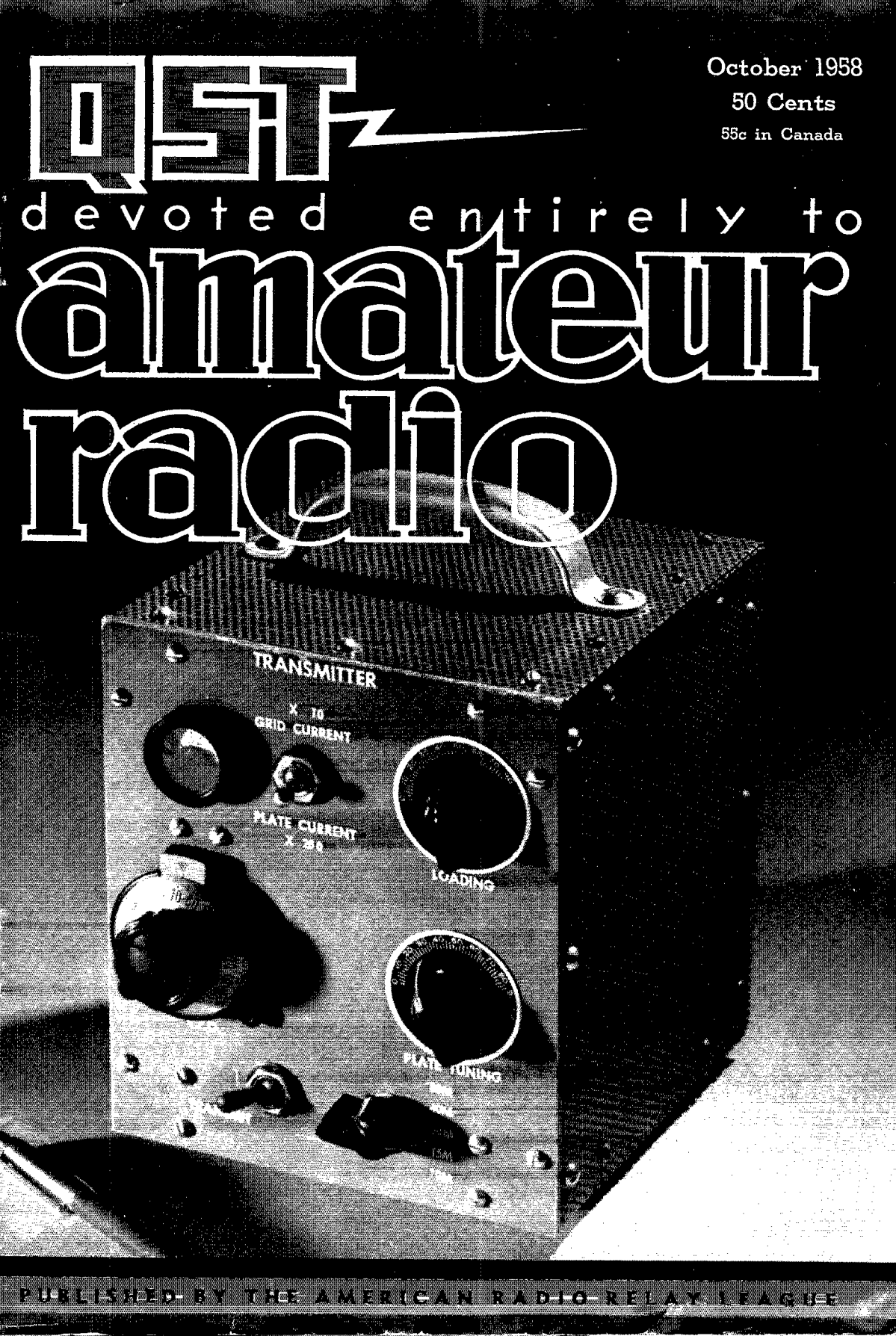
QST

devoted entirely to

amateur radio

October 1958
50 Cents
55c in Canada

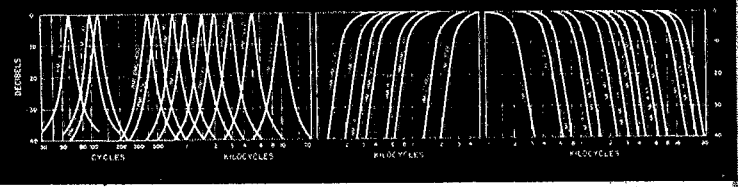


PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

FILTERS FOR ALL APPLICATIONS FROM STOCK

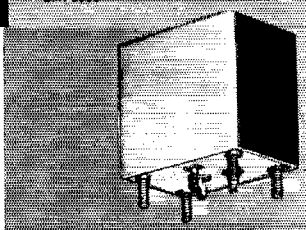
NUMERICALLY SCALED—FILMS—T-27A & MIL-F-18327

UTC INTERSTAGE AND LINE FILTERS



STOCK TYPES
(number in figure is cycles)

BMI-80	BMI-10000	LMI-500	HML-300
BMI-100	HMI-200	LMI-1000	HML-600
BMI-120	HMI-400	LMI-1500	HML-1000
BMI-400	HMI-500	LMI-2000	LML-1000
BMI-500	HMI-800	LMI-2500	LML-1500
BMI-750	HMI-1000	LMI-3000	LML-2000
BMI-1000	HMI-2000	LMI-4000	LML-2500
BMI-1500	HMI-3000	LMI-5000	LML-4000
BMI-2000	LMI-200	LMI-10000	LML-8000
BMI-3000	LMI-400	BML-400	LML-10000
BMI-4000	LMI-500	BML-1000	LML-12000
BMI-5000		HML-200	



This standardized group of filters covers most popular filter applications and frequencies. Units are in compact, drawn, magnetic shielding cases... 1 3/16 x 1 11/16 base, 1 5/8 high for BMI, LMI, BML; others 2 1/2 high. There are six basic types:

BMI band pass units are 10K input, output to grid, 2:1 gain. Attenuation is approximately 2 db at 3% from center frequency, then 40 db per octave.

HMI high pass units are 10K in and out. Attenuation is less than 6 db at cut-off frequency and 35 db at .67 cut-off frequency.

LMI low pass units are 10K in and out. Attenuation is less than 6 db at cut-off frequency and 35 db at 1.5 cut-off frequency.

HML high pass filters are same as HMI but 500/600 ohms in and out.

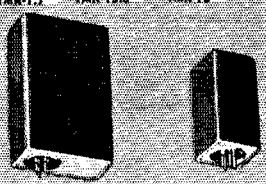
LML low pass filters are same as LMI but 500/600 ohms in and out.

BML band pass units are same as BMI but 500/600 ohms input, output to grid, 9:1 gain.

UTC TELEMETERING BAND PASS FILTERS

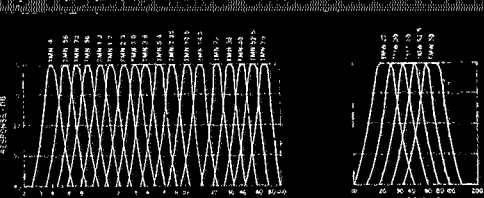
STOCK TYPES
(number in figure is KC)

TMN-.4	TMN-2.3	TMN-14.5	TMW-22
TMN-.58	TMN-3.0	TMN-22	TMW-30
TMN-.73	TMN-3.8	TMN-30	TMW-40
TMN-.98	TMN-5.4	TMN-40	TMW-52.5
TMN-1.3	TMN-7.35	TMN-52.5	TMW-70
TMN-1.7	TMN-10.5	TMN-70	



TMN-.4 thru TMN-1.7
1 1/16 x 1 3/16 x 2 inches
Weight ____3.5 oz.

TMN-2.3 thru TMW-70
25/32 x 23/32 x 1 1/8 inches
Weight ____1.2 oz.

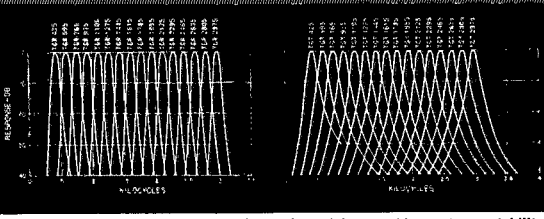


UTC standard telemetering filters provide extreme miniaturization with maximum stability, a complete set of 18 filters taking 19 cubic inches. They are 100K in and out and have an insertion loss of less than 6 db, 4 pin header for small Winchester socket.

TMN units are within 3 db at ± 7.5% of center frequency... down more than 18 db at ± 25%... more than 40 db beyond 1.75 and .58 center frequency.

TMW are within 3 db at ± 15% of center frequency... down more than 20 db at ± 50%... more than 40 db beyond 2.5 and .4 center frequency.

UTC TELEGRAPH TONE CHANNEL FILTERS



STOCK TYPES
(number in figure is cycles)

RECEIVING

TGR-425	TGR-1785
TGR-595	TGR-1955
TGR-765	TGR-2125
TGR-935	TGR-2295
TGR-1105	TGR-2465
TGR-1275	TGR-2635
TGR-1445	TGR-2805
TGR-1615	TGR-2975

TRANSMITTING

TGT-425	TGT-1785
TGT-595	TGT-1955
TGT-765	TGT-2125
TGT-935	TGT-2295
TGT-1105	TGT-2465
TGT-1275	TGT-2635
TGT-1445	TGT-2805
TGT-1615	TGT-2975

TGT CASE
1 1/2 x 1 1/2 x 2 1/2 in. 8 oz.

TGR CASE
1 1/2 x 1 1/2 x 4 1/4 in. 15 oz.

These band pass filters for multiplex transmitting and receiving provide maximum stability in miniature sizes. Both receiving and transmitting types are 600 ohms in and out, and employ 7 terminal header for sub-miniature 7 pin socket.

TGR receiving filters are within 3 db at ± 42.5 cycles from center frequency... down more than 30 db at ± 170 cycles... down more than 15 db at adjacent channel cross-over.

TGT transmitting filters are within 3 db at ± 42.5 cycles from center frequency... down more than 16 db at ± 170 cycles... down more than 7.5 db at adjacent channel cross-over.

And Special Units to Your Specifications

UNITED TRANSFORMER CORPORATION
150 VARICK STREET, NEW YORK 13, N. Y.
EXPORT DEPT.: 25 WORLD TRADE CENTER, NEW YORK 48, N. Y. CABLE "ARLAB"
PACIFIC MFR. DIVISION: 3300 SO. SEPULVEDA BLVD., LOS ANGELES 34, CALIF.
EASTERN DIVISION: 144 EAST 43rd STREET, NEW YORK 17, N. Y. CABLE "ARLAB"

One Thing is *Crystal Clear*—Your Signal

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.

Meets FCDA Specifications

Export Sales: International Division
Raytheon Manufacturing Company
Waltham, Massachusetts

Compare these features

- **5.0 mc. quartz crystal filter cuts unwanted sideband 50 db. or more.**
- **Bridged-Tee modulator; temperature stabilized and compensated.**
- **SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands.**
- **High stability, gear driven V.F.O.**
- **144 watts peak power input.**
- **Distortion products down 30 db. or more.**
- **Complete band switching.**

Proof of the HT-32's superiority is heard on ham bands night after night. Listen. You won't be satisfied with anything but the cleanest signal on the air. *The HT-32 is available with convenient terms from your Radio Parts Distributor.*

The new ideas in communications are born at...

In our 25th year of service

hallicrafters
Chicago 24, Ill.

Double Conversion Double Talk

The single conversion superheterodyne is probably the most used piece of electronic equipment in the world today as the basis of almost every broadcast receiver. On the broadcast band, it does an excellent job of receiving where stations are separated by huge voids of empty spectrum (by amateur standards) so selectivity is not a serious problem. The frequency is low enough that low drift or good stability is not much of a requirement. This low frequency also allows adequate image and spurious rejection with very simple tuned circuits.

But try to use a single conversion receiver on the higher frequency ham bands and its deficiencies are greatly magnified. You first notice that you have your choice of two ten meter bands — one (the image) is a little weaker than the other, but still strong enough to create a problem when the band is crowded. You also notice that a slight jar of the table causes signals to disappear like magic. Warm-up drift becomes quite objectionable when the set is used on higher frequency bands, caused by the local oscillator which must operate near the high frequency signal in this type of circuit.

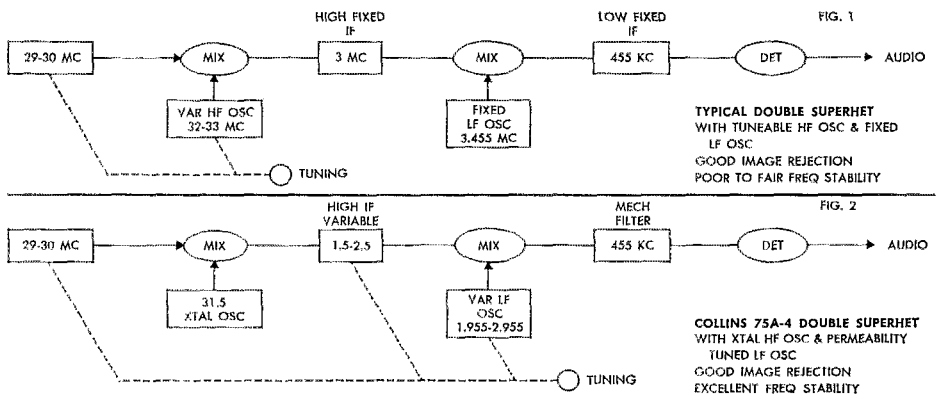
What can be done to cure these inherent faults of the single super? Assuming the same number of front end circuits, the only way to secure better image rejection is to use a higher IF frequency. But since a high IF frequency and good selectivity are not compatible, it is necessary to again convert this high IF to a lower frequency for selectivity purposes. This is double conversion. Frequently this 2nd conversion is done with a crystal oscillator, but the main source of drift, the tuneable oscillator, is still required to operate at a high frequency. (See Block Diagram #1.)

We have now cured *one* of the faults, poor image rejection. If carried no further — which often happens — the double conversion superheterodyne still drifts and its signals still warble.

At Collins, we believe there is only one right way to build a double conversion super. That is to first convert the high frequency signal to a lower frequency signal by means of a stable crystal oscillator, providing good image rejection without introducing drift. We then tune this low frequency signal with a very stable linear oscillator, and since this oscillator is operating at a much lower frequency than the original signal, its drift and mechanical instability become almost negligible. A Mechanical Filter is then used for securing the best possible selectivity. This is not the easiest nor the least expensive way to build a receiver, but we have found it the only effective method of producing maximum performance. So look at the block diagram before you buy. Is it done the easy way or the right way?

Eugene C. Sentz

WØROW
Design Engineer
Amateur Section



QST

OCTOBER 1958

VOLUME XLII • NUMBER 10

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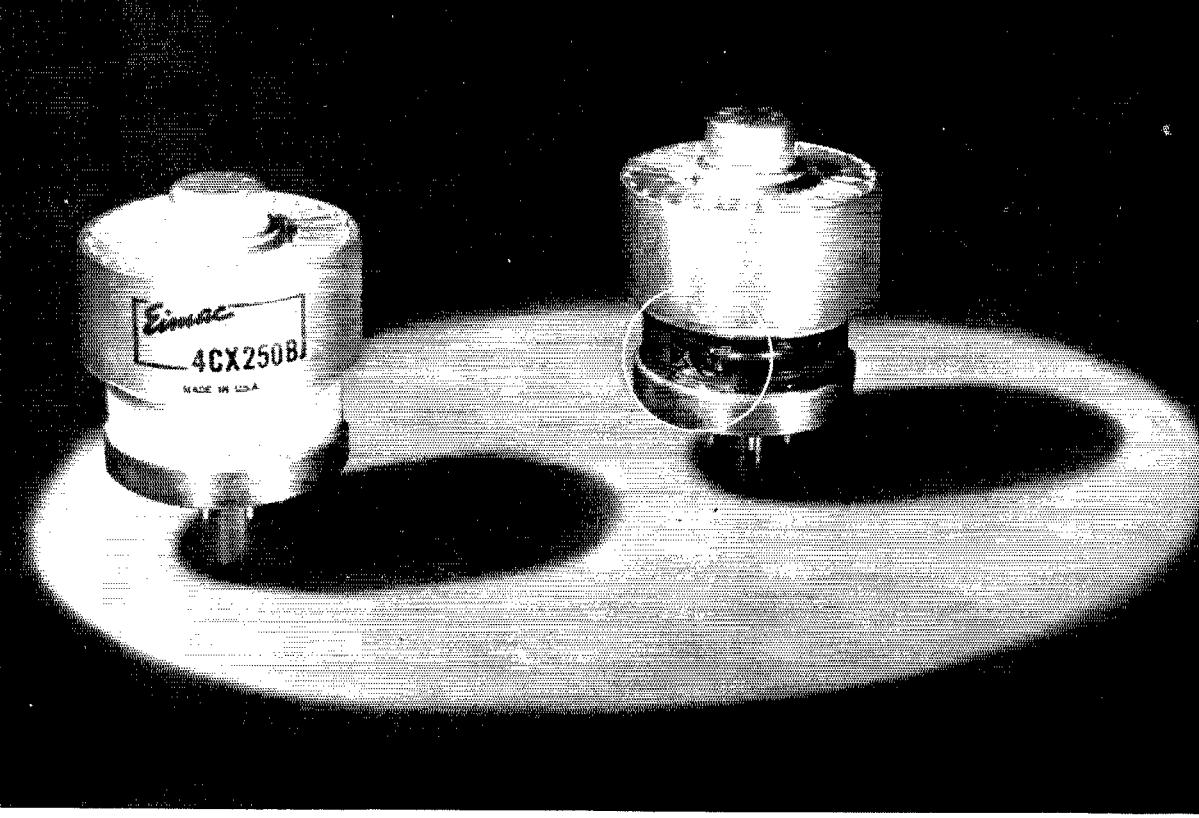

Lower Dielectric Loss

is an Eimac Ceramic Tube Extra

Fifth in a series describing the advantages of ceramics in electron tubes. Previously discussed: Impact, heat, vibration, compactness

Ceramic is considerably superior to glass in terms of dielectric loss at high frequencies. The ceramic Eimac 4CX250B and the glass envelope 4X250B shown above were operated in identical 500 megacycle RF amplifier circuits, under identical operating conditions. The glass envelope tube failed catastrophically within a few minutes due to RF heating and puncture of the glass envelope. Further tests of the 4CX250B at 500 Mc. with higher applied voltage showed no appreciable heating of the ceramic envelope material from dielectric loss effects.

