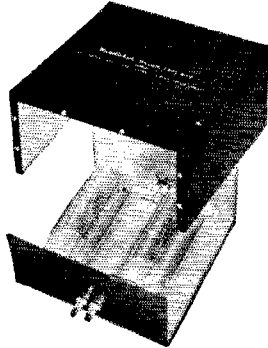


REFLECTED POWER METER

## HEATHKIT BALUN COIL KIT

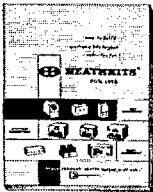
This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1  
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QUAN.	ITEM	MODEL NO.	PRICE

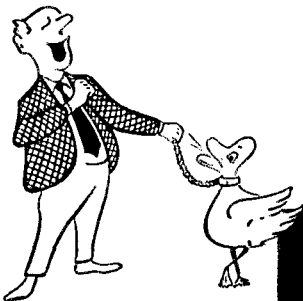
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**The TECHNICAL MATERIEL CORPORATION**

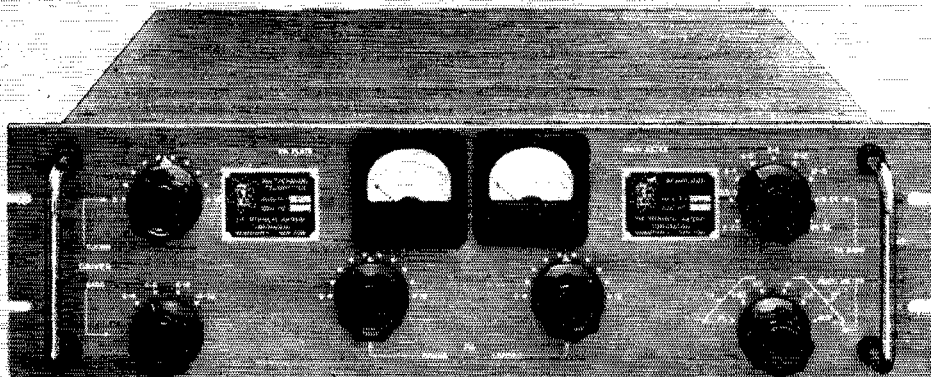
IN CANADA  
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- Parallel 4 X 250B's
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- 2 to 32 Megacycles
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**VERY LOW FREQUENCY, June, 1957** — New research in the very low frequency band, below 30 kc., opens up greater portions of the radio spectrum for communication purposes. VLF has many new and important uses. A reference work you'll need for years.

**SINGLE SIDEBAND, December, 1956** — A round-up of recent technical discoveries as presented by the Joint Technical Advisory Committee through its sub committee on Single Sideband techniques. This special study for the FCC points up the many advantages of single sideband.

**FERRITES, October, 1956** — This new group of solid state materials outmodes the intermittent "pulse" system of World War II radar. The ferrites allow simultaneous sending and receiving on a single microwave antenna; as well as full-power transmission in microwave ranges with reduced power loss and interference.

**SOLID STATE ELECTRONICS, December, 1955** — This issue heralds the arrival of a new epoch in radio electronics — the solid state electronics era. Defined and named with the birth of the transistor, this concerns the control and utilization of the electric magnetic and photic properties of solids. There are now whole new classes of electronic devices due to discoveries in this field.

**SCATTER PROPAGATION, October, 1955** — Here's radio history in the making. This issue presents practical application of a new principle in the fields of broadcasting and electronics. Thirty-five papers lay the foundation of a new means of communicating over long distances.



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For Coupling Energy Into Space

Anywhere in the Radio Spectrum

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# here are the **Hy-gain** FULL-SIZED trap tribanders

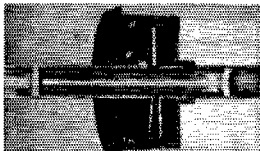
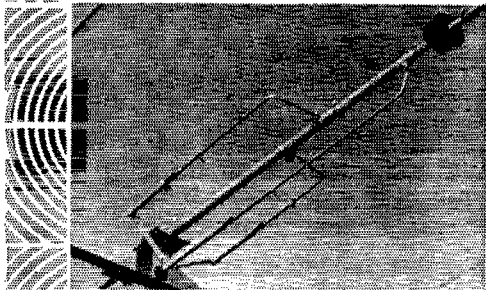
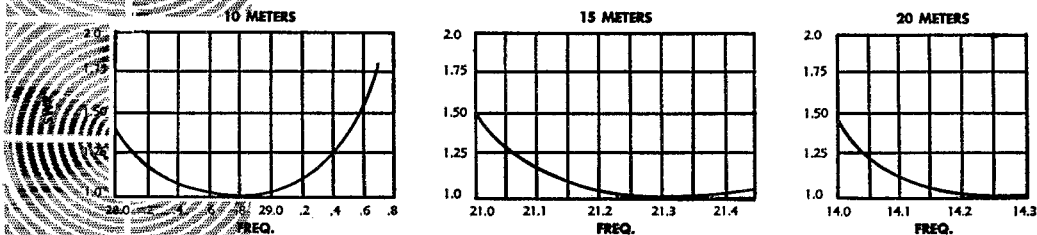
There are more hy-gain trap tribanders in use than all other three band beams combined! The 3-element Tribander, shown to the left, is now considered the standard of performance in the field of amateur radio communications. F/B Ratio: approx. 25 db. Forward gain: 8 db. average.

The 2-element Trap Tribander is for use in limited space when top quality transmission is desired on 10, 15 & 20M. Single transmission line. F/B Ratio: average 18 db. Forward gain: 5.8 db. average.

The world's champion, the finest, highest gain rotatable array: the 5-element Trap Tribander. Heavy duty construction. Uses 36", 2x3" rectangular aluminum boom. F/B Ratio: average 25 db. Forward gain: average 12 db.



SWR CHART FOR HY-GAIN TRIBANDER MODEL 152T3 TUNED ON PHONE FREQUENCIES



### No Bulky Sleeves!

The hy-gain lumped constant trap circuit accomplishes decoupling in the smallest, most efficient, most weather-proofed manner possible. Housed in a tight, 3" unit, they eliminate moisture, dust and breakdown. Compare this with trying to weatherproof an eight foot sleeve. The creative design of the hy-gain traps guarantees less total wind loading area than any other full-sized 3-band beam in existence.

### Automatic Switch Action!

Streamline, silhouette traps, only 3" in diameter, make possible for the first time a really efficient multi-band antenna system, acting as insulator at its resonating frequency, but allowing radio energies of other frequencies to pass, isolating various sections of the antenna. Mechanically and electrically stable, the hy-gain traps are hermetically sealed in a polyethylene cover and cap. Hi-Q coils wound on large 3" diameter styron form. Capacitor dielectric is solid styron. No air dielectric.

### Power Traps!

The new traps now take 2 KW (D.F.P.) RF Power, enough to handle the most modern high powered linear amplifiers, more than any other tribander now made.

**hy-gain traps are guaranteed for the life of the beam!**

## Perfect 1:1 SWR

The new, pre-calibrated Triaxial Gamma Match System with coaxially placed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR on 3-band antenna system. Exceptional band width maintains low SWR over the entire band. Coax connector for 52 ohm feed line included. Gamma rod and capacitor section calibrated for exact setting over each band. No external baluns, antenna tuners or matching networks needed. The Triaxial Gamma Match System completely obsolesces the "old fashioned" split dipole feed, maintaining perfect balance. Used exclusively in the hy-gain 3-band antenna, this system is factory pre-assembled and weather sealed.

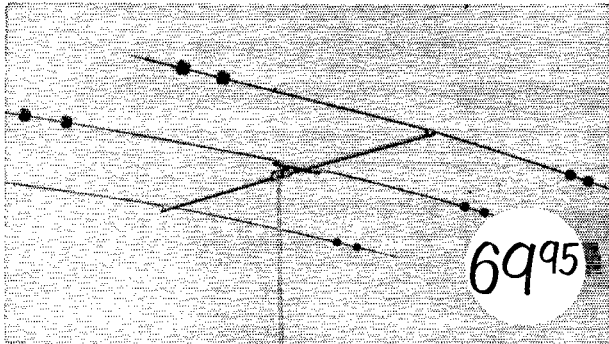
SEE YOUR NEAREST DISTRIBUTOR



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and Introducing the NEW...



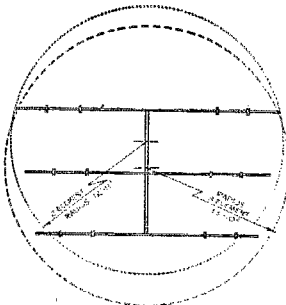
LIGHTWEIGHT, MINIATURE 600 WATT

## Mini-Tribanders

Small-sized, 3-band beams  
(10, 15 & 20M), with single feedline

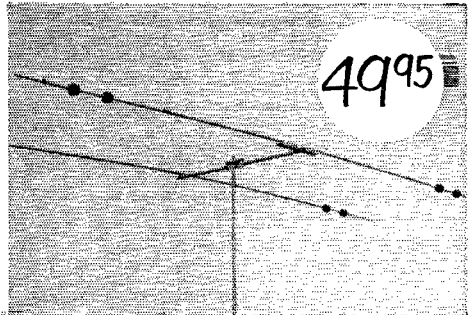
The world-famous hy-gain Trap Tribanders which most efficiently couple energy into space on 10, 15 & 20M with a single feedline, have now been reproduced in the smallest practical size consistent with efficient operation, allowing installation in the smallest city lots. Light weight, they can be easily rotated by most TV rotators. They are factory pre-tuned, with dimensions given for quick, easy assembly in a matter of minutes.

The 3-Element Mini-Tribander is extremely lightweight, weighing only 39.8 lbs. With a turning radius of 13 ft., 10 inches, this space-saving beam may be installed almost anywhere, yet boasts most of the features of the hy-gain full-sized trap tribanders.



### Turning Radius Sketch

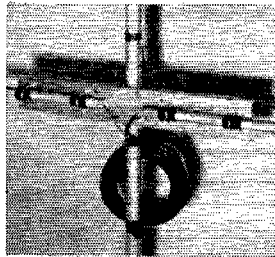
The short turning radius of hy-gain's Mini - Tribanders facilitate installation almost anywhere. Note schematic at left.



The 2-Element Mini-Tribander is practically a feather-weight. Weighing in at only 33.8 lbs., it is easily one-man installed in the shortest possible time . . . and nearly anywhere, with its turning radius of only 12 ft., 11 inches. Note its top features at its minimum cost.



Designed especially for the Mini-Tribanders, these new insutraps are extremely small and lightweight, weighing only 3 oz. Factory pre-set, sealed and weatherproofed, traps never need be opened, since no adjustments are necessary. Will take 600w AM, 100% modulated. HI-Q airwound traps are enclosed in weatherproof, carbon activated polyethylene cap and covers. Capacitor dielectric also solid polyethylene. No air dielectric. The only weatherproof traps in the industry, they are guaranteed for the life of the beam. Compare this advanced design with the heavy metal-enclosed non-weather protected, low efficiency traps.



Split Insulated Dipole Feed with coaxial choke results in SWR of less than 2:1 on all bands. No adjustments needed; simply attach 52 ohm feedline to dipole terminals. Heavy 12 ga. hot dipped galvanized steel channel and polyethylene-insulated U-bolts support hy-gain's driven element. Compare this construction with the flimsy, aluminum supports using self-tapping metal screws.



Boom is 1 1/2" dia. by .065" wall thickness, hot dipped galvanized steel. Elements are 6061T6 high strength aluminum alloy. Telescoping sections of 1", 7/8", 3/4" sizes are used. Compare this with small diameter, light wall tubing elements. High quality, galvanized and iridite treated hardware used throughout.

"World's Largest Manufacturer of  
Amateur Communication Antennas!"



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# "Talking of testimonials..."

READ WHAT THESE HAMS SAY

ABOUT THE



TRAP TRIBANDER

## Performance!!!

**LLOYD D. COLVIN, W6KG**  
(Winner of the First "WPX" Award)

Operating from W6KG I contacted on CW, radio amateurs in 331 different prefixes located in 141 countries during the first 8 months of 1957 to win the first WPX (Worked all Prefixes) award in the world. My antenna system consists of a Hy-Gain 3 element tribander. The beam is rotated using a television type rotator, and a Hy-Gain RotoBrake. The rotator and brake are mounted on top of a 70 foot wooden pole using a Hy-Gain antenna mounting kit.

I have built and used many beam antennas. Considering weight and size limitations, I have never before had a three band, rotary antenna system that compares with my present Hy-Gain three band, single transmission line, antenna.

During DX contests and other operating competitions, fast band switching is a great help. The use of the Hy-Gain 3 band, one transmission line, antenna goes a long way toward accomplishing fast band switching and the working of more stations than the fellow struggling with 3 transmission lines.

*Lloyd D. Colvin*  
Lloyd D. Colvin  
Lt. Col. Signal Corps  
W6KG

## Construction!!!

**HENRY S. LAU, KH6AW**  
Lt. Col., USAF, Honolulu

Hy-Gain Antenna Products  
1135 North 22nd Street  
Lincoln, Nebraska

Dear Andy,

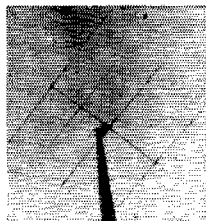
I find the Hy-Gain Tri-bander Beam a very practical antenna. It is easy to assemble both on the ground or element by element on top of a tower. I find good results on 15 and 20 meters with it in keeping my regular schedules with East Coast stations.

The standing wave ratio is amazingly low. My beam is mounted on a sixty-foot tower.

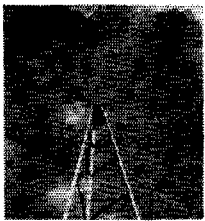
One of the many features of this beam is its ruggedness that survived the recent 82 miles an hour wind plus 17 to 24 inches rainfall in a 24 hour period.

Very truly yours,

*Henry S. Lau*  
Henry S. Lau, KH6AW  
Lt. Col. USAF  
925 14th Avenue  
Honolulu, Hawaii



What could be a better testimonial for performance than that of Col. Colvin, winner of the world's first WPX Award, and his contact with 331 different prefixes in 141 countries. And what speak higher of the Tri-bander construction than the "trial by fury" given Col. Lau's antenna. Here are but two of the excellent reports sent to us about the Hy-Gain Trap Tribanders.



There Are More hy-gain Tri-Banders In Use Than All Other 3-Band Beams Combined!

**Hy-gain** antenna products

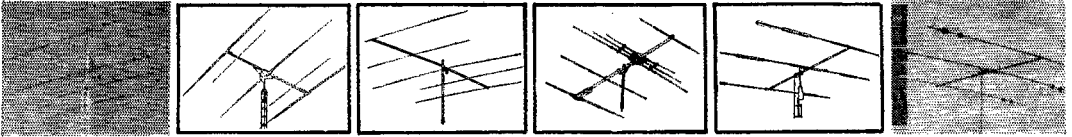
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120

OUR GREATEST TESTIMONIAL . . .

*Mr. Amateur*

# we're not afraid . . . TO MAKE AN HONEST COMPARISON!



Hy-Gain's Full-Size Trap Tribander Model G Model F Model T Model M Hy-Gain's Pint-Size Mini-Tribanders

## the three element 3 Band beams

3-ELEMENT	FULL SIZE				REDUCED SIZE	
	HY-GAIN FULL SIZE TRIBANDERS	MODEL G	MODEL F	MODEL T (A)	MODEL M (B)	HY-GAIN MINI-TRIBANDERS
PRICE	\$9.75	\$24.50	\$25.00	\$18.00	\$14.50 - \$9.50	\$4.50
BOOM LENGTH (ft.)	18	18	24	14	14	12
BOOM MATERIAL (1)	Hot Dip Galvanized 1 1/2" OD x .055 Wall Mechanical Steel With Boom Braces	Electro-Plated 1 1/2" x .055 Wall Aluminum No Boom Braces	2 1/4" OD x .125 Wall Aluminum No Boom Braces	2" OD Aluminum	1 1/2" OD x .125 Wall Aluminum No Boom Braces	Hot Dip Galvanized 1 1/2" OD x .055 Wall Mechanical Steel No Boom Braces
LONGEST ELEMENT	31' 9"	31' 9"	27' 11"	27' 10"	25'	25'
ELEMENT MAT'L. (2)	6061S16 Aluminum 1 1/2" x 1" x .055 Wall 1/8" x 3/16" x .049 Wall	5052H34 Aluminum 2" x 1 1/2" x 1/8" x 3/16" .035 Wall	6061S16 Aluminum 1 1/2" x 1 1/2" x 1/8" x 3/16" .055 Wall	6061S16 Aluminum 1" x 3/4" x 1/8" .049 Wall	6061S16 Aluminum 1" x 3/4" x 1/8" .049 Wall	6061S16 Aluminum 1 1/2" x 1" x .055 Wall 1/8" x 3/16" x .049 Wall
NET WEIGHT (Lbs.)	63	65	55	40	39	38
WIND LOADING AT 100 MPH (Lbs./Sq. Ft.)	212	256	215	138	135	113
POWER HANDLING CAPABILITIES	1 KW A.M. 2 KW P.E.P.	1 KW A.M.	Approx. 300 W A.M.	Approx. 500 W A.M.	300 W A.M.	600 W A.M.
METHOD OF MULTI-BANDING (4)	Enclosed Weather-Proof Lumped Constants Trap	Open, Non-Weather-Proof Linear Trap & Interlacing	Open, Non-Weather-Proof Lumped Constants Trap	Weather-Proof Lumped Constants Trap	Enclosed, but Not Weather-Proof Lumped Constants Trap	Enclosed Weather-Proof Lumped Constants Trap
METHOD OF MATCHING (5)	Perfect Match, 3-Band Triaxial Gamma Match	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System
GUARANTEE (6)	1 Yr.	90 Days	90 Days	90 Days	90 Days	1 Yr.

## the two element 3 Band beams

2-ELEMENT	FULL SIZE				REDUCED SIZE	
	HY-GAIN FULL SIZE TRIBANDERS	MODEL E	MODEL F	MODEL T (A)	MODEL M (B)	HY-GAIN MINI-TRIBANDERS
PRICE	\$9.50	\$15.00	\$15.00	\$18.00	\$14.50 - \$9.50	\$4.50
BOOM LENGTH (ft.)	6	9	9	16	14	8
BOOM MATERIAL (1)	Hot Dip Galvanized 1 1/2" OD x .055 Wall Mechanical Steel	Electro-Plated 1 1/2" x .055 Wall Electro-Plated	2" OD Aluminum	2" OD Aluminum	1 1/2" OD x .125 Wall Aluminum No Boom Braces	Hot Dip Galvanized 1 1/2" OD x .055 Wall Mechanical Steel No Boom Braces
LONGEST ELEMENT	30'	31' 9"	31' 9"	27' 10"	25'	25'
ELEMENT MAT'L. (2)	6061S16 Aluminum 1 1/2" x 1" x .055 Wall 1/8" x 3/16" x .049 Wall	5052H34 Aluminum 2" x 1 1/2" x 1/8" x 3/16" .035 Wall	6061S16 Aluminum 1 1/2" x 1 1/2" x 1/8" x 3/16" .055 Wall	6061S16 Aluminum 1" x 3/4" x 1/8" .049 Wall	6061S16 Aluminum 1" x 3/4" x 1/8" .049 Wall	6061S16 Aluminum 1 1/2" x 1" x .055 Wall 1/8" x 3/16" x .049 Wall
NET WEIGHT (Lbs.)	35	35	35	40	39	38
WIND LOADING AT 100 MPH (Lbs./Sq. Ft.)	132	160	160	138	135	113
POWER HANDLING CAPABILITIES	1 KW A.M. 2 KW P.E.P.	1 KW A.M.	1 KW A.M.	2 KW A.M.	500 W A.M.	600 W A.M.
METHOD OF MULTI-BANDING (4)	Enclosed Weather-Proof Lumped Constants Trap	Open, Non-Weather-Proof Linear Trap & Interlacing	Open, Non-Weather-Proof Linear Trap & Interlacing	Open, Non-Weather-Proof Linear Trap (Special Dipole)	Enclosed, but Not Weather-Proof Lumped Constants Trap	Enclosed Weather-Proof Lumped Constants Trap
METHOD OF MATCHING (5)	Perfect Match, 3-Band Triaxial Gamma Match	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System	Split Dipole No Matching System
GUARANTEE (6)	1 Yr.	90 Days	90 Days	90 Days	90 Days	1 Yr.

- Both Hy-Gain Tribanders use hot dipped galvanized mechanical steel booms. This high tensile strength boom material is actually dipped in the molten zinc metal for maximum weather protection. Compare this to the very lightly electroplated booms used by Hy-Gain competitors. Compare this also with aluminum booms of the same cross-sectional area. Although lighter in weight aluminum booms are less durable. Remember it is not weight which brings down antennas; it is wind resistance. The Hy-Gain full sized Tribander also uses boom braces. These braces are designed to form an angular construction which greatly relieves the stresses and strains at the point where the boom is attached to the mast.
- Hy-Gain uses only 6061 S16 hard alloy aluminum which is designed specifically for its weather resistance and high strength qualities. Note that competitive Model G uses a soft aluminum alloy and a very light wall.
- Creative design including the use of steel booms and compact trap assembly make it possible for Hy-Gain Beams to have the least amount of total wind loading area of any 3-band beam manufacturer.
- Hy-Gain's exclusive insu-traps accomplish element decoupling and the resulting multi-banding in the smallest most efficient manner. They are lumped constants, Hi-Q parallel resonant trap circuits which are mechanically and electrically stable in every respect and they are the only traps which are completely weather proof and hermetically sealed. Compare this with open air wound coil traps of Model F, long open sleeves of Model G which gather moisture and condensation, and small diameter low efficiency metal covered traps of Model M, which gather moisture and condensation through their drain holes and cover leaks.

- As is well known, parasitic arrays have feed point impedances of 15 to 30 ohms depending upon element tuning and other variable factors, such as height above ground and the proximity of surrounding objects. In the parasitic antenna which is fed directly to a split dipole the director must be fed from the point of the maximum forward gain in order to raise the impedance to a value which is close enough to 52 ohms to make possible a relatively low SWR. In addition, with no matching system dipole feed, there is no way to adjust or compensate for height above ground and other variables. In the exclusive Hy-Gain 3 Band Triaxial Gamma Match system the parasitic elements are carefully tuned for maximum forward gain since impedance values may be brought up to 50 ohms easily by the Gamma Match System. In addition, Hy-Gain's Tri-Axial Gamma Match affords the adjustment necessary to compensate and perfectly match any beam at almost any location. Hy-Gain's Tri-Axial Gamma Match is factory pretuned and dimensions are given which will result in very low SWR. In addition Hy-Gain's exclusive adjustability feature makes possible a perfect 1 to 1 SWR for the first time on a three band antenna.
- Hy-Gain's quality construction and performance backed by exclusive written one year guarantee. Note that the manufacturer of Model T does not make a three element three band array for 10, 15 and 20 meters. The Model T three-band antenna has two elements on 20, two elements on 15 and 3 elements on 10 meters. For this reason it was compared in the chart to similar three band antennas presently manufactured.
- Note that the manufacturer of Model M (Jr. and Sr.) makes only reduced size three band beams in a 300 watt and so-called kilowatt model. These

beams use shortened elements and a short 14 foot boom. They compare roughly in size with the Hy-Gain's Mini-Tribander. Note also that the Model M Jr. is the same as the Sr., except that it will only handle 300 watts AM compared to the Hy-Gain Mini-Tribander of superior construction and 600 watt AM capacity.

Forward gain and front to back ratio comparisons have purposely been omitted from our chart since manufacturers' claims and testing methods vary considerably. (For example the manufacturer of Model M claims 8dB forward gain for his reduced size and close space antenna. As is well known in the industry 8dB forward gain is obtainable only in a very carefully designed, sized and matched full size 3 element beam.) The dimensions of every Hy-Gain antenna were experimentally derived at the world's finest low frequency amateur antenna testing laboratory. Hy-Gain guarantees the highest possible gain and front to back ratio theoretically possible within limitations imposed by each installation sight.

FOR THE FINAL PROOF . . .  
Compare — On the Air!

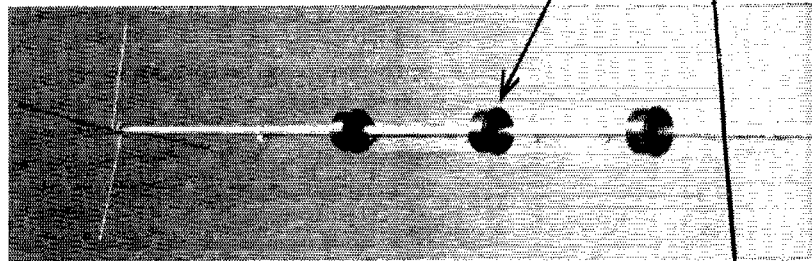
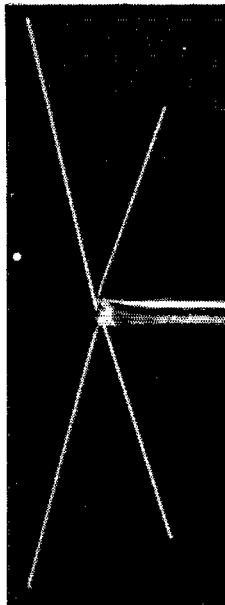
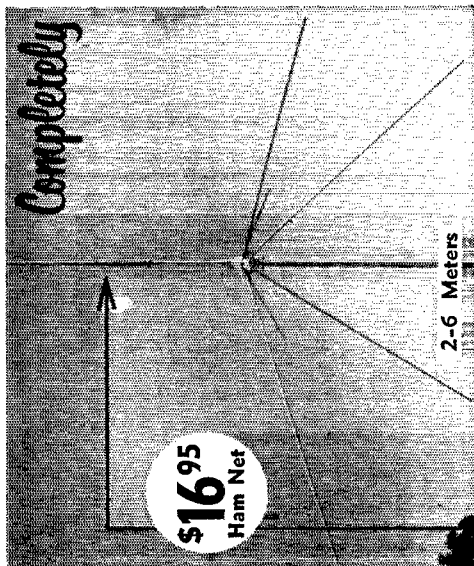
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# Completely New! A SELF-SUPPORTING Trap Vertical Series

FACTORY PRE-TUNED & PRE-ADJUSTED

for Quick, Easy Assembly

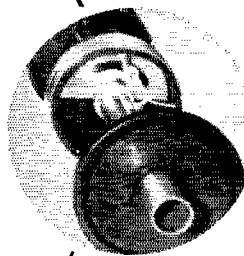
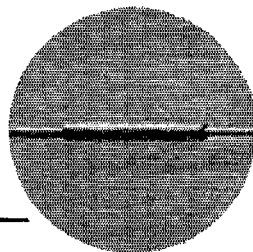
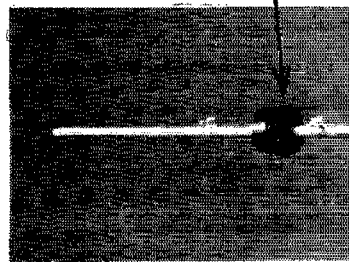
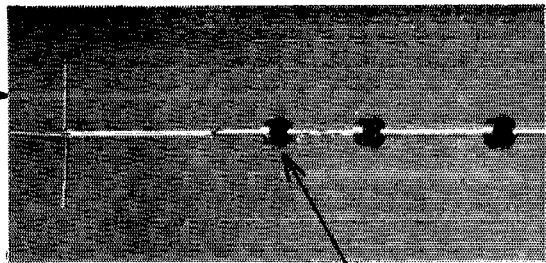
FROM **hy-gain**



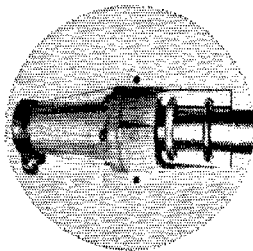
## MODEL 26-AV

Here's hy-gain's recently designed Automatic Vertical for the 2 and 6-meter bands, with the startling new "sleeve coupling" principle. Complete with ground plane at only \$16.96. Over-all height of Vertical and length of ground plane is 5 ft. Less than 2:1 SWR on both bands. 52 ohm coaxial feed. Complete instructions.

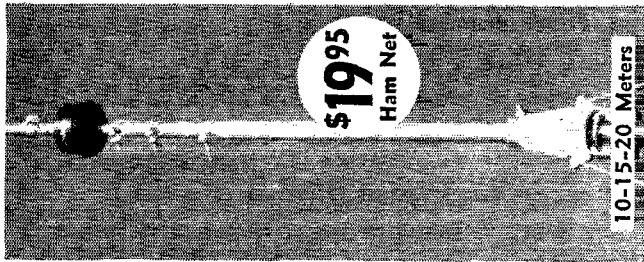
The new "Capacity Hat," a unique feature with hy-gain, electrically lengthens the vertical and increases radiating efficiency. Included with both the Models 14-AV and 18-AV



Radically new Decoupling Sleeve automatically isolates the various sections of the Model 26-AV Vertical, developing quarter-wave resonance on each band. Complete ground plane is also dual resonant for both bands. Totally unaffected by the weather; extremely efficient at high frequencies.



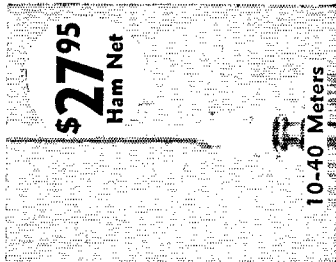
A new feature of all four Automatic verticals, this Base Insulator and Mount makes possible the self-support of the beams. Heavy duty cast aluminum mounting bracket is adjustable for various sizes of masts, with weather-protected internal coaxial fitting. Insulator is fiber glass impregnated nylon. All electrical connections factory sealed. Entire unit is completely weather-sealed.



**MODEL 12-AV**

The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15 and 20-meter bands. Sensational Insu-Traps isolate various sections of the vertical, developing quarter-wave resonance on each band. 62 ohm coaxial feed. Less than 2:1 SWR on all bands. Overall height: 14 ft. No "guess-work assembly" with hy-gain's step-by-step instructions.

Model 12-RMK: Combination Radial and Guy Wire Mounting Kit, designed to mount the 12-AV vertical. Complete with 8 1/4" steel mast, pre-cut radials which also act as mast guy wires, all hardware and base mount: \$8.95.



**MODEL 14-AV**

The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15, 20 and 40-meter bands. Sensational Insu-Traps isolate various sections of the vertical, developing quarter-wave resonance on all bands. Includes the hy-gain "Capacity Hat." Overall height: 21 ft. 52 coaxial feed. Less than 2:1 SWR on all bands.

Model 14-RMK: Combination Radial and Guy Wire Mounting Kit, designed to mount the 14-AV vertical. Complete with 5 1/2" steel mast, pre-cut radials which also act as mast guy wires, all hardware and base mount. Detailed instructions for easy assembly: \$9.95.



**MODEL 18-AV**

The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15, 20, 40 and 80-meter bands. Sensational Insu-Traps are used to isolate the various sections of the vertical, developing three-quarter wave resonance on the 20, 40 and 80-meter bands. 52 ohm coaxial feed. Less than 2:1 SWR on all bands. Complete with side mount kit; may be side-mounted at 18 foot height; completely self-supporting above 18 ft. Overall height: 88 ft. Complete instructions for all conceivable ground or building mountings.

Exclusive new Insu-Trap concept in parallel resonant trap circuits obsoletes old fashioned open-type coils. Effectively isolates various sections of the 12-AV, 14-AV and 18-AV so that an electrical resonant length exists on bands 80-10M. The only adjustable, completely weatherproof trap. Adjustable capacitor color coded for Fone or CW. HI-Q coils wound on high impact styron forms, also acting as low power factor dielectric for capacitors. No air dielectric involved. Assembly completely enclosed in weatherproof polyethylene cover.

**THE ONLY ANTENNA LINE STOCKED INTERNATIONALLY  
AT LEADING DISTRIBUTORS . . . EVERYWHERE!**

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now...for the first time

PERFECT 1:1 SWR

with hy-gains' new

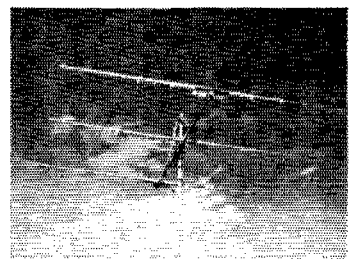
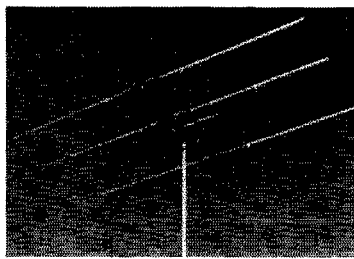
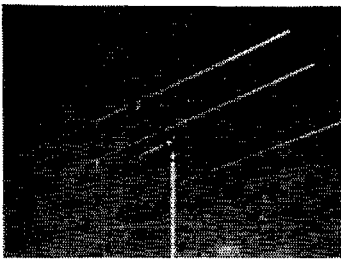
# hy-gain "monobander"

GAMMAXIAL Gamma match system!

10 METERS 3 ELEMENTS

15 METERS 3 ELEMENTS

20 METERS 3 ELEMENTS



Weighing only 18 lbs., this Antenna is small enough to be rotated by any TV rotator. Elements are adjustable for maximum gain over the entire 10 meter band. Easy to assemble in short order, with no further adjustments necessary. Boom is 104" in length; longest element, 17' 10".

Still small enough to be rotated with the heavy duty TV rotators, this ruggedly built antenna is adjustable over entire 15 meter band. Extremely simple to put up and into operation. Rugged Boom/Mast clamp also used to support the elements. Wt: 30 lbs. Boom length 142"; longest element, 23' 10".

This heavy duty, full-sized twenty meter array is really built to take it. The elements are adjustable over the entire 20 meter band, and they are telescoped three times to minimize element sag. Approximate net weight is 48 lbs. Boom length of 212"; longest element measures 35' 9".

Amateur Net: \$2195

Amateur Net: \$2995

Amateur Net: \$5795

Carefully engineered, incorporating the latest design principles for top performance, the hy-gain monobanders are factory pre-tuned and pre-matched. Complete with easy-to-follow instructions for assembly, these beams sold with 1 year guarantee. Features include large diameter elements and ruggedly built Boom/Mast clamps. Booms hot dipped galvanized steel for max. strength with minimum wind resistance. Elements 8061 T6 alloy.

Now a feature of all three monobanders, the new, pre-calibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included. Developed by hy-gain's engineering staff and used exclusively in the hy-gain monobanders.

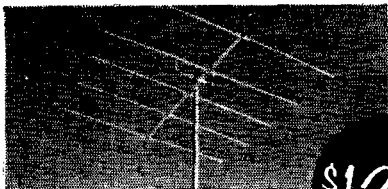
Average Gain: 8½ db. Average F/B Ratio: 24 db.



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6 Meter, 5 Element beam; boom length of 108", with a forward gain of 9 db. Net wt., 9 lbs.

\$1295



6 Meter, 8 Element beam; boom length of 216", with a forward gain of 12 db. Net wt., 18 lbs.

\$2495

The hy-gain 6-meter beams are adjustable for maximum gain over the entire band, from our instructions. No further tuning is necessary. A Calibration Chart is supplied with each instruction manual. Factory preassembled, these beams feature heavy wall 1/2" aluminum elements of 6061T6 alloy, and 1 1/4" diameter aluminum booms. They may be stacked for additional gain.

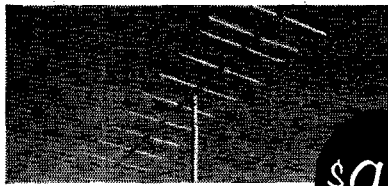


New pre-calibrated (GAMMA-XIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included. Developed by hy-gain's engineering staff and used exclusively in the hy-gain single band beams.

THE COMPLETE LINE OF

# Hy-gain VHF Antennas!

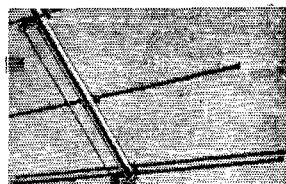
FOR THE 1 1/4, 2 & 6M BANDS



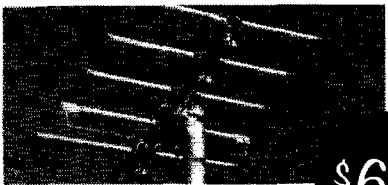
1 1/4 Meter, 10 Element beam; boom length of 80", with a forward gain of 12 db. Net wt., 2.5 lbs.

\$995

These hy-gain 1 1/4 and 2 Meter Beams are factory pre-assembled; the elements snap into position for immediate use. Each features 3/8" aluminum elements of 6061T6 alloy, and 1" diameter aluminum booms. Extremely easy to put up and into operation, these beams may be stacked for additional gain. Stacking bars for further gain for any of the models are available at \$3.95 additional.



Hy-gains 1 1/4 and 2 meter Beams incorporate the Folded Ratio Dipole with nominal impedance of 200 ohms. An adjustable 1/4-wave Q bar matching transformer is included, making possible perfect 1:1 SWR with 52 and 72 ohm coax or 300 and 450 ohm balanced lines.



2 Meter, 5 Element beam; boom length of 38", with a forward gain of 9 db. Net wt., 2.75 lbs.

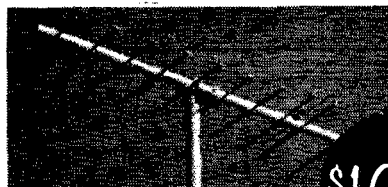
\$695

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2 Meter, 10 Element beam; boom length of 112", with a forward gain of 12 db. Net wt., 5 lbs.

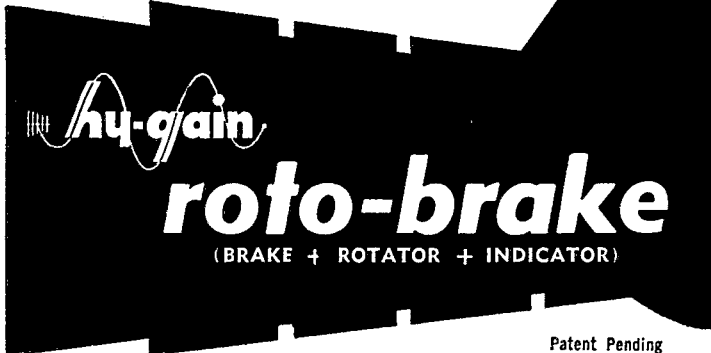
\$1095

# NEW

## Complete Rotating Assembly!

500 IN. LBS. OF ROTATING POWER  
10,000 IN. LBS. OF BRAKING POWER

the iron fist . . .



**hy-gain**

# roto-brake

(BRAKE + ROTATOR + INDICATOR)

Patent Pending

**Rotate! Hold!  
Indicate!**

# \$139<sup>95</sup>

**Complete with  
Brake, Rotator  
and Indicator**

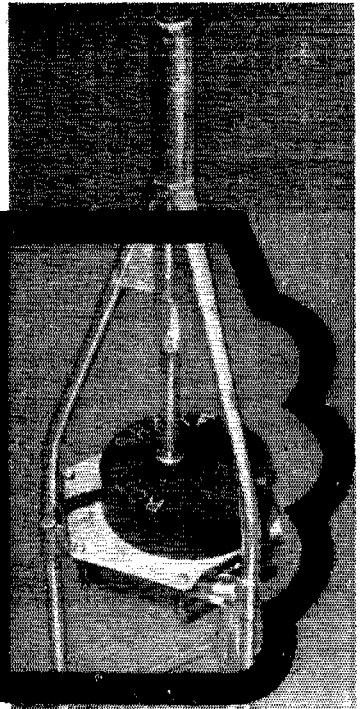
The Rotobrake, designed for internal mounting in steel towers 10-18" inside clearance, shipped complete with brackets for mounting in towers of this size. Kits available for mounting on side of pipe and pole towers. Brake unit encased in heavily ribbed, heavy wall, cast aluminum housing. Two bronze thrust and bearing surfaces are press fit into top and bottom of housing, designed to support more than 1000 lbs. of dead weight. Rotobrake is a complete rotating assembly, with spring actuated, solenoid released braking unit, built-in powerful twin 3600 rpm rotating motors, and Great Circle Map indicator and control box. Tests without failure up to 12,000 in. lbs. of torque. Built-in limit switches protect feed line.

**400% Stronger  
than Any Other Rotating  
Assembly on the Market!**

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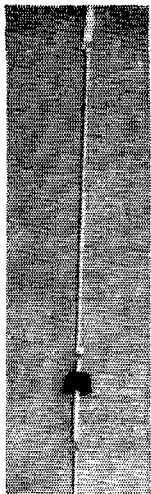


High carbon machined steel gear and rack, heavy skpolder bolts and lock nuts, oil sealed bronze bearings provide positive braking action. Twin 3600 rpm motors develop 500 in. lbs. rotation torque. Gear reduction unit factory sealed.



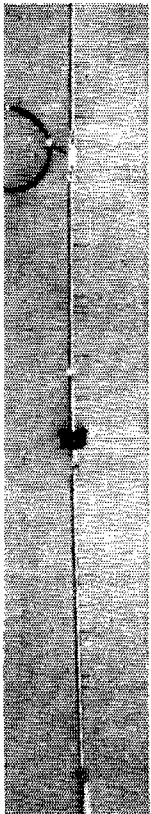
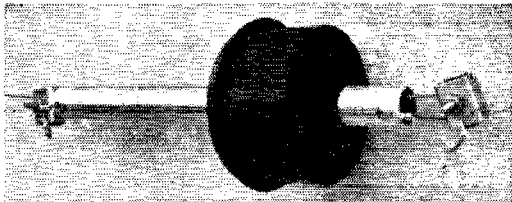
Multi-colored Great Circle wall map indicator, 16" in diameter. Moving wedge of light, 10' wide at perimeter indicates beam direction. Countries outlined and call areas labeled. Control box mounts under operating table. Calibrated every degree of the compass for pinpoint accuracy.





the  
**hy-gain**  
 4-Band  
 and 5-Band  
 Doublet Kits  
 and  
 Doublet Traps

Four or Five Bands With One  
 Feed Line, One Antenna & Low SWR



the hy-gain Insu-Traps

Large diameter, Hi-Q trap circuits, which maintain true isolation for maximum efficiency. Traps are light weight (8 oz.), completely weatherproof and handle 1 KW of RF power. Trap circuit coils wound on high impact styron forms which also form dielectric for capacitors. Entire trap circuit completely enclosed in carbon activated polyethylene cover and cap. Detailed instructions included for constructing your own 4 or 5-Band doublet.

the hy-gain Doublet Kits

Include #14 copper clad steel antenna wire, 7" porcelain end insulators, pressure clamps and 88 ft. of KW Amphenol twin lead, with complete instructions. When completed, 4-Band Doublet is 60 ft. overall length; 5-Band Doublet, 108 ft. overall length.

- Insu-Traps for 10-80M, traps only per pair .....\$12.50
- Insu-Traps for 10-40M, traps only, per pair .....\$12.50
- 4-Band Doublet Kit for use with Traps (less traps) .....\$14.00
- 5-Band Doublet Kit for use with Traps (less traps) .....\$15.00

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Gentlemen . . .

Please send me complete information on the Hy-Gain Beams checked here!

Monobanders  VHF Beams  RotoBrake  
 Full-Sized Tribanders  Mini-Tribanders  
 Trap Verticals  4 & 5 Band Doublets  
 All Hy-Gain Products

NAME: \_\_\_\_\_

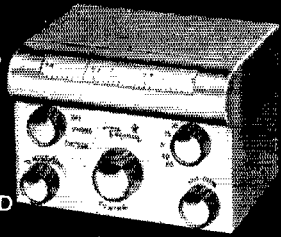
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Receive "Ham" signals  
anywhere, on any set with  
Model ATC-1 Transistorized  
Amateur Band Converter by

Regency®

WORLD'S  
ONLY  
SPECIALIST  
IN  
TRANSISTORIZED  
EQUIPMENT



# ARE YOU MOBILE?

Model ATC-1 is Self-Powered (3 penlight batteries, shelf life expectancy); simple to connect—one connection to antenna, other to receiver antenna input; only 4 3/4" x 3 1/4" x 4 1/16" — 30 ounces — small and light enough to be carried easily, mounted in any convenient spot in car; adaptable to any receiver—receives AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands; a natural for new cars using 12 volt tube and/or transistor receivers; the answer to mobile SSB listening—built in BFO plus a high degree of stability make the tuning of SSB, DSB, or CW signals a pleasure; provided with outstanding selectivity on AM phone by the modified "Q" multiplier circuit. **Model ATC-1, \$79.50**

See your Electronic Parts Distributor for full information on Transistor complement, Diode clamp protection, Controls, Sensitivity, etc., or write

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7900 Pendleton Pike  
Indianapolis 26, Ind.

3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 kc. at 1600, Congratulations to K2KIR, K2SIL and K2FCB on making the BPL, K2RYH won the prize as the most valuable member of the NYS C.W. Net during 1957. K2SIL made the Royal Order of Artiers. The Elmira ARC elected UZF, pres.; K2PKT, vice-pres.; K2TXM, secy.; K2CPB, treas. K2RHQ is going s.s.b. QHH got a 250 sticker on DXCC and YLCC-800. K2OUS has a homebrew 300-watter on the air. Sorry to report that K2KWF and OWT have joined Silent Keys. COB is building a speech limiter. E1AV visited the gang in Buffalo. The KBT RC had INJM speak at its March meeting. During the big snow the Erie County Sheriff's Dept. got an assist from GH, K2KQC, K2LLL, FWQ and K2EE. MTA reports the Tioga County RACES Net is in operation on 28.7 Mc. at 2100 on Mon. K2SRF and K2SSX gave a talk on TV about Ham Radio. BLO is on 2 meters with an 815. K2GKK is active on 75, 40 and 10 meters. K2CEH and ALL spoke at the RARA V.H.F. Nite. TQR is up to 200 countries. DKS has a new 500-B, an SX-101 and a 110-ft. tower for his new beam. DOD has hit the 200 country mark. K2HUK worked WAC in three days on s.s.b. CNT is up to 230 countries. K2GWT has a new 15-meter beam. Don't forget the RARA WNY Hamfest on May 17, at Doud Post in Rochester. BZN, Chairman of the Hamfest, promises a program to surpass all previous affairs. TJJ is on the air with a DX-100. K2KIR is doing a fine job on the *ESS Bulletin*. NAL is chairman of the newly-formed satellite committee for RAGS. NNT has heard "Moonbounce" signals. YRB, K2SZM, HIL and K2GEL are building 108-Mc. gear. ZOL has a KWS-1. RUF and K2DPA handled traffic for 5 hours after a big explosion in Niagara Falls. The NYSPTEN has been activated. BLO, RUF and K2ENV were renewed as ORSS. K2KTK was appointed OBS. Traffic: (FEB.) K2KIR 723, SIL 612, IYP 382, RYH 182, W2ZRC 139, K2FCB 122, UZJ 115, GVN 87, W2RUF 83, K2GKK 55, GQU 49, W2QHH 46, COB 44, K2RTN 44, W2DSS 38, FEB 35, BKC 28, PVI 28, K2KTK 27, HUK 24, KXE/2 20, W2BLO 18, ZDL 18, K2RJI 17, BBJ 12, UNZ 12, W2EMW 8, QCI 8, RQF 7, K2RIT 2. (Jan.) K2FCB 149, W2ZDL 13. (Dec.) K2FCB 411.

**WESTERN PENNSYLVANIA**—Acting SCM, Anthony J. Alroczka, W3UHN—SEC: OMA, RMs: GEG and NUG, PAMs: AER and TOC. It is the sad duty of this column to record the passing of MGB. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The Allegheny Kiski ARC has a new Johnson 500 and an NC-300. The Breeze Shooters Hamfest will be held at the Lodge, North Park, Pittsburgh on Sunday, May 25. MIF is now using a Hy-Gain vertical. The Cumbria County C.D. Net was activated for 24 hours on Feb. 19-20 on 29.470 Mc. until telephone service was restored. Those participating were OKI, DCY, LXQ, YOS, ZHQ, ULY, MIM, WRE, BST, K3AFY and K3AJB. The Conemaugh Valley ARC Old Timers Nite is set for May 6. SNN has a new EE-3. TIF is in Florida. WHR has a new DX-100. The North Catholic RC, K3BEP, has started working on a tracking and monitoring system for the U. S. Explorer and Vanguard Satellite Systems. UGV, OO, has been monitoring 7400-7500 kc. for amateur signals—and hearing 'em. WIQ has an RTTY converter. LXU has a new electronic keyer and received his 30-w.p.m. endorsement sticker. New officers of the Washington County ARC are UEN, pres.; YDG, vice-pres.; GYZ, secy.; HUX, treas.; USZ, act. mgr. The Mt. Lebanon (Pgh.) Township hams have a PYI Committee. UGV is now equipped for complete break-in. RFX has a new WRL-300. Up Erie way: KLD was the first reported ham in the Erie Area to hear the Army's Explorer Satellite; new Novices are KN3s CWA, CWB, CWC and CWN. AIZ is vacationing in Florida. The Pittsburgh Area Quarter Century Wireless Association is doing nicely under the direction of AAX. The Pittsburgh Pole Cut Net still meets Sun. at 1130 EST on 3665 kc. LEP, CDU, SXH and UHN are building RC model airplanes. CSL got his General Class ticket. OVM was principal speaker at ATA's March meeting. The Etna RC, EXW, meets the 1st and 3rd Tue. of each month. Traffic: (Feb.) W3WIQ 4956, LXU 255, YUL 184, BZR 150, EPM 39, YA 39, UHN 29, TOC 6, GJY 4, K3ABN 2. (Jan.) W3NKI 12. (Dec.) W3NKI 8. (Nov.) W3NKI 10.

## CENTRAL DIVISION

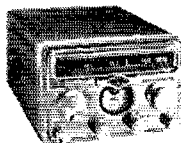
**ILLINOIS**—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME, SEC: HOA, RM: IAK, PAM: RYU, EG Cook County: HFG, Section nets: ILN, 3515 kc., Mon. through Sat. New appointments: K0BEI, HUW, VOX and YIF as ECs; T7N, K9ANI, PHE, PVD and JFA as OOs; and K9ANI as OBS. HXE and his Dupage County c.d. set-up got a

(Continued on page 130)

# A PAGE FROM THE GONSET CATALOG



Shown is page 1 (of 4) which presents only a very few of the communications equipment items in the big GONSET line.



## G-66B COMPLETE FIXED-MOBILE RECEIVER

A highly flexible receiver, well suited for fixed station use, with equal for superior mobile reception. 6-band coverage, stable, sensitive, selective.

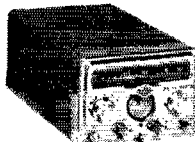
6 bands: .54 to 2 mcs, 3.54 mcs, 7.73 mcs, 14-14.35 mcs, 21-21.45 mcs, 28-29.7 mcs, AM, CW, SSB reception; highly stable HF and BF oscillators and xtal controlled second conversion oscillator. Steep skirt selectivity by 265 kc 2nd I-F with 8 tuned circuits. Double conversion all bands, AVC and famous Gonset noise limiter, antenna trimmer, "S" meter. Slide rule dial exposes only band in use. 40:1 tuning ratio. Universal power supply is a separate unit, operates on 6V or 12V DC and 115V AC. Loudspeaker is built into power supply unit. Specify whether operation is to be 6V or 12V DC.

"Thin pack" power supply is available for 12 volt DC only operation. Only 2 1/2" thick, plugs directly to G-66B as cabinet extension or can be connected with patch cable. Less speaker.

G-66B, less power supply.....#3046 Net 209.50  
 Universal "three way" power supply speaker unit. (6V-12V DC-115V AC) .....#3069-6 Net 49.50  
 Same as above. Factory wired 12V DC, 115V AC. With patch cable.....#3069-12 Net 49.50

"Thin pack" power supply, (12V DC only) less patch cable.....#3098 Net 29.50  
 G-66B receiver with 3069-6 power supply and patch cable. Factory wired for 6V DC and 115V AC .....#3213-6 Net 259.00  
 G-66B receiver with 3069-12 power supply and patch cable. Factory wired for 12V DC and 115V AC .....#3213-12 Net 259.00  
 G-66B receiver with 3098 "thin pack" power supply. (12V DC only) less patch cable. #3214 Net 239.00

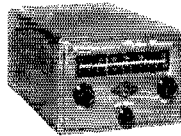
## G-77 A MOBILE TRANSMITTER...



G-77 A Transmitter with power supply and installation kit.  
 Model #3203....Net 299.00

A new mobile transmitter with every desirable feature. A companion unit to the G-66B, same size and appearance. Covers 80-40-20-15-10 meters, has built-in, stable, calibrated VFO with xtl optional. Power input 50-60 watts, modulated. P network output. Full press-to-talk with built-in antenna relay. Power supply and modulator are in separate unit. 6V or 12V DC and 115V AC Output voltage is 500-600. Full load. Selenium rectifier. Avoid rectifier filament standby drain.

## COMMUNICATIONS MONITOR RECEIVERS, FM AND AM TYPES



30 to 50 mcs, FM.....#3155 Net 79.50  
 112 to 132 mcs, AM.....#3156 Net 79.50  
 132 to 152 mcs, AM.....#3157 Net 79.50  
 152 to 174 mcs, FM.....#3158 Net 79.50

A new, economically-priced series of FM and AM receivers for communications monitoring and emergency applications in the VHF region. Complete with AC power supply, speaker, "built-in" antenna, calibrated slide rule dial. Each has 8 tubes plus rectifier. Oscillator is temperature compensated, has low radiation. Excellent AVC and adjustable squelch.

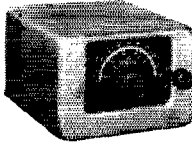
## 12 VOLT, POLICE-MARINE CONVERTER



Model #3163....Net 29.50  
 For operation on 12V DC only

New converter for mobile reception of maritime and police bands within frequency range of 1.6 to 3 mcs. Unit operates in conjunction with existing 12 volt battery system. Installation is simple, rapid. No alteration of auto set. Converter is supplied with cable and plug which fits antenna receptacle of auto set. Operating voltage (12V) is readily obtained by clipping lead to accessory battery post behind dash. Size 3 1/2" H, 4" W, 4" deep.

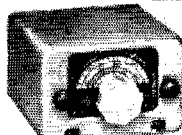
## 6 METER CONVERTER...



Model #3066  
 Net 52.50

An effective converter which provides excellent 6 meter reception when operated in conjunction with conventional automobile broadcast receivers or with communications or broadcast type home receivers. Has full-vision calibrated dial. Is compact, easy to install. Has switch for 6 or 12V filaments. Also has Gonset noise clipper built as separate unit for connection to receivers which do not have such provisions.

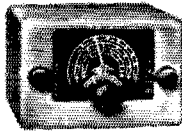
## "SUPER-SIX" SIX BAND CONVERTER



Model #3030  
 Net 57.50

The new six band de luxe converter covering 10-11, 15, 20, 40, and 75 meters. Improved sensitivity and added band spread. Also covers 19 and 49 meter SW broadcast bands. Built-in BC trap. Separate isolated antenna inputs for converter and BC set. Oscillator correction control on rear of chassis. Sturdy, drawn aluminum outer case. Factory wired for 12V DC. Easily converted to 6V DC.

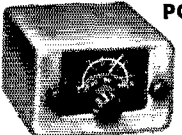
## "3-30" SW CONVERTER



Model #3002.....Net 49.50

An excellent general coverage converter where extreme band-spread is not required. Covers 3 to 30 mcs. in three ranges. Uses four tubes: 6BH6 RF, 6AV6 mixer, 6C4 oscillator and 6BH6 I.F. stage. Extremely compact and easy to install with any car radio.

## POLICE-MARINE CONVERTER

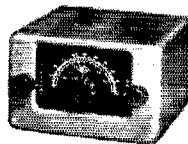


Model #3003-6.....Net 49.50  
 Model #3003-12.....Net 49.50

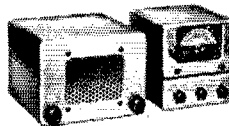
Overall performance and construction comparable to 3-30 model except covers 1.6 to 6 mcs in two bands and employs 1 mc output. Ideal for police, marine, CAP, Civil Defense, disaster communications as well as amateur 75 and 160 meter mobile work. Compact, efficient, ruggedly constructed.

## MOBILE FM TUNERS

Gonset tuners provide an inexpensive yet sensitive and stable receiver when used in conjunction with ordinary auto, home or communication receivers or with the Gonset Audio-Amplifier Power Supply unit. Tuners include squelch and noise clipper, I.F. and low-level audio. Very compact... mounts on steering post or under dash for mobile applications 50 ohm input, simple to connect to Audio-Power supply unit or equivalent sections of L.F. receiver.



30-40 mc. FM.....#3009-6  
 30-40 mc. FM.....#3009-12  
 40-50 mc. FM.....#3010-6  
 40-50 mc. FM.....#3010-12  
 88-108 mc. FM.....#3011-6 (less squelch)  
 88-108 mc. FM.....#3011-12 (less squelch)  
 152-162 mc. FM.....#3012-6  
 152-162 mc. FM.....#3012-12  
 Specify 6 or 12 volt factory wiring.  
 All Models.....Net 69.50

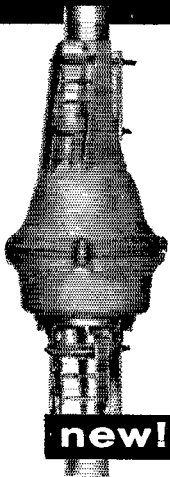


## "SUPER-CEIVER"

Used with any good converter, (as Super-Six) provides a complete receiver of outstanding performance on AM-CW.

Unit is xtal controlled for maximum stability and utilizes 8 tuned circuits at 262 kc for steep-shoulder selectivity. Self-contained vibrator supply furnishes regulated DC to converter and BFO. Latter is very stable and has pitch adjustment. Also available on special order as an excellent xtal controlled, fixed frequency receiver for many commercial applications. Information on request. Wired for 6 or 12 volts. (Specify).  
 Model 3041-6, less converter.....Net 119.50  
 Model 3041-12, less converter.....Net 119.50

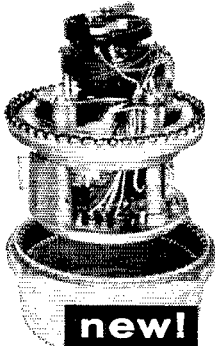
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new!

## C·D·R "HAM-M" Beam Rotor

Will support and rotate the heaviest beams commercially available. Weather-proof high pressure cast aluminum alloy housing. Heavy-duty holding brackets with stainless steel U bolts and nuts. Standard mounting on present towers. Complete system ready to install.



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Heavy-duty broached-cut stainless steel motor gears and pinions. 98 ball bearings in nylon retainers. High tensile strength die-cast aluminum-alloy housing, with positive lock-and-hold brake that eliminates drift. Solenoid-operated brake release. Electrical end-of-rotation protection.



new!

Sensitive 1-ma. meter indicator for pin-point accuracy. Separate transformer for direction indication. Double-stage switch permits instant direction reading without moving rotor. Heavy-duty power transformer. Designed for 8-wire cable.

**ONLY \$99.50**

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terrific write-up in the *Chicago Daily News*. The RACES plan was approved for the Mason County Area by the FCC. KN9JLD wants it known that the Regional Novice Net is not necessarily for the Novices; he invites all the gang to check in. New officers of the St. Clair Amateur County Radio Club are RQR, pres.; K9GII, vice-pres.; JMY, secy.; PAM, treas.; KN9LDP, sgt. at arms; RSY, act. mgr. K9BIY is the proud owner of a new Elmac AF67 and QDM has installed a new Mosley. BFS is going mobile with new home-brew equipment. QBJ has added a new 500-watt final class C, and is working 7-Mc. e.w. K9JIN and K9GSG are busy building their new DX-100. The Quad City Club at Moline is working hard on its Mississippi Valley Hamfest to be held near Davenport, Iowa, May 25. The Fox River Radio League of Aurora is out to build its new club house. OAN is now the proud holder of a DXCC award, with 105 countries confirmed. K9CQF has received YL QSL No. 200 for an additional endorsement sticker on her YLCC certificate. YJC is now in W4-Laud with the call K4RXD. The Chicago gang went out en masse when a filling station erroneously sold a fuel oil that was mixed with high octane fuel. The gang cooperated with the fire and police departments with mobile equipment trying to trace down the buyers of this oil. New Novices heard were KN9LIT and N9LLU; also N9LLS, a nine-year-old graduate from the Sangamon Valley Radio Club code class. MAK reports that the ILN cleared 327 messages in 27 sessions during the month while CSW and the North Central Phone Net traffic totaled 534. PNO has graduated to a new HQ-150. The Hamfesters (Chicago) ask that you check in their 160-meter net. The Sangamon Valley Radio Club held its annual spaghetti dinner for OMs, XYLs and harmonics on Feb. 19 and PSP made a surprise visit to the affair on his way to southern e.d. meetings. JFT finally snagged a Nipane for his WAC. KQX worked General LeMay 2-meter airborne. NIF made WAS. IRH made his WAVE. KN9KYW is now on the air with a Globe Scout and an HQ-110. K9IXA and K9IXB, father and son, are new Technicians in Litchfield. UOR is now on 6 meters and can be heard regularly. MQU can be worked on 6-meter mobile. OBY was named Radio Officer, with NZ, TPA and KEW as alternates, for the Harvard Illinois RACES plan which has been approved by the FCC. GNB has invested in a new Valiant and beam. K4AWV/9 has been appointed deputy communications officer for Park Forest. PCQ and his February traffic makes his tenth BPL certificate. Also receiving BPL this month are DO and MAK. Traffic: (Feb.) W9DO 952, MAK 713, FAW 375, PCQ 188, WBE 147, K9CDQ 78, W9CTZ 55, CSW 50, BUK 49, K9JIN 43, KN9JLD 34, W9TZN 20, YFO 16, RYL 13, BA 7, SKR 4, K9GSR 2, W9QBJ 2, K9AKS 1, (Jan.) W9BUK 45, JZK 6, (Dec.) W9JZK 5.

**INDIANA**—SCM, Arthur G. Evans, W9TQC—Asst. SCM; Seth Lew Baker, 9NTA. SEC: CMT, PAAL; BKJ, KOY, SWD and UXK. RMs: DGA, JOZ and TT. MPH is the new Marion County EC. The Lake County ARC held its Fifth Annual Banquet Feb. 15 with 365 attending. The Bloomington ARC is planning a complete mobile e.d. unit. A new club, the Owen County ARC, was formed with K9EOH, pres.; K9HITE, vice-pres.; KN9IOJ, secy.; Bernard Smith, treas. The new Miami County RC's officers are MLE, pres.; K9ACR, vice-pres.; EJC, secy.-treas. The Hoosier Amateur Women's Klub (HAWK) offers a very attractive certificate to any amateur working 10 of its members. Send confirmation QSL cards to RTH. JYJ is setting up on 420 Mc. K9CFG worked ZS9G on 50 Mc. GJS has been pounding brass for 38 years. EZW reports five new Novices in Marion. SYM is building f.m. equipment for e.d. work on 6 meters. ACN is the call of the Henry County Net, PPD as NCS, 3607 kc. Tues. at 1830. The Marion County 52 Net meets Mon. and Sat. at 1900 on 51.9 Mc. DOK reports a traffic total of 34 for the Delaware County 6-meter Net. 50.4 Mc. at 1900 Mon. through Sat. RFN traffic was reported by TT as 88. JOZ reports QIN traffic as 255. SWD gives IFN traffic as morning 202, evening 277, total 479. CAEN traffic of 50 is reported by EHZ. We have been asked to continue to send reports of any unusual amounts of rainfall via radio to the Indiana Flood Control Comm. at Indianapolis. K9BSU has a 10A on the air. Appointments: K9AYI as ORS; K9EOH as OFS and SVZ as OBS. Traffic: (Feb.) W9JOZ 1141, NZZ 1103, ZYK 230, TT 105, BDG 145, TQC 143, ETM 140, VAY 102, JYO 84, ENU 83, EHZ 81, EQO 78, SWD 75, K9AYI 73, W9RTH 71, K9DGO 57, W9DOK 57, K9GGB 57, W9DGA 52, K9HMN 41, W9AB 40, WID 35, HRW 30, BUQ 29, STC 29, EJV 28, K9EOJ 28, W9HXR 28, IMU 28, SNO 26, WHL 26, GJS 24, WYM 22, DZC 19, MLE 18, YXX 17, SVZ 16, VPI 15, CDW 14, K9EUV 14, W9QR 14, K9AOM 13, HDY 12, W9MAY 10, ZSW 10, K9BSU 9, EOI 9.

(Continued on page 132)

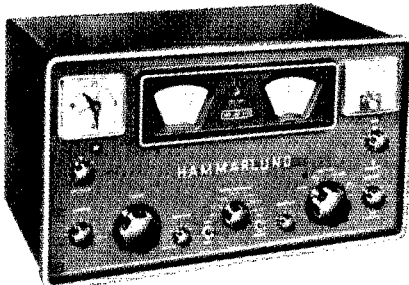
# HAMMARLUND HIT PARADE

HQ-100

## GENERAL COVERAGE RECEIVER

540 KCS to 30 MCS. Electrical bandspread. Q-Multiplier. Voltage-regulated and temperature-compensated for stability. Automatic noise limiter. Auto-response. 10-tube superheterodyne circuit. A real honey for the amateur and Short Wave Listener . . .

**\$169.00\***



HQ-110

## AMATEUR RECEIVER

Full coverage of 6, 10, 15, 20, 40, 80 and 160 meter bands. Dual conversion 12-tube superheterodyne circuit. Separate linear detector for SSB and CW. Q-Multiplier. Separate stabilized BFO. Crystal calibrator. Crystal controlled 2nd conversion. Auto-response. Automatic noise limiter. Most popular amateur receiver ever . . .

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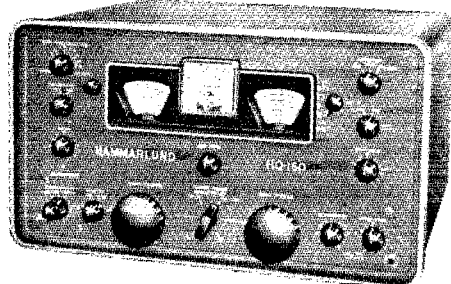
HQ-160

## GENERAL COVERAGE RECEIVER

A brand-new star performer for amateur and general use. Dual conversion 13-tube superheterodyne circuit. 540 KCS to 31 MCS. Electrical bandspread. Q-Multiplier. Adjustable notch filter up to 60 db attenuation. Separate stabilized BFO. Crystal calibrator. Automatic noise limiter. 14 tuned IF circuits. Crystal-controlled 2nd conversion.

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\*Telechron automatic clock-timer \$10 extra.



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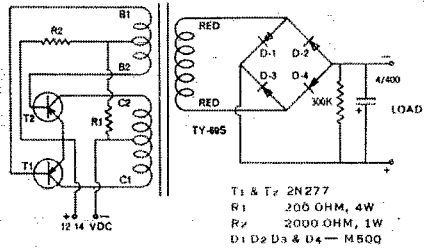
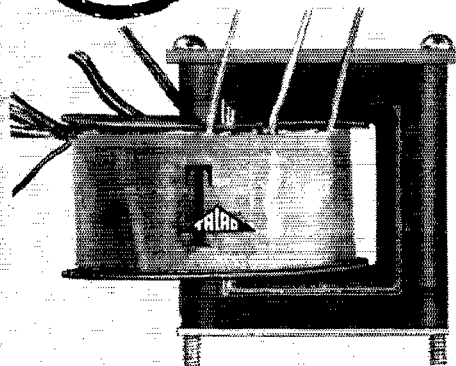
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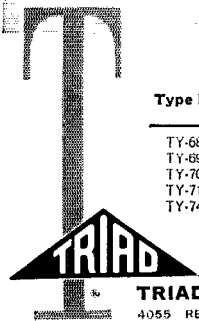


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NEW "DC Transformers" especially designed for DC transistor circuits, with an efficiency of 80% to 85% for the entire supply, are available from Triad. The types listed here are standard Triad catalog items you can get from your Triad distributor. For a complete listing of all Triad transistor transformers, please write for your copy of Catalog TR-58.



Type No.	Input Volts	Output Volts	Current Ma.	Net Price
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TY-69S	12-14	300	100	10.56
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TY-74S	12-14	600	200	15.00

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W9NTR 9, YVS 9, VQP 7, HUF 6, PPS 5, WAU 5, K9GSV 4, KN9KX 4, W9NTA 4, CMIT 3, NH 3, CYZ 2, K9DWK 2. (Jan.) W9WAU 3, UXK 2.

**WISCONSIN**—SCM, George Wolda, W9KQB—SEC: YQH, PAMs: NRP and AJU, RM: K9AEQ. Because our space is limited and to bring you more news this month only the top ten stations in traffic are listed, plus a total of all traffic that is reported. RQM continues DXing and is firing up on 6 meters. FZC is mobile happy with a new AF-67. QNO is resting after receiving his last WAZ QSL. BPL was made by CXY and K9GDF. ERW has WAC. KKK is a new EC. K9CEF is doing a good job as OBS and is on with a new mobile. PQA joined PDN as MRAC's 2nd DXCC on phone only. K9CJK finally has WAS. UNY and DWH are active on 10 meters relaying and patching traffic, while son K9HED works for his General Class license. BEN certificates went to K9GYG and KBH; WIN certificates to IQB, VHP, WJH, BUK, CBE, K9DHX and K9BCA. JEF now is at Hambridge Naval Training Center. Mid. New officers of the FLARC, Madison, include UGT, pres.; ICR, vice-pres.; K9ELK, secy.; and UDL, treas. New officers of the Jefferson County ARC are NRP, pres.; K9CWX, vice-pres.; WAQ, secy.-treas. VAK now is in Chicago with Gen. Tel. Labs. K9ERN gave an interesting talk on TV and TYI-proofing to the Mancoard Club of Manitowoc. K9s GAP, CTY, BKW, AQB and W9LST, all of Clinton are active on a 6-meter net. GFL/M, in Florida, kept skeds with LYX. New on 2 meters: FFY, JNY, NSE, NPX and K9EAN. KN9LCA, new in Lake Mills, made RCC with his first contact. K9EVB has a new Ranger and K9DIE has his General Class license. OBS PJT is chasing DX on 40-meter c.w. K9ELT has WAS. K9GDF is busy making his own QSLs. FFC has a new semicircular desk and a 10-meter beam. CXY QNIs five nets and has time to receive RST 599 from Poland without a beam on 21 Mc. Our total traffic count was 2044. Traffic: W9CXY 792, K9AEQ 302, GDF 296, W9SAA 149, K9ELT 130, DTK 76, GYG 57, W9DYG 46, KQB 33, QJW 20.

## DAKOTA DIVISION

**NORTH DAKOTA**—SCM, Rev. C. Bonitas, W0UBG—SEC: YCL, OBS: KLP, OPSS: UBG, KLP, YCL, K0IAB and CNC. ORES: K9CNC, KTZ and SDN. The Phone Net meets at 1800 CST every week day on 3845 kc. The NDN Net meets on 3670 kc. on Mon., Wed. and Fri. at 1830 CST. KRC, AOX, IER and WIQ were among those who used their station equipment when the Bell and Western Union lines went down under the ice during the latter part of February. They are all station agents on the railroad. What's happening to the NCSs? KLP was in the hospital for three days. UBG had about twenty-five stitches over his left eye. K0IAB had eight stitches on his face from a car accident. A new club is being organized in Dickinson. K0MEF is conducting code classes as part of extra-curricular activities at Dickinson STC. An EC drill for North Dakota is held every 1st Wed. from 1830 to 1900. K0EBB has a DX-100 but is hesitant about getting it on the air. K0GJS, Wyndmere, is an Asst. EC. Traffic: K9CNC 144, GGL 21, ABC 6, W0JWY 6.

**SOUTH DAKOTA**—SCM, Les Price, W0FLP—Asst. SCM, Gerald F. Lee, W0YKY. SCM assistants: FKE and NEO, SECs: YOB and GOE, PAM: SCT, PAM for 2 meters: RSP, RM: GWS. The S.D. 75-Meter (eve.) Phone Net had 32 sessions, SCT 18, ZLB 3, CTZ 2, EXX 5, QOH 1, GWA 4; QNI 1041, high 43, low 16, average 32.53; Traffic 71, high 8, low 0, average 2.2; informals 17, high 9, low 0, average 3.65. The S.D. 40-Meter (noon) Phone Net had 24 sessions; SCT 7, EXX 6, NNX 5, K0DPD 6; Traffic 66, high 11, low 3, next low 15, average 20.374; informals 44, high 5, low 0, average 1.83; QNI and traffic up, informals down some. The SFARC 2-Meter Civil Defense Net had 8 stations, QNI 35, high 5, low 4, average 4.37. The S.D. S.S.B. 75-Meter Phone Net had 28 sessions (NCSs NEO and FKE), QNI 465, high 26, low 16; CTC formals 19, informals 25. The S.D. WX Net (NCSs ZWL and UAJ) had 24 sessions; QNI 441, 24, 3, 18, QTC 497, high 24, low 5, average 18. The Huron ARC is building "club saver" 2-meter transceivers from Oct. QST. The PDARC is designing 2-meter, hand-carry transmitter-receivers. Traffic: W0ZWL 609, SCT 310, BAIQ 151, DVB 53, NEO 45, K0ALE 45, INZ 25, W0BQR 24, EXX 24, CTZ 23, K0HSW 23, W0SDE 17, FLP 15, K0CXM/0 11, W0DJJ 11, DIY 7, AZJ 6, FWJ 5, K0LAW 4, W0NNX 4, LXM 3, TKU 3, IION 2, MDF 2.

**MINNESOTA**—SCM, Robert M. Nelson, W0KLG—SEC: WVO, K0BFS. The base station of the Mound Area combined AREC/RACES 6-Meter Net, reports the  
 (Continued on page 136)

# FCV-2 CONVERTER

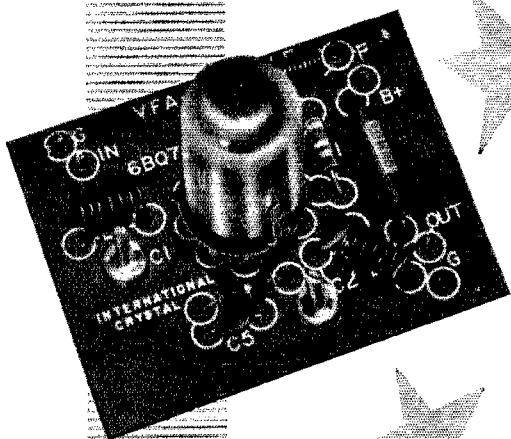
- Model 50 - 6 Meters
- Model 144 - 2 Meters

A 6U8 tube is used as oscillator-mixer. Cascade r-f amplifier using 6BQ7A. IF outputs available from broadcast band through 30 MC. (Two standard IFs are available, 600-4600 KC, 7-11 MC; others on request)

Designed to mount in a standard 3" x 4" x 5" minibox.

### PRICES

Kit with crystal (less tubes) ..... \$12.95  
 Wired with crystals and tubes ..... 17.95  
 Shipping Weight ..... 2 lbs.



# VFA-1 CASCODE PRE-AMPLIFIER

For 2 Meters and 6 Meters, using the 6BQ7A in a low noise circuit. Designed to mount in a standard 3" x 4" x 5" minibox.

### PRICES

Kit, less tubes ..... \$ 4.75  
 Wired, with tubes ..... 6.95  
 Shipping Weight ..... 2 lbs.

# IFA-10 AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox. (Specify range when ordering).

Kit, less tube ..... \$ 5.75  
 Wired, with tube ..... 8.50  
 Shipping Weight ..... 2 lbs.

### HOW TO ORDER

Please supply sufficient information with order to facilitate accurate processing. Shipments are made on open account F. O. B. Oklahoma City when credit has been approved. On C. O. D. orders of \$25.00 or over, 1/3 down payment with order is required. Kindly include in check or money order sufficient postage and insurance for your Parcel Post Zone.

Shipping weight each unit 2 lbs.

Zone	Postage
1 x 2 (to 150 miles)	.27
3 (150-300 miles)	.31
4 (300-600 miles)	.36
5 (600-1000 miles)	.40
6 (1000-1400 miles)	.46
7 (1400-1800 miles)	.51
8 (Over 1800 miles)	

Insurance—Add 10c for up to \$10.00 value; 20c for up to \$25.00 value.

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18 N. LEE PHONE RE 6-3741 OKLAHOMA CITY

**Put America Back To Work!  
10% PRICE SLASH DURING MAY AND JUNE!**



*"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD*

## ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V10 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

**I USE MY GOTHAM ALL BAND VERTICAL ON C, 10, 15 AND 20**

**ME TOO, TOM-AND LAST NIGHT I SWITCHED TO 40, 80, AND HQ. WORKED SOME REAL DX!**



Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

**DEDUCT 10%  
DURING MAY AND JUNE**

*Airmail Order Today — We Ship Tomorrow*

**GOTHAM** Dept. GST  
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

- V40 vertical for 40, 20, 15, 10, 6 meters.....\$14.95
- V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....\$16.95
- V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....\$18.95

Name.....

Address.....

City.....Zone.....State.....

### QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminate finish for protection against corrosion. Loading coils made by Barker & Williamson.

### ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

### EASY ASSEMBLY

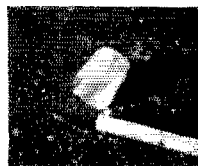
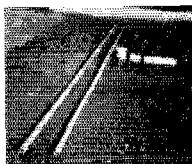
Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

### SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window.

### AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.



### PROVEN DESIGN

Over a thousand Gotham verticals are on the air—working the world and proving the superiority of Gotham design.

**AND THE PRICE IS RIGHT!**

*"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI*

**HOW TO ORDER.** Send check or money order directly to *Gotham* or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

### WORK THE WORLD



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**10% PRICE SLASH DURING MAY AND JUNE!**

# YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!



**TYPE OF BEAM.** All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

### MORE DX CONTACTS

**GAIN.** Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

### THOUSANDS IN DAILY USE

**MATCHING.** Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

### ALCOA QUALITY ALUMINUM

**ASSEMBLY AND INSTALLATION.** No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

### CONSISTENT PERFORMANCE

**MAST.** Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between  $\frac{3}{4}$ " and  $1\frac{1}{2}$ ".

### YOU WILL WORK THE WORLD

**STANDARD AND DELUXE BEAMS.** Standard beams in the 6, 10 and 15 meter bands use  $\frac{5}{8}$ " and  $\frac{3}{4}$ " tubing elements; the deluxe models for these bands use  $\frac{7}{8}$ " and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

## TRIBANDER BEAMS

6-10-15 TRIBANDER.....\$39.95  
10-15-20 TRIBANDER..... 49.95

Do not confuse these full-size tribander beams with so-called midjets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

### TWO BANDER BEAMS

6-10 TWO BANDER.....\$29.95  
10-15 TWO BANDER..... 34.95  
10-20 TWO BANDER..... 36.95  
15-20 TWO BANDER..... 38.95

Each Two Bander has twin 12' booms, and full-size half-wave elements.  $\frac{7}{8}$ " and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WØDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.

**DEDUCT 10%  
DURING MAY AND JUNE!**

*Airmail Order Today — We Ship Tomorrow*

**GOTHAM** Dept. GST  
**1805 PURDY AVE., MIAMI BEACH, FLA.**

Enclosed find check or money-order for:

**TWO BANDER BEAMS**  
6-10 TWO BANDER.....  \$29.95  
10-15 TWO BANDER.....  34.95  
10-20 TWO BANDER.....  36.95  
15-20 TWO BANDER.....  38.95

**TRIBANDER**  
 6-10-15 \$39.95  10-15-20 \$49.95

**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.)

### **NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS**

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

Beam #R6 (6 Meters, 4-El).....\$38.95  
 Beam #R10 (10 Meters, 4-El)..... 40.95  
 Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....

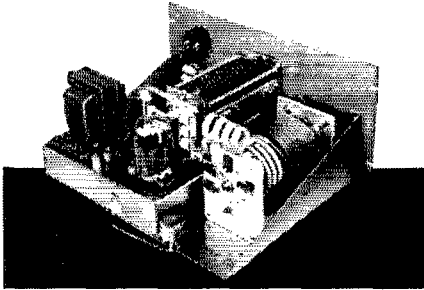
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You fellows have been asking for it



## ... NOW IT'S HERE—the L-1001-A

Ever since B&W first came out with their grounded grid linear amplifier, amateurs from all over the country have been clamouring for just the RF section of the unit.

Now it's here! At last, you can buy only this RF section and have all the advantages of the complete B&W L-1000-A. Use of your own power supply will save many dollars.

Two tetrodes in the RF section are connected as high-Mu grounded grid triodes. Intermodulation distortion products of a grounded grid amplifier are far less than those generated in a conventional grounded cathode circuit because of the inherent negative feed-back. Increased driving power requirements are offset by recovery of most of the driving power in the output circuit.

This RF section will boost your signal to the maximum allowable. Quality of materials and workmanship is unsurpassed. Tuning and loading are precise over the 80, 40, 20, 15, 11 and 10 meter bands. Why not drop in at your favorite dealer and take a look at either the Model L-1000-A or just the RF section, Model L-1001-A. If he doesn't have them in stock write the factory for details.



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**B&W AMATEUR EQUIPMENT:** Transmitters • AM—CW—SSB • Single Sideband Generators • Grounded Grid Linear Amplifiers • Single Sideband Receiving Adapters • Dip Meters • Match Meters • Frequency Multipliers • Low-Pass Filters • T-R Switches • R-F Filament Chokes • Transmitting R-F Plate Chokes • Audio Phase Shift Networks • Band Switching Pt-Networks • Cyclometer-type Counters • Antenna Co-axial Connectors • Baluns • Variable Capacitors • Fixed and Rotary Type Coils • Band Switching Turrets • Standard Inductor Materials •

following members have mobile stations in operation: K8ALJ, BFV, CAZ, ECV, IGP, JQD, W8IRM and QQW. K8ALJ was delighted to find his 6-meter mobile had a Q-5 signal, 60 miles from the base station. The St. Cloud and the Worthington Radio Clubs also are working on portable 6-meter gear for civil defense use. TCK and TZB finally got their GPR-90 receivers. KN8OIW is a new ham at St. Peter. KN8LBC is now General Class. TKX has a new Drake 1-A receiver. K8MNY now has a Viking II. K8GME, 74 years young, just got his General Class license! K8GLS installed a new rotator on his 10-15-20-meter beam. QDI now has a v.f.o. on 6 meters and all frequency bands below. HZ has a new 10-15-20-meter beam mounted on a home-brew 40-ft. telescoping tower. K8HNN has a new home-brew modulator using a pair of 1625s. QDZ has added a foot-switch to his 1X-100. CFN/OTU now runs a Paecemaker and has relocated in North Minneapolis. K8CAZ is working on an RTTY rig. W8DGL traded his mobile gear for a Globe King. WMA is operating s.s.b. with a 10B exciter, 600L amplifier and a new SX-101 receiver. LCM is mobile with a 3-tube, 6-watt rig, using three 6C4s. WVT is holding code classes at Delavan and has 5 students attending. K8IVV passed out cigars after dropping the "N." New ECs are PRJ for Clearwater County; K8JCF for Jackson and Murray Counties and Windom; K8KEJ for Cottonwood and Watonwan Counties; and PDN for Ramsey County. Traffic: (Feb.) W8KJZ 278. KLG 227, K8GCN 162, W8SHP/8 108, W8DQL 75, QDL 72, K8IDV 60, AEE 46, GVX 46, W8OJK 46, QVR 44, WMA 38, PET 36, K8DIA 34, W8RQJ 27, OJG 23, K8EPT 22, W8BUO 18, MIBD 16, QDZ 14, ALW 12, OPX 12, UMX 12, TCK 11, WCD 11, UCV 10, EMZ 9, KN8KYK 9, W8VBD 9, K8KEJ 8, W8KFN 8, KYG 7, LST 7, FGP 6, HFN 5, QVQ 4, K8GKI 3, KN8LBA 2. (Jan.) KN8KYK 3.

### DELTA DIVISION

**ARKANSAS**—SCM, Ulmon M. Goings, W5ZZY—SEC; K5CIR, PAM; DYL, RM; CAF. It seems that grounded-grid liners are becoming very popular all of a sudden in Arkansas. K5GOF, K5IPS, K5EWA, K5APA and WEC are all using them. K5HSO now has a new kw. with a pair of 4-250As. K5EZI has increased his power to 250 watts on 6 meters. We really are proud of SZJ, who was the only one to report his traffic for the month in the State of Arkansas. VAJ, ZJL, OCO and LSQ have all recently gone double sideband and they are putting in a pretty good signal, too. The Osceola Club was very glad to welcome K5CDY to the last club meeting. Bill is a charter member of the club and is now serving in the Marines at Camp Pendleton, Calif. The club at Pine Bluff was host to the Boy Scouts at the last meeting. The Scouts were given a complete picture of amateur radio, its operation and purpose. We want to encourage more of the clubs to do more of this sort of thing for our youth. The reports were few this month and news was scarce; we hope we will do better in the next issue. Traffic: W5SZJ 14, ZZY 6.

**LOUISIANA**—SCM, Thomas J. Morgavi, W5FMO—The Lafayette ARC Station, DDL, has been re-activated and the following were elected officers: VAQ, pres.; K5EGW, vice-pres.; K5DPH, secy.; K5DMI, treas. A code class with an average of 30 is now in progress. CEZ reports that LAN, the Louisiana c.w. net, is getting under way but more stations in Northwest Louisiana are needed. MIXQ bangs a mean fist on LAN. K5AGJ sent in his usual good traffic report. K5DMA reports activity on the Gulf Coast Hurricane Net and in 14th Air Force MARS. EA, net control for LAN, would like all interested in traffic-handling and c.w. operation to report in on LAN on 3615 kc. nightly at 6:30 CST. From K5KLA's letter he sure enjoyed the ham meeting at the NCAEC recently. Your chances of getting in the AREC are very good. See your local EC. The N.O. Club is offering a prize of \$25 to the first teenager-or-below club member who works all states. James E. Warrington, K5BQT, was elected winner of the Edison Award for 1937. The Lake Charles Radio Club moved into its new club rooms in the Chalcaieu/Cameron Chapter House of the American Red Cross. Had an eyeball QSO with CEW and looked over his shack. Your SCM had the pleasure of a get-together with hams in the Shreveport Area recently. K5GPB has been appointed Official Experimental Station. Please mail your reports in early. Traffic: W5CEZ 462, K5AGJ 131, W5MXQ 84, EA 34, NDV 22, K5DLA 6, DMA 5.

**MISSISSIPPI**—SCM, John Adrian Houston, sr., W5FHH—K5OQB, of Corinth, reports that TKW has a new RTTY rig on the way; K5ICB, OQB and TCF

(Continued on page 138)

3-ELEMENT BEAM

# no coils at all



## 3-BANDER BEAMS

2-ELEMENT BEAM

Gonset 3-Bander Beams give you outstanding performance on 3-bands . . . 10, 15 and 20 meters . . . operate electronically . . . use no coils at all.

Even the best coil has some loss. The losses in a poor coil can be excessive. Before choosing, consider that Gonset 3-Banders do not use coils . . . will give more signal for a given power . . . than if coils were used.

### ELECTRONIC DISCONNECT BY MEANS OF CONCENTRIC ELEMENTS . . .

Electronic disconnect, essential for instant and automatic change from band to band . . . is highly effective. It is accomplished without coils by special concentric elements which are part of a completely new and original Gonset antenna design.\* The effectiveness of properly designed quarter wave sections as electronic disconnects is well known.

\*Patents applied for

### WEATHERPROOF . . .

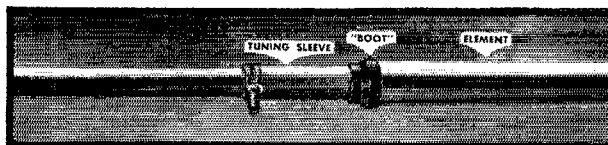
3-Banders now use "Boots" to seal off the open-ended concentric elements from dust and moisture. These "Boots" are of the highest grade silicone rubber, have very low losses, do not absorb moisture, will not become brittle under exposure to sun and weather. They tend also to maintain element concentricity and to lessen vibration.

### SET 'EM AND FORGET 'EM!

All elements are factory cut to correct length. 20 meters requires no adjustments. 10 meters has fixed-length parasitic elements, requires adjustment only on the driven element. 15 has adjusting sleeves on driven and parasitic elements. Adjustments are made on the ground by short, sturdy tuning sleeves which are permanently clamped after setting to specified position. You set 'em and forget 'em.

2-element, #3219-B . . . . 84.50

3-element, #3220-B . . . . 124.50



### DIELECTRIC SPARINGLY USED . . .

Dielectric losses are greatly minimized by a design that eliminates coil forms and other large dielectric masses . . . uses only widely separated low-loss rings to maintain concentric element spacing.

### GAIN . . . VSWR . . . FRONT-TO-BACK RATIO . . . WEIGHT . . . FEED.

FORWARD GAIN. (typical)  
3-ELEMENT: 10 meters, 8.4 db, 15 meters, 8.1 db, 20 meters, 8.2 db.  
2-ELEMENT: 10 meters, 5.3 db, 15 meters, 4.9 db, 20 meters, 5.0 db.  
VSWR (typical) either beams: Not more than 1.4 to 1 across phone or C.W. band segments at heights greater than 35 feet.  
FRONT TO BACK RATIO. 3-element, 24-28 db, 2-element, 14-18 db.  
WEIGHT: 3-element, 65 pounds, 2-element, 35 pounds.  
FEED: Both beams are fed with single RG8/U cable.

# GAIN? MILES AHEAD!

-in these new



## STATIONMASTER® ADVANCED DESIGN ANTENNAS

- 5.8 Db Gain
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BEST ENGINEERED — BEST MANUFACTURED

are planning some interesting projects for the summer; Alcorn County is in the process of organizing an amateur radio club; K4CDZ is now residing in Biloxi and is interested in handling c.w. traffic, GPH, of Hermando, is on 50.1 Mc. with 400 watts to a four-element beam, K5IUE and LWQ are now mobile with Elmac rigs. It is with deep regret that we announce the death of AKY, Elbert A. Allen, of Pas Christian. We all hope the XYL of JHS is well on the way to recovery after an operation. K5EXG is in the hospital at Indianapolis with a stroke. We all wish him a speedy recovery. We all wish K5AYP's XYL a speedy recovery from a heart attack. VKY is building a new 1-kw. rig, also 600 watts mobile. He has purchased 10 acres of land for an antenna farm. New appointments: K5JLX as EC, YAA as V.H.F. PAM and OES. Traffic: W5FPI 362, JHS 83, RIM 21, ZZY 19, K5IHQ 13, AYP 8, W5EHH 5, K5MFY 4, W5TIR 1.

**TENNESSEE**—SCM, Harry C. Simpson, W4SCT—SEC: RRV, PAM: PQP, RM: IV, NHT is a new ORS. The usual nice reports were received from RM IV, TN, TPN and ETPN. IV visited EWC and SCF. Congratulations to OGG on having brought RN5 from seventh to first place during his tenure as manager. Roses to PL and RCF for their fine BPL totals. The Memphis bulletin reports that BSR, JMF, LPS, DIV, HSJ, GAQ, HEC, BMF, EPZ, AJF, KTP, IDX and DFU handled a "back-road" sports car race. The route covered 300 miles! Several Memphis 6-meter stations worked South Africa, Memphis mobiles assisting with the Mother's Polio March were EM, ASL, BAQ, BWB, ENA, UDI, JSF, LZR, BOM, WBK, YMG, ADM, CTA, EAS, CPM, CCH, FRB, RCT, BAO, YMB, WTI, WTJ and DJO. The very fine Oak Ridge bulletin features a story and picture of K4LTA. LQE spoke on transistors at the club's last meeting. The Knoxville bulletin reports that 39 participants showed up for the first club-sponsored theory class! Knoxville's only YL ham is KN4STL. IUV has a new final, JWZ and LAZ have new 10-meter beams. PVD and APD have started a 6-week school for Novices at Cookeville's First Presbyterian Church, with 42 enrolled! Traffic: W4PL 1805, W5RCF 1048, K4ONQ 300, W4OGG 98, VJ 91, IGW 64, IV 55, SCF 40, UVL 39, MIX 26, LLB, 23, NHT 21, GFL 18, CLM 13, DIZ 12, EWC 8, PAH 8, AOK 6, WFA 5, DAP 4, BKC 3, HJO 2, HSK 2, HUT 2, AAX 1, BXJ 1, DHA 1, JPP 1, PVD 1, UVU 1, WQT 1, YRM 1.

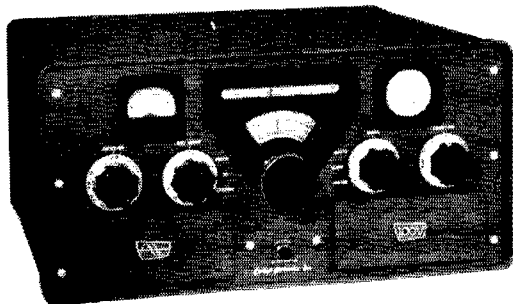
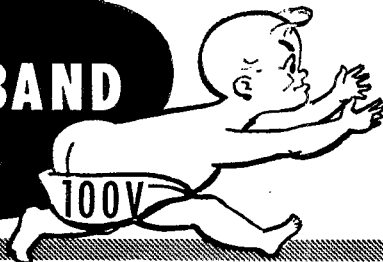
### GREAT LAKES DIVISION

**KENTUCKY**—SCM, Albert M. Barnes, W4KKW—SEC: JSH, RM: K4AIS, PAMs: K4ECJ, K4LOA, OGY and SUD, KYN cleared 489 messages in February with 52 sessions held. Two daily sessions were held at 1700 and 1900 CST on 3600 kc, KPN cleared 217 messages in 28 sessions. One daily session was held at 1930 CST on 3960 kc, The Ky. Sideband Net (KSN) handled 23 messages in 20 sessions with sessions held Mon. to Fri. at 1830 CST on 3975 kc, KPN now holds morning sessions on Tues., Thurs., and Sat. at 0730 CST. KNN, the Ky. Novice Net, is perking along Mon. through Sat. on 3735 kc. at 2000 CST. This net is open to all Novices who want to increase code speed and learn traffic handling. K4LOA, our V.H.F. PAM, reports good progress in the organization of a Ky. 6-meter net. Present active stations are K4AGU, K4BVS, K4KLM, K4JJE, K4HTO, DZI, K4SPJ and YWH. July 13 is the date set for the Ky. Nets' Picnic at Dix Dam. A tour of the dam has been arranged with the Ky. Utilities Co. as host. K4OAH made BPL again, K4AIS is using an SX-101 and a Viking II. CDA has the 100TH rig working on 40 meters. K4PGF and K4JOP are new 9RN liaisons. The new officers of the Radio Transmitting Society of Louisville are MFG, pres.; TDQ, vice-pres.; KWR, secy.-treas.; K4KGE, asst. treas.; BTA, MFI, TLU, WQC and CTZ, directors. Traffic: (Feb.) K4OAH 530, AIS 311, W4HSI 216, BAZ 212, ZDB 173, KKW 128, K4CSH 112, W4RPF 91, JSH 82, SUD 81, CDA 79, K4MEM 77, PGF 63, KTO 61, W4HOJ 42, K4KIN 38, W4MWR 30, K4MIW 30, JOP 27, KIS 27, HOE 17, DTT 15, W4KKG 12, NGN 11, SZB 11, YOK/4 3.

**MICHIGAN**—SCM, Thomas G. Mitchell, W8RAE—SEC: YAN. All ECs, please note: Your monthly AREC reports are urgently needed by the SEC. Prompt cooperation in filing will be appreciated. BPL certificates were earned by DJN and WGU for February traffic totals. WGU expressed the desire for more traffic outlets in Michigan. Stations interested in message-handling will be welcomed in any and all of our nets. Outlets are needed in low population areas as well as in the cities. Those of us who were unable to attend the Michigan Convention at Saginaw missed a fine one. Ac-

(Continued on page 140)

# THE BROADBAND TWINS



**THE REVOLUTIONARY NEW 100V  
EXCITER-TRANSMITTER**

NO TUNING (except VFO), uses famous CE BROADBAND system, PRECISION LINEAR VFO—1KC Calibration, Single Knob Bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF Output adjustable 10 to 100 Watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression, 2" RF Scope, Speech Level and Load Mismatch Indicators, Audio Filter — Inverse Feedback — 50 db Carrier and Sideband Suppression.

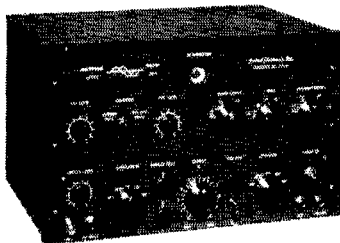
IN PRODUCTION SOON.....PRICE \$595.00



**FAMOUS MODEL 600L  
BROADBAND LINEAR**

NO TUNING CONTROLS — CE BROADBAND Couplers in HIGH EFFICIENCY CLASS AB<sup>2</sup> using single 813. Easily driven to 600 Watts PEP Input 160 thru 10 by a 20A or 100V. Built-in HEAVY DUTY POWER SUPPLY — 45 MFD PAPER Capacitor. Meter reads WATTS INPUT, GRID DRIVE, RF AMPS, and SWR. Completely shielded — TVI suppressed — parasitic free. REMEMBER there is LESS than ONE S UNIT difference between the 600L and a 2 KW PEP job. ....PRICE \$495.00

**MODEL 20A**



**THESE MULTIPHASE EXCITERS  
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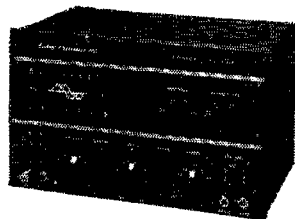
**MODEL 10B** — 10 watts PEP. Plug-in coils 160 thru 10 meters. Perfect voice control on SSB—DSB—AM and PM — CW break-in; Carrier and calibrate level controls. 40 DB suppression.

Wired.....\$179.50 Kit.....\$139.50

**MODEL 20A** — 20 watts PEP. Bandswitched 160 thru 10 meters. SSB—DSB—AM—PM and CW. Magic eye monitors carrier null and peak modulation. Ideal for driving AB1, AB<sup>2</sup>, and most Class B linears.

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**MODEL 10B**

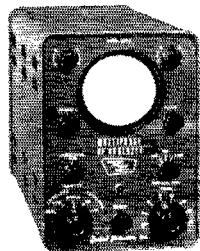


**MODEL GC-1.** Gated Compression Amplifier. Connects between receiver and speaker. Automatically brings all received signals to same level—no blasting. Compensates for receiver AVC deficiencies. Compresses a 40 db increase in level to less than 3 db. Magic Eye continuously monitors compression value. Keep peace with your family and neighbors — buy a GC-1.

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IF adapter RM-455 or RM-80 or RM-50 .....\$9.95  
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Kit .....\$99.50



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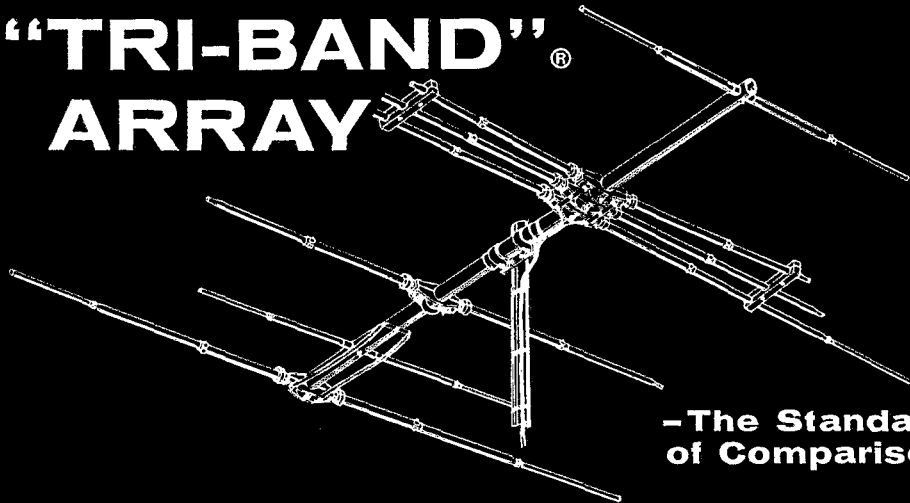
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**-The Standard  
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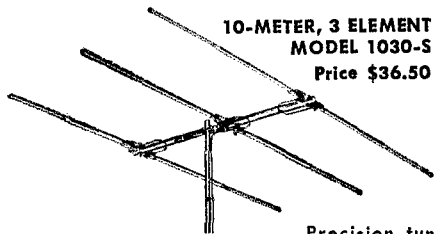
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**3-ELEMENTS 7 DB ON 10 METERS, 2 ELEMENTS 5.5 DB ON 15 METERS,**  
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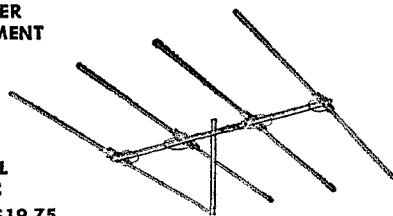
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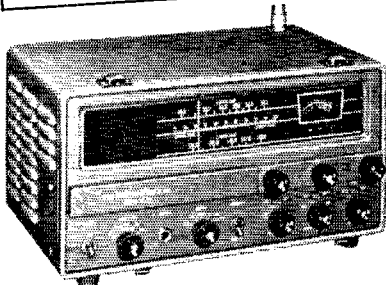
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Set-up your deal now — we'll guarantee  
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POWER OUTPUT: 6 to 7½ watts 2 Meters  
7 to 10 watts 6 Meters

A complete 2 and 6 meter transmitter and re-  
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Transmitter crystal controlled — select up to 4  
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35, W8GQB; 34, LT 31, UPB 29, K8CCZ 25, W8CCTZ  
21, YGR 19, QIE 18, DSQ 16, K8CTQ 13, W8WE 12,  
BEW 10, PBX 10, LGR 6, K8AAV 5, W8STR 5, PSX  
4, STF 4, K8AAG 3, HXF 3, EVT 2, W8LMB 2,  
UHW 2.

### HUDSON DIVISION

**EASTERN NEW YORK—SCM**, George W. Tracy, W2EFU—SEC: I.G.C. RM: PHX. PAM's: IJG and NOC. Section nets: NYS, on 3615 kc. at 1900; NYSPTEN, on 3925 kc. at 1800; ENY (emerg.) on 145.35 Mc. Fri. at 2100; MHT (Novice), on 3716 kc. Sat. at 1300, Congrats to K2HPQ vs Asst. Dir. of TCPN and ATA, who was voted a prize for the highest attendance during 1957 on NYS. A new appointee is K2YTK as OO. Endorsements: IJG and NOC as PAMs, LWI as OES, WVK as EC and K2EDH as ORS. K2KBH and his XYL, K8G, are new stations on 6 meters. K2EDH was a winner in the 17th Annual Westinghouse Talent search. K2ICD reports DX as 101 with 80 confirmed. Among those instructing at Albany for General Class is K2HPQ. The Ulster Co. Novice Net has been disbanded because of inactivity. The Mike and Key Club had a display at the Boy Scout Merit Badge Exposition handled by K2YDI, YFA ZPF. At the Schenectady Club, ICB spoke on 6-meter operation and activity. K2OXY is erecting a 60-ft. tower for a five-over-five on 6 meters. He also plans 32 elements on 220 Mc. We received a Communications Plan from the Schenectady Co. AREC group. Does your local AREC have a written plan for its members which outlines operations during a local disaster or emergency? The Albany Co. AREC was activated for stand-by during the Feb. snow emergency. A club station is planned at the Pelham H.S. Club and fund-raising has been started. The traffic ranks are increasing with 19 reports submitted to the SCM for Feb. traffic. The NYS had a very successful year. Traffic: (Feb.) K2UYK 261, W2EFU 212, K2VTW 210, LK1 142, W2PHX 136, K2YTD 131, YJL 106, W2ATA 84, K2HPQ 81, QJL 45, W2ELX 36, K2PXM 35, W2SZ 35, K2UTV 20, IINW 8, CKC 6, W2FYC 6, K2PRB 4, EDH 3. (Jan.) K2HPQ 144, QJL 12.

**NEW YORK CITY AND LONG ISLAND—SCM**, Harry J. Dainals, W2TUK—SEC: ADO. RM: WFL. PAM: OBW, V.H.F. PAM: K2EQH. Section nets: NLI, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST; NYC-LI AREC, 3908 kc. Sun. at 1400 EST; V.H.F. Traffic Net, 145.8 Mc. Wed. at 2000 EST. KEB continues to stack up BPL cards. K2HVV earned his first BPL card on originations plus deliveries. Brooklyn is now represented on NLI by CKQ. BO has added a 10-meter ground-plane to his antenna farm. K2JYZ keeps traffic skeds with the Canal Zone of 15 meters. K2DEM now has WAC on s.s.b. K2HEA/MGE have a Viking 6N2 on the air. GP's low-power rig snagged KZ5-Land on 3.5 Mc. A new Johnson Thunderbolt has added man-sized shoes to EEN's Pacemaker. IYS installed a Gouset Commander in his Volkswagen. A DX-100 has been added at K2ITW. K2QFV is building a 6-meter rig for mobile use which will have a transistor power supply and modulator. K2AED installed a Leece-Neville system in his mobile and now runs a full 60 Watts to his AF-67. SKX moved to a new location in Brooklyn with more antenna space. KN2EMD is operating on 15 meters with a Knight 50-watt rig and S-85 receiver. VDT needs only 3 countries for DXCC. A new Knight v.t.o. has been added at K2PTS. K2VUI joined the NLI Net with a DX-20 adn SX 99. K2SSE earned the WANJ Award. K2VBL built a 150-watt linear amplifier for d.s.b. EX-DBI now signs K4SCZ from Florida. A new 15-meter beam at BQM has helped raise his all-phone countries total to 184. K2EWD is active on 10 meters. K2SDY has a new 15-meter beam. HAE is using an indoor 10-meter dipole on 11 meters. New officers of the 5 Towns RC are K2CTK, pres.; FEI, vice-pres.; KRP, treas.; and K2CFE, secy. K2EQH has a new HT-32 on s.s.b. K2LQL is now 144 Mc. with a Communicator II. A new tri-band quad at K2MDL is expected to raise his countries total higher than its present 131. K2TGV is on the air with a Viking II and GPR-90. A Valiant and HQ-150 make up the station at K2UYG. K2DNL received his 48th QSL for WAS. The Gompers HSRC, signing DOW, has a kw. on a m. and s.s.b. and a 75A-4. Skeds are wanted with other club stations. Contact the trustee, CMAL. Ex-K2UJT now signs K8MKG and works the NYC-LI boys on 10 and 15 meters. The Southside Senior HSRC, K2LAK, has a Valiant, an NC-300 and a Matchstick on the air. Club officers are K2OZH, pres.; K2PHK, vice-pres.; and

(Continued on page 144)



*they came...*

to the I. R. E. Show  
and the 7th Annual  
Single Sideband  
Dinner

*they saw...*

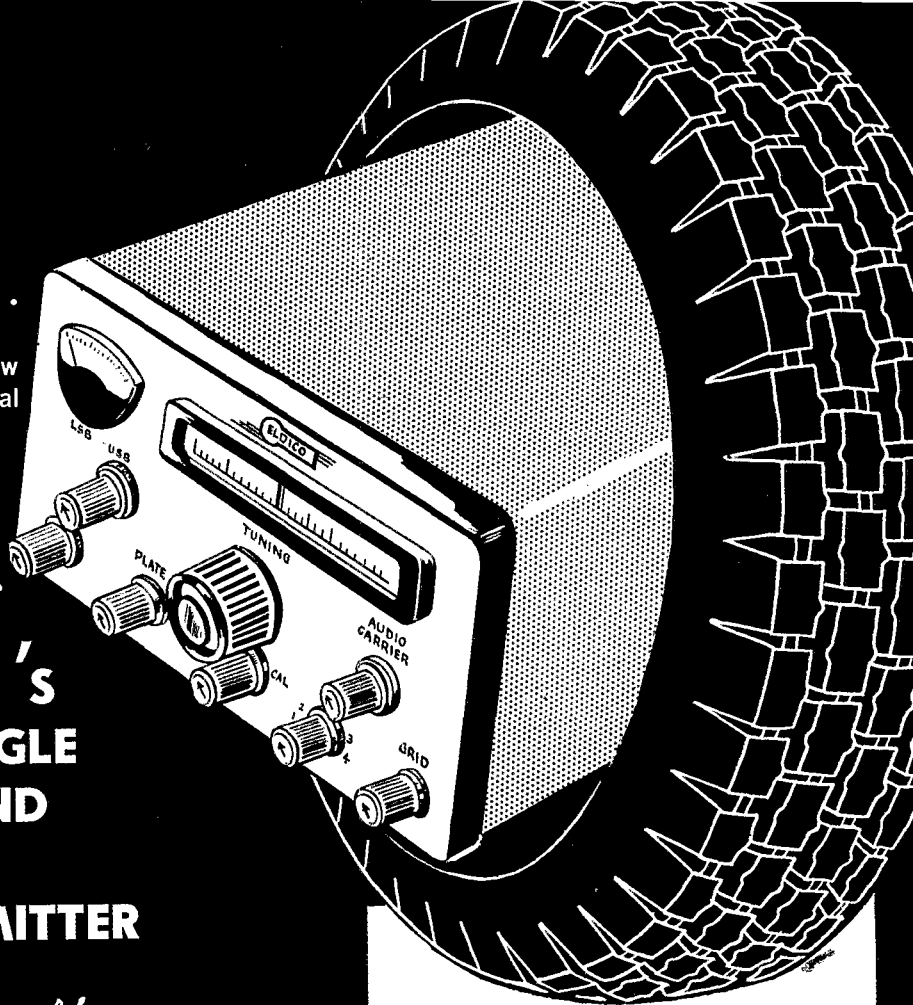
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Power Ratings: DC average input A.M. input (two tone test)  
—60 watts, SSB-100 watts. Peak envelope input SSB  
144 watts. Peak envelope power output SSB 100 watts.

Keying: Grid Blocking.

Harmonic Attenuation: 40 db

Sideband Suppression: 38 db—3 kcs

Frequency Stability: Control Oscillator—(1000 to 1200 kc)  
 $\pm 100$  cycles after two minutes warm-up period. Out-  
put frequency—within 300 cycles after five minute  
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Frequency Range: 80m—3800 to 4000 kc  
40m—7100 to 7300 kc  
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15m—21,250 to 21,450 kc  
10m—28,500 to 28,700 kc

Selectable crystal controlled on MARS, CAP and CD  
frequencies.

Tube Lineup: 10 tubes, including 5894 power amplifier.

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Voltage Regulation of 6146 Screen and 9MC OSC.

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Built in 3500 cps low pass audio filter.

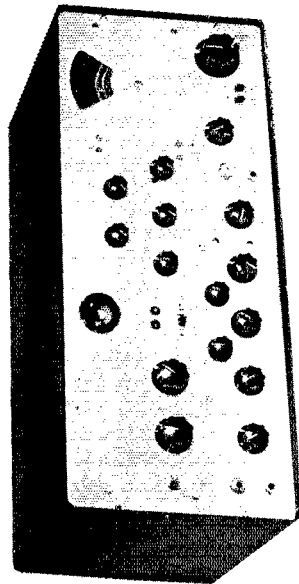
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**Amateur Net**  
**\$459.00**

Built in VFO 100 to 1 Precision Dial.

Frequency Stability and Reset Accuracy better than 100 cycles.

Completely Bandswitched 160, 80, 40, 20, 15 and 10 meters.



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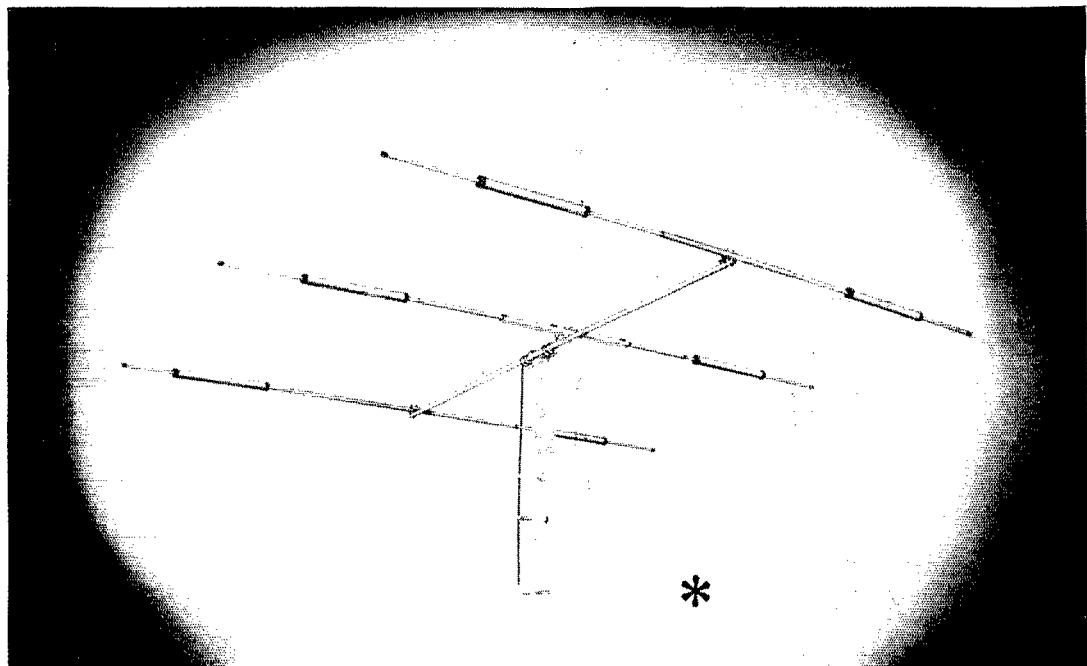
K2TBW, secy-treas. K2CVJ sends his regards to the NYC-LI gang from Patrick AFB, Fla. Officers of the Amateur U.H.F. club are OTA, pres.; GKX, vice-pres.; K2IDD, rec. secy.; QPQ, corr. secy.; and K2BBO, treas. KN2LGL has a new HQ-110. The Levittown ARC, GLO, has an HQ-110. It's a new YL arrival for YGV. New officers of the Radio Club of Brooklyn are K2OEH, pres.; CCD/KW, 1st vice-pres.; K2OHH, 2nd vice-pres.; AAZ, treas.; K2JFL, secy.; and BN, PF, MTD, K2s EIB and OHH, directors. Your SCM visited the Nassau RC, Suffolk RC, Radio Club of Brooklyn, the 5 Towns RC and attended the second Annual Dinner of the NYC-LI Phone Net. Traffic: (Feb.) W2KEB 3538, JOA 354, VDT 359, K2HVV 206, PHE 136, W2OME 110, AEE 77, CKQ 57, K2RJO 57, W2DRD 53, K2DEM 33, QBW 29, W2JBQ 24, K2BH 22, PTS 22, VU1 22, W2DUS 20, LGK 20, K2GCE 18, W2GP 13, PF 12, K2SSE 12, W2YBT 11, UGF 10, OBW 9, EC 8, K2MEM 8, W2IVS 7, K2SEK 6, TBU 6, W2TUK 6, K2VBL 6, AAW 5, W2PFE 5, K2AZT 2, ITZ 1. (Jan.) W2JBQ 34, K2HVV 16.