Other tests compared glass envelope 2C39A tubes with 3CX100A5's, their ceramic envelope counterparts. These tubes were operated as oscillators at 2.5 KMc., under identical conditions. 3CX100A5 ceramic tubes consistently showed a 10% greater output power than the glass envelope type, due to the lower dielectric loss of the ceramic material.

These ceramic tubes are just two of more than 40 Eimac ceramic tube types whose compactness, and resistance to damage by impact, heat, and vibration make them ideal for use wherever exceptional reliability and high performance are demanded.

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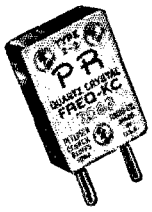
AMATEUR



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

Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed; ±500 cycles.....**$2.95 Net**

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Third overtone oscillator. Low drift. High activity. Can be keyed in most circuits. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation; ±500 cycles.....**$3.95 Net**

24 to 27 Mc., PR Type Z-9A

Third overtone; multiplies into either 2-meter or 6-meter band; hermetically sealed; calibrated 24 to 27 mc., ±3 kc.; .050" pins.

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50 to 54 Mc., PR Type Z-9A

Third overtone; for operating directly in 6-meter band; hermetically sealed; calibrated 50 to 54 mc., ±15 kc.; .050" pins.

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SPECIAL TYPES

Commercial Crystals available from 100 Kc. to 70 Mc. Prices on request.

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.45 Net**

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range.

Calibrated to .005%. 1600 to 10000 Kc. **$3.45 Net**

Type Z-6A FREQUENCY STANDARD

To determine band-edge. To keep the VFO and receiver properly calibrated.

100 Kc. . . . . **$6.95 Net**

PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
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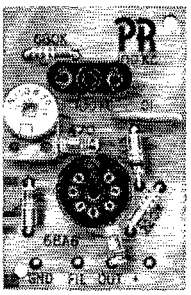
- As Foundation Circuit for Low Frequency SSB Crystals



Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.

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Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.45 Net**

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Section Communications Managers of the ARRL Communications Department

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

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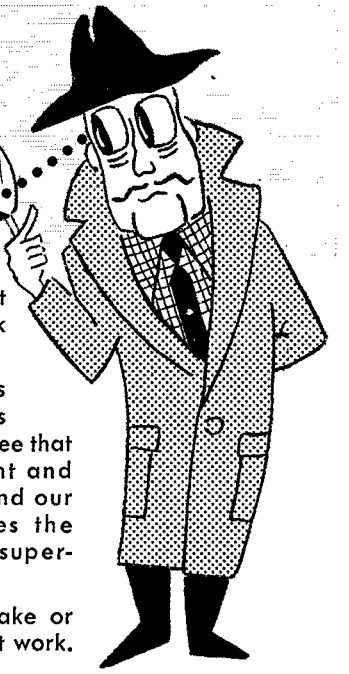
Saskatchewan	VE5LU	Lionel O'Byrne		Rowatt

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

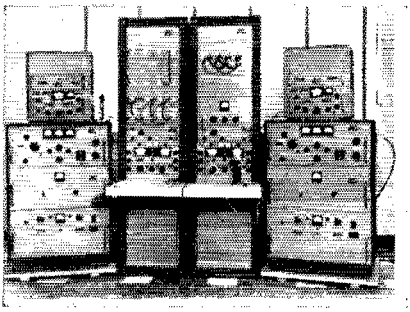
Meet NICK CARTER...

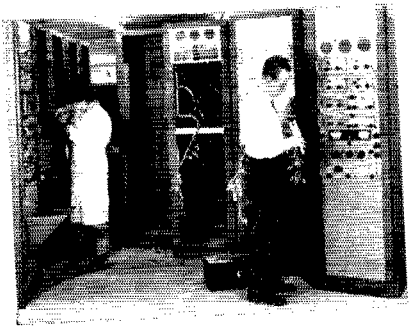


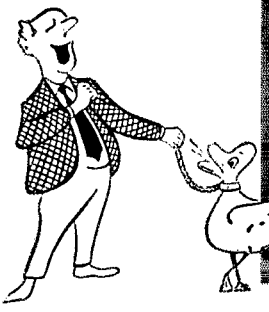
No relation to the famous detective, but he has to be a detective of sorts.—Nick heads up our Field Engineering group.

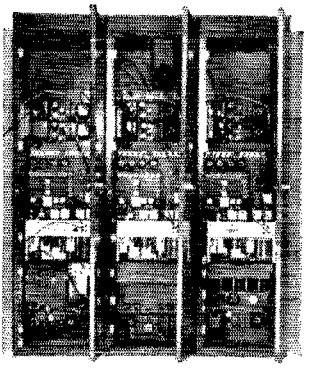
You see, TMC ships communications equipment to some forty odd countries and somebody has to see that it gets installed right and keeps on working, and our field group supplies the necessary qualified supervisory personnel.

So whether it's Salt Lake or Timbuktu TMC makes it work.









Have you read our whodunnit? If not, write to Charles Dean for your copy.

The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office: MAMARONECK NEW YORK

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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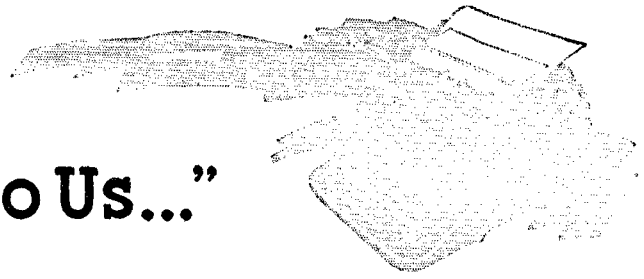


"It Seems to Us..."

KUDOS

It is — and we say this in all modesty — nothing particularly new for amateur radio to receive praise for outstanding performance in the public interest, convenience and necessity. But during the National Convention in Washington a rather impressive assemblage of high "brass" paid some mighty forceful compliments to hams and ham radio, and we think it appropriate that the nation's 180,000 amateurs stand momentarily at attention while we, in a reportorial capacity, decorate them with a few quotations.

Vice-President Richard M. Nixon, at the final convention banquet, won the hearts of his audience immediately with a good-natured recounting of the occasion when, while staying overnight with his good friend William P. Rogers (now U. S. Attorney General), he was kept awake much of the night by assorted noises from an upstairs room — which he later found were caused by young Tony Rogers, W3BFW, participating in the W/VE contest. Mr. Nixon, in praising amateurs for their contributions to the public welfare, particularly in the field of civil defense preparation, told of two more incidents in his own personal experiences. During his 1957 trip through Africa, on one occasion regular communications broke down — but a Liberian amateur got an emergency message through to Washington ordering a new engine for the Air Force plane in the nick of time to make repairs and keep the trip on schedule. Mr. Nixon also thanked amateurs for communications assistance during his South American travels earlier this year; ham channels carried the first word to the U. S. from our Embassy in Caracas concerning the stoning incident and riots. The Vice President said that if he ever gets some spare time, "I think I'll take up ham operations myself."

A statement from Neil McElroy, Secretary of Defense, was read to the banqueting members by Attorney General Rogers. A framed copy was presented to ARRL President Dosland; we reproduce the text elsewhere on this page.

Leo A. Hoegh, Director of the Office of Civil and Defense Mobilization, outlined some of the problems of defense preparedness. Speaking particularly of communications, Mr. Hoegh said, "This is where many of you can be of the utmost importance to the survival of this nation. You could be the communications link that we need. Many of you are members of RACES. . . . I wish that more of you could see the merit in joining the RACES program. Should this nation ever be attacked, or for any reason should the President ever find it necessary to declare a civil defense emergency, only RACES stations could remain on the air. I am mindful of the facts that amateur operators under great pressures have remained on the air to give us invaluable help in many kinds of natural disasters, and particularly in the wake of hurricanes and floods, and RACES amateurs have made excellent contributions to the success of Operations Alert. For both of these activities we can only say, 'well done', and give you my personal thanks. We earnestly hope that services such as these are all that will ever demand your attention and your work. I would like to think, though, that we are fully prepared to deal with much greater emergencies, should they ever develop."

During the military session of the convention, held at the Pentagon, Lieut. General James D. O'Connell, Chief Signal Officer of the Army, said, in part, "I have for several

(*Continued on page 188*)

THE SECRETARY OF DEFENSE
WASHINGTON

AUG 1 5 1958

The valuable and varied services which radio amateurs have performed both in war and in peace in the communications and electronics fields are well-known and greatly appreciated in the Department of Defense.

Modern technology, which has shrunk our world and pushed us into the space age, has forced many revisions in our concepts of national defense. I am confident that the forward-looking programs of the radio amateur services will continue to help us improve our knowledge and our capability in an essential part of our defense effort.

In this task we value the continued assistance of the members of the American Radio Relay League.

A.R.R.L.
ONTARIO PROVINCE CONVENTION
Hamilton, Ontario — October 18

The Hamilton Amateur Radio Club, Inc., invites all amateurs to attend the ARRL Ontario Province Convention to be held at the Royal Connaught Hotel, 112 King St. East, on Saturday, October 18; registration will begin at 10:00 A.M. The one-day affair will include technical addresses, two mobile transmitter hunts, special afternoon features for the ladies, and a party. The banquet at 7:00 P.M. will be followed by a guest speaker and entertainment. The initiation of candidates into the Royal Order of the Wouff Hong will terminate the convention festivities.

Requests for registration should be mailed to Bob Parry, VE3DJE, 65 Sunning Hill Avenue, Hamilton, Ont. The fee for registration is $5.00 and should be included with your registration request. Hotel and motel rates in the Hamilton area range from $5.00 and up per day. Please come and bring your XYL.

COMING A.R.R.L. CONVENTIONS

October 4–5 — Midwest Division, Des Moines, Iowa
October 10–12 — Southwestern Division, San Diego, Calif.
October 11 — Hudson Division, Albany, N. Y.
October 18 — Ontario Province, Hamilton, Ontario

A.R.R.L. SOUTHWESTERN DIVISION CONVENTION
San Diego, Calif. — October 10-12

Fellow hams: San Diego invites you to attend the 1958 Southwestern Division Convention sponsored by the San Diego Council of Amateur Radio Organizations in beautiful Balboa Park. Pre-convention activities consisting of early-bird registration, informal reception, ragchews and ham-gear exhibits will take place Friday evening at the Lafayette Hotel, convention headquarters. Activities Saturday take place in Balboa Park with registration starting at 8 A.M. in the conference building where ham exhibits and demonstrations will be featured all day. Ample parking available. Contests and mobile events are scheduled for Saturday morning, including transmitter hunts on 6, 10 and 75 meters, and judging for best mobile installation, with prizes. Saturday afternoon's program includes technical talks on s.s.b., transistors, interference problems, Novices, etc., followed by an open forum. Saturday evening is the main banquet, dancing, and a Wouff-Hong initiation at midnight.

Sunday morning breakfast groups start the day at 9 A.M., with more ham activities following and then a wind-up luncheon. Throughout the convention, programs for the licensed and non-ham ladies will be provided.

Registration of $6 includes banquet. Make checks payable to the San Diego Council and mail (by October 3 to qualify for pre-registration) to Hal Helms, K6JCX, 3705 Coconino Court, San Diego.

25th ARRL Sweepstakes — Nov. 8–9 and 15–16

How many ARRL Sections and how many stations in those sections can you work in two week ends? If you are located anywhere in the League's field-organization territory (see page 6), you are cordially invited to take part in this popular annual operating activity. Any amateur bands, phone or c.w., may be used. The total operating time allowed each contestant is 40 hours. Phone entries are compared only with other phone entries — c.w. scores only with other c.w. scores — in your particular section, in the competition for awards. Special Novice certificates are also issued. The week-end periods starting Saturday afternoon (1500 PST or 1800 EST) on the 8th and 15th of November mark the open season for SS contacts.

A complete announcement of the contest, including the rules governing participation, will appear in November *QST*. The rules will be the same as those of the 1957 SS. Amateurs in remote ARRL Sections who do not receive the next issue before the Sweepstakes may refer to November, 1957, *QST* for contest details.

Contest reporting forms will be sent to all amateurs who request them by mail or radiogram. It is not necessary to use these forms if the report form prescribed in November 1957 or in the next issue of *QST* is followed.

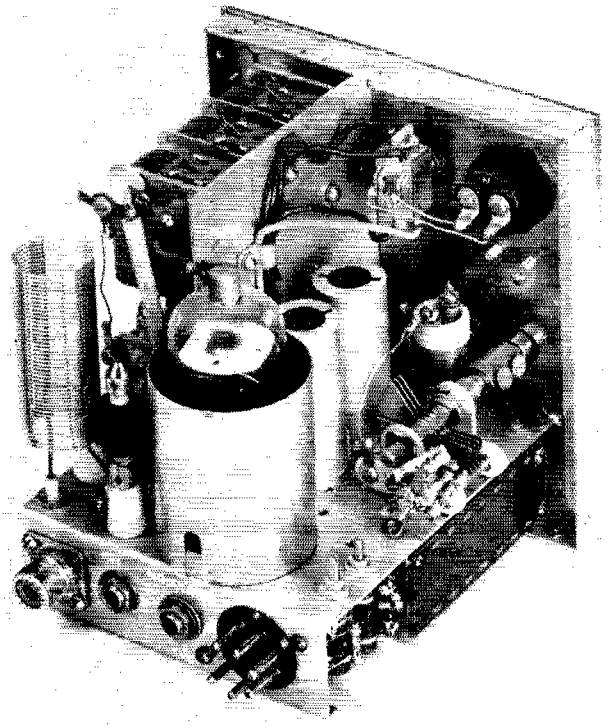
OUR COVER

When we visited W3HH in his Navy BuShips offices a few months ago he took time off from his duties as Deputy Director for Electronics to show us a little rig he had just completed. It looked as though it would be a cute one for *QST*, and when we suggested this he reached in a desk drawer and whipped out a manuscript, all written and ready to go. (The Navy is always ready!) We brought the rig back to West Hartford and gave it a try, and had it photographed. You'll want to refer to the cover photo for some of the front panel details as you read the article.

Pygmy Powerhouse Model II

75 Watts—1/7 Cubic Foot

BY G. L. COUNTRYMAN,* W3HH



Rear view of the Pygmy Powerhouse. The cutput loading capacitor is in the upper left-hand corner. The tank capacitor is below it (seen more clearly in the bottom view). L_9 is to the rear. The v.f.o. and buffer tubes are behind the 807W. The v.f.o. coil and tuning capacitor are to the right.

SEVERAL YEARS ago the author designed a little transmitter christened the "Pygmy Powerhouse" [1] which supposedly was to end the author's rebuilding in the low-power-transmitter department. The rig was put to good use for a couple of years and then turned over to W3ENK who is now operating it in Germany. Certain minor deficiencies became apparent with use and these are tabulated below:

1) The 40 watts input was a little too low for consistent fixed-station communications.

2) Even though the rig weighed only 26 lbs. it got pretty heavy after a two-block walk. Divided into two packages, a few pounds carried in each hand is a cinch, and use of aluminum instead of steel for the cabinet reduces the weight appreciably.

3) There was no provision for voice modulation which is sometimes desirable, particularly in portable operation.

Modifications

The Pygmy Powerhouse Model II has been designed to eliminate these deficiencies. The power has been increased to 75 watts and the transmitter proper is one unit only 6 inches wide by 6 inches deep by 7 inches high, completely enclosed. The power supply, including bias, is in a separate unit connected by a plug-in cable. Provision is made so that a Gardner modulator [2] can be plugged into the rear of the transmitter for voice operation.

The two band switches used in the original model are combined, so that only one switch is necessary. The use of 5763 tubes in lieu of 6AG7s assists in the over-all miniaturization.

Circuit

The photographs give a clear idea of the assembly and, as in the first edition, careful layout of components is necessary. Fig. 1 shows that except for the v.f.o., the circuit used is almost identical with the original model. It was decided to retain the 807W, rather than go to the 6146, as no space was saved by using the newer tube. The 6146 costs about $5.00 while the 807W, a

Gil Countryman's "Pygmy Powerhouse," described in an earlier issue of QST *has proved to be a very popular item in the low-power field. The Model II described here is similar circuitwise, but has been designed with convenience and portability in mind.*

* Captain, U. S. Navy, Assistant Chief of Bureau of Ships for Electronics, Navy Department, Washington 25, D. C.

[1] Countryman, "The Pygmy Powerhouse," *QST*, April, 1954.

[2] Gardner, "The Simplest Modulator," *QST*, September, 1953.

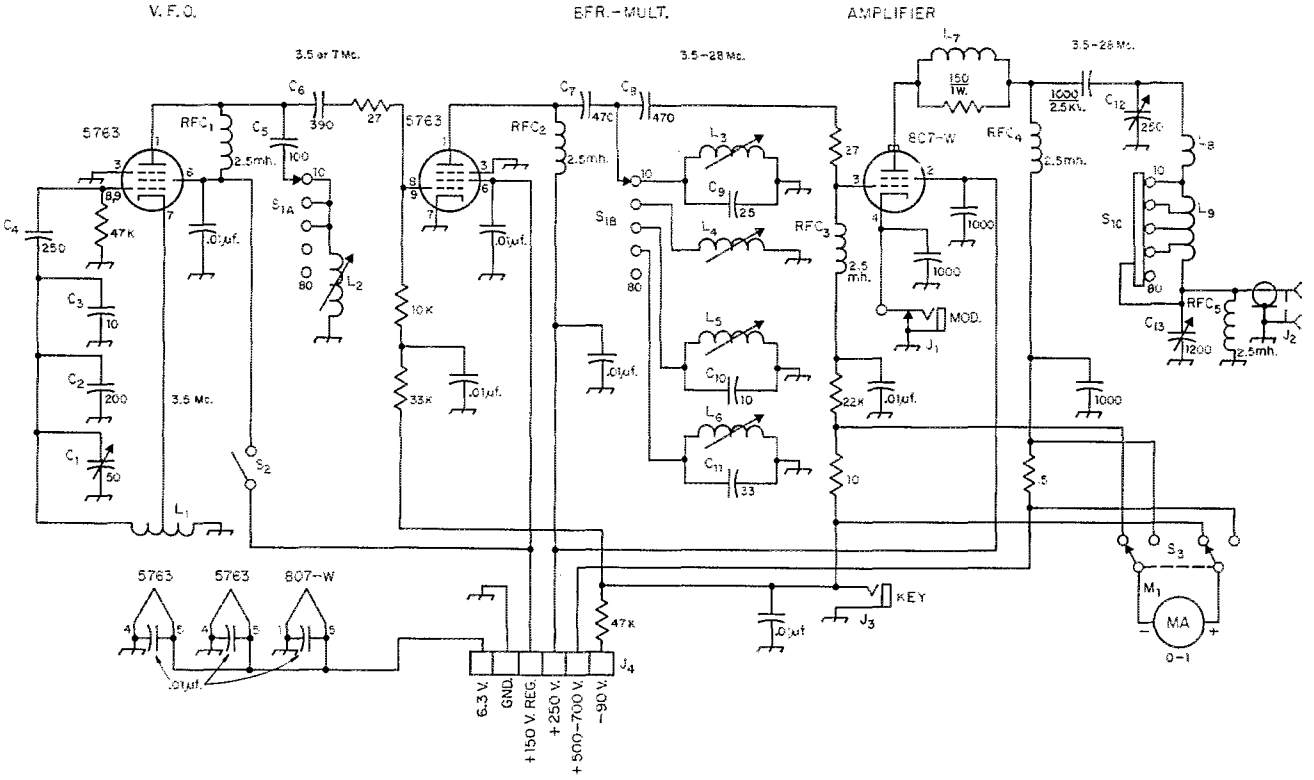
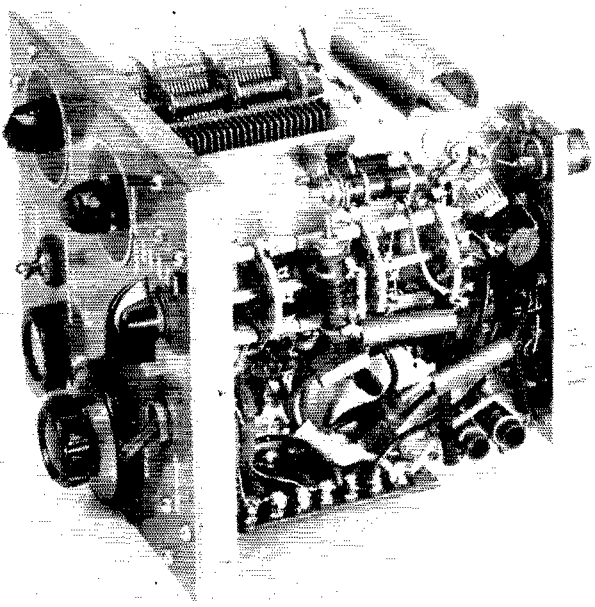


Fig. 1—Circuit of Pygmy Powerhouse Model II. Unless otherwise indicated, capacitances are in $\mu\mu$f., and resistors are ½ watt, and values are in ohms. Capacitors not listed below are disk ceramic.

C_1—50-$\mu\mu$f. midget variable (Hammarlund MC-50-S).
C_2, C_9, C_{10}, C_{11}—Zero temperature coefficient mica or ceramic.
C_3—Negative temperature coefficient (N750) ceramic.
C_4, C_5, C_6, C_7, C_8—Mica.
C_{12}—250-$\mu\mu$f. midget variable (Bud CE-2007 or similar).
C_{13}—1200-$\mu\mu$f. variable (3-gang b.c. replacement type, 400 $\mu\mu$f. per section, sections connected in parallel).
J_1—Closed-circuit jack.
J_2—Coaxial receptacle (SO-239).
J_3—Open-circuit jack.
J_4—Chassis-mounting octal plug.
L_1—24½ turns No. 20, ¾ inch diam., ⅝ inch long, tapped at 3¼ turns from ground end, ceramic form recommended.
L_2—Approx. 80 μh., ⅜-inch slug form (CTC LS3–5 Mc. coil with 15 turns removed).

The following coils are scramble-wound with No. 26 enameled on ⅜-inch iron-slug forms (CTC LS3 form)

L_3—9 turns, approx. 0.8 μh.
L_4—15 turns, approx. 4 μh.
L_5—20 turns, approx. 5 μh.
L_6—29 turns, approx. 10 μh.
L_7—9 turns No. 22, wound around associated 150-ohm resistor.
L_8—5 turns No. 20, ⅝ inch diam., 5/16 inch long (B & W 3007 or Air Dux 516).
L_9—48 turns No. 20, 1 inch diam., 3 inches long, tapped at 4, 9 and 18 turns from input (plate) end (B & W 3015 or Air Dux 816).
M_1—0–1 d.c. milliammeter (see text).
RFC_1, RFC_2, RFC_3, RFC_5—2.5-mh. 50-ma. r.f. choke (National R-50 or similar).
RFC_4—2.5-mh. 125-ma. r.f. choke (National R-100 or similar).
S_1—Miniature 3-gang, 5-position ceramic rotary switch (Centralab P-301 index assembly with PA-1 wafers for S_{1A} and S_{1B} and PA-12 wafer for S_{1C}, 5 positions used).
S_2—S.p.s.t. toggle switch.
S_3—D.p.d.t. toggle switch.



Bottom view of the Pygmy Powerhouse. L_2, and L_4 behind it, are mounted on a small L bracket above the band switch. L_3 is near the center. L_5 and L_6 are in the lower right-hand corner. The separate 10-meter amplifier coil L_8 is in the upper right-hand corner.

On the panel, the 1-inch milliammeter is behind the v.f.o. dial, and the meter switch and output loading-capacitor control to the extreme left. The v.f.o. stand-by switch is in front of the v.f.o. dial and the band switch above. The remaining knob is for the final tank capacitor.

ruggedized, miniaturized 807, can be purchased for $1.50, will take an input of 75 watts and is not as critical as to screen and grid currents as the 6146. Actually, the author has operated the rig at 750 volts and 125 ma., or some 94 watts input, with no ill effects to date. There was some trepidation about the miniature band switch, which is made from a 4-inch Centralab assembly and three wafers, but with an input of 95 watts there has been no tendency to break down or arc over between terminals. The manufacturer guarantees the switch to stand 25,000 operations. This figures out to 20 years of operation, even if all bands are used each day, and should satisfy the most ardent ham!

It was decided to use the high-C Hartley oscillator shown in the wiring diagram as it was impracticable to design a grid coil with a value of Q acceptable for a Clapp oscillator within the limited space available. With the values as shown, the following frequency ranges are available:

Dial	*Frequency*
0–100	3500–3800
0–75	7000–7300
0–60	14,000–14,350
0–50	21,000–21,900
0–50	28,000–29,700

These can be modified, of course, to suit individual requirements. The small resistors in series with the control grids of the 807W and the 5763 buffer-multiplier eliminate any possibility of the amplifier going into self-oscillation. The 807W runs straight through on all bands, and there is ample drive throughout the frequency range.

The miniaturized meter is a new item recently put on the market by International Instruments, Inc., and mounts in a one-inch panel hole. The basic movement is 0 to 1 ma. and the internal resistance of the meter is 100 ohms. The two shunts shown extend the range to 10 ma. for the amplifier grid current and to 200 ma. for the amplifier plate current. Due to the fact that the v.f.o. plate and screen, and the buffer screen are regulated at 150 volts, no metering was considered necessary in these circuits.

The pi-network output capacitor is a t.r.f.-replacement three-section unit with a total capacitance of about 30 to 1200 $\mu\mu$f. with the sections connected in parallel. The trimmer capacitor attached to each section was removed. The capacitance is sufficient to feed a matched 50-ohm coax line on 80 meters.

Keying

The v.f.o. runs continuously while the buffer and final are keyed by the blocked-grid method. S_2 cuts the v.f.o. for stand-by periods. A biasing voltage of -90 volts is required to cut off plate current to the 5763 and 807W with the key open.

Power Supply

All power-supply components, including the VR tubes and the selenium-rectified grid-bias supply, are in a separate unit, since this eliminates one source of heat and also provides two packages of approximately the same cube for ease in carrying. If a Grammer "Economy" rectifier circuit[3] is used, the weight of a 750-volt power supply can be reduced considerably. His circuit requires that the rectifier filament be turned on before the high voltage and, to insure a foolproof circuit, two double-pole single-throw switches may be inserted in the 115-volt side. This circuit is shown in Fig. 2 and, no matter which switch is thrown first, only the filament will be turned on. The high-voltage transformer is then energized by throwing the other switch. The *ARRL*

[3] Grammer, "More Effective Utilization of the Small Power Transformer," *QST*, November, 1952 (also *ARRL Handbook*).

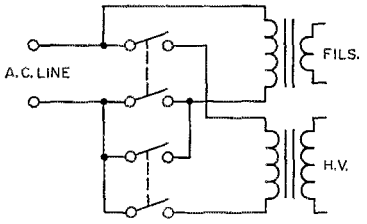


Fig. 2—Suggested control system for the "Economy" power supply mentioned in the text. Filament power comes on first regardless of which switch is closed. Switches are d.p.s.t. toggles.

Handbook and *GE Ham News*, Vol. 12, No. 4 (July-August, 1957), describe conventional power supplies which can be adapted for use with the transmitter.

The Gardner modulator, including the small choke, can be assembled in a package smaller than the transmitter, plugging into the jack in the cathode lead of the 807W when phone operation is desired.

R.f. output is via a coaxial connector and either a coax line to a beam or dipole, or one end of a random-length antenna can be fed. The wide range of the pi-network capacitors enables almost any antenna to be loaded on any band.

The aluminum open-end chassis is a standard $5\frac{3}{4} \times 17\frac{7}{8} \times 1\frac{1}{2}$-inch size and is installed one half inch above the bottom of the panel. The rear lip of the chassis rests on the edge of a piece of $\frac{1}{2}$-inch angle stock bolted to the bottom plate. The $6 \times 7 \times \frac{1}{8}$-inch aluminum front panel, $\frac{1}{2}$-inch angles, and perforated aluminum back, sides, top and bottom may all be purchased from Dick's (W8IJL), although Reynolds stock could be used. The six-conductor cable connecting the power supply with the rig is a stock surplus item (29¢) from Burstein-Applebee, and a small seven-prong socket and male plug connect at the power supply and transmitter ends, respectively. The 8-to-1 ratio planetary-drive dial is an import from Japan, available from Burstein-Applebee and WRL for $1.59, and makes a smooth miniaturized bandspread frequency control for the v.f.o., with no backlash.[4]

The amplifier output pi network was designed for a Q of 12 and a voltage of 600, but it operates very satisfactorily anywhere in the 400- to 750-volt range. The tank coil stands up well with 75 watts input to the final and does not overheat.

Construction

Shielding is adequate. The aluminum sheet supporting the pi-network output capacitor is made from a standard $1\frac{1}{8} \times 3\frac{3}{4} \times 1\frac{1}{2}$-inch open-end aluminum chassis with all but one bend straightened out and the top cut down enough so it will fit in the enclosure. This sheet makes contact with both the 807 tube shield and the front panel, and effectively isolates the v.f.o. portion of the circuit from the final amplifier. The tube shields and the chassis itself provide shielding between v.f.o. and buffer circuits.

The case and panel were sprayed with grey Krypton varnish and Teckni-labels were applied after the components were mounted on the front panel. The convenient carrying handle is a stock Bud item.

This little rig is suitable for low-power fixed-station use or for driving a triode kilowatt. Along with its power supply it can be incorporated into one section of a rack-and-panel job. It will fit nicely in a traveling bag along with a small voltage-quadrupling selenium-rectifier power supply, and a hank of indoor-antenna wire, for low-power portable communications. It is equally adaptable to a mobile installation, with a vibrator or dynamotor power supply.

[4] A front view of Pygmy Powerhouse Model II appears on the front cover of this issue.

Strays

W0BMW suggests that anyone desiring to print his own QSL cards should investigate the silk screen process. Briefly, silk screening is accomplished by putting a stencil of a design over a silk "screen" that is stretched on a wooden frame. Colors are then forced through the stencil onto the paper or other surface on which the design is desired. Matching stencils and colors may be used to produce a multicolored product.

Silk screening is a hobby which, like ham radio, may be as much or as little "do-it-yourself" as the individual desires. Stencils and frames may be bought ready-made, or you can produce them yourself. Stencils may be made from paper, or from the more versatile and durable film method. We won't try to give you a complete course in the process, for we have found that the local library has a considerable amount of material on the subject, done in considerably more detail and completeness than we can devote here. It does look fairly simple, however, and you should be able to come up with some attractive cards. W0BMW sent us some samples of his work, and they are very handsome. For information and supplies, check in your local library and in the Yellow Pages of the classified phone directory.

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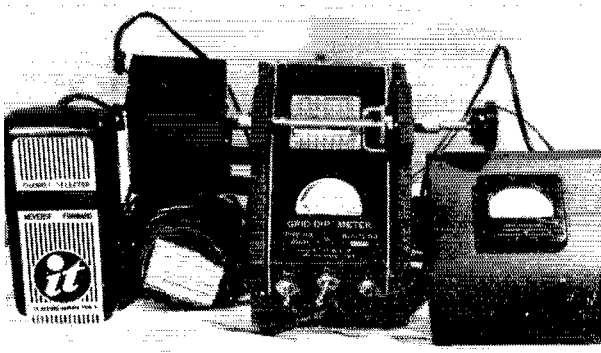
The October schedule for the Air Force MARS Eastern Technical Net (Sundays 2–4 P.M., EST, 5740 and 15,715 kc.) is as follows:

Oct. 5 — Transistor fundamentals.
Oct. 12 — Transistor fundamentals.
Oct. 19 — Information theory.
Oct. 26 — Satellite tracking at Yale.
Nov. 2 — Radio traffic control.



A TV remote-tuning motor is used to tune the grid-dip meter. The motor is housed in the black box to the left of the g.d.o.; the wire is rolled up below the box, and the control switch is at the extreme left. The remote milliammeter is at the right.

The shaft of the motor connects to a shaft carrying a small gear that meshes with the finger drive of the Millen g.d.o. A further extension of the shaft carries a knob for manual tuning. The wooden box that supports the shaft and provides a carrying case for the g.d.o. is so proportioned that when the g.d.o. is in place the gear meshes with the finger drive.

Remote Control of a Grid-Dip Meter

Checking Resonance at A Distance

BY WILLIAM F. BURKS,* W8HNX

In this article W8HNX tells of the need he had for a remotely tuned g.d.o. and how he solved the problem. The method is simple and might be applied to anything from a remotely tuned transmitter to an antenna element or matching section.

DURING THE course of my few years as an amateur the problem of finding the resonant frequency of a driven antenna element in its operating position seemed to have no simple solution. All the beam authorities agree that the resonant frequency of the driven element must be known before the other tuning techniques can be properly used. After much thought on the problem I decided to build a remotely controlled grid-dip meter. This would permit placing the g.d.o. up at the antenna element, and a two-wire line could be used to pipe the meter current back to the shack. A reversible motor could turn the g.d.o. tuning capacitor.

At a surplus house in the city some new remote controls for TV sets were found selling for $5.95 each. Testing the counter sample it was amazing to find how much torque the motor had, and it was apparent that it would easily manipulate the grip-dip meter if it was properly attached to it. This particular remote control was made for the Alliance Company; it is powered by three 1½-volt flashlight cells housed in the control box. The control box comes with 20 feet of wire between it and the motor. The batteries are supposed to last about one year when used with a television set. The ones used in these experiments have been in use for months and show no signs of weakening.

The photograph shows how this apparatus was connected to a grid dipper, a Millen.

For use with this particular setup 40 feet of 150-ohm Twin-Lead was added to the 20 feet already with the control unit. This addition caused no noticeable difference in the speed of the motor. The knob on the quarter-inch shaft permits manual use of the g.d.o. when the motor is disengaged, and the smaller drive gear produces a reduction action. Formica or Lucite may be used in place of the wooden box if desired.

The meter used in the remote position is a 0–1 milliammeter. It is connected to the posts of the other meter by soldering the ends of a 60-foot length of 150-ohm Twin-Lead to the posts. Going through the phone jack eliminated the necessity of drilling a hole in the grid-dip meter case. The remote milliammeter and the control box can be placed right in the shack, and for the frequency readings the various dips can be checked by listening on an accurately-calibrated receiver.

There is no backlash in this apparatus. It is very simple to operate — push the FORWARD control until the meter dips and then back it up with the REVERSE control and then forward again until the maximum dip occurs. An average taken of ten readings should give the exact resonant frequency.

This method of combining the two units is by no means considered to be the ultimate. With a little mechanical know-how and some ingenuity perhaps many better ways can be found to construct the apparatus in a manner that will be simpler and work equally well.

This control can be used to turn the variable capacitors in the T match and the Omega match while they are in the operating position. Disconnect the motor from the grid-dip meter and attach it to the variable capacitor shaft, and the proper capacitor setting can be quickly determined.

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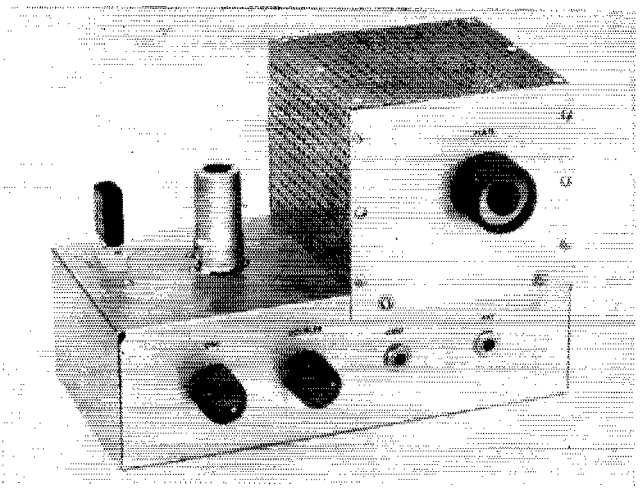


The 50-Mc. transmitter is built on a standard aluminum chassis. Shield cover over the amplifier tube and plate circuit is made of perforated aluminum.

A Versatile 50-Mc. Transmitter

Ten to Fifty Watts Input with Two Tubes

BY EDWARD P. TILTON,* WIHDQ

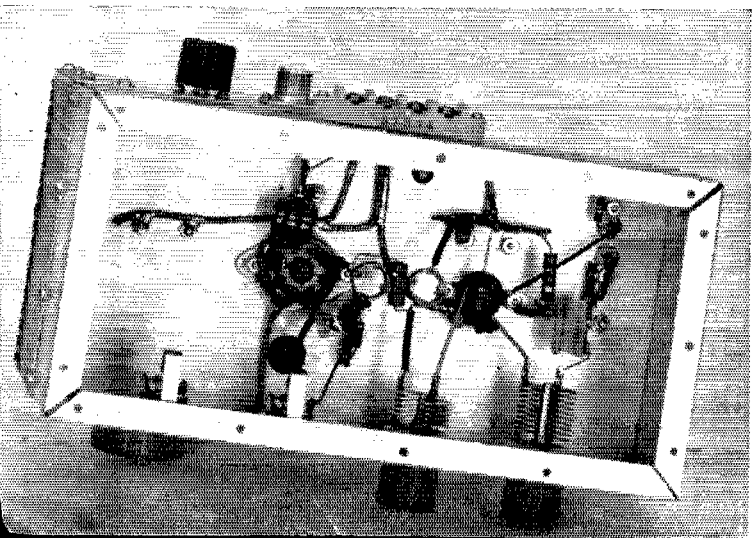
"PLEASE send me information on a low-cost 6-meter rig that is easy to build and adjust." The two-tube transmitter shown herewith was intended to answer this very common request. It is straightforward in design, inexpensive and easy to build, and flexible as to power level. Depending on the power supplies available and the tube used in the final stage, this 50-Mc. r.f. unit can be run at any power level from under 10 to over 50 watts input. It may be keyed for c.w., or modulated for voice operation. Requiring only a single 300-volt power supply, it is well adapted to mobile service.