**NORTHERN NEW JERSEY**—SCM, Lloyd H. Mannon, W2VQR—SEC: IIN. PAM: VDE. RMs: BRC, NKD, CGG, VMX and his XYL, K2UXJ, have moved to Linden. The Bogota High School Radio Club is now an ARRL affiliate. BVE has acquired a 75-A-2 receiver. 4UWA and his XYL, K4JNI, have moved to NNJ. AI is attending school at Ft. Monmouth. ZVV has a 2-meter converter completed. KN2ZSQ is a new member of NCNJ. CWV has received a VA-JF Award. RZO is a new ORS. The NCNJ held its first simulated emergency test in March. K2ICE has been on vacation down Miami way. EBG received his WAS certificate. K2BWQ's daughter Barbara is now K2LCL. His son George is K2BWP and operates from R.P.L., Troy. K2GIF has rebuilt the 813 final stage. EWZ has received a WANJ certificate with all contacts being made on 40-meter c.w. WN2TKZ passed the general class exam. NIY has received a DUF/2 certificate. K2GER is back on the air. NLQ has a new addition to the family. The GSARA field trip to ARRL Headquarters was very successful. NBP is recruiting manpower for Field Day. K2BX was elected to the County School Board. K2BJA made the DXCC roster. K2IRC is on the sick list. The OceanSide Amateur Radio Society meets the 2nd and 4th Fri. of the month at the QTH of K2BBR. Training programs are given meeting nights to all persons interested in amateur radio. Officers are K2BBR, pres.; K2KVF, vice-pres.; and K2ZBX, secy.-treas. GVV visited MARS stations at Ft. McPherson, Camp Gordon and Pentagon during a recent trip. K2PSX is interested in starting a new club in the New Brunswick area. If interested please contact him. W2GRD is very active since getting his General Class license. KN2CEP is now General Class. KN2IQT, the OM of the family, will be on 6 meters soon. KN2LYS, age 10, is our newest AREC member. The IRAC Annual Club Dinner was a huge success. It looks like our best 2-meter location in New Jersey, at Eagle Rock Reservation, in West Orange, is off limits for all amateur mobile work. K2SKK tells us that the West Orange Police Department has installed its police radio antenna on the mountain and the police patrol evicts all vehicles with ham antennas as soon as they arrive at the summit. This seems to be a bit out of order. If any of you fellows up that way are in a position to help out in this matter drop us a line, please. New officers of the Ridgewood ARC are VCZ, pres.; AQF, vice-pres.; LAN, secy.; and K2QCV, treas. WN2RHF passed the General Class exam. Traffic: K2RRH 384, W2MLW 129, RXL 118, ZVV 83, DRV 78, OXL 73, K2OBJ 62, W2BVE 50, K2GIF 50, W2EWZ 49, K2QYT 36, BWQ 32, W2EBG 22, KN2ZSQ 20, K2VAB 15, KVR 14, W2CFB 12, K2HFF 12, W2BRC 11, K2MFF 10, W2ADE 7, K2ZHK 7, W2ABL 6, K2VNI 6, W2VOJ 6, ZEP 6, CVW 5, WN2RFS 5, W2OTD 5, W2CJN 4, IUC 4, RZO 4, K2GER 3, W2NIY 3, K2JTU 2, RJD 2.

## MIDWEST DIVISION

**IOWA**—SCM, Russell B. Marquis, W8BDR—NWx operated VPNG in the Bahama Islands during the ARRL DX Contest. SLC received an OPS appointment and UTZ renewed his EC. KN8OIJ is a new ham in Iowa City. His first QSO was with his father-in-law, DIB. QVA celebrated his 20th anniversary as a ham on Feb. 14. In 20 years Dick has had 24,746 QSOs. During SCA's vacation in Mexico, it cost Doc hard cash to find out that ALTO means STOP. Doc also visited GAR and RLG/4MI. EFG vacationed in Michigan. MG, Iowa SEC, has gone s.s.b. ZAM/8 has rejoined TLCN from Cedar Rapids. KN8MIM made BPL on originals and deliveries, as did K8CLS and EJZ. W8LGG reports that the TLCN will hold its annual get-together in the late spring. PZO is back in traffic after

(Continued on page 146)



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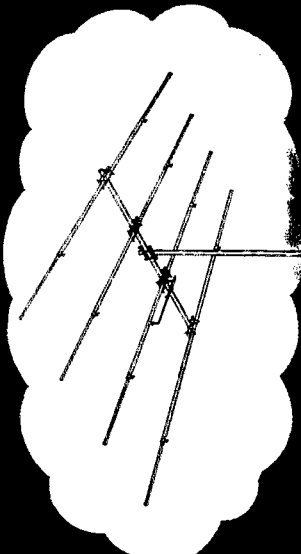
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Boom Length	Longest Element	Forward Gain	F/B Ratio	S/W/R at Frequency	Approx. Weight
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a month of KP duty. K0AZJ is designing a 150-watt all-band exciter W0DJY is selling all his phone equipment because of loss of voice. The Iowa gang is going to miss hearing you, Tink. Traffic: (Feb) W0BDR 1988, PZO 1069, LGG 990, LCX 879, SCA 879, CZ 529, K0CLS 423, W0CXQ 420, B1P 412, LJV 165, KN0MAMZ 165, K0EJZ 154, CVD 138, OHO 126, W0BLH 112, QVA 99, SLC 83, K0CYF 76, ASR 71, BLJ 57, WAD 54, W0NGS 50, IUY 36, NYX 36, K0HBD 18, W0BTR 17, REM 16, UTD 14, VQX 14, K0AHZ 13, W0NTB 13, UHO 13, W0YI 12, K0APL 11, W0FMZ 11, W0MEL 10, K0MIB 10, W0ADB 9, JPJ 9, K0BPE 8, W0DIB 8, CGL 7, K0EXN 7, W0SWD 7, PTL 7, FEP 5, GQ 5, K0HHS/0 5, K0AIC 4, K0IGU 4, BRE 3, W0FDM 3, K0HFQ 3, K0CFG 2, W0HNE 2, LJI 2, W0LSF 1. (Jan.) K0AAH 2.

**KANSAS**—SCM, Earl N. Johnston, W0ICV—SEC: PAH, RM: QGG, PAM: LEW, U.H.F. PAM: ZJB. The Kansas Storm Net organized by IFR held its 1st drill Mar. 6 on 3840 kc. The drill is held Mon. and Fri. at 1900. Five weather radar areas are represented with over 15 supporting observation stations checking in. U.H.F. PAM ZJB reports a big Aurora opening on 2 meters Feb. 10-11 and he got 5 new states. Pennsylvania, Minnesota, Ohio, Kentucky and Colorado. Vince is pleading for a 2-meter link in Manhattan and Topeka. He snagged ZS3G on 6 meters Feb. 23 and needs only Oceania or KH6. New officers of the Mike & Key ARC of Parsons are K0IHA, pres.; IRE, vice-pres.; IRI, secy.-treas. The club holds meetings in the basement of the Parsons Recreational Center the 2nd and 4th Thurs. of each month. The Kaw Valley Radio Club of Topeka is holding a "Christy" Memorial Picnic at Topeka May 18 at Lake Shawnee. For details listen to the KPN. The CKRC of Salina has set June 8 as its hamfest date. The Topeka-Shawnee County C.D. purchased a B&W s.s.b. generator to go with its Viking II. Incidentally its 30-ft. c.d. trailer with 10-kw. PE-195 and associated radio equipment furnished communication for a 24-hour survival group that went on nationwide TV Feb. 14. BPL awards go to OHJ and UOL. Traffic: (Feb.) W0OHJ 521, TOL 365, FNS 333, UOL 214, QGG 206, QJC 104, KXB 103, ABJ 98, OIB 92, K0HVD 88, HVG 74, W0RJE 60, SVZ 50, IFR 40, SAE 25, UTO 15, PDJ 11, W0EL 6, K0IHA 6, LEW 5, K0AWO 4, W0ICV 3. (Jan.) W0RJE 38, K0IHA 5.

**MISSOURI**—SCM, James W. Hoover, W0GEP—The Missouri Emergency Net has changed frequency to 3885 kc. Net Reports: ALEN, 12 sessions; NCS, VPQ 3, DWX 4, OHC 4, BUL 1; QNI 360, QTC 155, MON and SAIN, 51 sessions; NCS, OUD 47, PME 2, WFF 2; QNI 233, QTC 288, W0BUL was shut down temporarily awaiting replacement for a burned-out plate transformer. BVL is chairman of the C.D. Communications Committee in Glendale. CKQ, K0CEC, K0JOI and K0LLA have reported working ZS3G on 6 meters. KN0LGZ has a new HQ-100. The Rolla Amateur Radio Association has set up a permanent emergency station. KLQ works a regular schedule with two new stations on 6 meters, K0MOM and K0JOI, Buffalo. K0HQQ has a new DX-100. A radio club is being formed at Ritenour High School, Overland, and code and theory classes have been started. Active members include KN0S JPH, MPP, JPG and BIW. K0KXP and K0ALF are forming a club at Webster Groves High School. TDR worked KC4USA and delivered a message from the operator, NZW, to his mother in Webster Groves. K0GJJ is editor of *The Civil Defense Monitor*, published by the Kansas City Amateur Radio Club, Inc. K0EY and K0BVL recently received General Class licenses. The Midwest V.H.F. Association, Inc. has a signal generator, a grid-dip meter and a reflected power meter for club member use. The club's latest membership list shows 33 members. Traffic: (Feb.) W0CPI 1123, GAR 706, BVL 421, GBJ 315, PME 113, OUD 104, VPQ 83, KIK 83, VVU 76, K0LNQ 72, W0OVV 60, K0IHA 48, W0IR 46, HUI 31, K0HHQ 29, HBC 28, W0VZB 27, BUL 26, RTW 17, CKQ 16, VJD 15, KN0LGZ 13, W0ECE 12, K0IHY 12, W0GEP 10, VFP 10, KA 7, WYJ 6, K0DEQ 5, W0EBE 5, KN0LCB 1. (Jan.) W0PME 62, HUI 14, VZB 13, ECE 5.

**NEBRASKA**—SCM, Charles E. McNeel, W0EXP—SEC: DDJ, PAM: MAO. The Western Nebraska Net, reported by NIK, for February, had QNI 583, QTC 64. The Nebraska Phone Net reported by K0DGW, for February, had traffic 90, QNI 427, K0BDF, K0DGW, LFJ, SCT and VZJ were 100 per cent QNI for February. Those missing less than three are SPK, NIK and K0HKI. The Nebraska C.W. Net, reported by DDT, for February had QNI 192, QTC 69, and 20 active members on roll call Mar. 1. MAO reports the Nebraska SS Net had QNI 197, QTC 63, K0BMQ, K0HVG and W0MAO were 100 per cent QNI for the

(Continued on page 148)

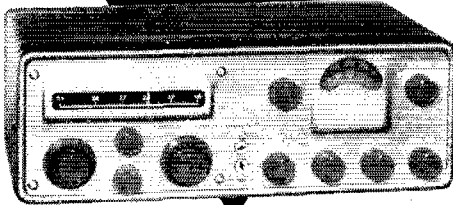
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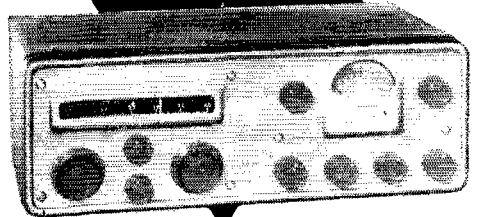
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**RF** and audio gain controls.

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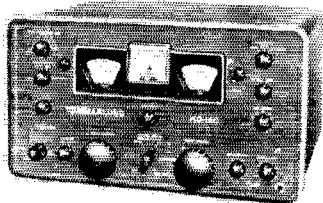
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month. The 75-Meter Emergency Phone Net, reported by MAO, had QNI 499, QTC 29 and 36 members on roll car as of Mar. 1. EXJ and LFJ are rejoining the net. KØGYE is moving to Dallas and will be on the lookout for the Nebraska gang on 75 meters. BTG is building a kw. rig using 4X500s on 6 meters. Traffic: WØDDT 116, MAO 108, KØDGW 73, BDF 65, WØKDW 49, OKO 32, ZJF 30, KØLXS 29, WØUJK 27, VZJ 27, IPX 26, KØKUA 24, WØNIK 23, OCU 17, SPK 17, QHE 12, VEA 9, URC 8, SAI 8, DQN 7, ELQ 7, KØBELU 7, WØQRK 7, WØEQQ 6, KØCDG 5, KØHKI 4, WØSOU 4, CTH 3, KØLTR 3, BRS 2, WØBTG 2, KØGYE 2.

## NEW ENGLAND DIVISION

**CONNECTICUT**—SCM, Victor L. Crawford, WITYQ —SEC: EOR, RM: KYQ, PAMS: YBH and FHP. Traffic Nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2130 on 3640 kc.; CVN, Mon., Wed. and Fri. 2030 on 145,980 Mc.; CTN, Sun. 0900 on 3640 kc. KYQ reports CN handled 347 messages during 24 sessions with an average attendance of 15. QNI honors go to GVK, KAM and MWB. MDB enjoyed the YL-OM Contest. BDI worked four new countries during the DX Contest. KIBAIL and FHP received the V.H.F. Institute certificate for working 25 stations above 146 Mc. KIBFJ likes his new DX-100. FHP advises CVN handled 41 messages during 12 sessions. High QNI goes to FHP, KNIBMM, KIBAIL, PFP and KNIDDY. The Meriden ARC elected STT, ULL, PTG and BTZ. YBH advises CPN handled 305 messages during 28 sessions with an average daily attendance of 32. QNI honors go to DHP, TVU, YBH, KIBEN, and LWW. A Connecticut v.h.f. club has been organized with QAK, KAC and EYF as officers. ACE, JHD and KFS are attending Cheshire Academy. DHP advises the Conn. University Emergency Net is now tied in with the Tri-County Mutual Aid Fire System. WHL reports the 6-meter net handled 22 messages during February. Your SCM attended a meeting of the CQ ARC at Torrington and presented FHP with the first CVN Net certificate. KUK won an SX-101 presented by Hallcrafters and the Radio Shack. A column on amateur radio by BYB in the *Niantic News* has been so favorably received that Don is forming a radio club. ECH received CP-35 endorsement and a VA-JF certificate. KNIBHN is operating portable at Taft School in Watertown. New appointments: KICKZ, GTG, HQM, KLK and YOL as OPSS; KIAQB, KIBFJ and GWJ as OPSS; EXO and ZKE as ECs. Appointments renewed: FYG and TVU as ECs; TD as ORS; GLX as OPSS; GIX as OO; GIX as OBS. Traffic: WYWB 517, TYQ 455, AW 327, KYQ 324, KIAQB 323, WIEFW 262, KIBEN 218, WIFVF 193, GVK 125, FHP 85, MWB 76, LV 72, ULY 58, MGT 54, CUH 50, DHP 46, BDI 44, NQL 37, RFJ 34, KNIDDY 27, WIMBD 26, VYI 24, ZHM 18, YU 15, KKK 13, AMY 12, FCE 11, KAM 11, ECH 9, FDO 9, GTG 9, KUO 9, KIBAL 8, KNIBMM 7, DZI 7, WIEJH 7, GIX 6, KIBFJ 5, WIFVF 5, GVJ 5, HHR 5, QJM 4, GEA 3, KNIBHM/1, WIEOX 1.

**MAINE**—SCM, John Fearon, WILKP—SEC: QJA, PAM: VYA, RM: EFR. New appointments: JMN as OBS and OO, EOP as EC. Renewals: MXT and KIBYE as OPSS, MXT as OBS. Spudland Net certificates are ready for mailing to any licensed amateur who contacts any 10 members on 75-meter phone or 5 members on the higher frequencies. Contact EPN, secy. The net is made up of Aroostook County hams only. GKJ is active on 6 meters. GJY is active on 75 meters. TKP has a transistor rig on 3960 kc. with 2½ watts and worked New Jersey. SRW has a new Viking Ranger. KIDXX has his old call back, WIEOX. YDA has his new Viking "500" on the air. KNIDPJ has his General Class ticket. SMISW would like to contact any stations in the following counties on 14 Mc. at 2000 GMT for WANE: Aroostook, Franklin, Hancock, Knox, Sagadahoc, Somerset and Washington. EPN has a Viking II and is working both phone and c.w. KIAKO now has his WAS. SRW, IZK and PHG have a 3-mile net on 10 meters. JMN reports the Lobster Net meets Mon.-Sat. on 145. 29 Mc. at 1830-1930. KIAIB is planning on 420-Mc. activity. BPM has 45 states confirmed on 10 meters. Don't forget the Augusta Hamfest June 15. Traffic: WILKP 272, IHN 124, KIAKO 116, WIHYD 116, PVE 96, QJA 60, EFR 39, UDD 37, KIBDQ 26, WILWO 26, GYJ 25, FV 25, GPY 16, JMN 14, LCX 14, KIBQT 12, W1OTQ 10, KIBAZ 8, BXI 7, WICEV 7, IZK 7, LXA 7, FD 4, FNI 4, KIGAV 4, WIUOT 3, KIAIB 2, BYE 2, KNICMH 2.

**EASTERN MASSACHUSETTS**—SCM, Frank L. Baker, Jr., WIALP—New appointments: DBY, Chelmsford, as EC; BL as EC, Mass. State Radio Officer; (Continued on page 150)

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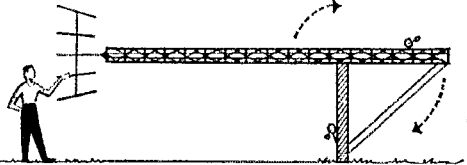
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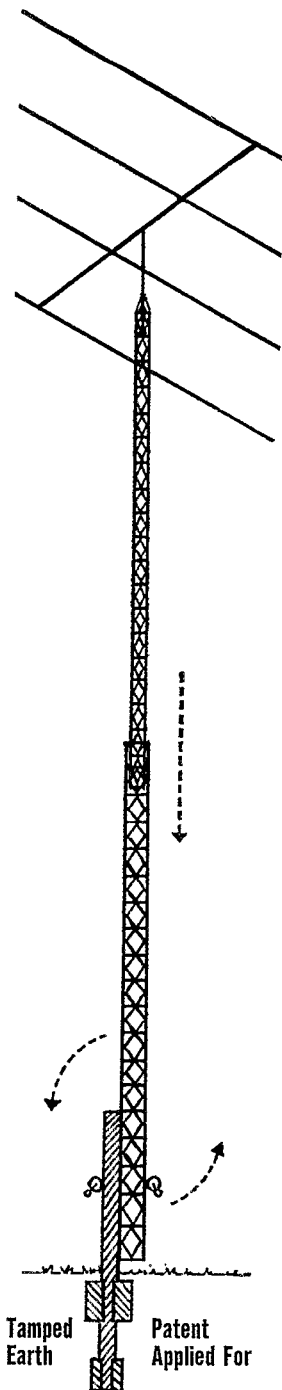
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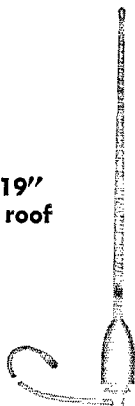


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150

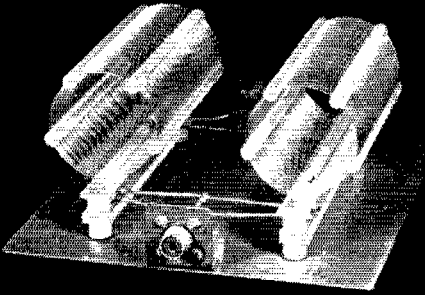
LGO as OO; UIR as PAM for 2 meters. Appointments endorsed: ADM Canton, MME Hull, ZDN Medford, PSG Gloucester, HUP Dover, SMV Cohasset, QQL RO for Sector 1-F, IPZ Shirley, HRY Wellesley, as ECs; MME, TWG and ZQM as OBSS; NF as OO; MME, HUP, MX and RP as OPSS; AQE, AUQ, AOG TY, EPE and MX as ORSS; AQE as RM for 40-meter c.w.; AOG and KCR as OESS; EPE as RM for 20- and 160-meter c.w. and PAM for 160-meter phone. WJW has a Gonsset for 6 meters. NLJ is General Class. NS is on 20-meter c.w. Heard on 2 meters: MTT, PF, FXT, LVE and LHV. Heard on 75 meters: JMS, YLO, IVA, KGU, UPH, IUU, NEW, KAG, WLZ, WAG, LJT, ADR, PAD, CEY and YPH. The Mass. State Phone net is active on 3870 kc. at 1800 Mon. through Fri. Harold Fritz is secy. of the M.I.T. Radio Society, MX. We're sorry to have to announce the death of ZKT. CLS spoke at the QRA meeting on V.H.F. HA spoke at the Elray Radio Club Dinner on "DX and DX Certificates." The Braintree Radio Club held an auction. The South Shore Club held two meetings. The Framingham Radio Club held a meeting with a movie on "Strange Case of the Cosmic Rays" by the New Eng. Tel. Co. KIAGB is on 2 meters and is building several rigs. RP has an NC-300 and worked a W4 aeronautical mobile on 75 meters. The Winthrop Net is very active. The Boston-Providence Chapter of the QCWA held a winter dinner in Boston. GDJ's jr. operator now is DL4ACO. NF worked FK8AD on Chesterfield Island, northeast of VK-Land. IPZ's son is MHY on 6 meters. The Lynn Club held an auction. Area 1 Radio Comm. held a meeting with TXZ, JZQ, ZYX and AIP present. TQP is home from the hospital. NPR is president of the Town of Barnstable Club which has 30 active members. IEF is General Class. KIAIO has an HQ-150 and a DX-100 and joined MARS. KIBUF lost her appendix. KIAGS and KIAWP are on 75 meters. KIAYW participated in the Novice Roundup. FJJ worked JTIYI for No. 70. DPV is back on 2 meters after an illness. New in Winchester are KNIs DUB, DQP, DWR, DWN and DYZ. ZQM has a new Johnson Navigator. WU is on 10-meter c.w. after DX. EMG made BFL again. EAE is taking traffic from other nets and relaying on 2 meters. JLN, ALP, OB, BCN, LMG, IMI, LHZ, COH and ZSJ attended the license plate hearing at the State House in Boston. New QRA officers: VRE, pres.; EYZ, vice-pres.; KI, secy.; DNW, treas.; OKB, OG, KTJ, HIL, AOG and EED, directors. CMW is retiring from W.U. Traffic: (Feb.) WIEMG 537, AWA 451, FJJ 375, EAE 249, DIY 187, CZV 106, QPU 103, AUQ 92, UKO 75, NJL 57, KNIDIO 32, WILMZ 29, UIR 24, KIBYL 12, WIBE 12, UE 11, ATX 8, BGW 7, NTK 7, TY 7, HWE 6, SMO 6, WU 5, AHP 4, DTH 4, AKN 3, KIBUF 2, WIBY 2, KIBYV 1, ETH 1. (Jan.) KNIDIO 38, WIEF 6, KIACJ 2, AIO 2, BUF 1. (Dec.) KNIDIO 50.

**WESTERN MASSACHUSETTS**—SCM, Osborne R. McKeraghan, W1HRV—Acting SEC; HRV, RM; BVR, PAM; MNG. The W. Mass C.W. Net is on 3560 kc. and the Mass. Phone Net is on 3870 kc. They need your support. Appointees, please send your certificates in for endorsement when due. OY has been appointed EC for Westover Air Force Base where he has done a fine job of organizing an AREC group. This group has about 20 members who are stationed at the base and all have portable and emergency-powered equipment ready to go in an emergency. This group is strictly AREC and has no connection with e.d. TAY reports Amherst is ready to join the Sector 4C e.d. Net on 50,625 Mc., making a total of eight towns in the net. Five clubs in the W. Mass. section are now publishing monthly bulletins. KIEHH is the call recently assigned to the Classical High School Radio Club in Worcester. The Pioneer Valley Club in Holyoke is working for a charter. LPQ is teaching a radio class for the Boys Club in Pittsfield. WCC, formerly of Pittsfield, is stationed with the Navy in Adak, Alaska, and is operating from KL7ATZ on 20 and 45 meters and is looking for contacts with W. Mass. JZG's new final with a pair of 4-250As is ready to go on 80 through 10 meters. TAY has been elected assistant director for TCPN in the New England Area. DGL has a new linear amplifier and antenna matcher. TVJ reports working over 30 new countries in February. DPY is operating 100 per cent s.s.b. now with a 10B exciter and a p.p. 813 linear. HRV is completing an extensive rebuilding job on his rig brought about by a recurrence of some TVI. A new Novice in Pittsfield is KNIGFT. AEW has 199 countries confirmed. KICPL has a new NC-300. BBV recently received his General Class ticket. Traffic: (Feb.) WIUEQ 1655, KGJ 342, DZV 176, DGL 167, BVR 92, TAY 28, AGM 10. (Jan.) W1TAY 21.

**NEW HAMPSHIRE**—SCM, John A. Knapp, W1AJJ—SEC; BXU, RMs; CRW and COC. PAM; CDX, V.H.F. PAM; TA. The GSPN meets at 1900 Mon. (Continued on page 152)



## air dux BALUN



The air dux<sup>®</sup> Balun is used for impedance matching in both transmitters and receivers without adjustment from 10 through 80 meters.

## SPIRAL WRAP<sup>TM</sup>



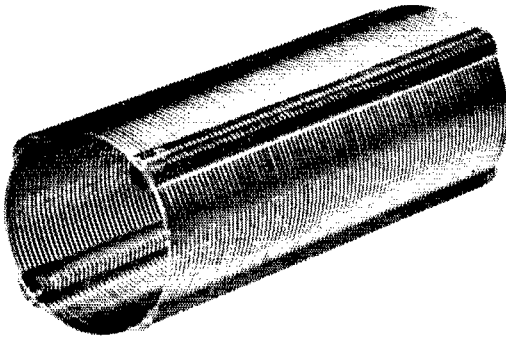
Spirally cut polyethylene tubing for easy cable harnessing and a multitude of other uses. Available in various lengths in  $\frac{1}{4}$ " and  $\frac{3}{8}$ " O.D. both expandable up to 2". Four different colors for color coding. Spiral Wrap is available in other materials for hi-heat applications. Inexpensive and easy to use.

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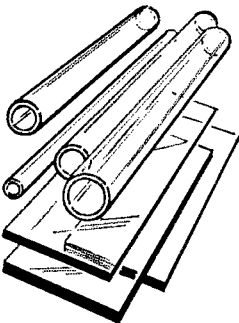
sunnyvale, california

# air<sup>®</sup> dux



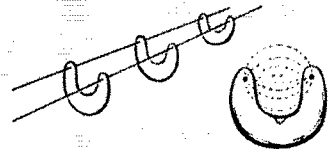
a complete and versatile line of air wound coils for the amateur. For use in pi networks, interstage, oscillator, and LC tank circuits. Manufactured from the finest materials, and crafted with expert workmanship. Available in a wide range of diameters from  $\frac{1}{2}$  inch to 3 inches, and lengths from 2 inches to 10 inches.

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$\frac{1}{2}$ " spaced open-wire transmission line. Solid copper wire with pure silver sheath and FORMVAR coated. Exclusive OUT-FIELD spacer cuts losses by keeping dirt and moisture out of maximum field. The ideal LADDER LINE<sup>®</sup> for all RF frequencies. Other types of LADDER LINE<sup>®</sup> are also available...Price 6.3 cents per foot.

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#### Linear Amplifier LA-1



Complete with well-filtered power supply, operates Class B or C, with grounded-grid Final. 200 watts input operated AM Class B. 300 watts DC input, or 420 PEP input, Class B linear SSB or DSB. Requires 15 watts RF driving power. 300 watts class C for CW (18 watts driving power). Pi Net output circuit covers 80-10M bands, matches loads 30-150 ohms. 52 ohm Pi Link coupled output on 6M. Extensively bypassed, filtered and shielded for TVI.

Wired & Tested: \$124.50  
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#### Universal Modulator UM-1



Supplies 10-45 watts audio output, depending on tube types and class operation. Uses: Class A or B modulator (RF inputs 8-100 watts); driver for higher power modulator; PA amplifier. Output matching impedance 500-20,000 ohms. Carbon or crystal mike may be used. Perforated steel cover available as accessory, \$3.00 extra. Wired model complete with 6U8, 6U4GB & two 6L6 tubes.

Wired & Tested: \$49.95  
Kit (less tubes): \$37.50

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#### ANTENNA TUNER AT-4



Built-in VSWR Bridge constantly in circuit. For any Xmtr. with final RF input up to 600 watts, 80-10M. Fixed link coupling in output circuit. Coax input, 2-wire balanced output. Special calibrated meter for monitoring actual SWR. RF shielding cabinet.

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For any Xmtr. with input of 100 watts CW, 75 watts fone, or less. Provides substantial amount of harmonic attenuation when properly tuned. Aids matching Xmtr. output to various types of antennas. Unbalanced output. Self contained.

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152

through Fri. on 3842 kc. and at 0900 Sun.; the NHN, traffic net, 1900 Mon. through Fri. 3865 kc.; the N. H. State RACES Net (BXU, NCS); 1300 Sun. on 3993 kc. Strafford Co. EC, WBM, reports the county RACES plan has been approved. Nashua High School's new radio club has K1BAV, pres.; YJE, vice-pres. K1BCS advises that 500 messages were cleared during a public service traffic feature on 2 meters at Belknap Recreation Area in Feb. Operators were K1BCS, NZZ, JFF, EOW and KN1GDZ. Repeat announcement: The 19th Annual N. H. State ARRL Convention and Hamfest, sponsored by the Concord Brasspounders, Inc., will be held in Concord, May 25 with a special entertainment program headed by JNC, for the evening of the "Night-before," for those who plan to arrive on the 24th. EVN is enjoying his new 15-watter mobile on 10 meters. Traffic: WINZZ 328, JFJ 168, KN1ENM 129, GDZ 106, W1IQ 39, WBM 23, CDX 20, EVN 12, KVG 10, KIAHE 9, W1MOI 8, MEL 6, TDI 5.

**RHODE ISLAND**—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ, PAMS; KCS and YRC, RMs; BBN and BTY. Appointments endorsed: ISE as EC and PAZ as SEC. New appointments: YRC as PAM, HKN as OBS, K1BWA as OES and TXL as OPS, SBP and YNE have moved to Eastern Mass. YNE did an excellent job as our PAM for over a year. YRC, net mgr. of the R. I. Satate Phone Net (1830, Tue., Thur., Sat., Sun., 3915 kc.), has expressed a need for more stations in the Providence Area to consistently check into this net. Section Net certificates were issued this month to YRC, YNE, LQJ, VDI, TXL and KIAOS. The EPARA will hold an auction Apr. 25. Congratulations to IHW and AUT on passing the Amateur Extra Class exam. The new Roger Williams V.L.F. Society, which was formed Feb. 13, is for the purpose of instructing v.h.f. operation techniques, studying propagation and other technical aspects of v.h.f. Temporary officers are K1BWX, pres.; KIABR, vice-pres.; FIG, secy.; and KCS, tech. adviser. KN1DUK, of Warren, would like to work more R. I. Novices. He runs 18 watts on 3719.4 kc. KIAOS has received RCC and WAS certificates. Several Rhode Islanders in the Eastern Canadian Arctic have been phone-patched into this area by KIABR. The six-meter rig at DDD is completed. Traffic: W1YRC 209, CMH 69, BBN 30, TXL 30, TGD 9, DDD 8, KIAOS 7.

**VERMONT**—SCM, Mrs. Ann I. Chandler, W1OAK—SEC: EIB, RM; BNV, PAM; ZYZ, V.H.F. PAMS; FMK and TBG. Traffic nets: VTN, Mon.-Sat. on 3520 kc., at 1830; VTPN, Sun. at 0900 on 3860 kc.; GAIN, Mon.-Sat. on 3855 kc., at 1700. FMK reports the activity of two v.h.f. nets in the Brattleboro Area and one in Bellows Falls, while in the Burlington Area TBG reports very good activity on two nets. BARC members plan for the June 15 Field Day at Mallets Bay, New in Norwich are K1s DKO and BHV, KATLT, ex-CGV, skeds EKU and MMV on 21,318 kc. weekly. RJJ is in South Korea. New in Bellows Falls is KN1BIO. On 144 Mc., MEP has completed a new PA-RF amplifier. OAK is active on 50 Mc. with 400 watts and a four-element wide-spaced beam. Traffic: W1BXT 777, OAK 178, JLZ 50, ZYZ 48, HRG 42, ELJ 39, KJG 35, K1BGC 21, W1EIB 15, AD 12, VMIC 12, IT 9, KIAUE 7, W1ZJL 4.

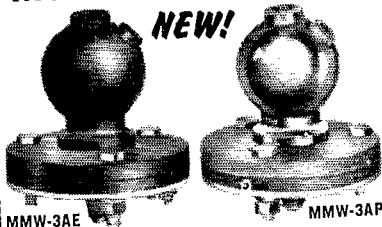
#### NORTHWESTERN DIVISION

**ALASKA**—SCM, Eugene N. Berato, KL7DZ, TI, BOF, ASQ, CBD, ADR, ML, AWR, AV, AX, MD, SG, BEW, RZ, LW, IS and AG were Anchorage visitors. AN, APH, AV, AYZ, BMZ, BNL, CBD, CDA and CEJ received the Sourdough perfect-attendance certificate for February. The YL-PARKA Club did a wonderful job during the Fur Rendezvous, originating 726 messages. Equipment used was a Viking 500 and a GPR-80 receiver. AVY reports very little activity on 6 meters. The YL-PARKA Club advises its Lucky Seven certificate is available to anyone working seven paid-up members of the Anchorage PARKA Club. Send cards to ALZ for confirmation. All Alaska hams should keep July 18, 19 and 20 open for the All-Alaska Hamfest to be held in Anchorage. Write PIV for details. Traffic: KL7BJD/KL7 726, BJD 611, ALZ 412, BLL 349, CEJ 22, BHE 20, BVQ 7, BVC 3, GJ 3.

**IDAHO**—SCM, Rev. Francis A. Peterson, W7RKT—The Boise C.D. Club now has a yellow monster bus with a 500-watt emergency transmitter with the call K7AXM. The Idaho Falls Club has monthly supporters for members. GCO is giving his mobile a good work-out. 6GTJ7 is instructing prospective Novices at Pocatello. Congrats to AVY on the new baby son. GGV and K7ALA have new mobile transmitters ready to go. VQC and RKI blew their transmitters off the air again  
(Continued on page 154)

## HEAVY DUTY MOBILE BASE MOUNTS

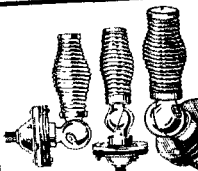
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MMW-3AE

MMW-3APS

**Engineered for Greater Performance**  
The last word in modern design for strength and service in universal swivel bases. Easy installation, mounts watertight on any surface. With template. Positive locking, any position. Ebony Finish \$6.95 Polished Finish \$7.95 Ebony Finish, S. S. Hardware \$8.95 Polished Finish, S. S. Hardware \$9.25



Model 232-C 232 Series



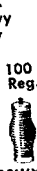
Model 142



Model 140



Model 100W

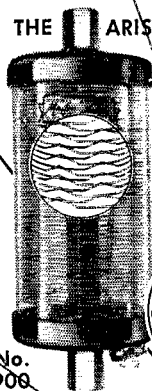


Model 100 Reg.

## NEW MULTI-BAND ANTENNA COILS

New Plug-In type coils for the Ham, designed to operate with a standard 3' base section and standard 5' whip

### THE ARISTOCRAT



No. 900

### THE VICTORY



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10-15-20 METERS

- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
- Operates into a 52-ohm cable
- Positive contact—noise-free, trouble-free operation
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**YOUR CHOICE**  
Amateur Net  
**\$14.95**

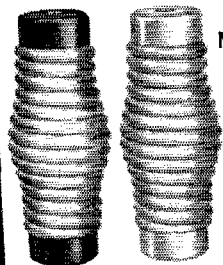
10-15-20-40-75 METERS

Now! 2 New Coils... just plug in and presto! your coil is ready for operation on the desired band! No switches, no sliding contacts, no loose connections. Built and pre-factory tested in Master Mobile's own laboratories.

Leaders in the Design and Manufacturing of Mobile Communication Equipment & Antennas

## NEW! from Master Mobile

### NEW HEAVY DUTY MOBILE SPRINGS



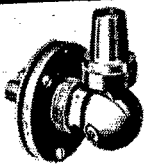
MMW-7

MMW-7SS

#### PROTECTS YOUR MOBILE ANTENNA

Heavy duty flexible mounting spring mounts on the base and holds the antenna. Special flexible "give" spring prevents sharp impacts and breakage. Lockwashers included.

MMW-7 Cad. plated, black painted ends \$4.50  
MMW-7HC Heavy Cad. plated—  
Extra Protection \$5.50  
MMW-7SS Deluxe Stain. Steel \$8.95



#### No. 321 BODY MOUNT

Swivel base body mount, less spring. Specially constructed diagonal ball joint for maximum strength. Amateur Net \$7.95

### NEW! SLIM-JIM

ALL-BAND BASE LOADING ANTENNA COIL

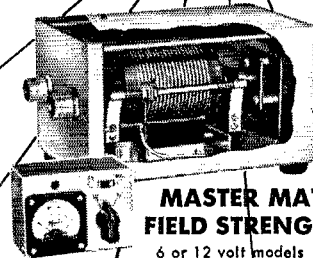
FOR 10 11 12 15 20 40 80 METERS



96" WHIP  
SIZE 1 3/8" X 1 9"

No. B-1080

Positive action, just slide whip in or out to loading point and lock nut into position. \$17.95

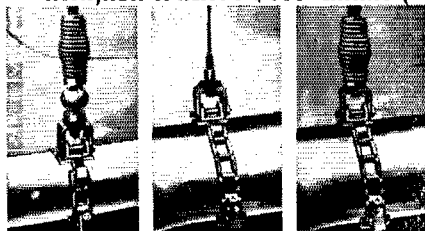


Automatically tunes the entire band from the drivers seat!

### MASTER MATCHER & FIELD STRENGTH METER

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AT LEADING RADIO JOBBERS EVERYWHERE

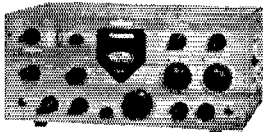
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**COLLINS 75A-4** This SSB Receiver offers all the proven Collins features — excellent image rejection through double conversion, precise dial calibration and high stability of Collins VFO and crystal controlled first injection oscillator, and the ideal selectivity of Collins Mechanical Filter in the IF strip.  
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**COLLINS KWS-1**  
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# PIONEER ELECTRONIC SUPPLY COMPANY

Amateur Department

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for a while. GMC reports that 7DDP and 5IQW/7 are new hams in Lewiston. Their radio club now meets the 1st and 3rd Thurs. Amazing fact: Only 22 per cent of the Idaho hams got their Idaho call letter license plates this year. Better get on the ball. A new net control and net manager for the FARM Net has been elected. Thanks and "well done" to WNR and NTQ. Idaho RACES still is growing but needs members in each town. Traffic: W7GMC 104, VQC 46.

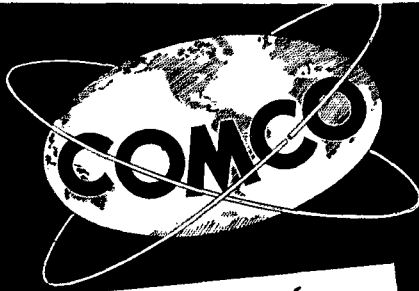
**MONTANA**—SCM, Vernon L. Phillips, W7NPV/WXI SEC: KUH, PAM; EOJ, RM; KGJ, CVQ was operated on at Seattle. 5GWX/7 moved from Roundup to Casper, Wyo. TKB moved from Miles City to Denver. K7CML and K7CMU are new calls at Miles City. They are husband and wife, ex-K8s, and hail from St. Louis. K7BFJ and K7CMW are new calls at Billings. KN7COZ is a new call at Harlowton. K7BQN graduated from Technician Class. SPK received WAVE Certificate No. 238. K7BVO has a new NC-100ASD receiver. GBL recently was appointed EC for Kalispell. The Capitol City Radio Club reorganized with W7UWY, pres.; K7BIX, vice-pres.; WMT, secy-treas.; and JLL, act. mgr. The Harlo Ham Picnic will be held June 8 in Wheatland County Park at Harlowton. The 24th Annual Glacier Park Hamfest will be held July 19-20 at Apgar Camp Grounds in Glacier Park. The 26th Annual WIMU Hamfest will be held Aug. 2-3 at Big Springs, Idaho. Traffic: W7SEK 48, VHK 30, MQI 23, TYN 12, YPN 10, DJL 9, DXK 9, TNJ 9, WMT 6, JHL 5, EEO 4, NPV 4, CQC 3, UDA 3, K7BON 2, W7DEO 2, DKF 2, EWR 2, PFI 2, TGM 2, YUP 2, ZUK 2.

**OREGON**—SCM, Hubert R. McNally, W7JDX—The Affiliated Council of Amateur Radio Clubs in Portland is considering plans for a State Convention in 1959. LT has been reappointed Asst. Director. YUY promises to become active on the OSN again. The OSN sure is going to town now with its attendance contest with check-ins and activity at a new high. BRATS for February were AJN, BZD, OMO and ZFH. Others with good scores were SUX, VJK and BVH. The David Douglas High Radio Club will be active on 8 meters. The Coos County Radio Club has a good code class going, likewise the OARS in Portland. GAJ has a new DX-100 and your SCM sports a new fire-engine-red Chevy. TLC has dropped his EC, ORS and OPS appointments until such time as he returns from California. We regret to hear of the passing of FKJ, Vern Valberg, of Borin, on Feb. 24 after a serious illness. He was a regular check-in on OEN. FTA still is busy on the new policy booklet for OEN. YQJ is recuperating from bad injuries in an auto wreck; ZQM likewise after an operation in Portland. GWB and GLZ are new OESs. Your SCM had a swell visit with the Ashland Radio Club but as usual tried to eat all the food. Boy, what a swell club house. Don't forget the Salem Convention in May, gang. See you there! Traffic: W7APP 1415, OMO 76, SUX 66, ZFH 65, AJN 39, CUWV 36, JDX 29, LT 29, SPB 17, GUR 8. (Jan.) W7DEM 12.

**WASHINGTON**—SCM, Victor S. Gish, W7FIX—BA took a two-week trip to San Diego on business and for pleasure and visited 6IAB and 8YDK. 7QLH is putting in a break-in system and having trouble. CWN is back in traffic a little and still working a little DX. NWP is perking along on the 80-meter nets with his 15 watts. JC is QRL postal work and DX Tests. WAH now has a rig at school and is working perfect break-in. LYB is back with tropical fish but still is on the nets. AMC is going in for c.w. work—the phone bands are too crowded. AIB is trying to get RNT rejuvenated and busy recruiting liaison and NCSs. URM won first prize in the Grays Harbor Radio Club QSO Contest. The club is repairing the emergency generator and looking for a new c.d. location near the club. PGY worked K4-LOY/KV4 and ZL3FM at the same time on 10 meters. GIP is going in for handling traffic to those hard-to-get spots in the Northwest. BXH is trying to get the AREC rolling in Snohomish County. Get your reports in before the seventh of each month for inclusion in this column. Traffic: W7BA 1155, PGY 579, K7WAT 234, W7GIP 142, DZX 98, APS 97, EHH 55, WQD 51, AIB 48, AMC 41, LYB 40, WVU 27, BXH 23, WAH 23, JC 18, NWP 8, CWN 3, JEY 3.

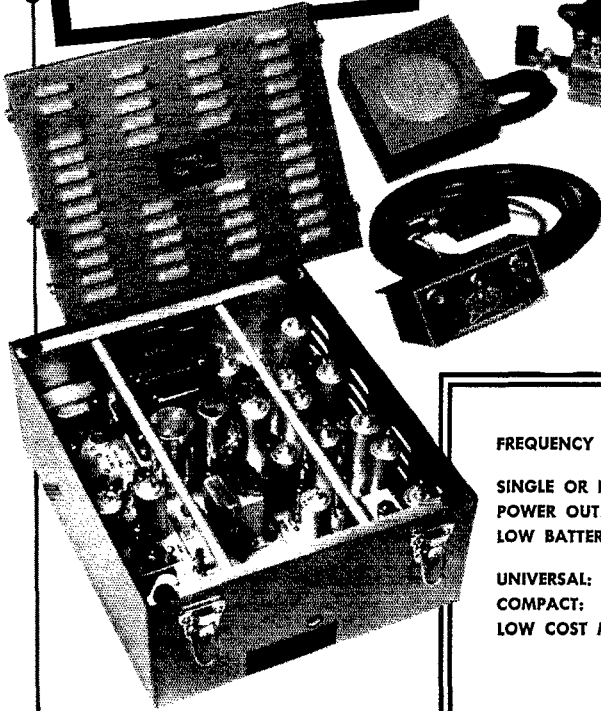
## PACIFIC DIVISION

**HAWAII**—SCM, Samuel H. Lewbel, KH6AED—IJ made the circuit of the Islands giving a very interesting and informative lecture/demonstration on beam antennas. The Hilo Amateur Radio Club is conducting a class in radio theory. CBL is in school in Los Angeles. IN is back on the air after a 2½-year layoff. AS replaced his G4ZU with a tri-band cubicle quad. CU is back on the air with a Ranger and has registered in  
(Continued on page 136)



MODEL 278 6/12 SERIES  
**CONTROLLER**  
 VHF-AM TWO-WAY RADIO  
 FOR AIRPORT VEHICLES  
 AND GROUND STATIONS!

**NOW! 6/12 VOLT**



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For use in ramp, jeeps, electrician's trucks, crash trucks, tow tractors, snow plows, executive cars, police cars and at temporary locations such as construction sites.

**FEATURES:**

- FREQUENCY RANGE:** 118 to 152 MC. crystal controlled (CR-18/U crystals).
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- POWER OUTPUT:** 3 to 4 watts, more than enough for airport service.
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- LOW COST MAINTENANCE:** the **CONTROLLER** has earned an excellent reputation for trouble-free operation. High quality standard manufacturers parts used and identified for easy replacement at your local supplier.
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  - ✓ AC adapter for operating mobile unit from 110 or 220 volt AC.
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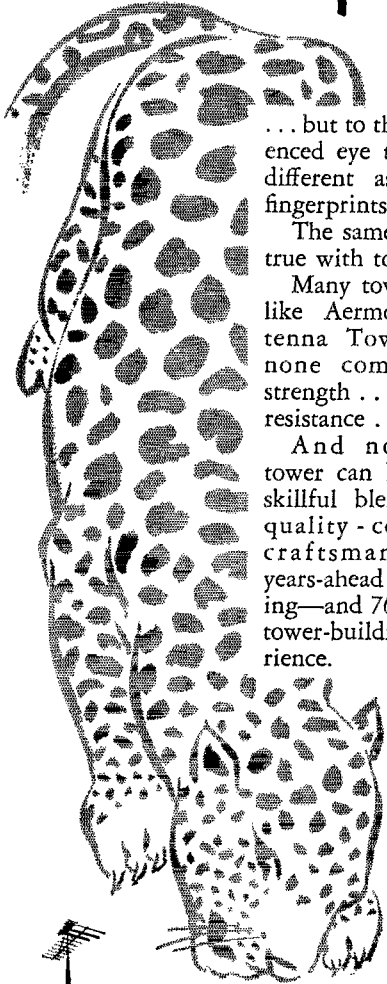


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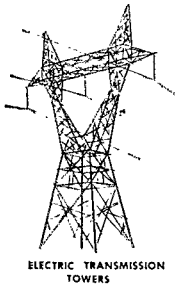
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the AREC. New faces at a recent Sidebander's Dinner: AW, BB and BJF; ALX recently spent a week with BH at Kona; MV flew him over in his private plane. Sam and Dave are both blind and have held daily contacts for a long time. AQE has a new SX-101; so has IW. AED got two tape recordings of Explorer 1 and now has modified an International Crystal Co. FGV-2 Model 50. Traffic: (Feb.) KH6AJF #20. (Jan.) KH6AJF 44. (Dec.) KR6AF 113.

**NEVADA**—SCM, Albert R. Chin, W7JLV—SEC: JU. A newcomer to the Reno Area is K7CJZ. JDI reports he spent a short spell in the Scott AFB Hospital, but all is now well. FJN, editor of the *SNARC Ragchever* of Las Vegas, attended the NARA meet in Reno. UPS, of Elko, was a guest of the NARA on its Jan. 31 hidden transmitter hunt. ONG has a new SX-101 and Eldico SSB on 40, 20 and 10 meters. CX, MAH and JLV still are active on 6 meters in Reno. MAH has had choice contacts with South Africa, Australia, Hawaii, Cuba and Alaska, to name a few. Jeanne, ex-1NFA, is now K7BPP. If you have any ideas for a "Nevada Day" ham band contest which could be publicized, bring them up at your next club meeting.

**SANTA CLARA VALLEY**—SCM, G. Donald Eberlein, W6YHM—SEC: NVO. RMS: ZRJ and QMO. PAM: OFJ. New appointees are PLG and K6LEE as OBSS. Endorsements: NVO as SEC. ZWE as EC. The SCCA-RA's Annual Barb-Q will be held at the S. C. County Fair Ground July 26. For more information contact CFK, chairman. PHS and QMO are acting as liaison stations from the section 6-meter net to NCN. PLG transmits official bulletins on Tue., Thurs., and Fri. at 1900 PST on 3675 kc. K6EWY has a Kleinschmidt perforator in operation and is sending his traffic on tape. K6GZ is keeping an RTTY sked with 0LZL, nightly for traffic. QHE has the new super shack finished. K6DYX was the MBRC hidden transmitter for the month. The location was the Sky Room of the San Carlos Hotel, Monterey. WJM gave a talk on C'DO at the MBR explaining the part of amateurs in the system. RSY lost a 30-ft. vertical in a wind storm and replaced it with a 34-ft. vertical. YHM has a new keying system that is giving good results. K6UWM is using a new 6-meter rig of an 829-B running 110 watts. K6CXT is located in Biloxi, Miss. K6GKG traded a new Hammarlund for an SX-28. CZI is on 2 meters. OW keeps regular skeels with KR6 stations. UOL is using a Tri-Band beam. UZY keeps nightly skeels with DL4DW. A new member of the SMRC is K6DKX. K6PQH and K6PQG are an OM and XYI, team from El Granada working traffic on NCN. QMO gave a talk on NTS before the NPRRC. Traffic: K6EWO 544, DYX 368, W6RPT 366, RSY 317, PLG 240, QMO 225, K6GZ 213, W6YBV 97, YHM 88, ZLO 78, HC 77, OII 29, AIT 24, PHS 9, K6LSG 2, W6ZXS 2

**EAST BAY**—SCM, B. W. Southwell, W6OJW—SEC: CAN ECs: LGW, ZZF, IUZ, K6BYQ, EDN, GXU and JNW. K6JSS is the newly-appointed Alameda Area EC. K6JNW is rebuilding his BC-799 per March QST. The Hayward Radio Club is building a new club transmitter. MDARC, Vallejo and the Crockett gang had a big turnout on a visit to the V.O.A. station in Dixon. WFR is running a gallon to a pair of 4-400As. K6YXT is on 75 meters with 100 watts. The Mission Trail Net is having a steak dinner roundup in Santa Cruz on June 15 and 16. The Mobiles had a well-attended breakfast get-together in Vallejo. AIR had TVI caused by a defective light switch and he wasn't even on the air. K6JAY is building a Heathkit hi-fi speaker system. QEN has a new Collins rig and an SX-101 and is in s.s.b. AKB says the new Gonset Tri-Band beams bring in plenty of DX. UUG finally got on the air with 100 watts to a pair of 6146s; His QTH is one block from the SCM, who is glad he likes 40-meter phone only. The East Bay Radio Club toured the P.T. & T. Central Office in Richmond. The Northern California Traffic Association held a breakfast meeting on Feb. 16 at Red Coach Inn, Los Gatos. K6LPR is RTTY with a Ranger, an NC-300 and a model 26 printer. K6DMW has moved to Albany from San Mateo. EG is the new president of the NCDXC. ITH is rare DX again as VP8RT. K6RPZ gave up trying to run his DX-100 with two flat 6146s in the final. LGW has 7 new AREC members in his area. The Napa SSS Club moved into its new club house and had so many attending the first meeting there was standing room only. YSD is EC of the Napa SSS Club. K6OCD is the new Asst. EC for the Hayward Area. AREC membership in the section is over the 100 mark. This is about triple the amount registered a few months ago. K6DMI is Asst. EC in the Richmond Area. SEC CAN is looking for ECs for the Greater Oakland and Piedmont Areas. The Mt. Diablo Amateur Radio Club Emergency Net stood by at the request of AIL, liaison officer of e.d. hq.,

(Continued on page 138)



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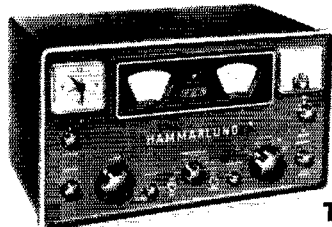
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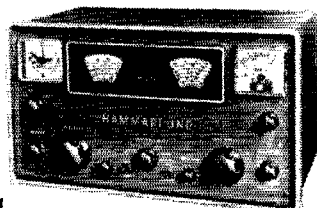
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 60 db Image rejection, 80 db I.F. rejection and 80 db down on all other spurious responses.

Model XC-144 I.F. Tuning Range 14 to 18 mc

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**XC-144-C4** Special Converter with Dual Crystal Oscillator and toggle switch for Collins 75A4 and similar receivers. I.F. Tuning Range 28-30 mc; Covers Complete 2 Meter Band.

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**TC-108 VANGUARD**

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Model XC-50 I.F. Tuning Range 14 to 18 mc

Model XC-51 I.F. Tuning Range 10 to 14 mc

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**SAN FRANCISCO—SCM**, Fred H. Laubscher, W6OPL—Flash! Flash! Flash! This is the best news of the year so far! Your SCM has just been informed officially that the new Communications Center, located on the famous Twin Peaks in San Francisco, will definitely contain a duly-licensed amateur radio station. The station will cover the amateur spectrum. RACES, c.d., liaison to the American Red Cross and the MARS program are scheduled activities. Congratulations and our best wishes go to the City and County of San Francisco for their forethought in this most vital step in communication preparedness. We still are asking all of our readers who actively engage in amateur communication to send a post card to your respective SCMs to let them know what you are doing. Maybe you put a new piece of gear on the air, or possibly are in the midst of a new experiment with transistors. Anything you may have to offer might be of some real interest to another reader. You send in the information and we will see that others hear about it. Let's build a great section and share each other's problems. Do it through your Station Activity report to your SCM prior to the 3rd of each month. The San Francisco Chapter of the Red Cross has offered to repaint and alter its amateur radio station, MLK. Before long MLK will have "the new look!" The club room, along with the proposed plans for new operating console, etc., will match that pretty new paint job the gang did on the 5-kw. generator. We would like to take our hats off to GQA for the magnificent job he is doing as OO. Al has helped hundreds of hams through the years to keep out of trouble. In these days of hurried life we sometimes don't take the time to really appreciate the work others do for us. So to all those who take time out of their busy schedules to help us, and especially to you, GQA, our many thanks. The National Traffic System is doing great things these days. According to the latest report from the gang NTS is planning a traffic booth at the coming ARRL Convention in Fresno. All modes of communications will be displayed and it should be a "must" for all those attending to make the NTS booth a place to meet a friend. GQY is certainly making up for lost time, another month with a 377 traffic unit. We can't keep up with BPL cards for him. Hi! K6EKC has been checking in with NCN 3 or 4 times a week. The NCN (Northern California Net) meets Mon. through Sat. on 3635 kc. at 1700 and 2200. Outlets from the San Francisco section (San Mateo County line to the Oregon border, those counties on the Pacific Coast) would be of great help. If you would like some traffic experience and at the same time support your National Traffic System, check in with the NCN. Speed or experience is not necessary. Traffic: W6GQY 377, K6LCP 141, EKC 2.

**SACRAMENTO VALLEY—SCM**, LeVaughn Shipley, K6CFP—Congratulations to K6BYS, K6RLR and MWLR. In recognition of their volunteer services and efforts on behalf of the State and the City of Chico in promoting civil defense, certificates of appreciation were recently awarded them at a special c.d. ceremony in Red Bluff. HJP was just reassigned from KR6-Land to Andrews Air Force Base, Md. PDT is working mobile on 1920 kc. QIV and QWD are hot on 6 meters with some Ws to their credit. JRY is the proud father of a YL harmonic, Lori. Good luck to K6BMU, the new president of the Golden Empire Amateur Radio Society in Chico. ZNU has the only RTTY in Chico—40 meters. QYQ is conducting code and theory classes in Clarksburg and recently turned out five new hams for the fraternity and c.d. in East Yolo County. The TVI Committee of Sacramento has been rejuvenated under the sponsorship of the McClellan Amateur Radio Society, Radio Amateur Mobile Society, North Hills Radio Club, Aerojet Club and Sacramento Amateur Radio Club. K6VGY is chairman of the group and three representatives are furnished from each of the clubs. Reports of all cases handled will be mailed to the FCC. PYE is off the air with a bad plate transformer. K6SKG is serounging parts for a new modulator. CMA has a new Globe Chief 90 complete with v.f.o. and full break-in operation. QYX finally got on phone. Traffic: K6YBV 292, W6CMA 126, K6SXA 86, VVV 8.

**SAN JOAQUIN VALLEY—SCM**, Ralph Saroyan, W6JPU—K6BGO has been appointed EC for Fresno County. The Tulare County Radio Club held a drill on Feb. 23 with mobiles on 75 and 2 meters with great success. The following took part in the drill: GCS, IEM, RBH, VWV, ARE, KN6ZDP, KN6YDW and ZKIL. FZV was killed in an automobile accident near Hayward. Ex-GEG, W3LNT, is enjoying beachcombing in Honolulu. LOS has a 20-meter beam sitting in his back yard. PXP ordered a 40-meter beam to go with his kw. OUX did some horsetrading and ended up with an HQ-100. K6LJQ got his General Class license and within 2 hours took a trip and bought himself an HT.

(Continued on page 160)





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100w PEP DSB Input, Suppressed Carrier  
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Completely bandswitching suppressed carrier Sideband Rig for 80-10M, continuous coverage, 3-9mc and 12-30mc. Designed for DSB, AM or CW; adaptable for converting your present AM equipment to sideband. Min. 35db carrier suppression all bands. 3-stage RF section allows straight through operation for max. efficiency all bands. Internal tone generator facilitates tuning. 600V power supply has ample reserve for using external accessories (socket provided). Provisions for antenna relay control. Size: 8x14x9.



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Bandswitching Xmtr. for 6 and 2M; on 6M, 80w CW, 65w Fone; on 2M, 60w CW, 50w Fone. All RF stages metered. 52-72 ohm coaxial output matches all beams and most doublets. Variable antenna loading control. Adequate harmonic suppression. TVI bypassed in all stages. Fixed bias operation regulated screen supply. Adequate reserve power for operating VFO, speech clipper, relay, etc. from auxiliary power socket. Suitable for use as mobile Xmtr.; provisions for power supply. New Forward Look Cabinet.

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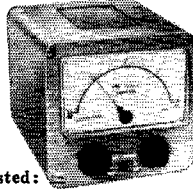
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21300 Unity	21285 Unity
21450 1.2:1	21450 1.8:1
28000 1.9:1	28000 3.25:1
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**TENNALAB - QUINCY, ILL.**

32. K6 ZCD is working out very well with his HT-32. WN6NKZ is working lots of DX on 40-meter c.w., seems as though WN6's are scarce! K6GOX, on 6 meters, worked Z83G, and several ZLs. JPS has converted a TBS for operation on 6 meters and can't get used to "high power." No more TVI? PPO got himself a Tri-Band quad and is working DX like mad, KTW has a 40-ft. tower up for his beam, K6CBQ is back on 75-meter mobile, ARC is heard on 75 meters nearly every morning when mobilizing to work. QON is heard QSOing with s.s.b. stations, K6EJT had a little fire in his transmitter and is back to his 50 watts. The Fresno Radio Club will hold the Pacific Division Convention June 7-8, 1958. See you there. Traffic: (Feb.) K6EJT 78, W6ADB 76, K6RLX 70, W6EBL 19, ARE 3, (Jan.) K6EJT 32.

### ROANOKE DIVISION

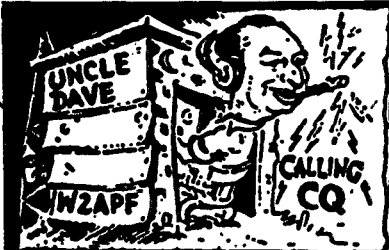
**NORTH CAROLINA**—SCM, B. Riley, Fowler, W4RRH—PAM: DRC, V.H.F. PAM: ACY: RACES in the State continues to grow, PDV is conducting a RACES Net Fri. at 6:30 p.m. on 3509.5 kc. Mon. through Thurs. a State C.W. Net is being held on that frequency. LOV is conducting an S.S.B. RACES Net on Thurs. at 6:30 p.m. on 3993 kc. The regular RACES drill is conducted by RRE Fri. at 6:30 p.m. on 3993 kc. Fifty-nine members of the State RACES plan attended a meeting in Raleigh Feb. 9. General Griffin praised the work of the amateur and James Denning, State Communications Officer, gave an excellent run down of the survival program and the part RACES personnel is to play in this plan. The SCM reported on net operation and a discussion period followed. HUW, the State Radio Officer, made a few remarks on RACES policies. The directors of the Tar Heel Emergency Net met Feb. 9 in Raleigh and elected HUW as Net Manager and QC as Assistant Net Manager. Plans for improving the net were discussed and amendments to the net rules were proposed. The SCM job has been hard work, but it has been pleasant in most cases. My sincere thanks to everyone for reelecting me as your SCM and I ask that you continue to give your best to make North Carolina the best section in the U.S.A.

**SOUTH CAROLINA**—SCM, Bryson L. McGraw, W4HMG—Since this is my last report as SCM, I do wish to thank each ham in our State for his cooperation during the last two years. Our new SCM, GQV, needs and deserves your support during his term. K4MYR is doing a nice job as traffic outlet for the Spartanburg Area. NTO is off to RTTY school for the C.A.A. HDX is General Class, K4CY gets a wallop out of his Viking I. HAQ has a very FB new 600-wattter. GRW is on with 100 watts on 2 meters with nice signals. Congrats to K4DXK on the new 8-lb. jr. operator. Among the s.s.b. stations now on 75 meters are K4-MYO, OAK and TFE. There are big s.s.b. signals from TWW, CTX, VJI, EGI, OHN and DOA. The Spartanburg Club's new officers are K4HDX, pres.; K4INO, vice-pres.; K4LEI, secy.-treas.; NTO, act. mgr. We notice that 3915 kc. is becoming very active with South Carolina s.s.b. stations, thus giving 3930 kc. a real break for the informal net owned and operated by HDR. Hi. Will be seeing you on a.m., c.w. and s.s.b. Traffic: (Feb.) K4GAT 352, K4AYU 200, W4AKC 62, K4EGI 5, (Jan.) W4AKC 80, K4EGI 19.

**VIRGINIA**—SCM, John Carl Morgan, W4KX—SEC: PAK. The trial runs on Sat. sessions for VN proved surprisingly good, so it's now a regular procedure. ZPE reports the 2-meter net is going strong in the Richmond Area. Attempts are being made to have relay stations in the Norfolk, Washington and Charlottesville Areas. We hear rumors of considerable v.h.f. activity in other parts of the State. YVQ activated VFN as a "Satellite" Net on Feb. 1 and again on Mar. 5. (F set up a station at the Portsmouth "Scouting in Action" exhibit originating traffic in spite of "terrific local QRM.") PFC, at the Quantico Marine Base, is begging for traffic schedules to take Virginia stuff. Chief Operator K2GWW says he finds it impractical to meet the regular Virginia nets. The Old Dominion ARC in So. Boston has a Globe Champ RACES rig. Traffic: W4PPC 1378, K4-AET 654, KNP 455, W4QDY 364, APM 345, SHJ 233, K4ELG 215, JKK 212, QIX 101, W4BZE 98, K4EZZ 86, W4PVA 82, K4PTG 58, W4KX 47, IT 38, BGP 37, K4-DSD 32, DJD 31, W4IF 28, K4QES 26, W4IA 21, YZC 20, BRF 16, K4DPX 14, W4CFV 11, BRG 10, K4ACH 9, W4LW 8, K4ECD 6, W4AAD 2, W4LK 2, OOL 2, K4PAN 2, W4ZM 2, ZPE 2, K4KGW took honors at the Fairfax HS Science Fair. The Prince William AREC had a successful dinner meeting at Lake Jackson. LW there has had an extension for another year at the Pentagon. Ex-K4ABL now is K6HZG in Texas. K4PRO made General Class. K4MKO and his KYL K4PAN have a new Mosley beam. New Novices reported include KN4QFF in Fairfax, and KN4SGP, Nathalie.

**WEST VIRGINIA**—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. PAM: FGL.

(Continued on page 162)



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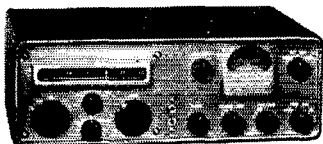
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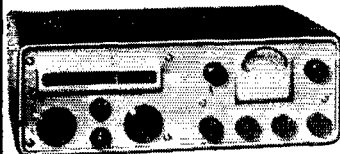
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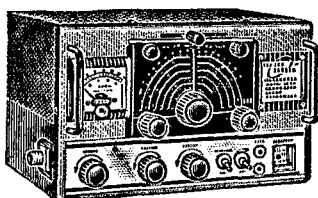


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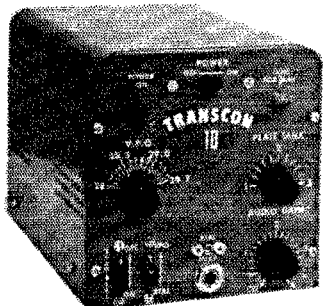
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SONAR SRT120 (new) .....	99.50
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V.H.F. PAM: K8AON. RMs: GBF, HZA, PBO and VYR. IRN moved to a new QTH on top of a hill and is back on temporarily. YBZ, GCN and PQQ are working good DX on s.s.b. YBZ has a new three-element beam on 14 Mc. DDB has a 10-meter vertical and also is checking into the phone net regularly. FNI and GBF made BPL with high traffic totals. GLB QSOed a ZE and a VQ2 on 50 Mc. A new net is being started on 50.55 Mc. K8HRO will be on 220 Mc. soon. John is very active on 50 Mc. and is NCS for the V.H.F. Net. K8AOQ has a VT-127 grounded-grid final on 50 Mc. K8IBB is a new ham in Huntington. VYI and HNT are going mobile on 6 meters. VII is working good DX with his DX-100. EAB is working DX on 15 meters. FNI worked some DX on 3.5 Mc. during the DX Contest. Bob Collins, ex-8SHG. is now in K9KAMZ and is on 20-meter phone at Indiana. U. HNK still is working on getting his antennas up. CSG did a fine OO job in February. JM is looking for a station in Lincoln County. Is there any activity there? KN8JLF is a new ham in South Charleston. HRO, GLB, DWU and CYW have Lettine 2428s on 6 meters. There will be a hamfest in Roanoke on May 18. Traffic: (Feb.) W8GBF 1215, FNI 505, VYR 169, HID 110, HZA 107, CNB 104, PZT 96, KXD 31, BWK 25, CSG 5, PQQ 3. (Jan.) W8FNI 93, HZA 48, HID 21, BWK 5.

## ROCKY MOUNTAIN DIVISION

**COLORADO**—SCM, B. Eugene Spoonemore, W0DML —SEC: NIT, ECs: AGY, K0BIL, K0CEN, K0COI, K0DCC, DLZ, GDC, KQD, LO, NUU, NVX, OMN, PGX, PXX, RRV, SFS, SIN, UPS, VSM, WMK and YMP. PAMs: CXW and IJR. OBS: K0BTU. OOs: OTR and RRV. ORSs: WLA, KQD and SGG. OESs: K0CLJ and FKY. The Coffee Club meets at 0600 daily on 3985 kc; the CWXN meets at 0700 Mon.-Sat. on 3945 kc.; the HNN meets at 1200 Mon. through Sat. on 7240 kc.; the CSSN meets at 1800 Mon. through Fri. on 3570 kc.; the RMN meets at 1900 Mon. through Sat. on 3570 kc.; the CEFN meets at 0800 Sun. only on 3890 kc.; the LCL-YL Loaded Clothes Net meets every Mon. at 0930 on 7235 kc. The ARRL Rocky Mountain Division Convention will be held at Santa Fe, N. Mex., June 14 and 15. Field Day will be held June 28 and 29. K0BCQ has received a Code Proficiency certificate. K0AQR has moved to Florida. WIR and ISL are working 6 and 2 meters. K0CJL is running 100 watts on 6 meters. IJR is working on a kw. using 400-A. K0GKR is running 300 watts s.s.b. on 6 meters. K0IRQ has a new DX-100 on the air. K0IMX has a two-tube transmitter with 15 watts on 75 meters. ZFM sold his TB550-D to NWJ. K0AYK recently spent a week end in Grand Junction with K0KEZ. LVS is back from a trip to El Paso. SKL was on a business trip to Pueblo from Denver. Join the AREC now; contact your local EC or SEC. Traffic: W0IA 332, K0BCQ 811, W0KQD 359, K0DCC 81, DXF 73, DCW 51, W0NVU 51, Q0T 39, NIT 18, ENA 15, K0CEN 7.

**UTAH**—SCM, Thomas H. Miller, W7QWH—Asst. SCM: Col. John H. Sampson, jr., 70CX. SEC: FSC. RM: UTM, PAM: BBN, V.H.F. PAM: SP. Utah is getting favorable comments for net activity. OCX was awarded a certificate for Mars operator-of-the-month. HHW, VTD and OPL handled traffic for OMs whose wives are in San Rafael attending a guide-dog school for the blind. BLE has a new kw. linear on the air. UTM has a new beam on 2 meters. KN7BUG is a new Novice in Tooele operating 7173 kc. OHR, the club station at BYU, was set up for Engineering Week and handled over 75 messages for students and visitors. EPU dropped the "N" from his call. Please send monthly reports to the SCM. Join the AREC, now! Traffic: W7OHR 75, OCX 27, CXZ 11, BBN 6, QWH 2, EII 1, UTM 1.

**NEW MEXICO**—SCM, Allan S. Hargett, K5DAA—SEC: CIN, PAM: ZU, RM: DWB. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1800 MST. 0730 Sun. The Breakfast Club meets on 3838 kc. at 0700 Mon. through Sat. RMN meets every night at 1900 MST on 3570 kc. Please support your nets. FPB received a V.H.F. certificate for working 25 stations on 2 meters. He also worked 80 Albuquerque members. CIN and K5LOV received a write-up in the Farmington paper as a mother-and-son team. CIN, who has been a hard-working EC, is now the new SEC. Best of luck, Leonard. Albuquerque's RACES Net will meet the 2nd and 4th Thurs. on the following frequencies: 29.6 Mc. at 1900, 144 Mc. at 1930, 3775 kc. at 2000. MSG reports very good signals on the c.w. portion of the DX Contest held on Feb. 22. UOZ and K5DZH received A-1 Operator Club certificates. K5GOJ eyeballed with 0IC in Denver Feb. 22. The Caravan Club will handle mobile activities at the Division Convention in June at Santa Fe. KN-5LDT worked SM7BPO on 1 watt from Las Cruces. The  
(Continued on page 164)

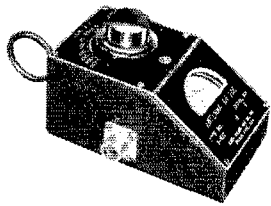
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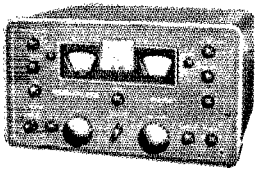
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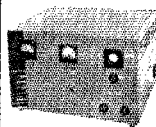
3-band operation on 10, 15 and 20 meters. Streamlined, lightweight, handsome, outstanding performance-wise . . . no coils, no tuning! Complete, 2-element **\$84.50**  
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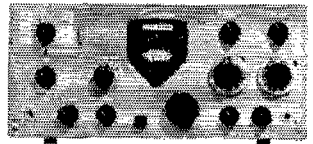
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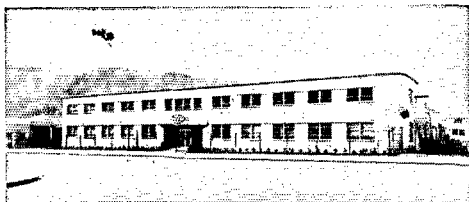
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contact was on 20 meters. The New Mexico Breakfast Club will meet on 7272 kc. from May 1 to Sept. Traffic: W5DWB 505, K5IPK 128, LFE 40, W5VC 10, ZU 6, CIN 4, K5LDS 4, LFF 4, W5WNU 1.

**WYOMING**—SCM, James A. Masterson, W7PSO—SEC: MNW. RM: BHH. The Pony Express Net meets Sun. at 0830 on 3920 kc. with AMU and MWS alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DXV and NMW alternating as NCS. The Sheridan Radio Amateur League has agreed to sponsor the Wyoming Hamfest this summer. QPP is chairman and the dates have been set as July 12 and 13 at a location west of Buffalo. Everyone should start planning now to attend. TQO has received his DXCC certificate. SZZ has a Tri-Band beam. LKQ has a new vertical. BHH has moved to a new QTH in Casper. N7BZC, Laramie, reports that IVL is now mobile and that 6DGO is operating portable at Harmony, Wyo. UFB and PSO are now mobile on 10 meters. The latest count shows 101 members of the ARRL in Wyoming. Traffic: W7AXG 34, DXV 26, BHH 14.

## SOUTHEASTERN DIVISION

**ALABAMA**—SCM, Clarke A. Simms, jr., W4HKK—SEC: EBD. PAMs DGH and K4BTO. RM: RLG. CNU, HTP and FEC continue to devote a large amount of time to satellite tracking. UHA received commendation from the military for his efforts along the same line. RLG is up to 37 states on 6 meters, MI 35. The Selma Club now has code and theory classes for new members. Dallas County now is organized for AREC. The net meets Sun. at 1400 on 3970 kc. K4KJP is mobile on 10 meters in Mobile. New station equipments: A KWS-1 for K4OXA in Florence, a DX-100 for JWB, a Viking 500 for AOZ. Congratulations to K4APF; she has YLCC now. Welcome to new Novice KN4TLN, Athens. ENO worked over 100 countries in two days and K4ANB continues searching for DX, too. The 6-meter net continues to grow with most of the State now being represented. AENP morning sessions get larger daily; the traffic count is giving the evening session a run for the money. Thanks to those who stepped in to take over for Net Manager K4BTO during his illness. An especial thanks to the NCSs: they manage to maintain their calmness in spite of all types of interference, accidental and intentional. Traffic: (Feb.) W4RLG 240, KIX 91, W0IVH/4 89, K4AOZ 52, JDA 49, W4MI 38, K4BWR 37, KZQ 29, KJZ 14, W4CIU 13, K4IPF 9, MQH 9, KJP 8, W4RTQ 7, WAZ 7, CRY 6, K4JWB 6, W4HKK 5, UHA 5, K4HJM 4, W4ZSH 4, GOW 3, K4K 3, KJD 2. (Jan.) W4ZSH 7, K4GOW 2. (Dec.) W4KN 4.

**EASTERN FLORIDA**—SCM, John F. Porter, W4KGGJ—SEC: IYT. RM: K4SJH. PAM: TAS. Newly-elected officers of the Jacksonville Amateur Radio Society are WMN, pres.; HWA, vice-pres.; CNH, secy.; HRC, treas.; FXQ, act. mgr. The club meets the 1st Wed. evening of each month. New officers of the Sarasota Amateur Radio Assn. are WHF, pres.; K4DTB, vice-pres.; LMT, secy.; and IE, treas. The club is working for county-wide coverage on 6 meters. The Floridors now boast 47 members. BLL is the proud possessor of a Georgia Peach YL certificate. WPD and her OM have a new Tri-Band beam. K4KDN has a new Gotham beam for 15 meters. K4BDC has a new SX-100. KN4SOL is on the air with a new Viking running 60 watts. The Florida Mid-day Traffic Net now has 56 members. SDR received an honorable mention in the '57 Edison Award. K4QHI has a new B&W 5100 and an HQ-110. The c.d. communications team from Orlando journeyed to Ocala to try two-way communications on 2 meters. Contact was successfully established. ZUT was awarded a Braille wrist watch by the Longines-Witnauer Watch Co. New officers of the Gator Amateur Radio Club are SMK, pres., K4JHQ, vice-pres.; HNV, secy.; and K4CTH, treas. The club now has 20 members. The SPARC is monitoring 29 Mc. every night for anyone new in the St. Petersburg Area or any mobiles passing through. Fellows, let's keep the station activity reports coming in. If you don't have the forms, drop a card or radiogram for a supply. Mail by the first or second of each month. Traffic: (Feb.) W4DUG 4616, FPC 1320, IWM 1143, K4SJH 671, W4HCQ 470, SMK 184, K4KDN 165, LCF 133, W4IYT 115, K4BDC 107, AXX 106, W4-LMT 99, FSS 63, PZT 60, K4AKQ 59, W4TAS 56, ZCD 54, K4AHW 52, EXN 49, BNE 42, ILB 40, BLM 39, ABE 36, W4WDX 29, K4COD 25, W4FHW 23, K4QFW 21, CO2UG 19, K4MTP 18, W4SJJ 16, BWR 15, BR 13, K4IWT 13, W4SGY 13, BJI 12, FE 10, K4QBF 5. (Jan.) WKLP 22.