How Simple?

You can build a simpler rig for 50 Mc. than we have here, but too much simplicity may not be the best approach. Going to 50-Mc. crystals, for example, would simplify the circuit slightly, but changing frequency then becomes a costly matter. This transmitter uses low-cost 8-Mc. crystals, providing a degree of stability superior to that obtainable with higher-frequency crystals. The crystal oscillates on its third overtone (25 to 27 Mc.) so only a single multiplier stage is needed. This feature eliminates TVI due to multiples of the crystal frequency appearing in various low-band channels, a condition that may develop when an 8-Mc. crystal is used at its fundamental frequency.

The flexibility of the transmitter is worth considering. With a 2E26 in the final stage this rig may be run at 10 watts input or less. It will serve as an exciter for a higher-powered amplifier, or as a low-powered transmitter. The total power drain at 300 volts is well within the capabilities of economical 100-milliampere power supplies commonly used in mobile service. Changing to a 6146

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



Bottom view of the 50-Mc. transmitter. Note positions of the various coils, particularly those in the doubler plate and amplifier grid circuits, near the middle of the assembly.

final tube and increasing the plate voltage to 450 or so allows an input of 50 watts for voice operation, or up to 65 watts on c.w. This may well be all the power you'll ever want to run on 6, but if you decide to go to the kilowatt level someday you'll have an exciter quite capable of supplying the drive requirements.

Circuit Details

The crystal oscillator is the triode portion of a 6U8 triode-pentode. Crystals between 8.34 and 9 Mc. or 25 to 27 Mc. are used. Those in the 8-Mc. range can be purchased at very low prices from surplus houses, or they can be ordered to your desired frequency from any crystal manufacturer. Crystals in the 25-Mc. range are actually 8-Mc. crystals, so cut as to encourage operation on the third overtone. They are somewhat more expensive than 8-Mc. crystals, and are likely to be less stable. When 8-Mc. crystals are used the resultant frequencies should be checked carefully, as they may not be exactly 3 times those marked on the crystal holders. This is important only when using frequencies that come out near a band edge.

The pentode portion of the 6U8 is a frequency doubler, giving 50-Mc. output to drive the final amplifier. The doubler plate circuit is both capacitively and inductively coupled to the amplifier grid. The grid coil, L_3, is resonated by the input capacitance of the amplifier tube. The coupling capacitance is a small value (5 $\mu\mu$f.) so the coupling at 25 Mc. is low. This prevents 25-Mc. energy from being passed on to the amplifier to a large extent, and is helpful in reducing possible TVI in Channels 7, 8 or 9 that might result from multiples of the oscillator frequency appearing in the transmitter output.

The amplifier tube may be a 2E26 or a 6146, depending on the power level desired. Jacks are provided for measuring the grid and cathode currents. The cathode jack may also be used for keying the transmitter for c.w. operation. Output is coupled out through a link at the bottom of the plate coil, to a coaxial fitting on the back of the amplifier shield compartment. A variable capacitor in series with the grounded side of the link serves as a loading adjustment. The amplifier is neutralized by the capacitive-bridge method, in which a small amount of energy from the plate circuit is fed back to the low end of the grid coil.

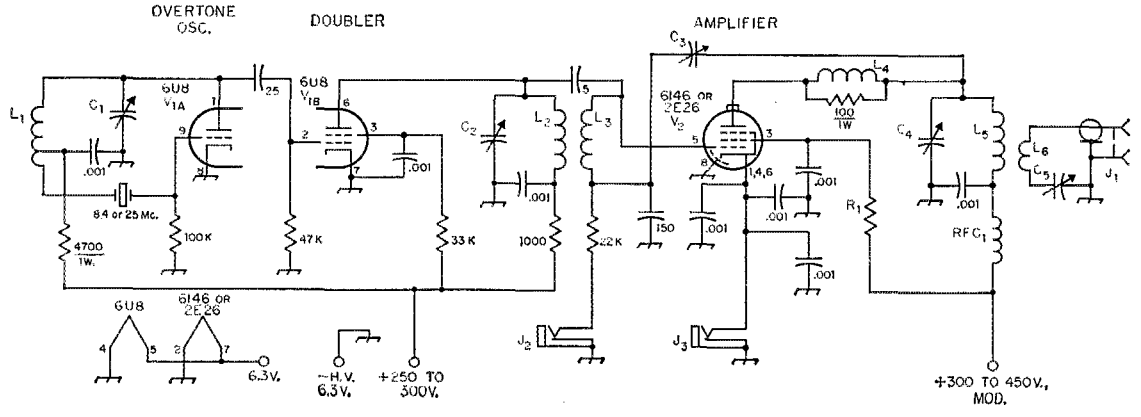
Construction

The transmitter is built on a standard aluminum chassis, 5 by 10 by 3 inches in size. The shield enclosing the amplifier tube and output circuit is 4 inches high and 5 inches square. The shield contributes nothing to the efficiency of operation, but it may be useful in the prevention of TVI, and it is a desirable safety measure.

Controls on the front wall of the chassis are the oscillator and doubler plate tuning capacitors. Grid and cathode jacks are also on the front wall. The plate tuning capacitor of the amplifier is mounted on the front of the shield enclosure. The loading capacitor and coaxial output fitting are on the back. A 4-terminal strip on the back of the chassis provides for connection of filament and plate power. Terminals are for one side of the heater circuit, which is also the negative high-

Fig. 1—Schematic diagram and parts information for the 50-Mc. transmitter. A 6146 may be substituted for the 2E26, for higher power input. Capacitors are ceramic unless specified. Values under .001 are in $\mu\mu$f. Resistors ½ watt unless specified.

C_1, C_5—50-$\mu\mu$f. variable (Johnson 157-4).
C_2—25-$\mu\mu$f. variable (Johnson 157-3).
C_3—0.5 to 3 $\mu\mu$f. ceramic trimmer (Erie 3139D).
C_4—25-$\mu\mu$f. variable (Johnson 167-2).
J_1—Coaxial chassis fitting.
J_2, J_3—Closed-circuit jack.
L_1—14 t. No. 20 tinned, ½-inch diam., ⅞ inch long, tapped at 4½ t. from crystal end (B & W No. 3003).
L_2—6½ t., 7/16 inch long, similar to L_1.
L_3—7¼ t., ½-inch long, similar to L_2.
L_4—5 t. No. 20 wound on and spaced to fill 100-ohm 1-watt resistor.
L_5—3½ t. No. 14 tinned, ¾-inch i.d., ½-inch long.
L_6—2 t. No. 14, similar to and at cold end of L_5. Cover with spaghetti sleeving.
R_1—37,500 ohms, 4 watts (4 150,000-ohm 1-watt resistors in parallel).
RFC_1—Single-layer v.h.f. choke, 2 to 7 μh. (Ohmite Z-50 or National R-60).



voltage, the other heater lead, and two for the plate supplies. One of these feeds the oscillator and buffer plate circuits and the other the plate-screen circuit of the final. This allows separate supplies to be used for these functions, and makes provision for modulation, as explained later.

Layout of parts is not particularly critical, but for those interested in building an exact duplicate a layout drawing is shown in Fig. 2. The hole for the final plate tuning capacitor is 2 inches in from the top and right edges of the front plate. The four holes in the front wall of the chassis are 2 inches apart, centered on the front surface. The back wall of the shield enclosure has the loading capacitor 2½ inches in from the left edge, and the coaxial fitting 1¼ inches from the right edge. Both are 2¾ inches down from the top edge.

The front and back plates of the shield enclosure are cut from sheet aluminum, with ½ inch extra length for fastening to the front and back walls of the chassis, making them 4½ by 5 inches in size. Sides and top are cut from Reynolds perforated aluminum sheet, available in many hardware stores. The side fastened to the end of the chassis is 5 by 6 inches in size before bending, the other being 4½ by 6 inches. Both have ½-inch surfaces bent over on the top and sides. The top piece is 5 by 6 inches, with half-inch lips bent over for slipping over the top of the assembly. The entire shield box is held together with self-tapping screws. The large holes in the perforated stock will just pass these screws. The smaller holes can be enlarged with about a No. 33 drill to pass the thread on the self-tapping screws. Do not attempt to pull these up too tightly, as the thin stock will strip out readily. Perforated stock can be bent easily between wood or steel blocks, or in a vise, using the rows of holes for aligning the bends.

To give a finish that will resist finger-marking the aluminum can be cleaned in a lye solution and then sprayed with clear lacquer, or it may also be rubbed down with steel wool and then sprayed.

Leads carrying d.c. and heater power were put in with shielded wire, grounded to the chassis at intervals. This lends a neat appearance, and helps to keep power leads from picking up and radiating r.f., a possible cause of TVI. Tie-point strips are used to support resistors and other parts, where they will contribute to mechanical stability. The position of these terminal strips is indicated on the layout drawing, Fig. 2. The 5-lug strips have two mounting feet, so two of the five terminals are actually grounded. The 4-lug strip mentioned is a 5-lug strip with one end terminal cut off.

It should be pointed out that hole sizes for the tube sockets will vary with different makes of octal sockets. It would be well to check your sockets for dimensions before going ahead with drilling of the chassis. Most miniature sockets have a metal ring in the center which acts as a shield. With this type of socket, all the terminals that are to be grounded (Pins 4, 7 and 8 on the 6U8) are bent up against the ring and soldered to it. A lug under one of the socket mounting screws is then soldered to the combination.

In the experimental model of this transmitter considerable trouble was experienced with oscillation in the amplifier stage. Many stabilization tricks were tried, without too much success. The trouble was traced eventually to the tube socket used. It was a molded brown bakelite type having a metal ring with four lugs that are intended to serve as ground points. This approach may be all right for broadcast receivers, but it is no good for amateur transmitters, v.h.f. or otherwise. After about three days of struggling, the socket was changed to a ceramic type having no grounding ring, and all our troubles faded away. Moral: bypass to the *chassis*, not to grounding lugs that don't make *direct* contact with the chassis.

All bypassing should be done with the shortest possible leads, otherwise it may be ineffective. Where resistors are used for decoupling purposes, as in the power leads to tuned circuits, the lead from the resistor to the r.f. circuit should be as short as possible. Note the positions of the coils, as these are important, particularly the doubler plate and amplifier grid coils. They should be mounted about one coil diameter apart, with the axis of each coil perpendicular to the chassis top. The bottoms of the coils, as drawn in the diagram, face toward the chassis.

The neutralizing capacitor, C_3, is the type intended for mounting with one side grounded to the chassis. Obviously, this is impossible in this application, so another mounting provision must be made. A small tab of sheet copper ⅜ inch wide and about 1 inch long is used to support the capacitor, the far end of the tab being soldered

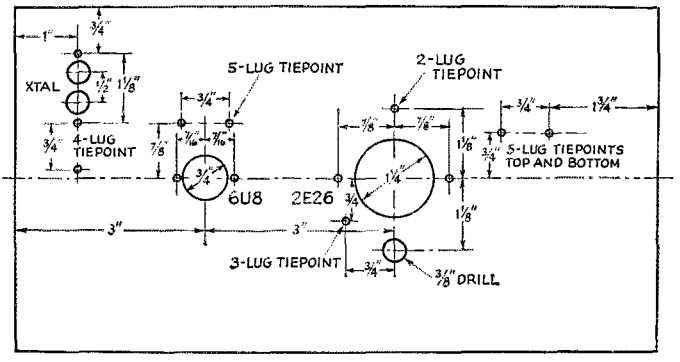
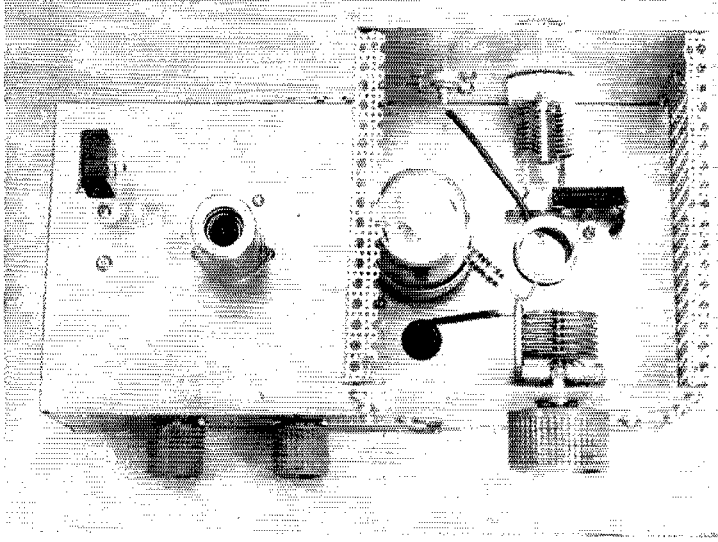


Fig. 2—Layout drawing of the chassis top, for those who wish to make an exact duplicate of the original transmitter. Precise duplication is not important, though the general parts layout should be followed. Hole sizes may vary with different types of sockets.



Looking down inside the amplifier shield. The plate tuning capacitor, C_4, is on the front wall, with the loading adjustment, C_5, on the rear wall. Parasitic suppressor and plate coil connect to top stator bar of C_4. Black lead, lower left, runs through a rubber grommet to the neutralizing capacitor, below the chassis.

to the lug on the 3-lug tie-point strip nearest the tube socket. The 150-$\mu\mu$f. bypass at the low end of L_3 connects from that point to the ground lug at the middle of the terminal strip. The lead from the sleeve of the neutralizing capacitor is a stiff wire that passes through a $^3/_8$-inch hole in the chassis to the lower stator terminal of the plate tuning capacitor, C_4. The latter is mounted with its stator terminals one above the other.

The parasitic choke, L_4, is wound on a 100-ohm resistor, the leads of which are used to make the connections to the top stator terminal and the plate cap of the amplifier tube. The choke is made by notching the ends of the resistor with a file, using these notches as the starting and ending points of the winding.

Adjustment and Operation

For initial tests a power supply capable of delivering 200 to 300 volts d.c. at about 100 ma., and 6.3 volts a.c. or d.c. at 1.7 amperes may be used. (Only 1.25 amp. will be needed if a 2E26 is used.) The negative side of the plate supply and one side of the heater supply are connected together. The oscillator is tested first. This is done by feeding plate power to the 4700-ohm resistor in the oscillator plate lead only, disconnecting the doubler plate-screen lead temporarily.

Apply heater voltage only, and allow the tubes to warm up for 30 seconds or more. Connect a 100-milliampere meter in the lead to the plate supply, and apply power. Swing the oscillator tuning capacitor, C_1, through its range. There will be a sharp dip in current to about 10 ma. as the crystal starts oscillating.

Check the frequency of oscillation with a grid-dip meter or wavemeter.[1] If you have a receiver that tunes the 25- or 50-Mc. region, listen for the oscillator to determine if it is crystal controlled. The frequency will change only slightly, if at all, when the circuit is tuned through resonance. Listen to the note with the receiver beat oscillator on, and place a screwdriver or other metal object near the tuned circuit. There should be very little change in frequency. Should the frequency change more than a few hundred cycles under these tests the oscillator may not be controlled by the crystal.

Self-oscillation is the result of too much feedback. This can be corrected by moving the tap lower on the coil. Too little feedback may prevent the oscillator from working at all, or it may drop out of oscillation when loaded appreciably by the following stage. The cure is to raise the tap position on the coil.

When the oscillator is working correctly, remove the milliammeter from its power lead and connect it between the high-voltage source and the junction of the screen resistor and 1000-ohm resistor at the low end of the plate coil. Plug a low-range milliammeter, preferably 5 or 10 ma., into the grid current jack, J_2, of the amplifier. Apply plate voltage to the first two stages and tune the doubler plate circuit for maximum grid current, as read on the meter in J_2. This should be at least 2 ma., with a 250-volt plate supply. Try varying the separation between L_2 and L_3, leaving spacing at the point that yields greatest grid current. Retune the doubler plate circuit as the spacing is changed.

Next comes neutralization of the amplifier. With drive on, but no plate or screen voltage, tune the amplifier plate circuit through its range, watching the grid current meter. There may be a downward dip in grid current when the plate circuit is resonated. Adjust the neutralizing capacitor, C_3, a turn or two and check the grid current dip again. If there is less change than before, the adjustment was in the right direction. Continue in this way until no downward movement can be seen in the grid current as the plate circuit is tuned through resonance.

If neutralization cannot be achieved, a different value of bypass will be required at the low end of L_3. If the neutralizing capacitor is at minimum setting when neutralization is approached, a larger value of bypass will be needed. Try 220 $\mu\mu$f. as a next step.

[1] Wavemeters and their uses are discussed in July, 1958, *QST* and in the *ARRL Handbook*.

Power may now be applied to the final amplifier. This can be from the same source as has been used for the earlier tests, for the time being. The meter may be removed from the doubler power lead and connected between the junction of the r.f. choke, RFC_1, and screen resistor and the terminal on the back of the transmitter. This will measure the combined plate and screen current drawn by the amplifier. The meter may also be plugged into the cathode jack, where it will read combined plate, screen and grid current.

A light bulb of about 25 watts or more can be connected to a coaxial fitting and used as a dummy load in place of an antenna. This will not represent a 50-ohm load, so the tuning of the stage will not be the same as when a matched antenna system is used, but it will do for initial tests, and it will give a rough indication of power output.

Apply plate-screen power to all stages, and tune the plate circuit of the amplifier to the point where plate current dips the lowest. Now adjust the series capacitor, retuning the plate capacitor, until maximum brilliance is seen in the load lamp. Check carefully for any sign of oscillation in the amplifier. Remove the crystal from its socket briefly, while watching the amplifier grid current. This current and the amplifier output should drop to zero, and remain there regardless of the tuning of any of the transmitter circuits. Should grid current appear with the oscillator inoperative, recheck neutralization. The grid-current dip may be only an approximate indication of neutralization, so the adjustment may have to be touched up after power is applied to the amplifier. Turn off power as a safety measure when this is done. With perfect neutralization, maximum grid current, minimum plate current and maximum output will all occur at the same setting of the amplifier plate circuit tuning. Perfection in this respect may not be possible, but there should be no sign of oscillation (grid current in the amplifier when the drive is removed) at any setting of the tuning controls.