**WESTERN FLORIDA**—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RM: AXP. Several mobiles from Pensacola participated in a Sports Car Rally in So. Alabama. Cars were spaced at points around a 250-

(Continued on page 166)

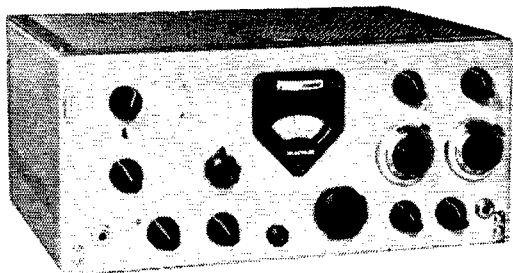


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A cinch to run up, a sec-

### Signal Corps AB-85 Mast Sections.

Brand new, in original sealed wrapping. (Add \$1 per order for packing)

Be sure to order enough sections, now. You might want to go higher, later, and you'll never see a mast bargain like this again! Use some for guy anchor stakes.

ONLY \$1.25 EACH

### ACCESSORIES

Flat guy rings 4 for 88c	Guy wire clamps 6 for 98c
Floating guy rings... 96c	Egg strain insulators 7 for 98c
Roller bearing guy rings. For easy rotation of mast and beam... \$2.97	Rotary screw earth anchors (Deadman) \$4.35
Thimbles for guys 12 for 49c	Universal mounting base. For flat, sloping or peak ..... \$1.45
Glas-Line, per 100 feet \$2.89	Insulator for base. Heavy ceramic, glazed. 5 1/4" high ..... 49c
Heavy 7x17 high tensile strength aluminum guy wire. Per 100 feet \$2.63	(Or, use a Coke bottle)

### C·D·R BEAM ROTATORS.

Complete with direction indicating control unit: New, heavy-duty HAM-M model—\$99.50 (Special 8 wire cable—\$6.25 per 100') Standard heavy automatic model. FB for VHF arrays, up to 15-20 mini and loaded beams. AR-22—\$31.17 (4 wire cable—\$3.25 per 100')

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mile course to report passage of racers. NCS used an antenna 500 ft. high, on the WALA-TV mast! Ground-wave coverage was up to 100 miles, on 29,560 kc. Net managers in Pensacola are K4IVD for 6 and 00W for 10 meters. ANP is dusting off plans for the high-power c.w. and phone rigs, also for the satellite receiver. MIS and AGM worked ZEZJV for a new continent on 6 meters. KN4TXU and K4UEA are new hams. K4PSB is active on 6 meters. K4RMO is building on a VOX unit when not working DX. K4SOI is doing an FB job with the paper Parasites. Ft. Walton/Englin AFB: 5BZQ is trying a new HZ-150. Two-meter activity is booming, with 13 stations on.

**GEORGIA**—SCM. William F. Kennedy, W4CFJ—SEC; KAUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 on Sun. ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Sat. at 1900 EST on 3595 kc. with PLM as NC; the 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc. with UUH as NC; the Atlanta Ten-Meter Phone Net each Sunday at 2200 EST on 29.6 Mc. with VHW as NC.; the GTAN each Sat. at 1000 EST on 7290 kc. with K4ORR as NC; the GPYL Net each Thurs. on 7260 kc. at 0900 EST with K4IEF as NC. The University of Georgia students organized the Univ. Amateur Radio Operators Club and elected K4ICO pres.; (BD, vice-pres. and eng. in charge; and K4CLB, faculty advisor. K4FCT, K4MCL, K4LVE and ETD made BPL this month. K4HOU has added a 100-ke. crystal calibrator to his equipment. FGH is constructing a new final that should do great things. ZVT and his aunt and uncle are all hams. He now has WAS (worked all Sadlers). Remember, the South Georgia Rag Chewers Club will be held May 18 in Thomasville, the Atlanta Radio Club Hamfest, the Augusta, Ga., Hamfest, July 13, the Georgia Cracker Radio Club's June 8 picnic in Macon and election of officers July 27, the CQCS Hamfest in the vicinity of Atlanta, where a KWS-1 and a 75-A-4 will be given away, August 17. K4JTL, K4TEG, K4UCA, K4UCB and K4SVT are new hams. Traffic: K4FCI 1705, MCL 1442, LVE 1100, W4ETD 960, PIM 182, K4BAI 161, HOU 122, W4AQL 59, HXV 33, ZDP 14, ZAVT 7, EOQ 6, K4APC 2, W4PDP 2.

**CANAL ZONE**—SCM. P. A. White, KZ5WA—JS worked Arizona and California on 6-meter c.w. Feb. 23. RM reports that Bill Johnson, ex-WJ, is recovering from a heart attack and that his XYL has just presented him with their 4th boy. EL made his first VK contact with VK4EL. VR, who has just been made honorary police lieutenant of Buffalo, N.Y., is checking in regularly with the West Pa. "WC" Net (Civil defense) on 10 meters Sun. at 8:30 a.m. EST. The Crossroads Radio Club on the Atlantic Side of the isthmus is active again and now meets at 7:30 p.m. the 2nd Thurs. of each month at Margarita Service Center. Cliff Hayward, a Canal Zone boy, gave an interesting talk with slides, describing his two years with Operation Deep Freeze at the Feb. meeting of the CZARA in Balboa. A father-and-son team, KK and KD, are on the air now. New hams are TC, HI and KR. Traffic: KZ5RM 33, VR 25, EL 9.

### SOUTHWESTERN DIVISION

**LOS ANGELES**—SCM. Albert E. Hill jr., W6JQB—SEC; LIP, RMs: BHG and GJP. PAMs: K6BWD and OHS. K6MCA, K6MLL, GYH and ZJB made the BPL. Congrats fellows! New appointees are K6SLM, FSJ, K6OQD and PHO as OOs, TUU and K6QMK as OHSs. The Hughes Aircraft Amateur Radio Club meets at 2 p.m. the 1st and 3rd Sat. at the Deauville Club in Santa Monica. The club also offers code classes every Sat. at 1 p.m. New officers of the Citrus Belt Amateur Radio Club are OFU, pres.; HDV, vice-pres.; APH, secy.; K6PJE, treas.; WEL, act. mgr. K6MCA is moving into a new shack and getting new gear. K6KYJ, K6KZY and K6HLR were awarded Net certificates for activity in the SCN. Nice going, fellows! K6QMK worked ZL on 6 meters and reports many openings. K6KYJ is sporting a new SX-99 receiver. K6GTG reports there are over 150 stations on 220 Mc. and he has an 88-element beam up. K6OQD and K6HVC report nice scores in the NL-OM Contest. K6SLM is getting the 312 rig rebuilt. K6OZJ has a new type "J" antenna for 6 meters. K6EPE is doing an FB job as NCS on the 246 Net. CIS is QRL with a new rig and minibeam. K6ICS reports the South Gate Mobile Club is going on TV pm 420 Mc. SRE reports the SGVRC is very QRL tracking "Explorer" and will issue a certificate for confirmed contacts with 10 members of the SGVRC. The

(Continued on page 168)



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## has the NEW WRL "SIDE BANDER"

Join the swing to Side Band operation! Why clutter up the bands with a whistle-producing, power-wasting carrier, when for only \$139.95 Harrison can give you this complete 100 watt PEP Double Side-band transmitter with guaranteed 35 db or more carrier suppression! Also operates as conventional 40 watt AM phone, and 50 watt CW. Will drive any of the popular linear amplifiers.

Full band switching 10 thru 80

meters, also covers all special frequencies 3 to 9 and 12 to 30 Mc. Uses regular crystals or any stable VFO. Simple to tune and use. Speech clipping and filtering gives greater talk punch per watt, and narrows band width.

Power supply section is heavy enough to handle external accessories. Pi network output matches any 52 to 1000 ohm RF load. Housed in attractive cabinet contacts. 8" x 14" x 9". Weight 29 lbs.

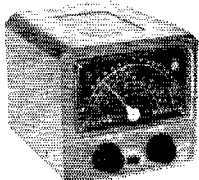
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WITH FULL, CLEAR INSTRUCTIONS

FACTORY WIRED AND TESTED,  
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VOX-10 Plug-in voice operated control. Has auxiliary contacts. Wired — \$19.95. Complete kit — \$13.95

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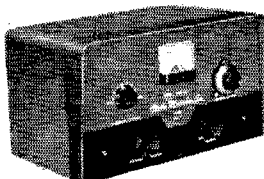


FB for use with the SIDEBANDER, or any transmitter, the

#### WRL 755 VFO

gives plenty of rock-steady output on all bands 10 thru 160. Large, accurately calibrated dial. Internal power supply.

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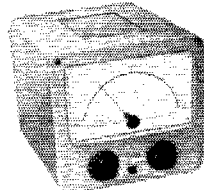
#### WRL AT-4

#### Antenna Tuner and VSWR Bridge.

Enables perfect match of any antenna system to transmitter of up to 600 watts power. 10 thru 80 meter bands.

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**\$10.00 CAN BRING YOU** any Chief, Scout, Antenna Tuner, etc., etc. Put the balance on Automatic Revolving Credit with your Harrison Charge Account, and you can pay it off with as little as 1/10 of each monthly statement. You can add on more charge purchases any time you want. It's the greatest shopping convenience, ever! Send your order, today! Give employment and credit references, and include deposit.



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Large, accurate dial with smooth vernier drive. Crystal-steady, 50 volt RF output, enough to drive any rig. Feeds right into crystal socket. Voltage regulated power supply, temperature compensated circuit, and sturdy construction give excellent frequency stability. Model 666.

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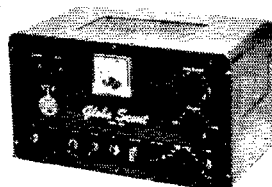
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New Model 680A

**Globe Scout**

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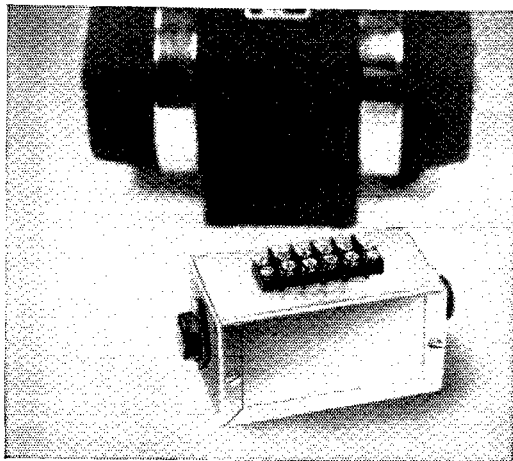
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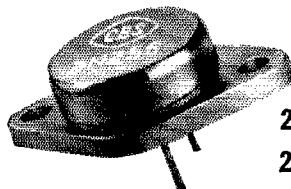
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Features: compact and light . . . 85% efficient . . . instant-starting . . . cool-running . . . long-lived. No moving parts . . . vibrationless, noiseless and troublefree. You'll find this supply ideal for mobile or portable transmitter and/or receiver, sound system, etc.

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## CBS-HYTRON

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ARAC reports new officers are PQH, pres.; K6GEH, vice-pres.; K6DQE, secy.; and K6KVJ, act. mgr. All clubs report feverish activity for the coming Field Day. Support your section net, the Southern California Net, which meets daily at 1930 PST on 3600 kc. Traffic: (Feb.) K6MCA 1234, MLL 998, W6GYH 697, ZJB 416, K6OZJ 414, HLA 391, W6BHG 234, K6OQD 129, UYK 101, EA 91, W6HJY 87, K6HVC 55, GUZ 48, QMK 47, W6USY 40, K6KYJ 38, W6VSH 35, K6GCC 34, HOV 26, EPY 17, KZY 13, W6YSK 13, K6COP 12, W6BUB 11, K6ICS 11, W6CIS 10, JQB 6, SRE 6, K6DDO 2. (Jan.) W6ZJB 340.

**ARIZONA**—SCM, Cameron A. Allen, W7OIF—SEC: YWF. The Copper State Net meets on 3895 kc. daily at 1930 MST; the Grand Canyon Net on 7210 kc. at 0900 Sun. Traffic: W7FKK 521, CAF 42, OIF 28.

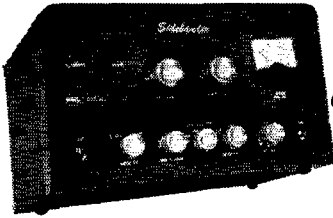
**SAN DIEGO**—SCM, Don Stansier, W6LRU—OME has resigned as president of the Helix Club as Navy orders take him away. FFD is the new president and BAO the new vice-president. A steering committee has been appointed by the San Diego Council of Radio Organizations to work on an ARRL Division Convention for San Diego in the fall. The chairman is K6JCX, assisted by K6JPI, YXU and LYF. An October Convention date looks probable from here if all goes as expected. The San Diego DX Club made over 600,000 points during the first week end of the ARRL C.W. Test. The top five in order were ZVQ, KYG, LRU, BZE and KSM. VFT is the Field Day chairman for the Helix Club for '58 and plans already are taking shape. The Satellite Explorer was tracked locally by NXP, PAN, KUIG, LWT and JUT. K6BBA, with the Coast Guard in Connecticut, skeds BZE weekly for traffic to his parents. Our Division Director, EKM, was a visitor at the Council meeting in February. K6LVU was a winner in the National Merit Scholarship Competition. K6IIR heads the sound crew at Pt. Loma High School, assisted by K6CUZ. K6DAI is working good DX on 28-Mc. phone with a DX-100 and a three-element beam. WCH and K6s EBB and UZP are now active on 432 Mc. Traffic: W6EOT 583, K6UOD 521, W6YDK 244, SK 89, K6UJL 4.

**SANTA BARBARA**—Acting SCM, Robert A. Hemke, K6CVR—The San Luis Obispo Amateurs had an auction with all proceeds going to the local YMCA. The Poinsettia Radio Club met and elected new officers. A report was given on Field Day preparations. Guest speaker CEM gave an FB talk about Pentode Linear Amplifiers. The Santa Barbara Radio Club had an interesting talk about ARRL, AREC and State C.D. structure by K6CVR, K6DXW and K6BF, in that order. K6KPU gave some timely tips about traffic-handling. YCF and K6VDW are building 10-meter beams. K6JRT built an all-transistor 10-meter transmitter to be used on Field Day. BMQ is back on 40-meter cw. again after a short time on 2 meters. New appointments: QIW and MSG as OOs; NTF as OBS; IHD, YCF and KLR as OPSs. YCF and IHD as PAMs, K6GNM as EC. Traffic: W6YCF 10, QIW 6.

### WEST GULF DIVISION

**NORTHERN TEXAS**—SCM, Ray A. Thacker, W5TFP—Asst. SCM: Bruce Craig, W5JQD SEC: BNG. PAMs: K5AEX and LWQ. RAI: ACK—A report was received this month from a fellow in Paducah. He handled 34 messages but forgot to write in his call. KN5PCG is new to the Novice bands from Amarillo. KOO, EKP and HTH worked the March of Dimes Telethon over an Amarillo TV station. K5MBA advises that the Baylor U. club rig should be on all bands in the near future. The South Plains ARC has certainly helped the "public relations" cause in the West Texas-Panhandle Area with its historical radio exhibit, a "displayed" history of radio equipment from the early days up to now. This exhibit was shown in the West Texas Museum of Texas Tech. in Lubbock. Special thanks are due to K5ESB for her superb job as chairman of this project. K5KTN's QTH now is Midland. A new Novice here is KN5PDG. K5GVS is happily mobiling with a new AF-67. IHHR writes that K5BIN has been awarded a "W-CONN" (Worked all Connecticut) certificate. This award is sponsored by the Willimantic Jaycees. To our knowledge this is a "first" from this section. Congratulations! We understand that ZKT and his XYL, K5IPP, are now in Dallas having moved from Wichita Falls. The many reports received this month certainly are appreciated, especially those received from club officials who took the time to prepare quite lengthy reports. More of the same, please? Traffic: W5DAG/5 223, GY 127, K5HTH

(Continued on page 170)



*Any Way You Look At It...*

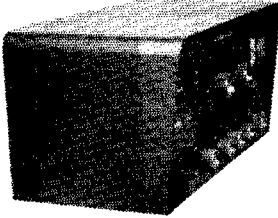
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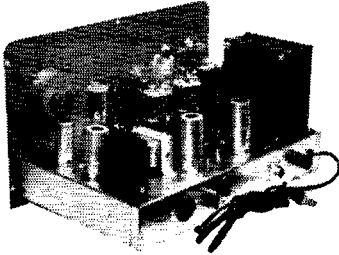
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100w P.E.P. DSB Input, Suppressed Carrier  
40w AM Phone; 50w CW

WITH THE NEW



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*Go Sideband... Inexpensively!*

**TUBE LINE-UP:**

- two 6DQ6A final amplifiers
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- 6CL6 crystal oscillator or VFO buffer
- 12AX7 audio driver amplifier
- 12AX7 speech amplifier and driver
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- 1N34 speech clipper
- 5U4GB rectifier

Available as accessory, VOX Model 10 for voice operated control with extra contacts for auxiliary circuits. Simply plug in socket.

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Here's a Complete Bandswitching suppressed carrier Sideband Rig for 80-10M, with continuous band coverage, 3-9mc and 12-30mc, covering all the popular MARS, CAP and special emergency services. No fear of obsolescence, designed for DSB, AM or CW, adaptable for converting your present AM equipment to sideband, and can be used with standard crystals and regular VFO. Minimum of 35db carrier suppression on all bands. If one sideband QRM'ed, simply switch to other. Will drive any of the popular commercial linears for sideband service. Three-stage RF section allows straight through operation for maximum efficiency on all bands. Internal tone generator facilitates tuning. PI-net output, 52-600 ohms. Speech clipping and filtering assures powerful communication punch and minimum band width. 600V power supply has ample reserve for using external accessories (operation of external VFO, VOX, etc. Socket provided on chassis rear apron.) Provisions for Antenna Relay Control. Shpg wt.: approx. 30 lbs. Size: 8"x14"x9"

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126, ETX 121, W5BKH 110, BOO 90, CF 20, TFP 19, K5ACD 13, W5ASA 10, K5DNQ 5.

**OKLAHOMA**—SCM, Richard L. Hawkins, W5FEC—SEC: LXHL RM: JXM. PAMs: EJK and MF. Don't forget to get your pre-registrations in for the West Gulf Division Convention. The OKCity clubs have planned an FB affair. K5KFS made WAS and CP-25 and now is striving for DXCC. K5CBA made WAS. VNC is on a trip around the world. K5BNQ made WAS/YL No. 25. W5EHC has a new 40-ft. tower up with v.h.f. antennas. K5HXO has a new Valiant. The Lawton-Ft. Sill Hamfest was well attended in spite of the snowstorm. K6HXE/5 and W7ESO/5 had their 20-meter quad damaged in the wind. PNG received CP 25 w.p.m. K5JFO graduated to General Class. The tornado season is here; let's make sure all our emergency gear is in operating condition and help out by participating in the Weather Net. CZB has done an FB job in originating and keeping this net going. SVX is trying a Monopole antenna on the 3.5-Mc. band. UCK moved to Okie City. Oklahoma's Ham of the Month: K5CAY for his work in handling phone patches for men in the Armed Forces. Traffic: W4RCM/5 370, W5ESB 267, KY 80, JXM 78, W7ESO/5 55, K5KFS 51, INC 41, W5VLW 36, K5EGS 35, DUJ 35, DUV 25, W5FEC 25, KWK 22, PNG 22, K5CAY 21, W5MFX 21, GOL 19, QVV 19, MGK 18, K5CBA 18, DLH 18, W5FKL 15, K5BNQ 14, W5ERI 14, W5IER 14, K5DJA 11, W5BBL 6, K5EQX 6, W5EHC 5, BYC 4.

**SOUTHERN TEXAS**—SCM, Roy K. Eggleston, W5QEM—The new officers of the Corpus Christi Amateur Radio Club are GMT, pres.; QEM, vice-pres.; PC, treas.; KFAAG, secy.; K5ONZ, pub. dir. The Texas A&M College Amateur Radio Committee has a new HQ-150 receiver and a BC-610 transmitter. The officers are PFS, chairman; K5BZC, vice-chairman, WBT, secy.; UMW, treas. The call is AC. A very warm welcome to 8PHA/5 to the nets of South Texas. EGD has changed her bulletin transmissions to 7:30 p.m. Wed. on 3780 kc, and 7:30 p.m. Fri. on 7032 kc. The 7200 Traffic Net had 41 sessions, with 436 messages and 1171 station check-ins. The STS C.W. Net had 24 sessions with 259 messages. The two traffic nets are filling a long-time need of South Texas. New QRS appointees are NXZ/5, UMY, K5LIP and K5BYV. FCX has been working VP7s, KG4s and KH6s on 80-meter c.w. EGD, the OBS for Houston, transmitted 18 bulletins in February. K5COZ and K5CPA had a nice write-up in the Corpus Christi paper entitled "Unusual Hobbies for Women." CPA is the only licensed teenage YL operator in Corpus Christi. Welcome to our section to K5PEQ and K5OQN. Traffic: W5UMY 336, W8PHA/5 242, W5EGD 187, FCX 82, K5JCC 78, W5ZIN 72, K5BYV 22, DER 8, W5AC 5.

### CANADIAN DIVISION

**MARITIME**—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon. IOC. FH has completed his term as SEC and has been succeeded by AEB. Out thanks to Leo for his work in the past and it is hoped that all AREC members will give full cooperation to the new SEC. EP is the first VE1 to receive the WAZ Award. VO2NA is the second Canadian to receive the coveted Swiss Helvetia Award. AV was top scorer in the VE1 Contest with 5400 points and MA was runner-up. Congratulations to VO2AT and his XYL on the arrival of their first harmonic, also to VE1MZ and XYL on the birth of a YL. Transfers include VO2GB, now operating portable from Halifax; VO2FS from Cape Harrison to Sydney, N.S.; VO1EN (ex-VO6S) now at Clark's Beach, Newfoundland; WX to Kingston, Ont. The CBEN and CBAREC Nets have united. UX is giving slow-speed code practice on Mon. and Fri. on 3720 kc. at 6 p.m. HT reports working W5KPZ/AM on Feb. 6. The contact was on 6 meters and W5KPZ was 8000 ft. over P.E.I.! New calls include LT and ABL. All set for Field Day? The Maritime Keyers Net is now in operation daily, 3630 kc., 2000 hours. Traffic: VE1FQ 147, PZ 78, VN 75, DB 53, AV 47, BN 40, ABJ 25, ADH 13, AEB 8, EB 3.

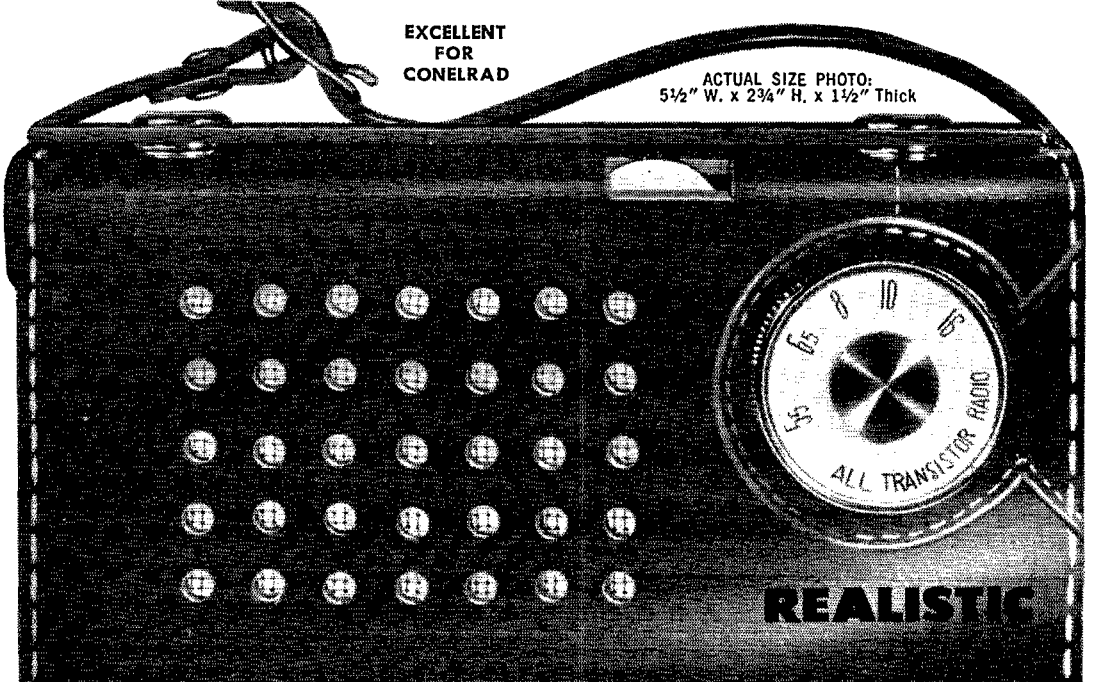
**ONTARIO**—SCM, Richard W. Roberts, VE3NG—A large Field Day group will be at North Bay this year. DFA is recovering from an operation and RH is recuperating. The Scarboro Club is affiliated with its local civil defense. OHM is ex-VOIK and VOIDK and now is residing in Falconbridge. VE3s interested in amateur radio teletype should send a card to 443 West 47 St. New York City, N. Y. for a copy of the magazine. The North Shore Radio Club of Oshawa scheduled its Annual Dinner and Hamfest for Apr. 19 at the Genoshawa Hotel. Because of an error ABG

(Continued on page 172)

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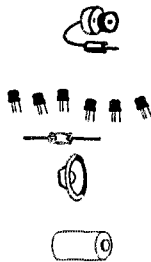


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was mentioned as active in the February issue. Sorry to hear that 2FL is giving up Ham radio. CJO is a new ham in the Timmins Area. Your SCM and SEC paid visits to the Niagara RC and the Brantford RC recently. MK has been appointed as OO is the Toronto Area. BBD is active on 2 meters. The North Shore of Lake Ontario now has a v.h.f. club. The Federation for Prevention of TVI is gaining ground and has our blessings. DAR has information on it. BRC is the new EC for Peterboro. The Newfoundland emergency saw the following standing by on the Ontario Phone Net: KM, NG, CO, BIK, DTB, EII, AML, NO and AEJ. Guest speakers at the Niagara ARC meeting were NG and KM. DPG edits for the St. Clair Valley RC (Sarnia). The Hamilton gang is getting ready for the ARRL Ontario Convention in October. CAB and BCV promote the Quinte bulletin and report that the club transmitter fund is well under way. The Northtown and Scarborough Annual Dinners were well attended. The Toronto Area AREC was responsible for the manning of a booth at the Toronto Sportsman Show. Over 600 messages were handled. Traffic: (Feb.) VEBUR 214, EII 119, NG 99, AUU 93, BJV 82, AML 73, DPO 69, KM 35, BOY 30, CO 30, EAM 30, DUU 30, CE 20, DTB 16, DWN 15, RW 13, UW 11, DGW 10, APL 7, SG 6, ELC 5, DH 3. (Jan.) VE3NO 67, AUU 49, DUU 21, CE 8.

**QUEBEC**—SCM, C. W. Skarstedt, VE2DR—Nets: OSN/PQN meets daily at 1900 on 3535 kc.; Quebec phone net, daily at 1845 on 3780 kc. AGI now is running 200 watts. AGT and UB are reliable relay station at Grand Mere. AJT and AUH are busy on 20 meters most nights. The Montreal Amateur Radio Club re-elected BB, pres.; MV, 1st vice-pres.; VV, 2nd vice-pres.; AKY, treas.; and HL, secy. CB asked that MARC member mobiles handle communications at the forthcoming sports car rally. ZZ and his wife, RK, are off to the West Indies for a vacation. AWK's new mobile sounds fine. AAD sports a new DX-100. AXS will join the 2-meter gang. AWD was heard on a local h.c. station speaking on ham radio (not BCI, hi). AAH is the very able manager of the Quebec phone net. AFI and AXR are newcomers. Welcome! ABE may contact the moon as he is now studying astronomy as a second hobby. AZS signs /W8. AKT, AXZ and PS snag DX on 10 meters while mobiling. ATL now is fooling with 2 meters. WK, president of McGill University station UN, reports a cosmopolitan atmosphere with VE1ACY, VO2CA, LU2HAC and OA4GW available. They are eager to contact OTs familiar with the original CP, as they wish to reconstruct this station. If you have any information please QSP via the SCM. JE took part in a profitable relay from VE6NE/MM and succeeded in relaying valuable traffic to Halifax. N.S. QQ is active on 20 meters. ACU, ex-PA, has returned with a DX-100 and is working the world on all bands. Traffic: (Feb.) VE2DR 200, EC 51, CP 43, BG 24, AGN 6. (Jan.) VE2AGN 44, CP 36.

**BRITISH COLUMBIA**—SCM, Peter McIntyre, VE7JT—Congrats to JB, who received the BCARA Cup Award for 1957 for his fine work in promoting amateur radio at past Pacific National Exhibitions and his unselfish help with traffic and phone patches to any and all who needed them. Ask JF for his cure for rat-bite not snakebite. Begorrah, it's good. A c.w. net has been formed under the new RM, Jim Cummings, and it meets daily Mon. through Fri. on 3650 kc. from 1830-1930 PST or PDST. It is designated as BCEN with liaison to RN7 and BCAREC. The new c.w. net is eager for new members to increase its coverage and also obtain coverage into Alberta, Saskatchewan and Manitoba, where traffic-handling is at a low ebb. APH and PV have been appointed as ECs for the Southern and the Island sections, respectively. I hear May 10 this year is the big day for Edna Hemming, SH and Ernie Savage, FB. The c.w. frequencies they designated as "our frequency" carried not the dah-dit-dahs of a usual contact but the characters formed came out in the shapes of hearts and flowers and lover's knots. We still have no news from the DX club on its activities or the forthcoming DX Convention. Is it a secret, fellows? This is a scanty report but conditions have not been conducive to much activity on my part the past few weeks. Traffic: (Feb.) KG1DT 611, VE7TF 144, AUF 21. (Jan.) KG1DT 594. (Dec.) KG1DT 605.

**MANITOBA**—SCM, James A. Elliott, VE4IF—The well-attended Feb. meeting of the ARLM was held in the Free Press Building. Informative talks on communication receivers were given by CP, TA, VG and TJ. The members were guests of a local "807" factory, where free recappable 807s were served. JW reports hearing XQ8AG. Bill also is very busy conducting code and theory classes in Beausejour. VP9DC stopped off

(Continued on page 174)

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in Winnipeg to visit a few of his ham friends while on a Sputnik trip around the world. We enjoyed your brief stay, Al, and hope to contact you en route. GR is in the East on an IBM course. LJ is busy on 40-meter c.w. and 15-meter phone. HL is now working in Winnipeg. MP is working DX-100 and his XYL, Helen, is now home from the hospital. Mike wants to get going on 6 meters. We are sorry to learn that SR is in the hospital. Get well soon, Stu! Things are picking up; your SCM received an activity report this month! Let's hear from you gang. Traffic: VE4QD 24, KN 15, EF 11, AY 8, GE 6, RB 6, TA 6, AN 4, IF 4, EN 2, KL 2, OB 2, JP 1, JW 1.

**SASKATCHEWAN**—SCM, Lionel O'Byrne, VE5LU—KJ has a new HQ-129X with built-in 100-ke. crystal calibrator. MS reports that 7ABE, of B. C., is now 5CR at LaFleche. SEC IG has been visiting ECs I.Y, WG and WM with reports that BZ has been doing an excellent job and he has a Viking Valiant. CB has a new Geleso VFO. CI was visited by MN. JR has a new receiver and wavemeter. EQ has a new grid-drip meter. QL is working on a mobile transmitter. HF and AT are on 10 meters. BU is on again with a Viking Ranger after a 2-year absence. MIF works ZLs on 80-meter c.w. in the late hours. JK is sporting a new phase shift network. Traffic: VE5DR 20, BZ 6, EQ 4, QL 4, CI 2, RE 2, HF 1.

## The Driven Beast

(Continued from page 17)

without whose help and encouragement this project would have indeed been very difficult.

My good neighbor, John Hultquist, W6QMC, helped with many details of fabrication. Bob Thompson, K6SSJ, performed almost all of the "steeplejack" work during that tense day-long job of raising the two bays into place. There were times when Bob was working 90 feet in the air! I have John Kettl, who is a serious producer of documentary scientific films, to thank for my pictures, both stills and movies. Lyle Brown, W6KRB, helped on the winch during the installation.

I especially wish to thank Dr. John Kraus, W8JK, for his response to my written queries, and also Mr. Howard King for the complete and rigorous analysis that he made of this array.

Last but not least, I must pay tribute to my wife, Dorothy, who has tolerated such a device to exist in our small back yard.

## Viking Navigator

(Continued from page 46)

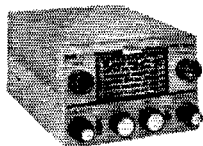
the excitation level is set by the exciter control. The operate switch has a tune position (final off) for frequency spotting, a standby position and a transmit position that turns on the final and also closes an auxiliary circuit that can be used to control an antenna change over relay or the plate supply of a following amplifier.

Although the 22-page instruction book is, in general, a good piece of work, it appeared a little skimpy in some departments. The Navigator might well be the first transmitter in many a ham station, and a beginner should be entitled to a little more information on how to connect a key, an antenna relay if used (only reference to this is

(Continued on page 176)



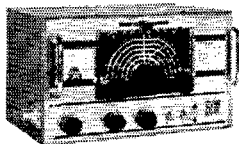
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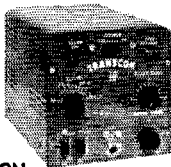
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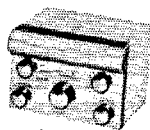
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Central and South American call book. Including a complete listing of all Mexico, West Indies and Brazilian (PY's) stations. 386 pages.

**Amateur Net** ..... \$2.95



**Regency ATC-1  
Transistorized Converter**

Self-Powered (3 pen cells); one connection to antenna, other to receiver antenna input. Can mount in any convenient spot in car. Adaptable to any receiver—receives AM, CW, and SS<sup>3</sup> on the 80, 40, 20, 15 and 10 meter amateur bands. A natural for new cars using 12 volt tube and/or transistor receivers. Built in BFO plus a high degree of stability make the tuning of SS<sup>3</sup>, DS<sup>3</sup>, or CW signals a pleasure. Provided with outstanding selectivity on AM phone by the modified "Q" multiplier circuit. Size: 4 3/4" x 3 1/4" x 4 1/4". Small and light—only 30 ounces.

**Amateur Net** ..... \$79.50

Matching Transistorized AM Receiver Model TCR-2A covers 550 to 1600 kc. **Amateur Net** ..... \$39.95



**TS-13 Handsets**

Push-to-talk butterfly switch. Handy units for use in mobile, CD units, ham use, etc. Complete with rubber covered cable and plugs. Shpg. wt. 3 lbs.

**Amateur Net** ..... \$4.95



**"Wonder Bar" 10 Meter Antenna**

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniinductor. Only 8 ft. long for 10 meters.

**Amateur Net** ..... \$7.85

**Relay Special**



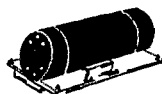
DPDT ceramic insulated relay with extra SPST contact. 12 volt DC coil. Ideal for antenna relay, or parallel all contacts and use as generator relay. **Special Price** ..... \$1.75



**Transcon  
Twin Noise Squelch**

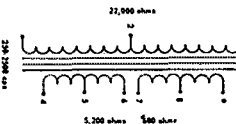
This TNS can be installed in any car radio rapidly. Tube complement: 6AK5 & 12AX7. DC power input: 150 V. DC to 225 V. DC. Filament: 6 or 12 V. Noise Level Attenuator: S2. Size: 2 1/4" x 2 1/2" x 4".

**Amateur Net** ..... \$12.95



**6 Volt Dynamotor**

Rated output: 425 V. DC at 375 ma. High efficiency, compact. 4" diam., 7 1/2" long. Shpg. wt. 13 lbs. Worth 2 to 3 times this low price ..... \$12.95



**Versatile Miniature Transformer**

Same as used in W2EWL SSB Rig — March '56 QST. 3 sets of C.T. windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the center taps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, phone patch, line to grid or plate, high impedance choke, etc. Size only 2" h. x 3/4" w. x 3/4" d. Brand new. Fully shielded. At fraction of Government cost. **Amateur Net**, each ..... \$1.39  
3 for \$3.49 10 for \$10.75

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**NEW! . . . 60-ft. 4-BAND ANTENNA  
TUNES 40-20-15-10 METERS**



Same Hi-power design except 4 bands in 60 ft. over all. Tested at 10,000 KV RF. Will handle 2 KW of well over-modulated AM. Only coils guaranteed to take a KW on the market.

Available for immediate delivery

- 40M-C 4 band KW coils . . . . . \$14.95
  - 40M-A 4 band KW antenna . . . . . \$24.50
- All antennas have 88 ft. KW twinlead, heavy duty insulators, copperweld wire.

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- HC-F 5 band KW coils . . . . . \$19.95
- HA-F 5 band KW antenna . . . . . \$23.95

**Improved quarter KW 5 band models:**

- 5 BC-F phone coils; 5BC-C CW coils . . . . . \$12.50
  - 5BA-F phone; 5BA-C CW antennas . . . . . \$27.50
- Postpaid in U.S.A.

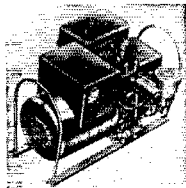
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- 700 watt (A712) Shpg. wt. 77 lbs. . . . . \$143.50
  - 1000 watt (A1012) Shpg. wt. 90 lbs. . . . . \$195.50
  - 2500 watt (A2512) Shpg. wt. 225 lbs. . . . . \$325.50
- Sizes to 3500 watts. Dual voltage models, automatic controls, etc., available. Write:

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mention of "relay jack" in the parts list; its function is determined by checking through the wiring diagram) and an antenna. Part of the responsibility for the antenna system is shared by the ARRL apparently; the Navigator instruction book says that "Solutions to antenna problems may be found in the ARRL Handbook in the chapter 'Transmission Lines and Antennas'." We agree with the basic concept, but that chapter heading is one that hasn't been carried since the 1950 edition. —B. G.

**"Club-Saver" Portable**

(Continued from page 21)

isn't plenty of activity on 2, and we consider that our project is already a genuine success. Thanks are due the president of the Fox River Radio League, Robert Downer, W9PME, and to Don King, W9OJG, and their many assistants, for their tireless efforts in getting our project rolling, and to Bob Klein, W9KRZ, and Ray Lippert, W9ZVQ, for their help with the modifications. It is our hope that, in passing along these suggestions, we may have helped a few potential builders of the popular "Club Saver" avoid becoming bald before their time.