When the rig is operated with a properly designed antenna the settings of the amplifier plate and antenna loading adjustments may be somewhat different from those obtained with a lamp load. Both should be adjusted for maximum power delivered to the antenna. This can be recorded on a field-strength meter, giving a relative indication of the power radiated by the antenna. Better than this is a power-indicating standing-wave bridge, which may be left connected in the line to the antenna at all times.

Power Supplies and Modulators

Equipment described in *QST* and the *Handbook* does not often include built-in power supplies, meters or modulators. These should be treated as accessories, useful with other items of the station equipment. Properly designed, they are permanent equipment, to be used in essentially the same form for years. Separate power supplies and modulators are versatile items that can be used in many ways. If you decide to change

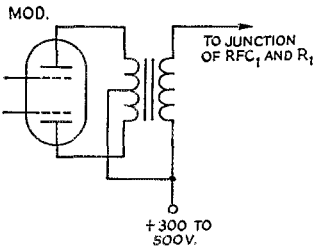


Fig. 3—Method of connecting a modulator to the 50-Mc. transmitter. Plate and screen current for the final amplifier tube run through the secondary of the modulation transformer. With the connections as shown, the same power supply is used for both amplifier and modulator, but separate supplies may be used, and are recommended. Eliminate the common connection in this case.

the transmitter design, only the r.f. unit need then be altered; the accessories remain intact, ready for use with any new equipment.

You can put this rig on the air with nothing more in the way of power equipment than a low-cost supply built from receiver-replacement parts. It could be as low as 250 volts output, at about 100 ma. When you get ready to increase power, this supply can be used on the oscillator and doubler stages, and possibly on the speech amplifier in your modulator. A separate supply delivering up to 500 volts or so can be built for the final amplifier, and be used for the output stage of the modulator as well, if you like.

The audio power output of the modulator should be at least half the d.c. input to the final amplifier. If the transmitter is to be used with a 2E26 at about 10 watts input, a single pentode or tetrode modulator may be used. There is nothing wrong with using a larger modulator, if you have one. Merely hold down the gain to the point where adequate audio power is available to modulate the transmitter properly. If you use a 6146, running up to 50 watts input on phone, a modulator delivering 25 watts audio power will be needed. Any edition of the *Handbook* has modulators that will suit these requirements.

The same is true of power supplies. Design details in the *Handbook* will enable you to build a power supply system to meet your needs. The current for the final amplifier of the transmitter is run through the secondary of the modulation transformer, as shown in Fig. 3. Connection of a single supply for both modulator and final amplifier is shown, but separate power supplies can be used. Separate supplies may, in fact, represent an economy in the end. Several small power supplies may cost no more than a single large one.

For mobile operation with a 6-volt battery the heater circuit is wired as shown. If the car has a 12-volt battery a 5-ohm 5-watt resistor connected in series with the heater lead will drop the voltage sufficiently, when a 2E26 is used in the output stage. Twelve-volt versions of the 6V8 and 2E26 are also available. Any mobile power that delivers 250 volts or more can be used for the plate supply. Most mobile enthusiasts will be content

(Continued on page 164)

Simple Low-Pass Filter Design

Easy Calculation of Values in a High-Performance Circuit

BY JAMES V. O'HERN,* W2WZR

Circuit constants for low-pass filters having a wide range of attenuation characteristics can quickly be obtained from the data given in this article. W2WZR uses an audio filter of this design to improve signal-to-noise ratio and relieve listening fatigue in weak-signal v.h.f. reception.

ANY amateur can construct excellent low-pass filters of the Chebychev type if the following things are known:

1) Terminating resistance.
2) Cut-off frequency.
3) Minimum desired attenuation in the stop band.

Fig. 1 gives the circuit of such a filter having a reasonably sharp rate of cut-off. The lower drawing of this figure shows where the cut-off frequency is in relation to the end of the pass band and the beginning of the stop band. The numerical relationships between these frequencies, for various amounts of stop-band attenuation, are given in Table I, together with values of L and C normalized to an impedance of 1 ohm and one cycle per second.

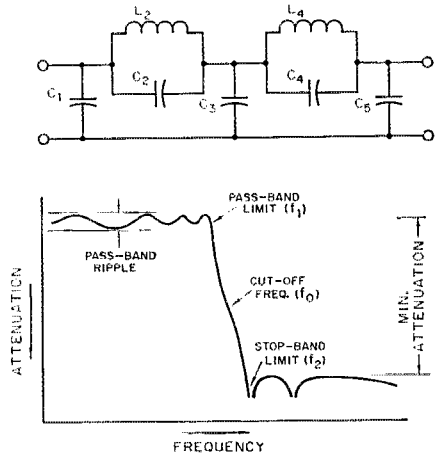


Fig. 1—The filter circuit and representative attenuation characteristic. Table I gives normalized values for circuit constants, pass-band and stop-band limits, for a maximum of 1.0-db. ripple in the pass band.

Chebychev filters have amplitude ripples in both the pass band and stop band. By proper design the amplitude of the ripple in the pass band can be held to any desired value. However, 1.0-db. ripple is adequate tolerance for amateur work and Table I is calculated on this basis.[1]

How To Use the Table

The table lists values for C_1, C_2, L_2, C_3, C_4, L_4 and C_5 as a function of the minimum desired stop-band attenuation. Capacitance values given are in farads and inductance values are in henrys. Since the values are normalized they must be converted to the appropriate frequency and impedance levels. For the frequency transformation all the L and C values given on the selected db. attenuation line must be divided by f_o, the cut-off frequency chosen. For the impedance

* 103 W. Roswell Ave., Nedrow, N. Y.

[1] Adapted from tables in a paper by Bedrosian, Luke and Putschi, "On the Tabulation of Insertion Loss Low-Pass Chain Matrix Coefficients and Network Element Values," *Proceedings of the National Electronics Conference*, Vol. XI, 1955.

TABLE I

Filter Design Data for 1.0-db. Pass-band Ripple

Minimum Stop-Band Attenuation	Pass-Band Limit (f_1)	Stop-Band Limit (f_2)	Capacitance in Farads					Inductance in Henrys	
			C_1	C_2	C_3	C_4	C_5	L_2	L_4
35 db.	.935	1.070	.3035	.0807	.3366	.2531	.2173	.1409	.0831
40 db.	.907	1.103	.3266	.0653	.3759	.1943	.2504	.1531	.1014
45 db.	.896	1.116	.3416	.0520	.4079	.1506	.2758	.1682	.1214
50 db.	.843	1.186	.3650	.0422	.4515	.1183	.3088	.1818	.1417
55 db.	.809	1.236	.3888	.0350	.4956	.0958	.3408	.1940	.1596
60 db.	.773	1.294	.4132	.0291	.5394	.0783	.3721	.2066	.1775
65 db	.737	1.357	.4398	.0244	.5836	.0649	.4046	.2195	.1947
70 db.	.701	1.427	.4668	.0202	.6204	.0543	.4378	.2335	.2122

transformation divide the capacitance values by the chosen value of terminating impedance (this should be purely resistive) and multiply the inductance values by the chosen value of terminating impedance. The two operations (frequency and impedance transformation) can be combined as follows:

$$C = \frac{1}{f_o R} \times \text{value given by Table I}$$

$$L = \frac{R}{f_o} \times \text{value given by Table I}$$

To find the pass-band and stop-band limits, multiply the cut-off frequency by the normalized values for these limits, for the stop-band attenuation selected, as given by Table I.

An Example

Say we want to work at an impedance level of 1000 ohms and we want the cut-off frequency to be 2500 cycles per second. We also want a minimum of 60 db. attenuation in the stop band.

From Table I we can immediately find the start of cutoff by looking in the 60-db. set of values, finding 0.773 as the factor for the pass-band limit. Then

$$f_1 = 2500 \times 0.773 = 1933 \text{ c.p.s.}$$

The stop-band limit, from the Table, will be 2500 times 1.294, or

$$f_2 = 2500 \times 1.294 = 3235 \text{ c.p.s.}$$

The attenuation characteristics of the filter can now be estimated as shown in Fig. 2.

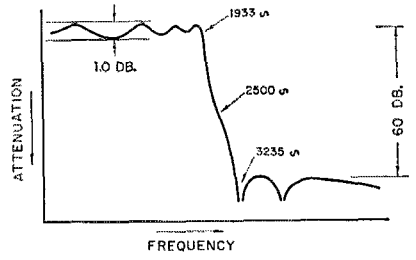


Fig. 2—General shape of attenuation characteristic of the filter calculated in the example.

The L and C values are calculated as follows:

$$C_1 = \frac{.4132}{2500 \times 1000} \text{ farads or } \frac{.4132 \times 10^6}{2500 \times 1000} \mu\text{f.}$$
$$= 0.17 \ \mu\text{f.}$$

$$C_2 = \frac{.0291 \times 10^6}{2500 \times 1000} = 0.012 \ \mu\text{f}$$

$$C_3 = \frac{.5394 \times 10^6}{2500 \times 1000} = 0.22 \ \mu\text{f.}$$

$$C_4 = \frac{.0783 \times 10^6}{2500 \times 1000} = 0.031 \ \mu\text{f.}$$

$$C_5 = \frac{.3721 \times 10^6}{2500 \times 1000} = 0.15 \ \mu\text{f.}$$

As a short cut, the value of the expression

$$\frac{10^6}{f_o R} = \frac{10^6}{2500 \times 1000} = 0.4$$

may be calculated first, and then multiplying the C values given in the Table by this factor will give the values of the various capacitors directly. A similar short cut,

$$\frac{R}{f_o} = \frac{1000}{2500} = 0.4$$

may be used [2] for finding the L values:

$L_2 = 0.4 \times .2066 = 0.082$ henrys (82 mh.)
$L_4 = 0.4 \times .1775 = 0.071$ henrys (71 mh.)

These values are all we need, and the complete filter is shown in Fig. 3.

Components

For best results the actual filter should use component values as close as possible to the calculated values. If possible, the capacitances and inductances should be measured on a bridge.

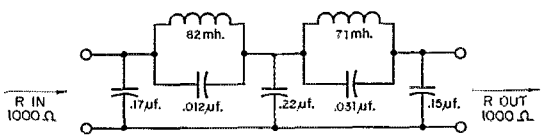


Fig. 3—Circuit constants of the filter calculated in the example.

The theoretical design is based on loss-free components, but capacitors and inductors with a Q of 50 or better will give excellent results. Mica capacitors are preferred; however, good-quality paper units may be used for the larger values.

The most critical component is L_4, which is in a parallel-tuned circuit producing an attenuation notch nearest the pass band. This coil therefore should have as high a Q as possible. Powdered-iron toroidal cores are best. Suitable cores can be obtained from the Arnold Engineering Company, Marengo, Ill., and the following types are recommended:

B-064157-3
A-930157-2
E-115157-4
D-671157-3
W-098157-3

Coils wound on any of the above cores have a nominal inductance of 157 millihenrys for 1000 turns of wire. Since inductance varies as the square of the number of turns, any desired value can be quickly approximated — e.g., 500 turns would give about one-fourth of 157 mh. or 39.2 mh.

Hand winding is not too difficult if a bobbin with slots in the ends is made up of brass or aluminum rod, as shown in Fig. 4, and passed through the center of the toroid after first having been wound full of wire of a size appropriate for the inductance required and the winding space available on the toroid core.

Choice of Impedance Level

In order to achieve the theoretical performance

[2] It is merely a coincidence that the short-cut factors happen to be the same for both C and L in this example.

Fig. 4—Bobbin for winding toroidal inductances.

of the filter the proper terminations must be used; that is, the signal source feeding into the filter should have the chosen value of internal resistance, and the output side of the filter similarly should work into the same value of resistance.

Any convenient value of impedance can be selected, but occasionally a choice is made that will require impracticable values of L and C — e.g., very high values of R will lead to extremely large values of inductance and very low values of R will lead to very large values of capacitance. If the design turns out to be poor on this account, it will be necessary to reconsider your choice of impedance. In general, an impedance value of the order of 600 ohms is a good choice for speech work as the component values are reasonable. However, there is considerable latitude.

If the output of the filter is applied to the grid circuit of an amplifier tube — usually this will be the case — the termination on the output side can be a simple resistor having a value equal to R. On the input side the filter can be coupled to the preceding tube by means of a transformer having the proper impedance ratio for the tube and filter, unless R happens to be, or is deliberately chosen to be, equal to the internal output impedance of the driving amplifier. A cathode follower makes a good driver since its internal output impedance will be in the neighborhood of a few hundred ohms, a good value from the standpoint of values of components used in the filter.

Fig. 5 shows the circuit of an amplifier built by the author using the values computed above. In this case the input side of the filter is coupled to a 12AU7 section through a step-down transformer to match the plate resistance of the tube to the 1000-ohm impedance of the filter. The second half of the 12AU7 drives a 6AQ5 output amplifier with the writer's "secret weapon" for combating line noise — a series-resonant circuit tuned to 60 c.p.s. — in its grid circuit. In v.h.f. reception the low-pass filter, by eliminating unnecessary high-frequency response, has practically eliminated the strain of listening to a dead band; and with the "secret weapon" a large amount of line noise can be tolerated. The filter is particularly effective for scatter communication, and it is surprising how little distortion of voice signals is apparent even though cut-off starts at about 1900 c.p.s.

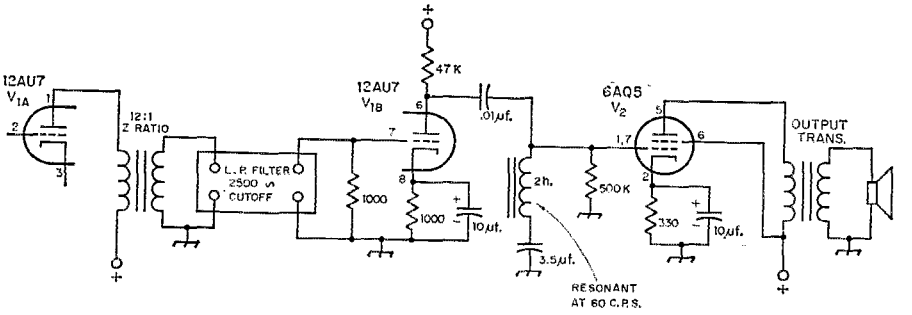


Fig. 5—The author's amplifier, incorporating a filter as designed in the text and the "secret weapon"—a series-resonant trap in the grid circuit of the output tube—for reducing line noise.

Hamfest Calendar

Alabama — The Valley ARC and the API RC will hold their annual ham picnic on October 5 at Chewacla State Park, just south of Auburn on U. S. Highway 29. Donations of 50¢, swap shop, auction, contests. Picnic lunch, so bring the whole family. For reservations contact Al Stancel, W4PHY, 1411 N. 7th Ave., Lanett.

New York — The annual Syracuse v.h.f. roundup will be held on October 11 at the Three Rivers Inn, just north of Syracuse on Route 57, Thruway exit 38. Talk-in rigs on 50.4 and 144.1 Mc. Tickets at $5.50 per person include banquet, speakers, dancing, floor show. You must register in advance. Contact Bob Mele, W2EMW, 18 Homeland Drive, North Syracuse.

New York — The Auburn ARA will hold its second annual hamfest on September 27 at Springside Inn, Auburn, with activities starting at 1500 and dinner at 1800. Advance tickets $3.50, at the door $4.00. For further info contact Don Smith, K2ZOD, 32 Fleming Street, Auburn.

Ohio — The Cleveland Area Council of Amateur Radio Clubs will sponsor a convention on October 18, beginning at 0800, at the Masonic Auditorium at 36th and Euclid. Pre-registration cost is $2.00 per person, $3.50 per couple, prior to Oct. 15. Tickets to the sideband dinner are $4.50 per person in advance, or $5.00 at the door. A special ladies luncheon and style show is $2.50 in advance, or $3.00 at the door. Suppers for v.h.f. enthusiasts and for MARS members; and Technical speakers, equipment displays, entertainment. See page 108 of September *QST* for details on the operating contest held in connection with this convention. Contact the Cleveland Amateuradio Convention, P. O. Box 5167, Cleveland 1, Ohio.

(*More on page 186*)

Adjustment Procedures for V.H.F. Converters

Hints on Attaining Optimum Performance with Simple Test Equipment

BY EUGENE C. FRYE,* KØDJP

MANY newcomers to the amateur v.h.f. field feel well able to build and wire their own converters. Most designs are simple enough, mechanically and electrically, but adjustment for peak performance is quite another matter. This article describes test procedures that can be carried through with only the simpler items of test equipment. The material presented is sufficiently general to be applicable to most v.h.f. converters described today.

Anyone who intends to build or even repair and adjust his own gear should have some test equipment. The items recommended here are not of the complex or expensive variety. They should be a part of the station equipment; as necessary as the transmitter, receiver or antenna system. First we need some form of test meter, either vacuum-tube voltmeter or volt-ohmmeter. The v.t.v.m. is preferable, as it is more versatile, but the latter will do if its meter is the sensitive 20,000 ohms-per-volt type. A grid-dip meter (g.d.o.) is a must for determining the resonant frequency of tuned circuits. A noise generator is a necessity for receiver work. The crystal-diode variety [1] is so simple and inexpensive that it is foolhardy to try to do without one. Let's see how these tools are used.

Local Oscillator Adjustments

If you have not already done so, it will facilitate converter adjustment procedure if you install a "looker point" in the grid circuit of the mixer stage. This can be a 1-megohm resistor connected between the mixer grid and a test jack or feed-through pin, as shown in Fig. 1. This point should be accessible from the top of the chassis. The d.c. voltage read here will be useful for setting the oscillator injection level and for alignment of the r.f. stages. Following initial alignment, subsequent checks can be made conveniently at this point without removing the converter bottom plate or other shielding.

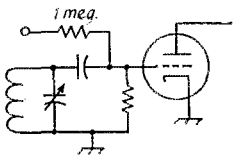


Fig. 1—A test point for measuring injection bias is a great convenience in making converter adjustments. D.c. voltage may be read with vacuum-tube voltmeter or sensitive volt-ohmmeter.

Before proceeding with actual alignment it is a good idea to adjust all tuned circuits approximately to the desired resonant frequencies with the grid-dip meter. This can be done with the converter inoperative, but with the heaters on.