**12AX7 Modulator Unit**

(Continued from page 41)

to an "eye" in the ground bus.

Mount modulation transformer  $T_2$  — Strip leads and insert in proper holes. Plate leads "P" connect to Pins 1 and 6 of  $V_2$  (12AX7), B+ lead connects to an "eye" on "+300" bus. Connect secondary leads (5–8–10K) to proper "eyes." Connect "Common" lead to "+" on "+300" bus lead below the  $V_2$  socket.

**Table I  
Modulator Operating Data**

	SUPPLY VOLTAGE		
	250 v.	300 v.	350 v.
Total max.-signal			
plate current . . . . .	58	70	95 ma.
12AX7 resting current	13	15	19 ma.
12BH7 resting current	17	18	23 ma.
12BH7 cathode			
resistor . . . . .	750	750	750 ohms
Max. output to 5000-			
ohm load . . . . .	4.2	6.8	9.7 watts
Distortion at max.			
output . . . . .	12.5	18	14 per cent

*Output* — Connect transmitter load of desired output impedance by connecting either the 5, 8 or 10K terminal to plate circuit of the final r.f. amplifier.

*Alternate Filament Connections* — For 6-volt operation, connect a jumper between Pin 4 of

(Continued on page 178)

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SPECIALIZING IN THE BEST AT EASY TERMS  
HIGH TRADES AND LOW DOWN PAYMENTS  
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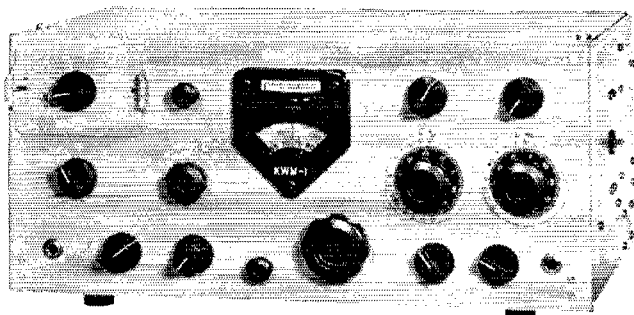
*Collins*

**KWM-1**

mobile

-----  
fixed SSB

transceiver



Component and accessory features of the Collins KWM-1 Mobile/Fixed Transceiver make it one of the finest mobile rigs available—and excellent for fixed use, too. The KWM-1 has 175 watts PEP input on SSB, and 160 watts on CW. Receiver/transmitter tuned to same frequency so you don't have to zero in. Covers amateur bands between 1.4–30 mc in 100 kc segments with 10 segments. A DX Conversion Adapter, interchanges with normal crystal box and provides seven transmitting frequencies within the band. It also allows reception over a 100 kc band in or out of the band. Another interchangeable crystal box provides Novice operation of the KWM-1. Switching is easy with crystal switch, automatic antenna switching control and logging scales on PA Load and Tune controls. Front panel meter acts as an S-meter on receive and as the tuning meter on transmit.

The Collins KWM-1 Transceiver is the most compact unit available for mobile operation with anywhere near the power—the only one available for SSB.

Remember, you go mobile first class with the Collins KWM-1 Mobile/Fixed Transceiver.

Mobile or fixed, the KWM-1 measures only 6¼" high, 14" wide and 10" deep. Electronic Supply's price is just \$820.

Collins 75A-4 SSB Receiver and KWS-1 Transmitter also available for immediate delivery.

Collins accessories available include:

516F-1 60 cycle 110 (or 115) vac Power Supply for fixed or portable operation.....**\$136.00**

516E-1 12 vdc Power Supply completely transistorized.....**\$262.00**

312B-1 Speaker in Cabinet.....**\$25.00**

312B-2 Speaker Console having 5" X 7" speaker and directional RF wattmeter.....**\$185.00**

Mobile Mounting Tray for snap-in installation which automatically connects power, speaker and antenna.....**\$86.00**

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Collins KWM-1 SSB Mobile/Fixed Station  
Transceiver.....\$ 820.00

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A Galvanized Tower that will last a lifetime.  
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Now! Tilt antenna for easy accessibility! Tilts heaviest antennas! Holds in any position!

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socket V<sub>2</sub> (12AX7) and the 12-volt bus. Connect a second jumper between Pin 9 of socket V<sub>2</sub> (12AX7) and the 6-volt bus. Connect 6-volt battery between Terminal "6V" and "ground." See Fig. 1.

For 12-volt operation, remove jumpers mentioned in "6-volt operation" above, and connect the 12-volt battery between Terminal "12V" and "ground," as shown in Fig. 1.

## The World Above 50 Mc.

(Continued from page 86)

cautions included to protect against voltages developed during ringing and when line is in use. Voltages of plus 4½ to minus 3 were read during Feb. 10 aurora.

W4FNR, Ft. Lauderdale, Fla. — CN8GX has agreed to try crossband work on 50 Mc. He is usually around 28.4 Mc.

W4HKK, Collierville, Tenn. — During the big aurora of March 11 a check was made with a good-quality hunting compass, to see if any change in heading could be observed. The needle was set exactly on north while the aurora was at its height, about 2247 CST. Compass was well away from metallic objects, and in a spot where it would not be disturbed. Setting was done with the aid of a high-grade magnifying glass. A few minutes later, when aurora signals dropped out quickly, the compass was read again, and found to be pointing ½ degree east of north. At midnight it had shifted nearly a full degree to the east. The following day it read exactly one degree east of north, and so it remained. Anyone else ever try this?

W6LIU, Lubbock, Texas — South American IGY stations heard on 49.92 and 49.96 Mc. Feb. 12, and 6 days consecutively beginning Feb. 23.

W6LWT, El Cajon, Cal. — K6OWV and others forming microwave clubs along the lines of the San Bernardino Microwave Society. All interested parties requested to contact K6OWV and pass along views.

K6OWV, Palm City, Cal. — Experimenting with K6VYA, using RT39/APG-5 cavities on 2400 Mc. Visited San Bernardino Microwave Society for information on 3300-Mc. equipment.

K6UJL, San Diego, Cal. — ZLs heard or worked on 50 Mc. Feb. 20 through 24. VKØ heard Feb. 22, and KP4s Feb. 23. More than 50 WASD certificates now issued to 50-Mc. men.

W7AGS, Seattle, Wash. — LUs and ZLs heard Mar. 2.

W7QDJ, 7, Logan, Utah — W7GPN, Ogden, finds that 70-mile path to Proro is workable consistently since he erected a 32-element beam. WTABI, with a 5-over-5, makes the grade only when tropospheric conditions are favorable.

W8WRN, Columbus, Ohio — Heard over 100 stations in 20 states on 144 Mc. during aurora of Feb. 10-11. Working W8CSW nightly on 220 Mc. Local gang on 432 Mc. have sked with W8JLQ in Toledo. W8NEE, Dayton, also heard in Columbus area on 432.

W9JIY, Indianapolis, Ind. — Completed W8JLQ-style beer-can converter for 220, using 417A-6AM4-6AM4. Shows big improvement in rejection of Channel 13, compared with former converter having conventional tuned circuits. Still have some interference with beam aimed at TV station, but in other directions reception is clear. Also made 220-Mc. converter from ARR-1, which is no match for homebuilt job as to noise figure, still but OK for local work. Run either into 6-meter Communicator for tunable i.f. Using low-powered modulated oscillator locally, taking audio and plate power from Communicator.

W9LST, Clinton, Wis. — PJ2AF and PJ2AO heard for 3 hours Feb. 23.

W9LVC, Beloit, Wis. — Recently completed 64-element array for 432 Mc. Uses 4 16-element Yagi sections, stacked 8 feet apart vertically and 10 horizontally. Also have 416B converter on 432, with noise figure of 2.6 db.

W0K1Q, Jefferson City, Mo. — Strong signals from Northern and Southern Rhodesia, Southwest Africa and Bechuanaland Feb. 22. No contacts, due to frequencies at 50.1 and 50.04. Stocked up on ammonium bifluoride next day!

W0MOX, Overland Park, Kan. — Local 2-meter activity picking up, mainly as a result of MARS net on 143.99 Mc.

# NEW PL-175 MEDIUM POWER BEAM PENTODE FROM PENTA

*Gives 25 to 30 percent more output as a Class AB<sub>1</sub> linear amplifier than tetrodes with similar ratings*

Heat-radiating fins on plate are aligned with beams, provide maximum cooling at points of highest heat intensity.

Suppressor grid terminates in base shell, which may be grounded in most applications.



One-piece, low-loss plate seal and cap is extremely rugged, resists plate seal leakage or damage, won't break off.



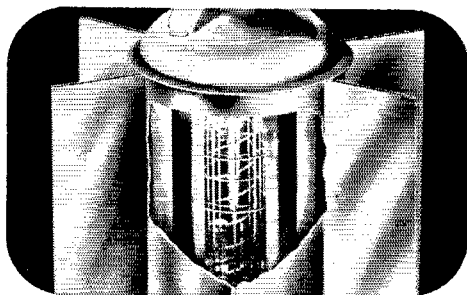
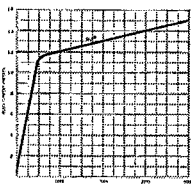
Base pin connections arranged for easy substitution of tube in equipment having old-type screen grid tubes.

Now Penta Laboratories brings to the 500- to 1000-watt output range the advantages of the exclusive vane-type suppressor grid introduced in 1956 with the 1000-watt PL-172. This new 400-watt PL-175 gives you from 25 to 30% higher output in Class AB<sub>1</sub> linear amplifiers than tetrodes with similar ratings, and with minimum distortion. Then, too, you can use it effectively in Class C amplifiers for CW, AM or FM, or as a high-efficiency, low-distortion Class AB, or AB<sub>2</sub> modulator. AS A CLASS AB<sub>1</sub> LINEAR AMPLIFIER the PL-175 gives 470 watts output with only 2000 volts on the plate — 790 watts output at 3500 volts.

AS A CLASS C AMPLIFIER a single PL-175 provides 505 watts output at 2000 plate volts, 1045 output watts at 4000 volts.

#### RATINGS

Filament voltage..... 5.0 volts  
 Filament current ..... 14.5 amps  
 Plate voltage, max.... 4000 volts  
 Plate current, max..... 350 ma.  
 Plate dissipation, max.. 400 watts  
 Grid-Screen Mu..... 5



Suppressor grid vanes guide electrons into converging beams, provide higher power output at lower plate voltages

Plate current curve at zero grid voltage shows why the PL-175 gives high power gain and operates efficiently at low plate voltages.

FREE BULLETIN ON PL-175 — write for your copy.

ASK FOR A FREE COPY OF "Transmitting Tubes for Linear Amplifier Service." This nine-page bulletin discusses linear amplifier tube requirements in detail. Graphs, characteristic curves, oscillograph linearity patterns and data show why Penta's exclusive beam pentode designs outperform four-element tubes.



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TY - 70S - 325 VOLTS 150 MA. - \$11.40

TY - 71S - 375 " 200 MA. - \$12.30

TY - 74S - 600 " 200 MA. - \$15.00

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Hams everywhere are ordering this handy, attractive album. Keep a state-by-state record as you work 'em; then mount QSL, as received from each new state, in space provided, using special adhesive hinges. Big (10"x14") with sturdy leather-texture covers, wire binding. You can inspect both sides of QSL's; remove or replace without damage. Cover planned to take your own QSL (or your call letters in gold for \$1 extra).

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Add \$1 per Album for call letters in gold).

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Street address \_\_\_\_\_

City \_\_\_\_\_ State/Country \_\_\_\_\_

**Armed Forces Day — 1958**

(Continued from page 64)

Times	Station	Navy Military Frequencies	Amateur Frequencies
1200 EST to 2400 EST	NDC (Norfolk, Va.)	7385 kc.	7175 to 7200 kc.
	NDF (New Orleans, La.)	4015 kc.	3700 to 3750 kc.
	NDS (Great Lakes, Ill.)	7380 kc.	7175 to 7200 kc.
	NDW (Treasure Island, Calif.)	7385 kc.	7175 to 7200 kc.

Times	Station	Army Military Frequencies	Amateur Frequencies
1200 EST to 2400 EST	A3USA (Ft. Meade, Md.)	4025 kc.	3700 to 3750
	A5USA (Ft. Sam Houston, Texas)	4025 kc.	3700 to 3750
	A6USA (San Francisco, Calif.)	4025 kc.	3700 to 3750

Times	Station	Air Force Military Frequencies	Frequencies
1200 EST to 2400 EST	AF8AIR (Wright to Patterson AFB, Ohio)	3295 kc.	3700 to 3750
	AF2AIR (Mitchell AFB, New York)	3295 kc.	3700 to 3750
	AF5FGJ (Kessler, AFB, Miss.)	3295 kc.	3700 to 3750



**May 1933**

. . . Well-known authors in QST 25 years ago this month included Clinton DeSoto, Art Collins, D. A. Griffin, Cal Hadlock, R. B. Bourne and Lt. J. B. Dow.

. . . Well-known topics of discussion included the participation by amateurs in the handling of emergency traffic, Class B modulation, how to get on 28 Mc., improving 56-Mc. equipment, antenna masts, improving superhet performance, and other items of perennial interest.

. . . A "personal" note remarked that Ferd. C. W. Thiede had held the call 2FC since the early part of 1913. (1958 note — he still holds it!)

. . . This issue 25 years ago reports that a QSO endurance record of 20 hours and 2 minutes was set on Jan. 28-29, 1932, by W7WY and W7HD.

. . . DX notes: W6AM was reported heard in England on 7 Mc. in the early afternoon — daylight all the way. W5KC worked SM7RV on 7 Mc., also during daylight. W9BWJ was twice heard on 3.5 Mc. by ZL2CZ.

. . . Book note: *Life's Place in the Cosmos*, by Hiram Percy Maxim, was reviewed and advertised. It dealt with interstellar space, life on other planets, signals from Mars, and the like. Said H.P.M., "The Martians may have been signaling us for centuries hoping that someday we would detect these signals and answer them."

. . . That famous SW-3 receiver, product of the National Co., was advertised for less than \$15, plus coils.

. . . A Byron Goodman, W6CAL, was SCM of the San Francisco section.



Heard on 40 c.w. — KN8IKE calling KN8HRY. — W8SQH

# Transistor Power Supplies\* and Components

\* Complete Units

## D SERIES (Standard)

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at 1/2 selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4 3/4" x 3 1/4" x 1 1/4" Wt.: 10 oz. 6- or 12-V Input: **\$39.95** 24-V Input: **\$61.95**

## DA SERIES

Continuous operation at 45 watts, 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4 3/4" x 3 1/4" x 1 1/4" Wt.: 14 oz. 6- or 12-V Input: **\$57.50** 24-V Input: **\$79.50**



# Toroid Transformers for Transistor Power Supply Application

## H SERIES

**H-6-450-1** Input: 6-VDC. Output: 450-VAC center tapped... 450 and 225 VDC from bridge rectifier... 45 watts.

**H-14-450-12** Input: 12/14-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 55 watts.

**H-28-450-15** Input: 24/28-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 65 watts.

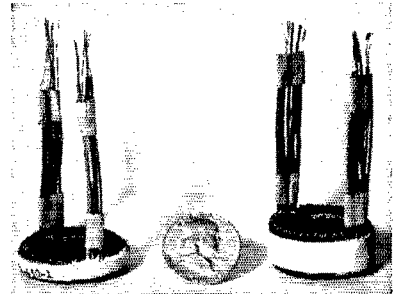
**H-6-100-125-150-D** Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

**H-12-100-125-150-D** Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

**H-24-100-125-150-D** Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **\$16.00 ea.**

With Encapsulation (3 ozs.). 1-10 units: **\$18.50 ea.**



## HD SERIES - 2000 CPS

**HD-6-225-300-2-D** Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

**HD-14-225-300-2-D** Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

**HD-28-225-300-2-D** Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$18.50 ea.**

With Encapsulation (4 1/2 ozs.). 1-10 units: **\$21.50 ea.**

## HDS SERIES - 2000 CPS

**HDS-6-225-300-2-D** Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

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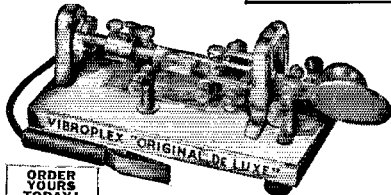
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**Correspondence From Members**

(Continued from page 75)

ing timed photographs of the satellites has been a fascinating combination of the two hobbies of photography and radio which I, and I am sure many other hams, have. I wonder how many of the fraternity are involved in such a project? Not many good photographers have the equipment to receive or transcribe WWV time signals, but I am sure that many hams have the suitable camera equipment. I would be interested to get in touch with any other hams that are engaged in this type of project.

— Robert E. Wallace, K6YIW

[Editor's note: At the time we go to press, W1AW is transmitting bulletins on Explorer and Vanguard positions and times, on all the regular W1AW bulletin schedules.]

**RIDICULOUS INDEED**

P. O. Box 696  
Redwood City, Calif.

Editor, QST:

The article by Pickering, W9LRA, in April QST, is just the latest in a long series of illustrations that those who run QST from behind the scenes are still striving to destroy amateur radio. The system described by W9LRA (undoubtedly a paid apologist for the malevolent forces at work influencing ARRL policy) is far too complex for the great majority of amateurs to get working properly. Furthermore the stuff is almost impossible to tune on our receivers.

Lastly, it is ridiculous to believe that anyone could memorize the arrangements of long and short signals which must be used to make use of this threat to our beloved ham radio.

— Albert E. Hayes, jr., K6EWY

**SHEER RAPTURE**

722-5th Avenue S.  
Great Falls, Mont.

Editor, QST:

You may be interested in some research I have done on n.s.b. Being a radio amateur and having a pioneering spirit, I felt obligated to try W9LRA's n.s.b. mode of communication. To outline my rig, I had a phasing-type s.s.b. exciter with carrier injected, modulated by a 60 c.p.s. square wave, feeding into the carrier exalting stage suggested by W9LRA. This basic signal was then heterodyned to 3800 kc. and fed into a 6V6 final to give 10 watts to the antenna, enough for me to make my debut with this radical signal. Much to my surprise I found mild success as shown by my contacting other experimenters, with very good readability, as far as California, Washington, Canada, and Minnesota. Imagine that with 10 watts on 80 meters from Montana!

Although n.s.b. may be something to experiment with, due to the high cost per watt and the complexity of the equipment needed I can hardly see how a side-bandless interrupted carrier will ever become a practical type of emission.

— David A. Cromley, W7UJH

508 Dogwood Drive  
Sumter, S. C.

Editor, QST:

What happened? I wish to express a very indignant attitude. Today I received my April issue of QST. To my horror, the famous (infamous?) name of all hamdom's hero, Larson E. Rapp, was missing from the table of contents. Feeling sure that this could be nothing more than an oversight, I frantically searched for even the smallest few lines of copy from the mill of that talented artisan of the air waves — but, alas and alack, no Rapp! (Not even a crime!) What has gone with Larson E.!

Pickering's article on n.s.b. was delightful, but still not up to Rapp!

— Bob Yates, W4GCB

2625 West Ainslie St.  
Chicago 25, Ill.

Editor, QST:

Re n.s.b. in the April issue of QST — Pickering is okay but I miss Rapp.

— Richard W. Gillis, W9PCQ

(Continued on page 184)





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Editor, *QST*:

... A cry went through our school (the Bronx High School of Science) — "We want Rapp back!"

— David S. Alberts, K2YDJ

## TO EACH HIS OWN

P. O. Box 430  
Sackets Harbor, New York

Editor *QST*:

When is all this hog wash — about a guy or gal not being a real ham unless he builds his gear — going to stop? Surely the ham who builds his gear can take a great deal of pride in his accomplishment (if it works), but I see no reason why an A-1 operator with commercial equipment cannot be equally as proud of his operating accomplishments. My particular cup of tea is traffic, but I respect the other ham's right to enjoy his favorite phase, be it DX, rag chewing, construction or experimentation. I ask for his mutual respect. Ours is the king of hobbies *because* it has so many interesting phases.

Let each enjoy it as he sees fit!

— Jack Zuzula, K2GWN

## CQ RAG CHEWERS ONLY

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Editor *QST*:

May I state my full agreement with K1CPQ (Feb. 1958 *QST*), K2E0F (Let's Talk, Dec. 1957 *QST*), and KN4OGY (Oct. *QST*).

Far too many American hams just won't or can't talk enough to carry on a conversation. I have seen that many times before from the viewpoint of a foreign station. With infrequent exception, I have found it virtually impossible to either entice or force W and K stations to drop the stereotyped signal report, name and QTH type QSO and let their hair down into a friendly rag chew. I have recently returned to Europe once again, but ceased 20-meter operation primarily because all QSOs smacked of repetition. Even before I quit 20 meters, I quit calling stateside stations for just that reason. The worst offenders are those who willingly give inflated signal reports such as 579 and then immediately protest of sudden QRN, QRJ, etc., when a ragchew is attempted, but who never fail repeatedly to ask for that QSL. The alternative plaint often heard is "you're only 559 OM; CU when condx better; QSL sure." Those routines are both common and discouraging to the DX station. K1CQP, K2E0F, and KN4OGY couldn't have stated it better. So, it's back to the v.h.f. section for me — where people can and do carry on conversations, not QSOs.

— CWO John P. Drummond, W3YHI/DL4WV

## FOR MORE MOBILE QSOs

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Editor *QST*:

How many times have you called CQ while you are mobile on 6 meters when on a long trip and never gotten an answer? Maybe the activity on 6 was a little low in that locality, but how about other mobiles?

Maybe there is another 6 meter mobile going down the road just a few miles ahead of you, and you never hook up, because you are not on at the same time.

Why not make a mental note to set a schedule of calling and listening for a few minutes on the hour. I believe there would be a lot more contacts made that way, and think of the fellows you could meet at lunch stops!

I drove to the west coast last summer, and did not make a 6 meter contact after leaving Minneapolis until I got to Billings, Montana. I know that there are some mobiles on 6 on that highway.

We have about 25 mobiles on 6 meters here in the Minneapolis, St. Paul area. So how about it, fellows?

— Vern Chirhart, K0DYT

(Continued on page 186)

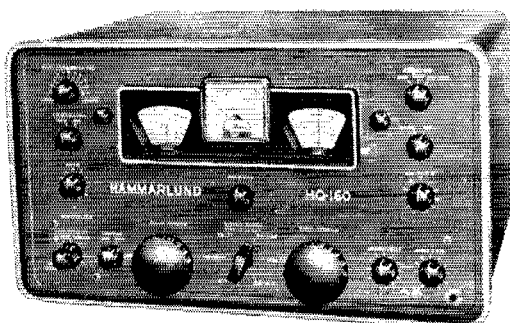
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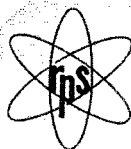
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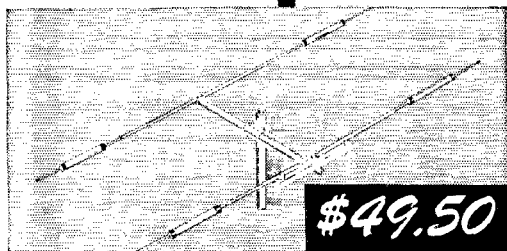


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Editor *QST*:

I've wanted to write and thank you for a number of things for some time. Those last two covers gave me the final push. Thanks to the man who drew them.

Thanks (twice) to the technical aid department.

Thanks for Monimatch, Conelette, keyer, sequence keying with relays, and the t.r. switch (I like to solder).

How about some general information about linear amplifiers, grounded grid especially? I do not have the latest not-yet-in-the-catalog tubes to play around with.

— Peter Beckman, O.S.B., K0CRH

## TAPE vs. TALK

R.F.D. 1  
Wadsworth, Ohio

Editor *QST*:

In answer to W5FLS's article, "Why be a ham?": Well, I've been licensed for 2 years now and have yet to find a hobby that can offer as much. Tape recordings are fine but can your other party give you an immediate answer to a question? Can you run a contest? You can't even rag chew!

Compared to our beloved hobby of ham radio, tape-recording is just plain dull. Mr. Wood, you can keep your recorder, just give me my rig and I'll be happy.

— Bruce Muscolino, K8BAL

## NOVICE NOTES

Rt. 1, Box 18  
Nashville, Tennessee

Editor *QST*:

I second the letter of W0AWK. Please encourage Novice operators to work below 21.2 Mc. What horrors to hear VU2CQ coming in Q4, R5, and a Novice zero-beats him (with v.f.o.) and calls, then sends V V V after failing. Please, this is no laughing matter.

— Steve Lawrence, W4ZMC

South Portland, Maine

Editor *QST*:  
We heartily disagree with William F. Rust W0AWK, who, in February *QST*, states his opinion that Novices are a menace to the 15 meter DX band.

He also states that he thinks that the Novice band should be shortened to include 21.100 to 21.150 kc.

We feel that all that Mr. Rust is trying to do is become a member of the Silent Keys club before his time.

We think that Novices have barely enough space to work real DX as it is.

— Walter Smith, KN1OWQ and  
Ronald Fullerton, K1BAZ

5911 Chester Avenue  
Philadelphia 43, Pennsylvania

Editor *QST*:

In answer to W0AWK's squawk about Novice frequencies, I would like to go to the next decimal place. Namely, the Novices should be taken off the 15-meter band!

A Novice can get into enough TVI trouble without tuning his rig directly into the i.f. of his neighbors' one-eyed monster. I spent my Novice year on the 40-meter "Leper Colony" doing just what the Novice ticket was made for—exchanging names, 5-7-9 reports, and practicing code.

I feel that the most horrible temptation to be dangled before a Novice is the two-meter fone band. It has been the downfall of many an aspiring ham. Two meters should be given to the technician along with six.

— John P. Stowe, W3JQE

1400 Exeter Avenue  
Middlesboro, Kentucky

Editor *QST*:

The following comes from the ARRL *License Manual*:  
"As an incentive to encourage a greater number of people  
(Continued on page 188)

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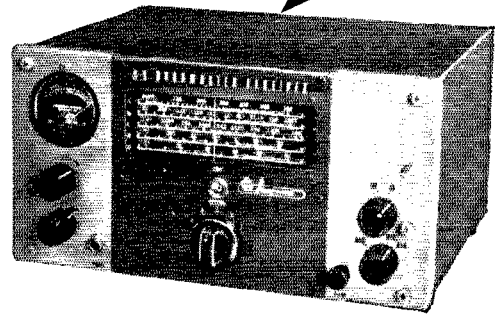
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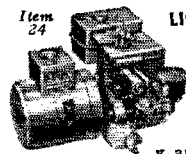
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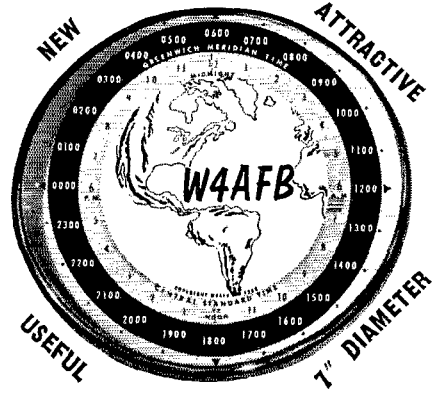
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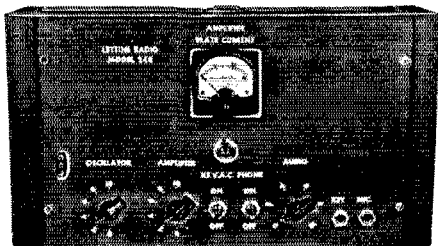
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ALTADENA, CALIFORNIA

to engage in the hobby of amateur radio, the FCC has established a Novice Class of license. . . . The fact is that when non-ham friends visit me and hear the QRM on the Novice bands, their usual comment is, "That does it."

Of the 1250 kilocycles allowed to the amateur operators, only 250 is permitted the Novice. This figure is from the 80-, 40-, and 15-meter bands. Then a man comes along wanting to take 100 kilocycles of our 250 away from us, leaving us with a grand total of 150 kilocycles to all crowd into, goody-goody.

Very little DX is got on the 80-meter and some DX is gotten on the 40-meter band. But to get that WAS or WAC or maybe DXCC as a Novice, one must go up on 15, so 15 meters gets operators from both 80 and 40 which piles up the QRM.

More than 10,000 people got Novice tickets the first six months of 1957. The QRM now is murder and will get worse, but imagine us with only 150 kilocycles to "brass-pound" in, gosh.

— Michael Lambdin, KN4PPK

## THE NR

625 Washington Avenue  
Charleroi, Pennsylvania

Editor QST:

Hurray, we've done it again. The N.R. was off to a bang-up start. I didn't enter but listened in — tremendous Q.R.M. How many N.R. entrants were having a f.b. N.R. QSO on 7.172 between 1125 es 1135 EST 2-2-58? Special tx should go to the ham (loosely said) who was considerate enough to tie his key down at 1126½ and let it up at 1132. Even I, a beginner, know enough to use a dummy load for a test. No bad luck to him but if his final is scattered around his shack, I will gladly send flowers.

— William V. Byron, KN3AOD

## "DO-IT-YOURSELF"

Saltspring Island, B. C., Canada

Editor QST:

Read with interest your "25-890-Mc. Filing." The section about our "contributions to the art," brought forth the following: do you honestly think the fellow who buys a factory-made transmitter, receiver, and antenna, and gets on the air (after one of those mail-order exams), is contributing anything to the art?

How about more exhortation for the do-it-yourself style to counteract all this mass advertising for buying ready-made gear?

The technical advances that we have brought forth are one of the basic excuses for our existence. Let's not rest on our laurels.

— Gus Nitsch, VE7AIH

## ETCHING

65 Whitethorn Dr.  
Miami Springs, Fla.

Editor, QST:

I sure want to thank you for your article in January QST on etching xtals. Some time ago, I bought 100 xtals for \$5.00 in the hope I could grind them to desired frequencies. Well, I reckon I just don't know how to grind xtals!

Although my first attempt at etching ended in failure due to loss of activity at the desired frequency, all succeeding attempts have been 100% successful.

By the way, the supply house wouldn't sell me less than a pound of the chemical so I figure I have enough to last a thousand years.

— J. J. Kessel, W4HQW

## THREE TUBES

4 Bryant Crescent  
White Plains, New York

Editor, QST:

The two-band three-tube superheterodyne described on page 111 of the ARRL Handbook (1956 edition) is one of the most refreshing projects I have worked on for a long time. I am sure that the late Dr. Armstrong never dreamed of that much performance in three tubes, when he developed the circuits. Thank you for a job well done.

— Arthur Blumenfeld

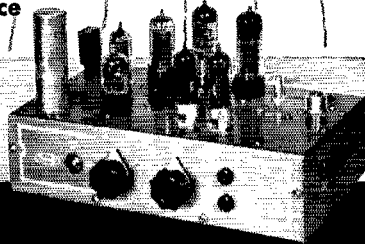
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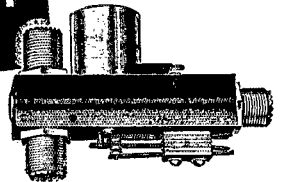
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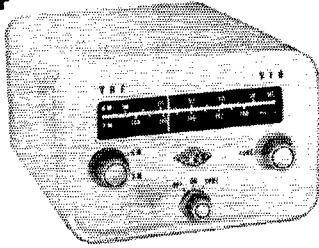
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## NEW BOOKS

**Radio-Television & Basic Electronics**, by R. L. Oldfield. Published by American Technical Society, 848 East 58th St., Chicago 37, Illinois. 4¾ by 8½ inches, 342 pages, including index. Cloth cover. Price, \$4.95.

Covers elementary electrical and electronic theory, transmitters and receivers — a.m., f.m., and television — and antenna systems. There are also chapters on acoustics, loudspeakers, high-fidelity systems, and transistors. In a book of this size, the many applications of electronics can only be highlighted, but as a "reading" text it should be a good introduction to the subject.

**Pictorial Microwave Dictionary**, by Victor J. Young and Meredith W. Jones, published by John F. Rider, Inc., 116 West 14th St., New York 11, N. Y. 110 pages, 5½ by 8½ inches, paper cover. Price, \$2.95.

The word "pictorial" probably conjures up an image of a picture book using as few words as possible. This is not such a book, and the authors also point out in their preface that it is not exactly a dictionary, either. It is about microwaves, though, and it does use illustrations wherever they will help to illuminate meanings. The definitions are not given with dictionary-type conciseness (which often only adds to confusion) but include enough explanatory material so that readers whose activities may be in technical fields other than microwaves will have no difficulty in grasping the essential ideas.

**The Use of Selenium Photocells and Sun Batteries**, by John Sasuga, published by International Rectifier Corporation, 1521 E. Grand Ave., El Segundo, California. 84 pages, 6 by 9 inches, paper cover. Price, \$1.50.

This booklet is divided into ten chapters and an appendix, the first nine chapters covering the principles of self-generating type photocells (sun batteries), light-powered devices using them, light sources, photoelectric relays, photometers, various types of light-operated relays, light-beam communication, and miscellaneous applications. Chapter Ten is a reprint of five articles from national magazines (including one from *QST*) covering applications of sun batteries. The appendix contains technical information on sun batteries and includes a list of references on the subject. Written for the experimenter, the book is full of circuits for various types of light-operated devices.

**Handbook of Basic Circuits, TV-FM-AM**, by Matthew Mandl, published by the Macmillan Company, 60 Fifth Ave., New York 11, N. Y. 365 pages, including index, cloth cover, 6½ by 9½ inches. Price, \$7.50.

The form of this book is unusual; where the ordinary handbook is commonly divided into sections each taking a particular subject, the arrangement here is alphabetical by circuit name — somewhat in the style of an encyclopedia. Thus one finds "pulse delay line" between "pre-emphasis" and "push-pull amplifier."

The intention is to cover basic circuits used in radio and television (136 of them are treated in all), describing the operation of the circuit and the functions of its components. This objective is achieved very well. The book would have been even more helpful, however, had representative circuit values been included for typical applications.

**Training Manual on Antennas, Volume 1**, published by Philco TechRep Division, Philco Corporation, 22nd St. & Lehigh Ave., Philadelphia 32, Penna. 224 pages, including index and question and answer sheets. 8½ by 11 inches,

(Continued on page 198)



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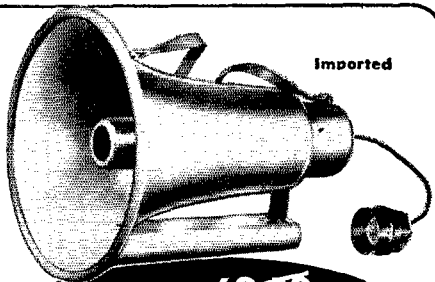
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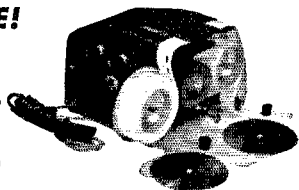
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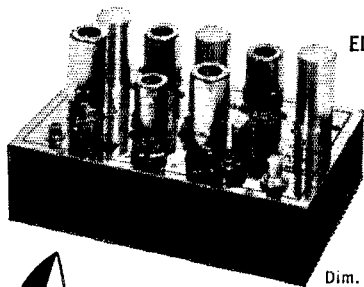
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This publication has been prepared for training courses in connection with military radio equipment. The text is descriptive rather than mathematical (although the usual formulas for antenna dimensions, characteristic impedance of transmission lines, and similar practical applications are included) and at a level that should be just about right for the interested amateur. Topics covered are wave propagation, antenna fundamentals, transmission lines, antenna feed, coupling circuits, types of antennas, and construction and measurements. A 20-day course outline is included, with four multiple-choice type examinations.

**Introduction to Printed Circuits**, by Robert L. Swiggett, published by John F. Rider Publisher, Inc., 480 Canal St., New York 13, N. Y. 112 pages, 5½ by 8½ inches, paper cover. Price, \$2.70.

Describes the various types of printed, etched, and plated circuits and how they are fabricated. Chapters on suitable components and on servicing printed-circuit assemblies are also included.

**Frequency-Modulated Radio**, by K. R. Sturley, published by the Macmillan Company, 60 Fifth Ave., New York 11, N. Y. 120 pages, including index, 5 by 6½ inches, cloth cover. Price \$3.00.

This is a British book, written by the head of the BBC Engineering Training Department, but there is so little difference between U. S. and U. K. practice in f.m. broadcasting that the details of carrier frequencies, deviation, and so on are equally applicable here. Its purpose is "to explain the principles of frequency modulation in terms that can be readily understood by the practical man." Its three main divisions are on general principles, methods of producing frequency modulation, and methods of f.m. reception. There are also short chapters on f.m. receiver tests and on features of a.m.-f.m. combination receivers. The reader with a moderate technical background will find it easy to follow.

**Radio Electronics Made Simple**, by Martin Schwartz. Published by American Electronics Co., 1203 Bryant Ave., New York 59, N. Y. 191 pages, including index, 6 by 9 inches, paper cover. Price, \$1.95.

About two-thirds of this book is spent on the elementary principles of electricity, magnetism, and vacuum-tube operation. Applications such as oscillators, transmitters, and various types of receivers are discussed in the remaining space, with a very brief concluding chapter on antennas. Designed for the raw beginner, it touches on the principal points in each subject division and uses a minimum of mathematics.

**RCA Magnetrons and Traveling-Wave Tubes** (Form No. MT-301), published by Tube Division, Radio Corporation of America, Harrison, N. J. Paper cover, 40 pages, 8¾ by 10¾ inches. Price, 50 cents. Order direct from Commercial Engineering, RCA Tube Division, Harrison, N. J.

The best way to describe this booklet is to quote the introduction: "This publication has been prepared to assist those who work with microwave tubes and circuits. It includes information on the operational theory of magnetrons and traveling-wave tubes, their operating considerations and applications, and techniques for measurement of their important electrical parameters." To which we might add that the text is concerned with giving a physical description of the phenomena rather than a mathematical treatment and is therefore very readable. Characteristics of their magnetrons (4J50, 4J52, 6521) and a traveling-wave tube (6861) are included.