The next step should be to get the oscillator working properly. If it is a tunable oscillator its frequency range should be checked and the dial calibrated roughly. If it is a crystal oscillator be sure that the frequency is right, and that it is controlled by the crystal. This can be done by listening to the oscillator note in a communications receiver. The frequency should vary only slightly, if at all, when the oscillator is tuned, or when a metallic object is placed near the tuned circuit. If the crystal frequency is out of range of the receiver this check will have to wait until the mixer is put into operation. Then a locally generated signal can be tuned in for the stability check. This signal could be from the transmitter exciter or other stable source. Some grid-dip oscillators are sufficiently stable for this purpose.

If the converter oscillator is not stable it is usually because of too much feedback. If no oscillation develops the feedback is too low, assuming, of course, that the crystal is in working condition. Most converter oscillators use overtone crystals or oscillator circuits that are intended to make the crystal work on one of its overtones. Overtone oscillator feedback adjustments have been discussed thoroughly in *QST*.[2]

If the converter has one or more multiplier stages following the crystal oscillator, these should now be checked to see that they are on the desired frequencies. Use the g.d.o. as a wavemeter for this. The circuits may also be peaked for maximum output with the g.d.o. as an indicator, though the d.c. voltage at the mixer test point is the best indication, once it is determined that the stages are on the desired frequencies. Coupling from the oscillator is usually adjusted to give about minus 2 to 3 volts injection bias at the mixer grid, as measured with a v.t.v.m.

R.F. Amplifier Response

Once the injection level is set, the response of the r.f. stage or stages can be set up using the

[1] Tilton, "Noise Generators — Their Uses and Limitations," *QST*, July, 1953, p. 10.

* 2735 11th Ave., Marion, Iowa.

[2] Tilton, "Overtone Crystals — How And Where To Use Them," *QST*, March, 1955, p. 16.

g.d.o. as a signal generator and the mixer test point as a signal detector. The g.d.o. can be connected to the antenna input terminal through a piece of transmission line about a half wavelength long. This can be coax or Twin-Lead, depending on the converter input circuit design. At the g.d.o. end of the line there should be a small pick-up loop, loaded with a half-watt carbon resistor of approximately the value of the line impedance. The loop can be made from the resistor leads, in fact.

Set the g.d.o. at approximately the middle of the desired converter operating range. Remove plate voltage from the converter oscillator and multiplier stages, so that only the voltage developed at the mixer grid by the amplified signal from the g.d.o. will be read. Couple the loop to the g.d.o. coil and adjust its position so that minus 1 to 2 volts is read at the test point. Tune the r.f. circuits for the desired pass-band characteristics.

R. F. Oscillation Checks

Before making final adjustments, check for oscillation in the r.f. stages. A simple test is to remove plate voltage from the oscillator and from the r.f. tube immediately preceding the mixer. Read the negative contact potential at the test point. Now apply the plate voltage to the r.f. stage again, but leave the oscillator disabled and the g.d.o. off. If the reading goes more negative when the r.f. stages are working, oscillation is present in the r.f. portion of the converter.

Elimination of r.f. oscillation can sometimes be quite a problem. If the r.f. amplifier is a cascode, it must first be determined which part of the amplifier is oscillating. A quick check on this is to read the amplifier plate current, and note if it changes as any circuit is tuned, or touched with a metallic object or the fingers. Usually oscillation in a cascode amplifier can be corrected by adjustment of the neutralizing coil, but there can be oscillation in the grounded-grid or second half of the stage. The latter is almost certainly due to improper grounding. Make ground connections separately, and never bypass to the center ring of the socket. Do not tie in ground connections from several points through a common wire to a single chassis point.

If the r.f. amplifier is a pentode, isolation of the grid and plate circuits may be important. This can be accomplished by a shield across the tube socket, but proper orientation of the coils may make this unnecessary. Mount the plate and grid coils as far as possible from each other, and in perpendicular planes to prevent inductive coupling between them. Observation of the d.c. voltage at the mixer test point (with oscillator off) will show whether corrective steps taken are in the right direction. Reduction and eventual elimination of voltage developed by r.f. oscillation is the condition to work for.

Adjusting Double-Tuned Circuits

R.f. bandpass adjustments may now be made. For this, be sure to set the signal level below the saturation point, as observed at the test point. Many current converter designs use double-tuned circuits, as they provide better attenuation of signals from outside the desired pass-band than single-tuned circuits. Unfortunately, they are notoriously difficult to align properly, unless a sweep generator and oscilloscope are available. The procedures outlined below will give satisfactory results without these expensive tools.

The simplest way of using an ordinary signal generator (or your g.d.o.) is the damping method. Set the signal generator or g.d.o. at the middle of the desired pass-band. Load one of the double-tuned circuits by connecting a carbon resistor of about 1000 ohms directly across it. The voltage read at the test point will drop considerably, and it may be necessary to increase the coupling to the signal source to provide a usable indication. Tune the other circuit for maximum indication at the test point. Remove the damping resistor from the first circuit and connect it across the second. Tune the first circuit for maximum indication. Remove the damping resistor and check the shape of the response curve by varying the signal generator across the converter tuning range and noting the voltage at the test point. It should resemble the curve of Fig. 2.

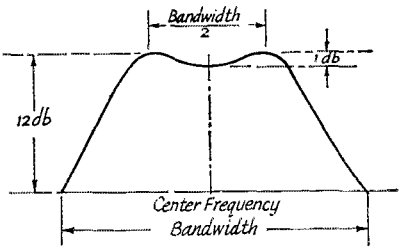


Fig. 2—Typical response curve of a converter using double-tuned circuits. Essentially flat top and steep sides are desirable characteristics.

The chances are that the desired pass-band shape and band width will not be realized with the first adjustment. In general, increasing the coupling while maintaining constant circuit Q will increase the band width and also make the "horns" at the edges of the pass-band sharper. Increasing the loaded Q of one or both of the tuned circuits will increase the sharpness and height of the horns without materially affecting their frequencies. The loaded Q of the tuned circuits can be changed by varying the L/C ratio at the desired frequency. With constant loading, decreasing the capacitance and increasing the inductance will result in lower loaded Q, and vice versa. Damping resistors can be used across the coils, if the minimum usable circuit capacitance results in too high a loaded Q (too narrow a passband).

Because changes in coupling or loading will often change the tuning of the circuits, it is a good idea to retune them after every adjustment of the coupling. It will also be found that coupling and Q adjustments are interacting. Should the pass-band shape tend to be tilted badly after adjustment by the damping method, it is an indication

either that regeneration is present or that there is undesired coupling between the two tuned circuits. If the ratio of band width to center frequency is over 10 per cent, one of the stages will probably have to be detuned slightly to eliminate tilt in the slope of the passband.

An alternative procedure for aligning double-tuned circuits is to detune one circuit considerably, tune the second to maximum response, damp the second, and tune the first to maximum. Remove the damping resistor when this is completed.

After the r.f. circuits are aligned the local oscillator injection should be rechecked, as adjustment of the tuned circuits, particularly the one in the mixer grid, will usually change the amount of injection bias observed at the test point.

I.F. Circuits

If necessary, the i.f. circuits of the converter can be adjusted without connecting the converter to a communications receiver. To do this, terminate the converter output with a resistance equal to the impedance of the line used between the converter and the receiver. Connect the r.f. probe of the v.t.v.m. across this resistor. With the converter operating normally, use the g.d.o. as a signal generator in the manner outlined for r.f. bandpass adjustment. While slowly tuning the g.d.o. across the r.f. pass-band, adjust the i.f. circuits to give the desired response.

In making these adjustments, be sure that the g.d.o. output does not saturate the converter. If the converter output is too low to give a usable indication by this method, or if a v.t.v.m. is not available, the converter will have to be connected to a receiver and the S meter used as an output indicator.

Noise Figure Adjustments

It cannot be too strongly emphasized that the simplest, easiest and most accurate method of realizing the ultimate sensitivity of a v.h.f. converter is the use of a noise generator. If you do not already have one of these handy devices, it will pay you to stop at this point and build one. Several excellent noise generator designs have appeared in *QST*, and even the simplest — the crystal diode type — is a highly useful tool.[1]

An accessory to the noise generator is a good audio voltmeter. The a.c. scales of a v.t.v.m. can be used, but these are generally peak indicating devices, and because of the character of the receiver noise the needle will bounce in an annoying fashion. Ideally, a true square-law or r.m.s. detector is required. However, a satisfactory device for this service is an *average* type detector, with some smoothing. Such a detector, suitable for connection to a phone jack or across the speaker terminals, is shown in Fig. 3. The transformer used in the detector is not critical. The one used had a 400-ohm primary and a 2000-ohm secondary. Some of the small transistor audio transformers on the market work very well. Popular types of volt-ohmmeters have average-

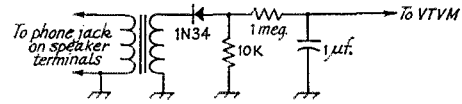


Fig. 3—An audio detector arrangement for use in making noise-figure measurements.

type rectifiers for use on their audio output scales. These are satisfactory for use as audio indicators in noise generator work.

In making noise generator tests it is important that the a.v.c. be disabled, and that both the audio and r.f. gain controls be set so that there is no tendency to saturate. Generally speaking, the audio gain should be run at a fairly high setting, and the r.f. gain should be turned up only to the point that will give a usable indication on the output indicator. The b.f.o. may be on or off, but all tests should be made with it in the position in which the work was started. The same may be said of the noise limiter. If you are working in a completely quiet location the limiter should be left off, but more reliable results can be obtained in noisy locations if the limiter is used. A moderate amount of noise limiting will have no effect on the accuracy of noise generator measurements, provided that the setting of the limiter is not changed during the work.

With the noise generator connected, but turned off, set the audio and r.f. gain controls as described above to give any convenient reference reading on the output indicator. Now turn on the noise generator and adjust its output to give a 3-db. increase in the output indication. Unless you have a db. scale, this will require an increase of 1.414 times. Adjustments should now be made on the converter to see if the 3-db. increase in noise indication can be obtained at a lower setting of the noise generator. Any adjustment that works in this direction has improved (lowered) the receiver noise figure.

In converters having one or more r.f. stages, adjustment of the mixer should have no effect on the noise figure, except in the case of very large changes in settings. The gain and output may vary considerably as circuits are adjusted, or the injection level is changed, but the noise figure should remain the same. If small changes in mixer adjustment do affect the noise figure, it is proof that the r.f. portion of the converter is not working as it should.

Except in the case of the plate circuit of a first grounded-grid r.f. amplifier, adjustment of circuits other than the input circuit and the neutralization of the first stage will have little or no effect on the noise figure. This holds so long as the gain of the first stage is sufficient to suppress noise contributions of succeeding stages. The neutralization of the first stage and the adjustment of the input circuit will have little effect on the over-all response of the converter, so the passband adjustments outlined earlier can be done first. They will require only minor touching up, if anything at all, when the noise figure has been adjusted to optimum. Do not be surprised if lowest noise figure is obtained at settings of the

first circuits that result in somewhat less than maximum gain. This effect is to be expected in circuits using neutralized triodes, particularly. In these, the loading and tuning of the input circuit for best noise figure will not coincide with maximum gain setting of this circuit.

In some cases it may be noticed that the r.f. stages tend to oscillate when the converter input is not loaded properly. This is usually an indication of imperfect neutralization of the first stage, but if the antenna circuit is properly matched to its transmission line, and the coupling to the input circuit is adjusted for best noise figure, oscillation with the antenna removed may not be harmful. If the antenna system has a high standing-wave ratio, however, more careful neutralization may be necessary to achieve satisfactory performance and freedom from oscillation. If extensive work is to be done using a poorly matched antenna system, it may be advisable to adjust the converter input circuit for that antenna. This can only be done by listening to a signal, with the antenna connected, in the manner recently outlined by W8WXV.

The importance of fairly high r.f. skirt selectivity in achieving accurate noise figure readings is not generally appreciated. If the converter pass band includes portions of the image frequencies (which may easily happen when a low i.f. is used) the indicated noise figure will be lower than the true noise figure of the converter and actual receiver performance will be degraded.[4] Thus, particularly where double-tuned circuits are used, it is desirable to make at least preliminary adjustment of the converter pass band, as already described, before attempting noise figure work.

As a final step, the r.f. and i.f. pass-band adjustments can be gone over, as minor changes will have no effect on the noise figure, so long as the first stage circuits are not altered. If the converter has an i.f. gain control it should be set so that the converter adds 10 to 20 db. of noise to the receiver output over that with the converter turned off.

The work on the converter will then be completed, and the experimenter can rest assured that he has made his handiwork perform to the fullest extent of its capabilities. It is hoped that the measures detailed here will help many workers in the v.h.f. field to achieve better over-all receiving results, and more important, to develop a better feel for the adjustment of their equipment.

[3] Burson, "Hints on 144-Mc. Converter Design and Adjustment," *QST*, July, 1958, p. 44.

[4] Weeks, "Image Ratio and Noise Figure," (Technical Correspondence), *QST*, February, 1955, p. 132.

Strays

A Pan-Pacific Boy Scout Jamboree will be held in Auckland, New Zealand, January 3 through 10, 1959. The New Zealand Association of Radio Transmitters will operate ZL1PPJ on all bands 80 through 2 meters daily from 2100 to 0900 GMT. Amateurs are invited to set up schedules with ZL1PPJ by contacting any of the Auckland stations or by writing NZART, P. O. Box 9138, Auckland S.E. 1, New Zealand. Club stations might give local Scout groups a chance to visit during some of these skeds.

—···—

Among the amateurs in El Paso, Texas, are

W5HRS	W5KOK	W5MXY	W5GQF
K5HRS	K5KOK	K5MXY	K5GQF

—···—

WCAU, CBS outlet in Philadelphia, has 32 hams included in its total technical staff of 68, and there are three more hams on the executive staff. Any other radio/TV station have a greater number of hams employed?

—···—

KØJCZ is looking for information concerning WØVJH, who died in 1949. Write to KØJCZ if you have any information concerning his uncle.

—···—

The October schedule of the Army MARS side-band technical net (Wednesdays at 2100, 4030 kc.) is as follows:

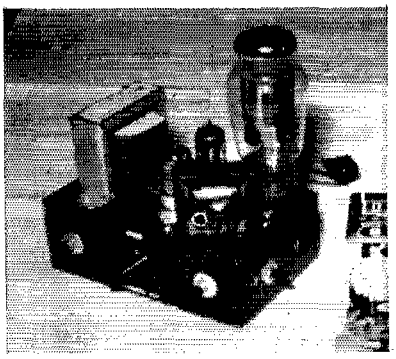
Oct. 1 — Engineering the White Alice network.
Oct. 8 — Characteristics of S.S.B. power amplifier circuits.
Oct. 15 — Technical facilities of Radio Free Europe.
Oct. 22 — Application of transistors to power supply equipment.
Oct. 29 — Maser amplifiers and oscillators.

The two gentlemen pictured at the right are W5RLU (left) and W3WDF (right) recently assigned chiefs of Air Force and Army MARS, respectively.

An All-Electronic Key and Keyer

Combined Circuits Solve Keying Problems

BY JACK LIVINGSTON,* K2POO



This electronic key and keyer can be built on a 2 × 4 × 6-inch chassis. The big tube is the 6AS7 keyer tube, which ends the sticking-relay problem.

BEING a normal tinkerer and also not being endowed with a tape-machine fist, the writer became interested in the construction of a fully automatic key.

Several suggested designs were built with the usual "home-brew" variations. The results were a cut below mediocre until one outlined by W3FQB [1] was followed. This proved to be the sought-for answer and it performed up to all expectations with only one small trouble. (There's always one!) When keying a low-level stage such as in the DX-100, everything was FB. However, when the keyer was applied to a transmitter such as the DX-20, where everything is keyed, it was found that sticking of the soft-silver relay contacts really "goofed up" the works. This was remedied by replacing the offending contacts with tungsten and all was dandy until . . .

Key clicks!!! One morning, having called some rare DX mightily but in vain as usual, my call was answered by a nearby friend who informed me that although my signal was S9 my clicks were running a close second. Not too bad, he allowed, but worth looking into. Out came the books, *QST*s and similar ammunition, and after careful searching the article by W3HH [2] illustrating a vacuum-tube keyer for the DX-100 was found. It looked like a good bet. Several hours and pounds of solder later we were in business. All the key-click checks outlined in the *Handbook* were passed with flying colors, and on-the-air comments were favorable. After the usual back-patting and head-swelling we figured

* 86 Martine Ave. N., Fanwood, N. J.

[1] Montgomery, "The Very Electronic Key," *CQ*, March, 1952.

[2] Countryman, "Hints and Kinks," *QST*, February, 1957.

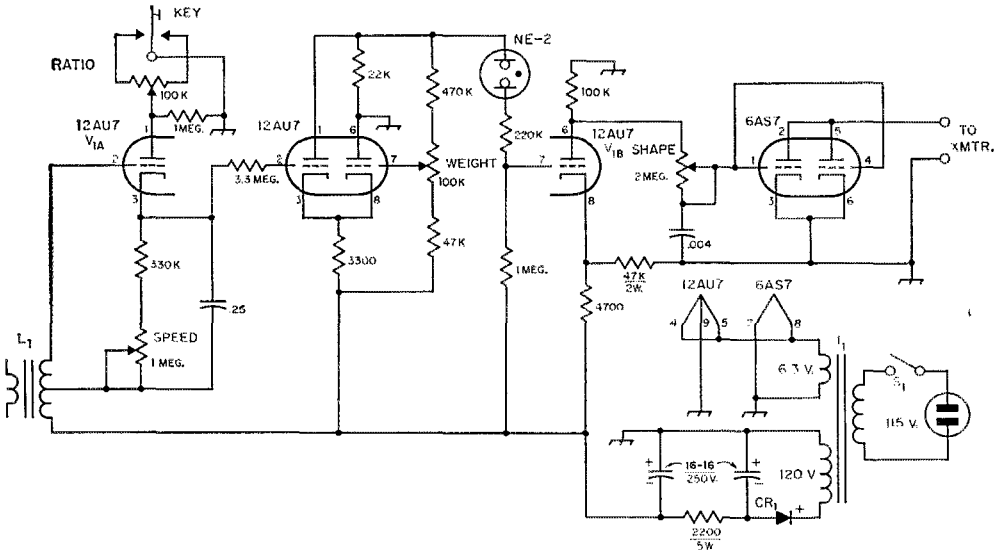


Fig. 1—Circuit of the electronic key and keyer. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt. Potentiometers have linear taper.

CR_1—Selenium rectifier, 65 ma., 130 volts.
T_1—125 v. at 50 ma., 6.3 v. at 2 amp. (Stancor PA-8421).
L_1—10-watt universal output transformer (Stancor A3849) Secondary not used.

we had it made. Now for some real operating! All went fine until about the second CQ, when the final dash lingered a little too long (about five minutes too long!). The - - ! *x ?* - - relay had welded itself shut again! This was it! Bird watching or stamp collecting were about to sign up a new devotee.

After a short period for temperature and pressure reduction it was decided that the tungsten contacts that had worked successfully on the DX-20 key would solve the DX-100 problem. As I drew my trusty soldering iron it dawned on me that it was silly to electronically key a tube to actuate a relay to key a tube to key the transmitter, particularly when the existing relay was inadequate in its present state. With this startling brain wave still oscillating in my other head, a letter was sent posthaste to W3FQB, the father of the original key. An answer was received pronto. The completed circuit ultimately decided on by the writer is shown in Fig. 1. For a detailed description of the key action, reference may be made to the original article by W3FQB or portions of the article by W5DQV.[3]

[3] Leslie, "Combined Keyer and Control Circuit," *QST*, February, 1957.

Construction of the complete unit proved no problem, as all the components fit quite well on and in a 2 × 4 × 6-inch chassis. Tubes, power and audio transformers are mounted on top, with the other components inside as space and preference permit. Some will no doubt note that the heater load on the power transformer is about 50 per cent above the manufacturer's rating, but this has caused no trouble to date. There is ample air circulation around this exposed unit, and the heating experienced even with long periods of operation has not been excessive.

No doubt there are simpler versions of this keying system available, such as tying directly into the transmitter for grid-block keying of existing tubes, but for a "no-digging-just-plug-in" unit this really fills the bill.

All due credit should be given to Mr. Montgomery, W3FQB, for his kind assistance, as it is his theory and the writer's soldering iron that produced this keyer.

It might be well to add in closing that there is one component that is extremely important for ideal operation, and that is the nut that holds the key lever. Does anyone have any help to offer?

Strays

FCC has added to its rules for the experimental radio service a section providing for the granting of authorizations, to students of seventh grade or higher level, for the use of radio in school experiments and demonstrations. Applications must contain detailed information (specified in the new rules) on the proposed set-up, a log must be kept, and the district engineer must be notified in advance of each scheduled operation. Power limitation is normally 5 watts, and frequencies near 27 Mc., 460 Mc. and 2450 Mc. are available for these temporary authorizations. Interested parties may obtain a copy of Part 5 of the FCC rules from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 10 cents (no stamps).

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All amateurs participating in the 1958 ARRL Sweepstakes are invited to compete for the Raymond R. Rosenberg, W3NCJ, Memorial Award, honoring the memory of the late SCM of the Western Pennsylvania Section. A 21½-inch trophy will be awarded to the highest scoring station (whether phone or c.w.). W3GJY, the donor, has eliminated himself from competing for the trophy. Logs need not be furnished. Final Sweepstakes tabulations as published in *QST* will determine the winner.

—···—

Not all hams speak the same language, nor do they all abbreviate the same. One afternoon the W1AW operator wanted to raise Pittsburgh, and so called "CQ PGH" several times. Each time he got an answer from a K2 in Poughkeepsie.

Silent Keys

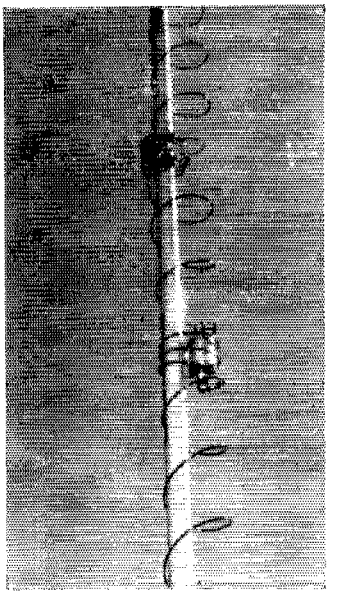
IT IS with deep regret that we record the passing of these amateurs:

K1BWY, Ernest J. Roy, Fitchburg, Mass.
K1BYC, Jennie S. Martin, Bridgeport, Conn.
W1CRW, Clifton R. Wilkinson, Salem Depot, N. H.
W1LFD, Dominick J. Ford, South Boston, Mass.
W1OLU, Ronald W. Heckbert, Medford, Mass.
W1PXJ, Francis J. Oresteen, Ossipee, N. H.
W2KS, James L. Murray, Hanover, N. J.
K2KWF, Kenneth M. Riker, Rochester, N. Y.
W2SJV, Edward G. Graf, Tonawanda, N. Y.
W2UWP, Ralph A. Wickam, St. James, N. Y.
W3USS, George T. Stump, Uniontown, Pa.
K4BGU, Frederick Wierk, Jacksonville, Fla.
W4CHE, Milton B. Drennen, jr., Miami, Fla.
K4JED, Charles Edwards, sr., Winter Park, Fla.
K4SQO, Basil Pinzelik, St. Petersburg, Fla.
W4TEE, George Roberts, Orlando, Fla.
W4UKX, Alfred B. Baird, Macon, Ga.
K5JMP, Arthur L. Neete, jr., Albuquerque, N. Mex.
W5JQQ, Paul C. Watson, jr., Houston, Texas
W5NEX, Charles E. Stailey, Lubbock, Texas
K6AVK, John M. Closson, Redwood City, Calif.
W6MXW, Theodore R. Peixotto, San Francisco, Calif.
W6QJJ, Thomas D. Herriman, Stockton, Calif.
W7MFC, William A. Young, Twin Falls, Idaho
W8HXM, Bertram J. Bell, Detroit, Mich.
W8OMZ, Charles W. Bixler, Detroit, Mich.
W8VNC, Oliver C. Stocker, Litchfield, Ohio
W9LJV, Robert E. Lathrop, Waukesha, Wis.
W9LYB, Charles F. Baker, Charleston, Ill.
W9ORM, Frank R. Kilburn, Chicago, Ill.
W9IGC, Victor R. Eades, Bethany, Mo.
KØLEM, Quentin C. Lehman, Mountain Lake, Minn.
VE3KJ, H. E. Ormsby, Toronto, Ont.
VE7XF, Andrew J. Kepner, Victoria, B. C.
ZL4AF, Andrew Aitken, Dunedin, N. Z.

Helical Element Ground Plane

20–15–10 Antenna with 10-Meter Dimensions

BY RALPH ROSENBAUM,* W5ECP



Helixes of the long, thin type have been used as antennas off and on for a long period, particularly in mobile installations. This, however, is the first time we have heard of their being used for ground-plane radials — and for multiband operation using traps.

A NEW antenna was needed desperately for 20 meters. Locals on this c.w. band were putting me to shame when they showed me their latest logs. A vertical or ground-plane antenna with its low-angle radiation should solve the DX problem, but complications arose. Problems of obtaining a good ground system and situating the antenna away from a maze of elm trees eliminated a conventional vertical from consideration, and a full-size ground plane was out of the question because this QTH has a tiled slanted roof. However, a ground plane with 10-meter dimensions would solve any difficulties.

Last summer W5AIG introduced a new antenna concept to me, the helical monopole. He mentioned that research indicated that a normal-mode [1] helix compared closely in efficiency with a straight vertical element. I decided to investigate a ground plane with helical radials.

* 530 Lafayette Place N.E., Albuquerque, N. M.

What started as a wild idea has now evolved as a tri-band miniature ground plane. Excellent results have been obtained on 10 and 20 meters. Stateside response and reports on 20-meter c.w. compare very closely to a regular ground plane, and DX has been good. The ground plane has opened a "new" 10-meter band with its ground wave. DX contacts on 10 meters show that the ground plane is never more than two "S" units below a three-element beam. Unfortunately, results on 15 meters have only been fair; occasionally this band does favor the ground plane, but usually my dipole pulls ahead with stronger signal reports. The ground plane also is grand for band scanning during contests and DX openings.

Band-changing operations are kept to a mini-

[1] I.e., maximum radiation in the plane perpendicular to the axis of the helix (corresponding to the radiation from a straight-conductor dipole or monopole) as contrasted with the helical antenna of Kraus. The characteristics of this type of antenna have been analyzed in a paper by Kandoian and Sichak, "Wide-Frequency-Range Tuned Helical Antennas and Circuits," *Convention Record of the I.R.E., Part 2*, 1953 National Convention. — *Ed.*

Above—The 10- and 15-meter traps installed between helixes. The traps are preset to frequency before installation, and adjusted for best input-resistance characteristics of the antenna in the final tuning process. Adjustment is by changing turn spacing.

Left—While the wire helixes do not stand out too well in this antenna photograph, enough should be visible to give the general idea. Simple helixes are used in the radials; only the radiating element is trapped for multiband operation.

mum since only one feed line having a fairly constant input impedance at the transmitter is used. The antenna is fun to construct, and the total cost is about thirty dollars.

Principles

Each element is wound in the form of a spiral. Turns of the helix can be thought of as forming an imaginary cylindrical surface. The length from end to end of this imaginary cylinder at resonance will be shorter than the length of a straight wire in space resonant at the same frequency. The inductive and capacitive reactances cancel at resonance, leaving the cylinder resistive. The total length of wire in a quarter-wave helix is greater than a quarter wavelength; for example, the wire length in a typical 14-Mc. quarter-wave helix is not sixteen feet but twenty-six feet. When the helix is compressed the resonant frequency rises (provided the turn spacing remains large compared to the wire diameter), and if no turns are added to the compressed helix it will be reactive at the original frequency but resistive only at some higher frequency. Tuning a helix is simple, since the resonant frequency may be raised by compressing it or lowered by stretching.

By changing the diameter and turns per inch, helixes may be made resistive at a given frequency although their length may vary greatly. One unfortunate thing happens, though, as a helix is shortened. The radiation resistance, which is a principal factor in determining the efficiency of a short antenna, is largely dependent on the length of the element. A conventional ground plane at resonance will have a radiation resistance around 32 ohms. If the length of a radiating element is cut down to, say, an eighth wave, it will have a lower radiation resistance whether it shows reactance or not. I found a helical ground plane of these dimensions to have an input resistance of 21 ohms on 14 Mc.

For multiband operation the radiating element is broken up into resonant sections separated by parallel-resonant traps as shown in Fig. 1. At the frequency to which it is resonated each trap shows an extremely high impedance and separates the remaining sections of the helix from the resonant section. A high C to L ratio is used in the traps to reduce resistive losses and to increase the band width.

Impedance measurements for the three bands were first taken with individually resonated helixes and then with the traps installed. The results are shown in the table below:

Frequency	*Helix without traps*	*Helix with traps*
28.6 Mc.	150 ohms	145 ohms
21.3 Mc.	75 ohms	100 ohms
14.1 Mc.	21 ohms	17 ohms

The radiation resistance should be and can be increased. Although I used a nine-foot dowel for the driven element, I suggest that you buy a thirteen-foot section; at longer lengths, the dowels begin to bend. Instead of using a helix

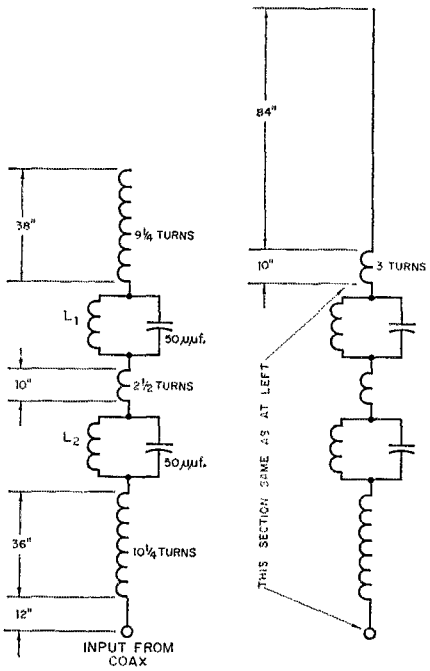


Fig. 1—Dimensions of radiating element. The arrangement at the left is the one used by the author; that at the right is a suggested modification to raise the input resistance on 14 Mc. Helixes are made of No. 12 wire. L_1—4 turns No. 12, 2¾-inch diam., ⅜-inch turn spacing. L_2—3 turns No. 12, 3½-inch diam., ¾-inch turn spacing.

for the 20-meter section, run a straight wire from the top of the pole and extend the wire into a three-turn coil before soldering it to the 15-meter trap.

Two quarter-wave transformers in series are used to obtain good impedance matches at the transmitter, as shown in Fig. 2. A quarter-wave transformer of RG-8/U is used on 20 meters to step up the 17 ohm impedance at the antenna to approximately 160 ohms at its input. This gives a good match (less than 2:1 s.w.r.) with the main feed line, the 93 ohm RG-62/U. If the input resistance of the antenna is raised to 29 ohms on 20 meters, a perfect match will result. On 10 meters the 14-Mc. quarter-wave transformer becomes a half-wave and repeats the 145-ohm impedance seen at the ground plane. The RG-62/U coax is an odd quarter-wave section on 10 meters and drops this 145 ohms down to 60 ohms at the transmitter. On 15 meters the impedance bridge connected to the input end of the 14-Mc. coaxial section gave the same 100-ohm impedance reading as did the antenna itself. The mismatch between this value and the RG-62/U is slight.

Construction

Before tackling this antenna, bottow grid-dip, impedance, and s.w.r. meters if you don't have them already. This equipment is essential for tuning the ground plane; it is also an excellent investment for any ham shack.

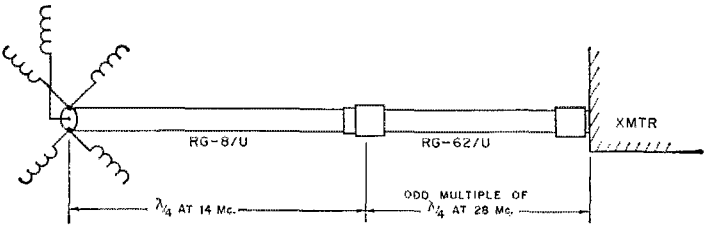


Fig. 2—Transmission-line system used for maintaining relatively constant line input impedance on the three bands. The length of the RG-62 U section may be any odd multiple of a quarter wavelength (at 10 meters).

A search for a mounting unit led me to K2GSO's "Happy Accident" ground plane[2] to which I added several modifications. To give a greater clamping area, a 30-inch length of angle iron was used instead of the prescribed 16-inch length. Two pairs of radial supports were welded, one set at the 30-degree angle and the other set perpendicular to the angle iron. (The latter set is used in the present antenna.) The supports were made of a thicker diameter, 1¼-inch black iron water pipe. This mounting unit was extremely heavy and awkward to work with; I urge the builder to use only one set of radial supports and to construct the unit out of aluminum.

The parts needed, most of which can be bought at electrical and lumber stores at the approximate prices listed, are as follows:

"Happy Accident" mounting unit	$5.00
150 feet of No. 12 copper wire	3.75
95 feet of RG-62/U	7.50
12 feet of RG-8/U	.50 (surplus)
5 wooden dowels, 1¼-inch diam. four 9-foot dowels	3.60
one 13-foot dowel	1.30
One straight adapter, four male coax connectors	2.00 (surplus)
Four aircraft-type stainless hose clamps	1.60
Two 5-kv. 50-$\mu\mu$f. capacitors, Centralab 8505, high-voltage ceramics	3.50
Glue, glyptal, varnish, tape	2.50
	$31.25

First, choose five straight lengths of wooden dowels. Since the water pipe used for the radial supports is smaller in diameter, cut down the diameter of the first six inches of each of the four 9-foot dowels to fit. The four dowels should be drilled for the bolts which hold them in the radial supports. Give them two coats of varnish.

The coil of No. 12 wire should be cut into five 28-foot sections which are then close-wound on a 2½-inch form. Wind all the coils in the same direction. Tin one end of each coil and solder lugs to four of them. Place one coil on a dowel situated in a horizontal position and insert a half-inch screwdriver handle between the first two turns. Next, start turning the coil until the screwdriver winds itself to the opposite end. Continue increasing the width of the object placed between the windings until the spacing between turns is about 3½ inches. Place the helix on the dowel so that the solder lug coincides with the drilled hole in the dowel. The first five feet of each helix may be glued to its dowel, leaving the remaining four feet of coil for tuning adjustments. I used electrical tape on every fourth turn.

Traps and Transformers

The parallel traps and coax transformers require a grid-dip meter and impedance meter for adjustment.

A variety of capacitors may be used for the traps. I pulled two out of the junk box; one was a 15-kv. plate capacitor and the other was a 5-kv. filament by-pass capacitor which has worked splendidly. The 10-meter trap consisted of three turns of 3½-inch diameter wire spaced ¾ inch apart while the 15-meter trap used four turns with a 2¾-inch diameter and ⅜-inch spacing. The traps should be kept away from metallic objects when being resonated, which should be done before installation. You should get a pronounced dip on a grid-dip meter when it is placed near the trap. Since the traps will pull the oscillator of the grid-dip meter, a receiver should be used as a calibrating unit. Resonate the traps at 28.6 and 21.3 Mc.

Solder a male coax connector on one end of each coax line and connect the RG-8/U section to the impedance meter. Set the impedance meter to minimum impedance and, using your receiver as a calibrating unit, set the grid-dip meter to 14.15 Mc. Start clipping the opposite end of the coax until the lowest impedance dip is obtained. This 20-meter coax section is now a quarter-wave transformer and should be 10.8 feet long, or an odd multiple of this value. Follow the same procedure with the RG-62/U section, using a frequency of 28.6 Mc. The length of this 10-meter transformer is 5.4 feet or an odd multiple of this figure.

Tuning

This ground plane should be tuned in its permanent location, or at least as near the same height as possible. First, bolt the four radials with their solder lugs in the radial support. Then couple the grid-dip meter to the first or second turn of any radial; a weak dip should be obtained. Clip off turns at the end of this radial until it resonates at 13 Mc. Using the same procedure, resonate the other three radials at 13 Mc. and then retune all four to 13.6 Mc. To do the final resonating, either compress or stretch

(Continued on page 160)

[2] Hammond, "The 'Happy Accident' Ground Plane," *QST*, January, 1957.

The "Bonus" 21-Mc. Converter

15 and 10 with One Crystal

BY LEWIS G. McCOY,* W1ICP

The cure for most of the high-frequency ills of many receivers is the installation of a good crystal-controlled converter between the antenna and the receiver. The converter described here by W1ICP, while intended primarily for 21-Mc. reception, gives a bonus of 28-Mc. reception without any additional parts or switching. Any Novice or other amateur who has a receiver that is satisfactory on 80 meters but not at 15 and 10 will do well to study these pages; the answer to the problem is here.