(Continued on page 104)



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Mr. A

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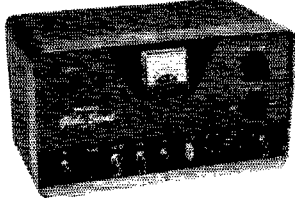
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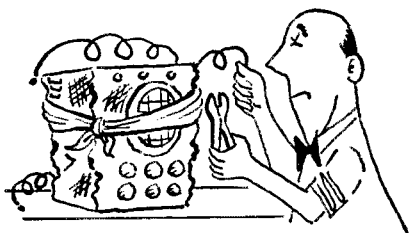
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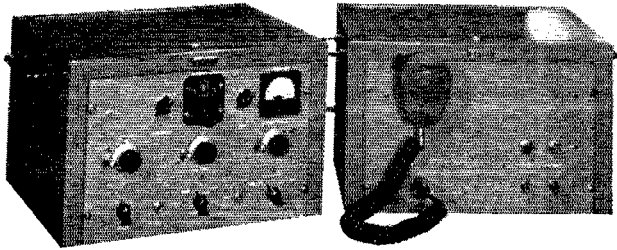
Picture Book of TV Troubles, by the John F. Rider Laboratories Staff. Published by John F. Rider Publisher, Inc., 480 Canal St., New York 13, N. Y.; 5½ by 8½ inches, paper covers. Vol. 5, *Horizontal Output and High-Voltage Circuits*, 108 pages, \$1.80; Vol. 6, *Horizontal and Vertical Sync Circuits*, 120 pages, \$1.80; Vol. 7, *Sound Circuits and Low-Voltage Power Supplies*, 64 pages, \$1.50.

These are the latest additions to the series described previously (*QST*, August, 1956). For service technicians, showing both picture-tube and oscilloscope patterns typical of the fault under discussion.

**Strays**

The following ten Electro-Commandments recently appeared in *Report*, a publication of the U. S. Naval Ordnance Laboratory.

1. Beware the lightning that lurketh in an un-discharged capacitor lest it cause thee to bounce upon thy head in a most ungentlemanly manner.
2. Cause thou the switch that supplieth large quantities of juice to be opened and thusly tagged that thy days may be long in this earthly vale of tears.
3. Prove to thyself that all circuits that radiateth and upon which thou worketh are grounded and thus tagged lest they lift thee to radio frequency potential and causeth thee to make like a radiator, also.
4. Tarry thou not amongst those fools who engage in intentional shocks for they are not long for this world.
5. Take care thou usest the proper method when thou taketh the measure of a high voltage circuit so that thou dost not incinerate both thee and thy test meter; for verily, though that hast no plant account number and can be easily surveyed, the test meter doth have one and as a consequence bringeth much woe unto the supply officer.
6. Take care thou tampereth not with interlocks and safety devices for this incurth the wrath of the supervisor and bringeth the fury of the department head upon thy shoulders.
7. Work thee not on energized equipment for if thou dost so thy shopmates will surely be buying beers for thy widow and consoling her.
8. Verily, verily I say unto thee never service equipment alone for electrical cooking is sometimes a slothful process and thou might sizzle in thine own fat upon a hot circuit for hours on end before thy Maker sees fit to end thy misery and drag thee into His fold.
9. Trifle thee not with radioactive tubes and substances lest thou commence to glow in the dark like a lightning bug.
10. Commit thou to memory all the works of the prophets which are written down in the chapters of thy bible which is the Safety Manual, and which giveth out with the straight dope and consoleth thee when thou has suffered from thy superior.



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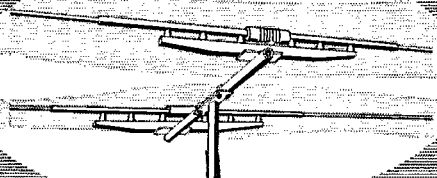
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The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by 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 4 1/4 by 9 1/2 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

- W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
- W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
- W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
- W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
- W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
- W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
- W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.
- W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
- W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
- W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.
- VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
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- VE6 — W. R. Savage, VE6EO, 833 10th St. N., North Lethbridge, Alta.
- VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
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- VO — Ernest Ash, VO1AA, P.O. Box 8, St. Johns, Newf.
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- KH6 — Andy H. Fuchikami, KH6BA, 2543 Namaau Dr., Honolulu, T. H.
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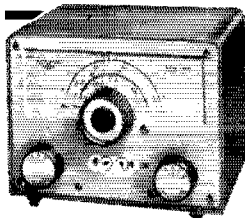


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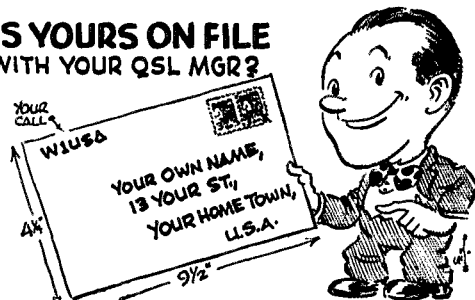
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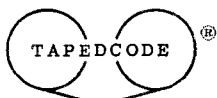
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The services from WWV include (1) standard radio frequencies of 2.5, 5, 10, 15, 20 and 25 Mc., (2) time announcements at 5-minute intervals by voice and International Morse code, (3) standard time intervals of 1 second, and 1, 3 and 5 minutes, (4) standard audio frequencies of 440 cycle (the standard musical pitch A above middle C) and 600 cycles, (5) radio propagation disturbance warnings by International Morse code consisting of the letters W, U or N, together with digits from 1 through 9, indicating present North Atlantic path conditions and conditions to be anticipated. (See ARRL *Handbook* for details on interpretation of forecast symbols.)

The audio frequencies are interrupted at precisely two minutes before the hour and are resumed precisely on the hour and each five minutes thereafter. Code announcements are in Universal Time using the 24-hour system beginning with 0000 at midnight; voice announcements are in EST. The audio frequencies are transmitted alternately: The 600-cycle tone starts precisely on the hour and every 10 minutes thereafter, continuing for 3 minutes; the 440-cycle tone starts precisely five minutes after the hour and every 10 minutes thereafter, continuing for 3 minutes. The fourth minute of each 5-minute period is silent, and voice announcements are made during the fifth minute. The one-second intervals are heard as a clock-like tick; the tick at the beginning of the last second of each minute is omitted.

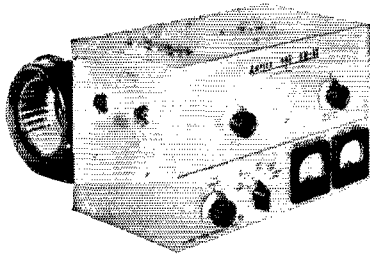
**Silent Keys**

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

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- W1GCG, Fred G. Hunt, Bedford, Mass.
- W2OWT, Charles A. Quick, Syracuse, N. Y.
- W3HLX, Norman G. Tulp, Ellicott City, Md.
- W3MGB, Randal R. Forester, Monessen, Pa.
- W4GFH, H. Halpine Smith, Palm Beach, Fla.
- W4NJA, Myron H. Pierce, Burns, Ky.
- W5LHJ, Marcus E. Noble, jr., Houston, Texas
- K6CCX, Evan E. Cummings, Sacramento, Calif.
- W6FZW, Kenneth A. Tatton, Stockton, Calif.
- W6CAL, George W. Sinclair, Tucson, Ariz.
- WN6SIZ, Robert M. Hubenette, Monterey Park, Calif.
- W6YUW, Evan C. Bourdon, Oakland, Calif.
- W7EOB, James E. Taggart, Salt Lake City, Utah
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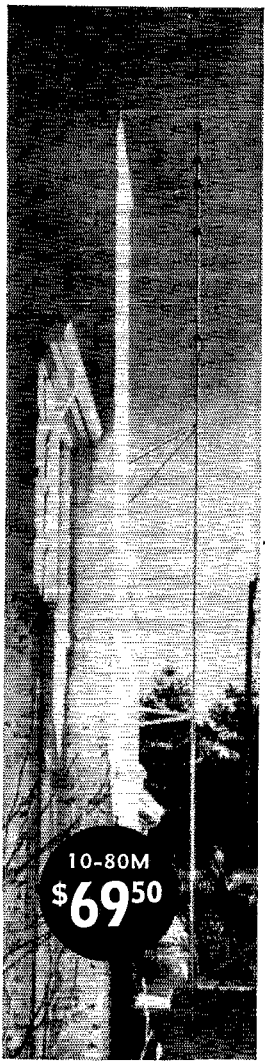
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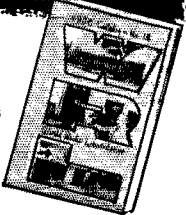
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**WANTED:** BC-610E, BC-614E, JB70 Junction Box, BC-939; ART-12, BC348, BC312, BC342, ARC-1, ARC-2, other military and aeronautical surplus. Give condition, name price. We pay C.O.D. James B. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

**VAN SICKLE,** Gene, W9KJF, invites you to shop his fabulous new electronic supermarket for latest gear at lowest prices. Van Sickle Radio Supply Co., 4131 N. Keystone, Indianapolis, Ind.

**WANTED** for restoration purposes RCA parts made in 1922, 2-WP855 rheostats, 2-UP415 reactors, 1-W111655 choke, 1-1UC1634 condenser. Geo. N. DeLaplaine, Box 861, New Brunswick, N. J.

**QSLs? SWLs? Finest and largest variety samples 35¢ (refunded).** Callbooks (latest), \$5.00. "Rus" Sakers, W8DED, P. O. Box 218, Holland, Michigan (Religious QSLs on request).

**QSLs**— 33 new designs 3 colors glossy stock order 300 and get them all plus 100 noteholds in 2 colors plus 5 x 2 engraved plate with your call plus 1,000 name and address labels all for \$10 or just 200 QSLs (20 different designs) for \$5. Get surprise of your life. 48-hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Maryland.

**QSLs.** Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

**QSLs.** Reasonable, 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

**QSLs-SWLs.** High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

**QSLs.** Twenty for Dollar. Curley, 200 Buntington Rd., Chester, Pa. QSLs, SWLs, VHF's, XVT, OAF's. (Sample assortment approximately 94¢.) Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fatubulous, DX-attracting, prototypical, snazzy, unparagoned, cards, Rogers, K0AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!).

**QSLs,** Taprint, Union, Miss.

**QSLs.** Plain and fancy samples 10¢. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

**CREATIVE** QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins Jr., K6GZMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

**DELUXE** QSLs, Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

**QSL-SWL** samples free. Bartinoski W2CWE Press, Williamstown, New Jersey.

**QSLs-SWLs.** 100, \$2.50, Samples 10¢. QSO file cards, \$1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

**RACKUS** Press QSLs-SWLs. Samples dime. 703 Cumberland St., Richmond, Va.

**QSLs-SWLs.** Samples free. Spicer, 4615 Rosedale, Austin 5, Texas. QSL "Brownie." W3CJT, 3110 Lehigh, Allentown, Penna. Samples, 10¢; with catalogue, 25¢.

**QSL Special.** Free sample. Nat Stinnette, W4AYV, Umatilla, Fla.

**QSL-SWLs.** Samples 10¢. Maigo Press, 1937 Glendale Ave., Toledo 14, Ohio.

**QSLs,** Sharp! 200 one color, glossy, \$4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

**QSLs-SWLs.** 100, \$2.85 up. Samples 10¢. Griffith, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

**QSLs.** Samples, dime. Printer, Corwith, Iowa.

**QSL.** samples dime. Eddie W. Scott, W3CSX, Fairplay, Maryland. QSLs: Cartoons, colors, something different! Samples 20¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

**QSLs.** Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

**QSLs**— We've printed a million! Samples 10¢. VYS QSLs, 1704 Hale St., Ft. Wayne, Ind.

**QSLs** of distinction. Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Penna.

**PHOTOGRAPHIC** QSLs-SWLs at reasonable prices, plus distinctive assortment by Mike, Samples 10¢, K6GJ Press, 678 South Cloverdale, Los Angeles, Calif.

**SELL!** New Messner 150-watt pi-network rotary inductors, \$2.40 each! National NPW-O gear driver with 6 gang capacitors, \$2.75. FH for VFO, receiver, etc. F.o.b. Joe Harms, W1CFE, Plustow, N. H.

**QSLs.** High-gloss 2-colors, samples 10¢ (refunded). K2VOR Press, 62 Midland Boulevard, Maplewood, N. J.

**RUBBER** Stamps for Hams, sample Impressions. W9UNY, C. W. Hamm, 542 North 93rd St., Milwaukee, Wis.

**WANTED:** Used receivers and transmitters: Will pay cash or trade, 10% down with up to 24 months to pay, in stock: new 754As, KWS1s, KWM-1 SSB mobile transceiver, Johnson, WRL, B&W, National, Hallcrafters, Elmas, Hammarlund, Conset, Central Electronics; Mosley, Hy-Gain and Gotham beams. Write for list of bargains in reconditioned receivers and transmitter with new guarantee. Shipped on approval. Write Ken, W0ZCN, or Gen, W0ZKD for your best deal. Ken-Fis Radio Supply Co., 428 Central Ave., Fort Dodge, Iowa.

**SELL!** Viking Vallant, factory-wired, \$325; DB23, \$35; DX100, \$185; Hammarlund HQ150 and speaker, \$245. F.o.b. K2SRO, RFD NR1, Millville, N. J.

**DELTA-TENNA** ground planes, commercial quality 2 mtr \$19.95, 6 mtr, \$24.95; 10 mtr, \$29.95. Also cut to any commercial frequency 450-20 Mc. Western Gear, Dept. Q, 132 W. Colorado, Pasadena, Calif.

**IMMEDIATE** answer to your request for new listings of reconditioned equipment and our new complete amateur catalog. We give you a realistic deal always on all brands, new or used. Check our offer first. We deal quickly, easily and on a personal basis. Our terms tailored to your budget. Stan Burghardt, W0BJV, Burghardt Radio Supply, Watertown, So. Dak.

**RECEIVERS** and transmitters repaired by experts. Authorized factory service. Ham prices. M. T. C., 239 East 149th St., Bronx, N. Y. Tel. MO 5-1100.

**DON'T** Fall! Check yourself with an up-to-date, time-tested "Sme-check Test." Notice \$1.50; General, \$1.75. Amateur Radio, 1013 Seventh Ave., Worthington, Minn.

**COMPLETE** Station NC-98, DX-100 with new D-K relay, B&W haluns, Bud FCC-90-A calibrator, Johnson Low-pass, Astatic D-104 mike with desk stand, Monomatch with meter, misc. tubes, etc. Sell for \$375. F.o.b. QTH or best offer on individual items. Les Reitz, W0WEA, Watertown, Minn.





FOR Sale: 75A-4, A-F-63, Vallant, 6N2, DB-23. Tape recorder, modulation transformers, power transformers, chokes, condensers, meters, self-addressed envelope for list. Wanted: UTC 8-37 and 8-38 and C-310-B VFO, B1H, W6VPO, 10K15 Rose Ave., Ontario, Calif. RCA Scope W088, like new, \$138; Senior Voltohmmeter, \$58; Gonset Super Six mobile converter, \$35; Tecraft 2 volt converter for Collins 75A series, \$35; 522 converted for 2 mtrs and power supply, ready for rack mounting, \$75. Alfred Bein, K2BWWQ, 26 Lenox Ave., Hilton, N. J.

WANTED: R&W 5100-B, Collins 32V2, Hallcrafters HT-30, or CE 20-A, W7DBA. P. O. Box 581, Yakima, Washington.

COLLINS 75A4, used 30 hours, brand new condition, \$580; Hallcrafters HT-32, never used, \$335. Will ship either item collect in original packing, 55 foot Apropode tower, prop pitch rotator, 2 in. aluminum mast, selsyn, installed in tower; stacked 10-15-20 meter beams, 10 & 15 Hy-Lite 3-el., 20 meter Telrex, 3-el, surplus radio compass direction indicator, all for \$200. Additional \$15 charge for crating and shipping collect. Frank Fairchild, K2IXC, 23 Wood Ridge Lane, Sea Cliff, L. I., N. Y.

COIN Collector will trade radio parts or tubes for old U. S. coins or proof sets. Advise what coins you have, their condition and what you need. Have most any part necessary to build up to 1 KW transmitter. R. M. Jones, W4WR, 1604 No. 17th St., Birmingham 4, Ala.

FOR Sale: Hammarlund HQ-120X with outboard unit for SSB reception (selectable upper or lower sideband, 50 Kc. I.F. system and product detector) with speaker, \$170. F.o.b. NYC. H. Weintraub, W2KRB, Tel. Jerome 6-8114.

FOR Sale: All band 80-40-20-15-10 mobile transmitter, Eimac A54H, \$75; Central Electronics 1013, like new, \$100. Bob Fogte, W2ZOC, 191 Washington St., Lockport, N. Y.

SELL SSB equipment, like new condx; 75A4 extra, 500 cycle filter, \$395; HT-32, like new, L1000A linear, \$395; H&W T111, 1000 cycle filter, \$15. Free delivery 100 miles. W. C. Gosch, W1CUX, 143 Haverford St., Hamden, Conn.

FOR Sale: NC240D, \$125; AT-1 and AC-1 coupler, \$120. Both new and xmtr, \$135. Gall Splitter, 4207 Somerset, Detroit 24, Mich. EXCELLENT DX35, VFI100 \$65. Charles Roman, 23 Lincoln Rd., Plainview, N. Y. WE 5-3280.

HARDLY used Hammarlund, HQ110, double conversion, all ham bands and 6 meter band, 8 meter, xtal calibrator, clock timer and matching speaker. Cost, \$253.50. Real bargain at \$200 F.O.B. In perfect condition, in original factory carton. J. Armstrong, 411 W. Liberty St., Springfield, Ohio.

HEATH AT-1, \$23; RCA AVR-1 revr. 2400 Kc to 6500 Kc, \$8; ARR-1, \$2; Johnson SWR, new, \$8; Headset and mike, sound-powered phones, \$3. Jim Dukas, W8OPB, Box 11, Belpe, Ohio.

COLLINS 75A3 excellent condition, many spare tubes, \$375. Higgins, 1 Enterprise Dr., Bruswick, Me.

WANT January 1925 QST. W1KKE, % ARRL.

WRL Screen modulator, \$8; T-26 carbon microphone, \$1; 24-250V DC dynamotor, \$1.50; 300K microscope set, \$10 or trade for equipment. Jon Harlan, K4OCZ, 2504 Ericwood, Anderson, S. C.

BARGAIN: Central Electronic, factory-wired, 20A with QT-1 and 458 converted VFO, practically new, \$190 cash. W2CFP, Balmville Road, Newburg, N. Y.

NEED a new Mercury outboard motor? We need ham equipment, specials: Viking Pacemaker, never used, \$365; Viking II, factory-wired, exc. condx, \$235; Viking VFO, exc., \$25; Hallcrafters 895, \$40, f.o.b. Blough Miner Co., Forest Park, Ill. Hal Blough, W9SP.

LYSCO 600 VFO exciter, transmitter, bandswitching 160-80-40-20-15-11-10, variable drive control, output sufficient to excite high power final. In exc. condx. Price: \$70 shipped prepaid anywhere in states. W7DBA, P. O. Box 586, Yakima, Washington

SALE: Elicdo TR-75TV1 transmitter, 60 watt c.w. including instrum manual. Ideal for service. Priced for immediate sale. Write to Eugene S. Davy, Inc., Bergen Plze, Brooklyn 17, N. Y. or telephone RECTOR 2-9810 weekdays 9 to 5, or STerling 9-6002 evenings and weekends.

WANTED: 75 meter mobile xmtr with 6 volt power supply. M. Long, 521 Russell, Davis, Calif.

TEXAN Hams Notice! Complete station for sale. Real bargain! Sell all or none. Will not ship. Write me if interested. R. B. Hannah, Junction, Texas.

WANTED To buy: Collins 32V3 and Collins KW1 transmitter. Will pay cash, but equipment must be clean and in gud condx. Prefer to buy from some one in New England so that equipment can be inspected before purchase. Bob Anderson, W1LBA, 428 Central Ave., Milton, Mass. Tel. BlUehus 8-9337 evenings.

CLEANING Out: At bargain prices or reasonable offer — recvg and xmtr tubes, including 250T11, 6C21s, 832As, etc. Some R&W components for KW Anal. Transmitter & pwr. supp. parts, meters, relays, etc., too numerous to list. Also DX-35, AR-3, surplus recvrs, 6v dynamotors (2). Send card for your needs. W1RUM, 10 Maple Ridge, Elmwood 10, Conn.

SALE: AT-1, \$23.00; AR-3, \$27.00; Space Spanner, \$12.00. Want: VFO, bug, 75-200 watt xmtr. Ben Vickery, KN4PHA, Rte. 2, Lavonia, Ga.

SALE: Eimac A-54 transmitter, PE-103 dynamotor, Super Six converter, Super-civo, Johnson all-band coil, whip, base mount, cables, relays, steering post, count, \$225.00. Harry Neumann, W1ZYT, 68 Thompson Hill Rd., Milford, Conn.

FOR Sale: BC-312N and RME VHF-152 converter. Send for details. Rick Schrier, KN7AEW, W. 2303 Jackson Ave., Spokane 12, Washington.

PANADAPTER Mod. 103IC. In exc. condx. Manual furnished, \$100.00. Furman James, W4YPZ, Concord, No. Carolina.

KWM-1 wanted. Also few high plate dissipation tubes. W2KUW, 64 Grand Pl., Arlington, N. J.

THE Original Vacuum Coaxial Antenna Relay. Sideband and high power operators, end your antenna relay problems! Price \$69.90. Send for dope sheet. South Bay Electronics, 3125 Barney Avenue, Menlo Park, Calif.

WANTED: Unused electronic tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write "Green Sheet" check full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 612 Broadway, New York 12, N. Y.

WANTED: Collins KW-1, W3A0H.

BARCO S in Sandusky, Ohio, for your best deal in Ham Gear. National, Hammarlund, Hallcrafters and WRL. Globe transmitters. Hy-Gain and Mosley beams. 1725 Columbus Avenue.

TS-47/APR Test Osc. 40 to 500 Mc., \$129.50. Navy RBL receiver 15 to 600 Kc., \$79.50; Lavole receiver, meter 375 to 725 Mcs., \$19.50; Fluxmeter 500 to 4000 gauss, \$19.75; General Radio DC amplifier type 715-AE, \$149.50; SO-1 radar pedestals, \$98.50; 46-in. parabolics, \$29.50; AN/APT-2 Jammer Transmitter 425 to 750 Mcs., \$19.95; AN/APT-5 Jammer Transmitter 300 to 1600 Mcs., \$169.50; AN/APT-5 revr 1000 to 6250 Mcs., \$98.50. All in new condx. Tech. manuals TM11-273, 120 pp covering BC-312 recvrs and BC-191 xmtrs, \$2.50; ID-60/APA Panadapter maintenance manuals, \$2.75. Both postpaid in U.S.A. Write for bargain list. Electroncraft, Inc., Box 269, Bronxville, N. Y.

WANTED: Hammarlund HQ-120-X and speaker cabinet. Must be in A-1 condition. Would like trial period, if possible. Will pay shipping costs. State lowest cash price. WN2ROH, 91 Morris Drive, East Meadow, L. I., N. Y.

WANTED: All types Aircraft Airline Military Electronics Gear; Collins, Bendix, ARC Airforce BC348, ARN6, ARN14, ART15, 51333, ARC1, MN62A, others. We pay C.O.D. Advice price and condition. Rife, P. O. Box 156, Annandale, Virginia. Phone Jefferson 2-5805.

SALE: Hi-power deal for ham who is still a do-it-yourselfer! Mod. using PP203Z's; heavy duty Multi-Match UTC xfrm, speech amp using PPL's, RF driver is a new condx Johnson Viking II and VFO, RF final. You finish it for any pwr 500-800W. All heavy duty individual pwr supplies, schematics, and interconnecting diagrams included. 25 units in individual cabinets but for D-TVing and ease of service, will supply a Par-Metal 6 ft. encl. cabinet rack in exc. condx. Will sell only as a package deal. Manufactured by Utah Radio Corp. Within 200 miles of Chicago, Ill., and will deliver for best offer over \$325. Write or phone LI 2-3922 after 6 p.m. weekdays. George Hamer, W9KXX, 224 McKinley Ave., Libertyville, Ill.

HRO-60, Rack-mounted, \$350, W6UTV, 1176 Lincoln, San Jose, Calif.

CODE Tape wanted: Will buy or rent code tapes for TG-34-A code keyer. W1N3JRN. Paul Hoffman, 1733 Kalmia Rd., N.W., Washington, D. C.

ANTENNA Farm: New Hampshire 20 acres, two state highways, need capts. Brook 2000 in water supply; 80 ft. sky hooks. Move in with your trailer, \$1000. W2TGI.

OLD QSTs wanted. Need December 1915 and January through July of 1916. Will pay cash or will trade Bound Volume 1, L. A. Morrow, W1VG, 99 Bentwood Rd., West Hartford 7, Conn. Phone ADams 2-2073.

SELLING Out: DX-100 xmtr, \$185; SX-28 receiver, \$115. R. W. Watts, R. D. 1, Apalachin, N. Y.

HAM Licenses, Resident courses. Novice and general classes, 3 evenings weekly. Delehanty Institute, 117 East 11th St., NYC 3, GR 3-6900.

"THE Saga of Telegraphy". LP recording & brochure. Historical. \$3.75. Ralph Graham, WARJX, Box 3556, Arlington 3, Va.

FREE Flyer. DX QSL Radio Coop., Box 5938 Kansas City II, Missouri.

CALLBADGES made in Holland, \$1.50 postpaid. K9EPK, de Waal, 4900 E. Kansas Dr., Denver, Colo.

FOR Sale: Panadapter and scope ID-60/APA-10 with power supply for 115v, 60 cycle operation, complete with two Handbooks, one for operating and one for maintenance, \$95. Robert B. Hupper, K2PLD, 47 Willis Road, Glen Cove, N. Y.

BUY, Sell, Trade. Collins receivers, Olson, 1165 So. St. Paul, Denver, Colo.

WANTED: 10B exciter. John Alt, WIBOM, 10 Richards Ave., Stamford, Conn.

SILVERPLATE your coils, coux tanks, etc. Reasonable prices. Send for details. L. K. D'Alro, K2CDS, 34 Garned Place, Brooklyn 15, N. Y.

TELRAD T18, \$18; HRO60T coils F and F, \$27 pr; T54, 7V, \$15; HS33, \$2; SCN dial, \$4.50; Milen 10012, \$3; postage extra, QST 57, CQ 55, 57 run complete, other parts and tubes. Send for list. Marshall, 455 Washington Ave., Dumont, N. J.

44TB Owners, brass mounting plate, machined 3-4 — 40 hole, \$2.50. Robert B. Flint, W9YBY, 4030 Evelyn St., Indianapolis, Ind.

VTKING II, Best offer over \$125. Alan Ritter, 1207 Yale Station, New Haven, Conn.

AMATEURS — Hi-Fi fans: transmitters, receivers, kits built and repaired. Write for estimate. Dan Flask, W3BNI, 5301 Perrysville Rd., Pittsburgh 29, Pa. Phone WE 1-0575.

ELECTRICAL Drafting for your pet or commercial circuit. Reasonable. Send sketch and \$2.50 per stage to Endeco, 1148 Wilmington Blvd., Wilmington, Calif.

KT Wiring. Rates reasonable. Write: John Hjelm, W0DBT, 1782 Portland Ave., St. Paul 4W, Minn.

FOR Sale: All like new condx: RME DB23 Preselector, \$35; Heath Q-Multiplier, \$6.00; RME100 speech clipper, \$30; Central Electronics Gate & Filter, \$40.00; Heath new 4150A w/socket, \$15; 30.00 James Wells, K4DWS, 1601 Lamar Ave., Petersburg, Va.

FOR Sale: One month old Gonset Communicator III, L.N. First \$200 money order takes it. Original carton. Reason for sale, need \$.

FOR Sale: Eimac A767 xmtr, \$125; Eimac PMR7A receiver with 6-12V pwr supp, \$125. Also Heath new 4150A w/socket, \$15; Dow-Key coux relay, \$4. W. H. Vogel, W9BYX, 205 Evergreen, Elmhurst, Ill.

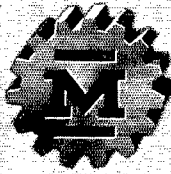
KWS-1, beautiful condx, Serial 992, 15 hours on the air: \$1450 for immediate cash sale! K2GFI, 546 Windemere, Buffalo 26, N. Y.

SELL: HQ140X, \$150. F.o.b. W2EHN, 214 Lawrence Ave., North Plainfield, N. J.

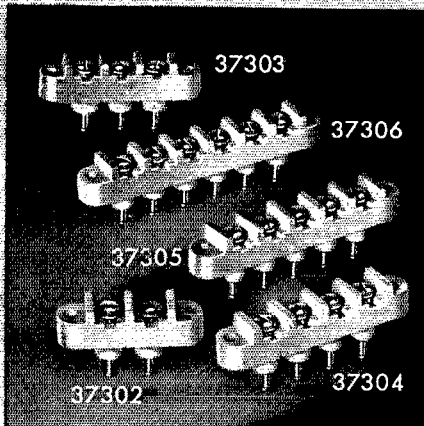
FOR Sale or trade: PE-103 with cables and base, \$19.50; Gonset Super Six, \$29.50; Johnson signal sensor, \$12. Wanted: KW components and pwr supp. W8STD, 183 Carnegie Ave., Youngstown 9, Ohio.



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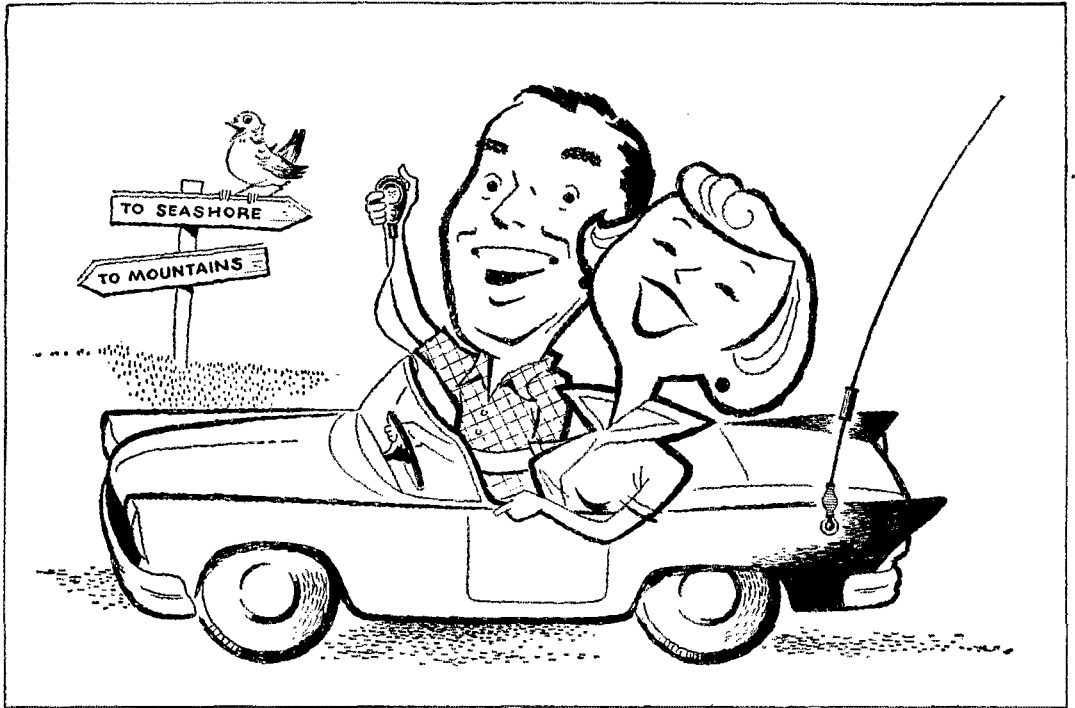
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Summer is just around the corner—that means it's just about mobile or portable time. And now's a good time to start putting the gear in shape, no matter which way you're heading.

If yours is a battery operated rig, renew the power by installing one of Mallory's 1500 series heavy duty vibrators. The new, buttonless contacts assure fast, positive starts—and up to twice the life of old-fashioned designs.

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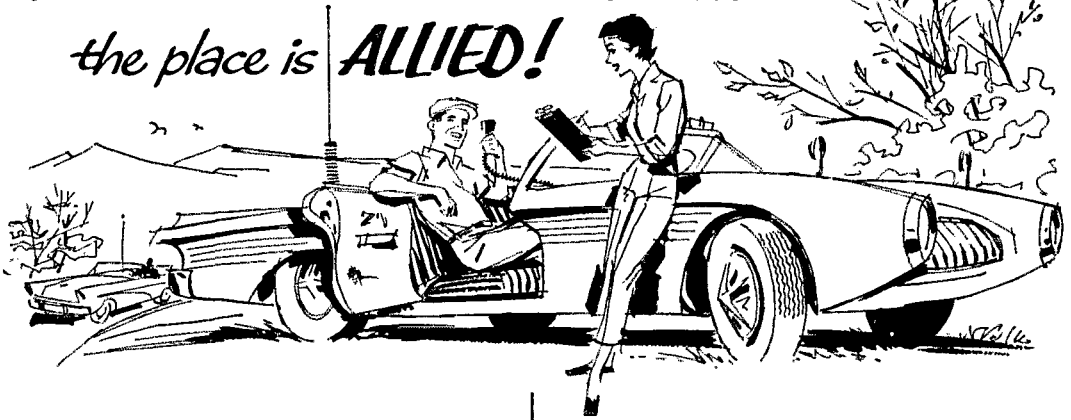
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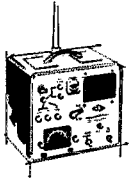
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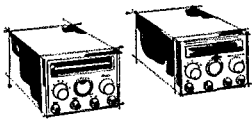


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G-66 Receiver  
G-77 Transmitter

**COLLINS**  
KWM-1 Transmitter



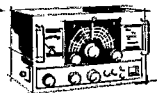
**ELMAC**  
AF-67 Transmitter  
PMR-7 Receiver

**REGENCY**  
ATC-1 Converter

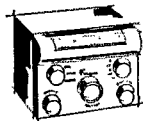


**NATIONAL**  
NC-66 & RDF-66

**JOHNSON**  
240-141 Xmitter Kit  
240-152 Mobile VFO



**MORROW**  
"Falcon" Receiver  
MBR-5 Receiver  
5BR-2 Converter  
MB-560-A Transmitter



**MASTER MOBILE**  
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Sensational new continuously loaded whip antennas complete with mount—specially priced by ALLIED to bring you a \$10 savings! Streamlined, only 4' and 6' long—delivers more radiated power. Tapered spiral radiator; no adjustments; matches 52-ohm coax; excellent VSWR—broad band; non XYL resistive. Easily mounted, each whip can be changed quickly; just screws into mount. Includes mounting kit, 10 meter whip, 15 meter whip and your choice of 20, 40 or 80 meter whip (order combination desired from listing below).

**92 SX 329.** 10, 15, 20 meters & mount.  
**92 SX 330.** 10, 15, 40 meters & mount.  
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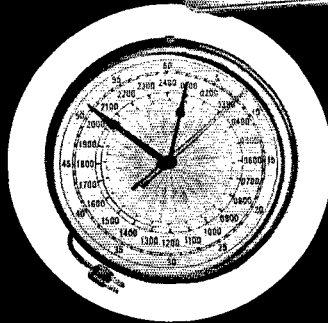
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CHICAGO 80, ILLINOIS

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# NOW!



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### 2400-HOUR ELECTRIC TIME CLOCK WITH EVERY NC-300 PURCHASE!

Fine quality clock gives you 2400-hour time every hour of the day in every time zone all over the world. Key cities clearly shown.

Direct reading, no computing or calculating necessary. Regular \$15.00 value. Order your NC-300 now while this special offer lasts . . . this is a limited time sale! Clock will be mailed to you and guaranteed by the clock manufacturer.

Liberal trade-in allowances and budget terms offered by most National Distributors.

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SUGGESTED PRICE WHILE AVAILABLE:

## NC-300 PLUS 2400-HOUR CLOCK

### \$39.90

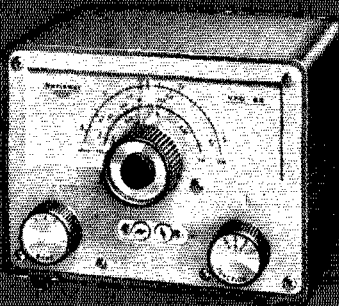
down, without trade-in.

Cash price \$399.00  
at most National  
Distributors

Both for the price of the receiver alone

BURTON BROWNE/New York

## NEW FROM NATIONAL - VFO-62



At your National Distributor...  
SUGGESTED PRICE: without trade-in, only \$10.00 down.  
Cash Price \$69.95, at most National Distributors.

Suggested Price: without trade-in, only \$10.00 down.  
Cash Price \$69.95, at most National Distributors.

See your National Distributor for details and specifications.

Since 1914

# National

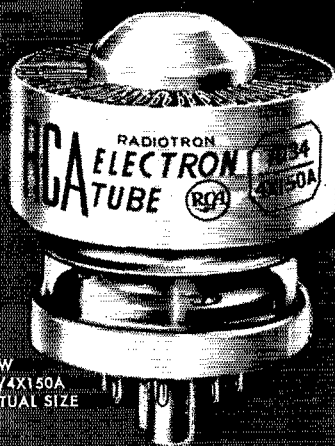
COMPANY, INC., MALDEN 48, MASS.



tuned to tomorrow

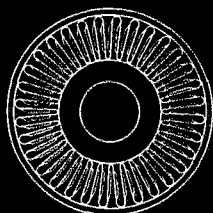


# 500 WATTS INPUT



NEW  
RCA-7034/4X150A  
SHOWN ACTUAL SIZE

- Can take 500 watts CW or SSB—in new transmitters.
- Operates with higher margin of safety and longer life—directly replaces 4X150A in present transmitters.
- Useful up to 500 Mc at reduced ratings.



#### Key to High Power

New, high-efficiency radiator is hard soldered directly to plate for increased heat transfer.

New RCA-7034/4X150A Beam Power Tube uses new high-efficiency radiator to handle higher power

This is it—for its size, the most powerful RCA beam power tube suitable for amateur service. Plate dissipation rating is 100 watts higher than for the 4X150A. Plate input power of 500 watts can be used in CW and SSB operation—at frequencies as high as 150 Mc.

Small as golf balls, two RCA-7034/4X150A's are the answer for compact, all-band finals handling inputs up to the legal limit. And note this fact: RCA-7034 can be used to replace type 4X150A in your present transmitter to give longer life. *No circuit changes needed!*

RCA-7034's are now available from your RCA Tube Distributor. Tube technical data is available from RCA, Commercial Engineering, Section E-37-M, Harrison, N. J.

RCA-7034/4X150A Typical CW Operating Conditions (up to 150 Mc)			
DC Plate Voltage	1500	2000	Volts
DC Screen Voltage	250	250	Volts
DC Grid Bias	-88	-88	Volts
DC Plate Current	250	250	Ma
DC Screen Current (approx.)	24	24	Ma
Driving Power	1.5	2.5	Watts
Power Output (approx.)	260	370	Watts



**TUBES FOR AMATEURS**

RADIO CORPORATION OF AMERICA  
Electron Tube Division Harrison, N. J.