WHEN purchasing his first receiver, a Novice is often more concerned with price than with performance. He may soon discover that his receiver is quite satisfactory on 80 and 40 meters but that it leaves much to be desired on 15 meters. This can, of course, make it even tougher than usual to work some of that 15-meter DX he is told about or hears at someone else's shack. However, all is not lost! If the receiver is satisfactory on 80 meters this same performance can be obtained on 15 meters through the use of a crystal-controlled converter ahead of the receiver.

Let's assume your receiver, the one you are about to improve on, is a "single-conversion superhet." (This means that it has a single intermediate frequency.) The crystal-controlled converter is a new "front end" for the receiver that now gives you a "double-conversion" receiving system with a crystal-controlled first oscillator and a tunable first i.f. amplifier. The tunable i.f. amplifier is, of course, the "front end" of your regular receiver. In the design of the converter we elected to put the crystal-controlled oscillator on 25.0 Mc., as shown in Fig. 1. An incoming signal at 21.15 Mc. (Fig. 1A) is heterodyned to a frequency of 3.85 Mc., and if the receiver is tuned to 3.85 Mc. you will hear the 21.15-Mc. signal. An incoming signal at 21.17 Mc. (Fig. 1B) would require a receiver setting of 3.83 Mc., and so on. The *difference* between 25.0 and the desired frequency at around 21 Mc. gives the required receiver setting, so it should be obvious that with the converter the 21-Mc. band, 21.0 to 21.45 Mc., will be found from 4.0 to 3.55 Mc. on the receiver when a 25.0-Mc. crystal is used in the converter. The receiver tunes "backwards."

Now suppose the signal applied to the mixer of the converter had a frequency of 28.83 Mc. (Fig. 1C). It would be heterodyned to 3.83 Mc., and could be tuned in at 3.83 Mc. on the receiver. If we don't want to hear 28- and 21-Mc. signals at the same time, we have to have enough "selec-

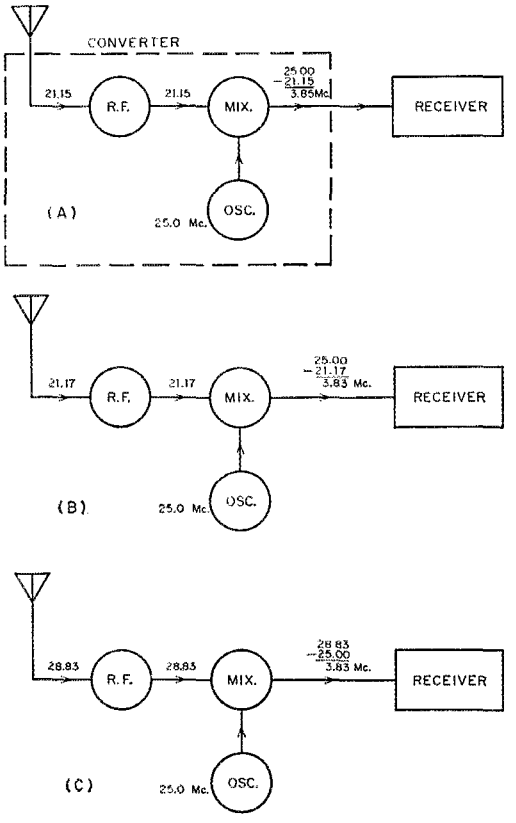


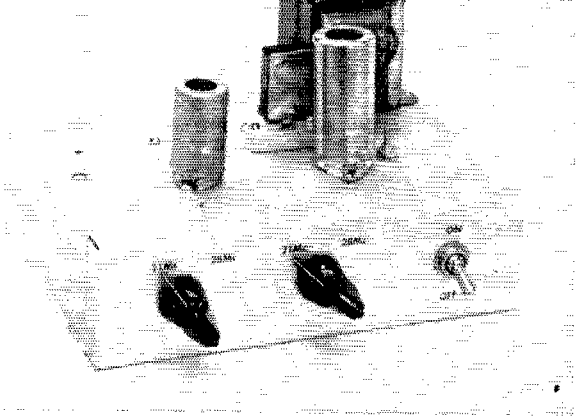
Fig. 1—Block diagram of the converter, showing the frequency relationships under several conditions. The output of the mixer is the frequency *difference* between the oscillator signal and the incoming signal.

(A) An incoming signal of 21.15 Mc. is heterodyned to 3.85 Mc. To hear it the receiver must be tuned to 3.85 Mc.

(B) Tuning the receiver to 3.83 Mc. brings in a signal from 21.17 Mc. if the r.f. and mixer circuits are tuned to 21 Mc.

(C) If the r.f. and mixer circuits are tuned to 28 Mc., the receiver setting of 3.83 Mc. permits reception of a 28.82-Mc. signal. With the 25-Mc. oscillator, the 10-meter band tunes 3.0 to 4.7 Mc. on the receiver.

*Technical Assistant, *QST*.



This view shows all of the components projecting above the chassis. At the left on the front is the r.f. control and next to it is the mixer tuning. At the far right is the a.c. switch. The tube at the left is the r.f. amplifier, and the crystal is between it and the mixer tube. Screw adjustment to the right of the mixer tube sets the slug of L_5.

tivity" ahead of the mixer to accept one band and reject the other. The converter to be described has quite enough, and to "change bands" it is merely necessary to change the input tuning from 21 to 28 Mc. or vice versa.

The converter consists of three stages, but it uses only two tubes. An r.f. stage amplifies the incoming signals, and an oscillator provides a steady signal that, in a mixer stage, heterodynes the incoming signal to the *difference* frequency mentioned above. If the input and output circuits of the r.f. stage aren't tuned to 21 Mc. the 21-Mc. signals can't be amplified to the full capability of the stage. However, the 21-Mc. tuned circuits aren't too sharp, so a single setting will usually suffice for most of the 21-Mc. band, and all of the tuning will normally be done at the receiver alone.

The practical circuit of the converter is shown in Fig. 2. Readers familiar with converter construction might think that the r.f. stage tuning capacitors, C_1 and C_2, should have been ganged, to furnish a "single-knob control" instead of the necessary two. You can build it that way if you want, but this is less expensive and complicated, and it has another advantage that will be mentioned later. Once made, a setting of these capacitors is good for most of the 21-Mc. band. The 47,000-ohm resistor across C_2 was used to make this circuit a bit broader.

The selenium-rectifier power supply is quite adequate for the job and makes the converter a self-sufficient unit, although the power may be "borrowed" from the receiver if it is felt that the selenium supply is an unnecessary expense.

In the crystal-controlled oscillator portion, a capacitive divider (C_3 and C_4) provides a tap on the tank circuit so that the oscillator is loaded very lightly. If you didn't tap down on the tuned circuit in this manner the overtone crystal, Y_1, might show lower-frequency energy as well, or

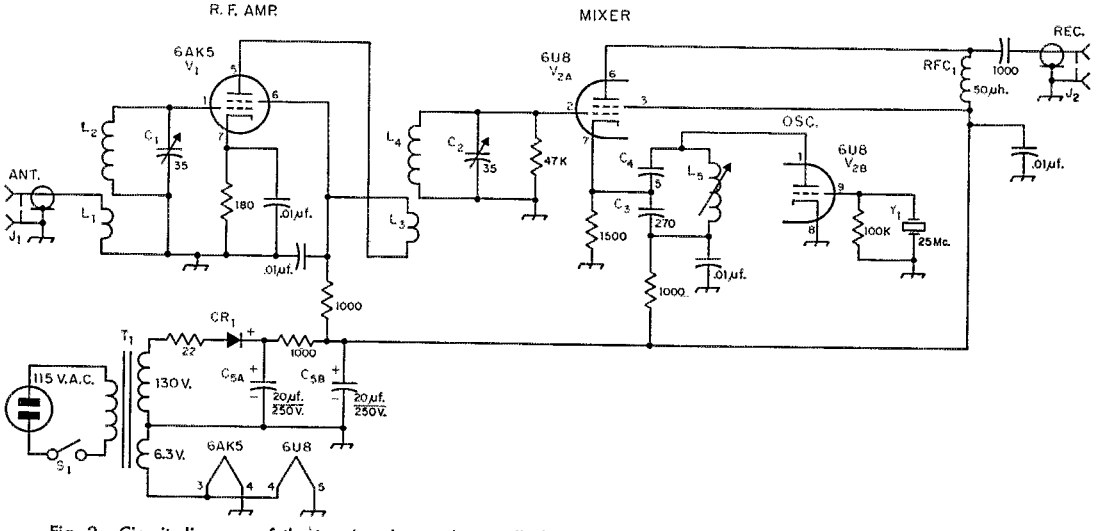


Fig. 2—Circuit diagram of the two-band crystal-controlled converter. Unless indicated otherwise, all capacitances are in $\mu\mu$f., all resistors are ½ watt, all resistances are in ohms.

C_1, C_2—35-$\mu\mu$f. midget variable (Hammarlund MAPC-35-B).
C_3—270-$\mu\mu$f. silver mica or NPO ceramic.
C_4—5-$\mu\mu$f. silver mica or NPO ceramic.
C_5—Dual electrolytic, 20-20 μf. at 250 volts.
CR_1—100-ma. 150-volt selenium rectifier (International Rectifier RS-100-E or equiv.).
J_1, J_2—Phono jack, RCA style.
L_1, L_2, L_3, L_4—Made of No. 18 bare, ¾-inch diam., 8 t.p.i. stock. See text.
L_5—2- to 3-μh. slug-tuned inductor (North Hills 120-A).
RFC_1—50-μh. r.f. choke (National R-33, Millen 34300-50).
S_1—S.p.s.t. toggle.
T_1—125 volts at 50 ma., 6.3 volts at 2 amperes (Stancor PA8422) or 135 volts at 50 ma., 6.3 volts at 1.5 amperes (Triad R-30-X).
Y_1—25.00-Mc. crystal (International Crystal Co., type FA-9).

it might not oscillate at all.

At this point you may ask yourself how the r.f. and mixer stages in the converter can tune to either 21 or 28 Mc. without switching. That's easy: the circuits L_2C_1 and L_4C_2 tune from about 17 to 35 Mc. The only requirement is that your receiver tune from 3000 to 4700 kc. and most of the lower-priced receivers will.

Building the Converter

The size of the chassis shown in the photographs is $2 \times 5 \times 7$ inches. However, any chassis large enough to accommodate the parts can be used. Most of the construction is simple but there are a few places where certain precautions should be taken, and these will be treated in detail.

Study the photographs, particularly the bottom view, to see how the coils and tube socket are mounted. Notice the shield that cuts across the 6AK5 socket. The purpose of the shield is to minimize the coupling between the grid and plate circuits of the r.f. stage, to avoid oscillation. A scrap of roofing copper was cut to $3\frac{1}{2}$ by 2 inches for the shield. Brass, or any other metal that can be soldered, could be substituted. The shield and socket should be mounted so that the shield bisects the socket between Pins 4 and 5. There is a $\frac{1}{4}$-inch lip on the shield which is used to mount it to the chassis top. The metal tube in the center of the tube socket should be soldered to the shield; the shield is held to the chassis by two 6-32 screws. Soldering lugs should be mounted under the nuts that hold the 6AK5 socket, and all the chassis ground connections of the 6AK5 grid and plate circuit should be made to these lugs.

The coils are made from B & W 3007 Miniductor stock. To make the coils, first cut off a coil of 21 turns from the stock. Next, unwind one turn from each end of the 21-turn coil. Now count off $5\frac{1}{2}$ turns from one end and cut the wire at this point. You'll find that if you bend the 4th and 6th turns in toward the center of the coil you should be able to reach the 5th turn with your wire cutters. Unwind the half turn from each side leaving two coils on the same support bars, one 5 turns and the other 13 turns. Two of these dual coils are needed, one for the r.f. stage and the other for the mixer. They can be mounted on a standard terminal tie point or supported by their own leads. We preferred to mount them on tie points, to provide a more rigid support.

The power supply is a simple half-wave rectifier, using a transformer, selenium rectifier, and an *RC* filter circuit. Incidentally, when connecting the rectifier, the + side is connected to the *output* side of the supply. Again, a standard terminal tie point is used for most of the connections of the supply.

Testing and Tuning

The preliminary checks are simple and should present no problems to the builder. First, turn on S_1 and see if the tubes light up. If they don't, turn off the switch and carefully check the wiring. Once the tubes light, allow a minute or two for the unit to warm up. The first thing to check is the crystal-controlled oscillator. If your receiver tunes to 25 Mc., listen in that region for the oscillator signal, which should come in loud and clear. If it doesn't, adjust the slug of L_5 until the oscillator starts. Should you find that it doesn't oscillate you'll need to make some voltage checks to make sure there is plate voltage on the oscillator. The voltage should be approximately 110, give or take 10 volts. If no voltage is indicated, check the wiring for errors.

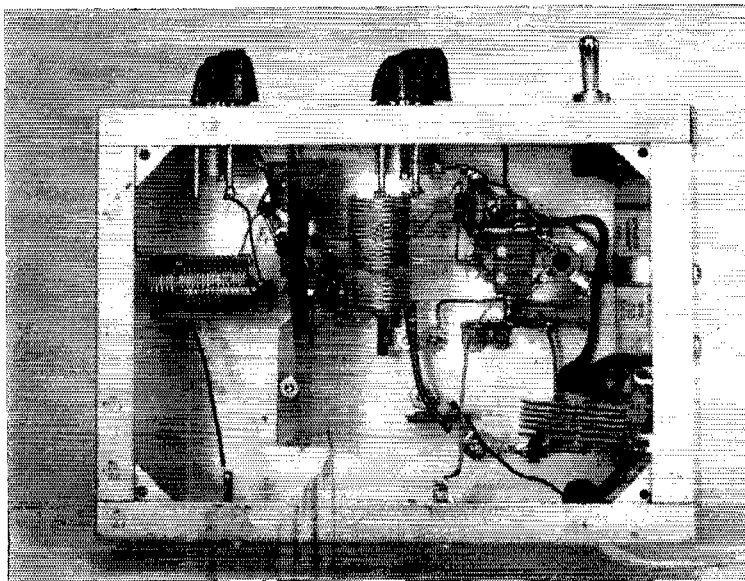
Once the oscillator is working, you're practically home. Oh yes, suppose your receiver doesn't tune to 25 Mc. How do you check the oscillator? Simple — build yourself an absorption-type wavemeter such as the one described a few months ago.[1] The wavemeter can be coupled to L_5 to see if the oscillator is putting out a signal.

Connect the converter to your receiver, using a piece of coax as the connecting line. Coax is used for the lead between the two units to minimize any pickup of unwanted signals near or in the 80-meter band. Set your receiver to tune the right range, 4000 to 3550 kc., and turn both units on.

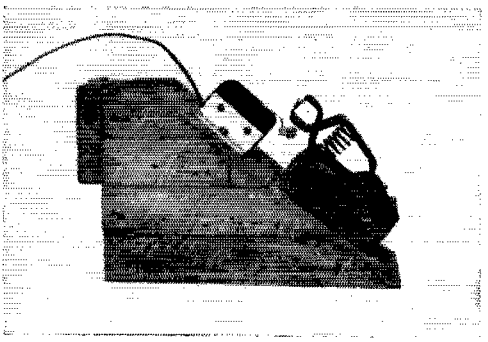
Adjust C_1 and C_2 for maximum background noise. You'll find two values of capacitance (four

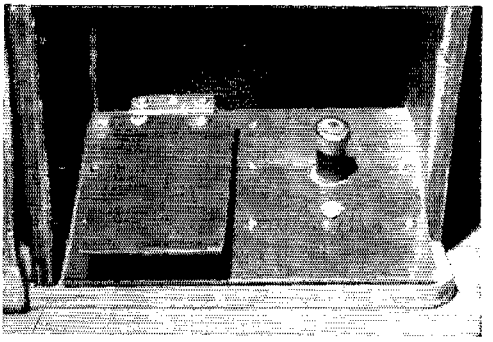
(Continued on page 162)

[1] McCoy, "A Novice Band Checker," *QST*, July, 1958.



All of the components of the power supply are grouped at the right. The tubular capacitor, C_5, mounts against the chassis wall. At the opposite side of the chassis, the metal strip shields the input circuit of the r.f. stage. The coils to the right of the shield are L_3, and L_4.





PHOTOGRAPHS, THIS PAGE AND FACING PAGE (LEFT TO RIGHT):

A simple form of foot-operated key devised by VE4VJ. A battery clip operated by foot pressure works a micro-switch connected into the keying circuit.

Main control switch, right, is made from a headlight dimmer floor switch. This is connected to the push-to-talk circuit of the transmitter. Treadle at the left is for operation of the VE4VJ intercom system.

Top and bottom views of the voice-operated keying system shown schematically in Fig. 1. Pulses from a voice-driven amplifier actuate a keying relay. Code may thus be talked or whistled by a person who is deprived of the use of his hands.

A Voice Key for the Handicapped

How One Cerebral Palsy Victim Became A Ham

BY JAMES WATT,* VE4VJ

CLICK went my footswitch, and I sat back after another enjoyable three-way with Myron and Bob, WØGFU and KØGKI. Reflecting on the miracle of amateur radio, I wondered how many handicapped people there are around the world who, for lack of a plan, are denied the chance to enjoy our wonderful hobby. You see, Myron, Bob and I are all in the same boat — physically handicapped in the same way.

I was born with cerebral palsy. It affects coordination of muscles. In my case, my arms are more difficult to control than my legs. My left arm is practically useless. I tell you this to give some idea of the obstacles in the way of the cerebral palsy victim who aspires to a career in amateur radio. These obstacles seemed unsurmountable to me, but they have been overcome, and I have been a licensed amateur radio operator for five years. It is my hope that the information to follow will give the physically handicapped, and those who want to aid them, the encouragement they need to push on to the achievement of that prized ham ticket.

This story involves my father and a few others who lent assistance and encouragement along the way. Early in 1939, when I was eleven years old, my dad got his license VE4VK. I soon acquired an interest in the technical aspects of radio and electronics and the urge to become licensed began to assert itself. Through the war years, when amateurs were not permitted to operate, I maintained my interest in electronics by study, and Dad and I built several pieces of test equipment. When amateurs returned to the air in 1945, my urge to become a ham was greatly intensified.

By 1952, I was confident I could pass the technical part of the radio amateur's examination. My problem was the act of sending Morse code with a hand key. To me, this seemed physically impossible. I simply could not form any recognizable Morse characters with my feeble manipulations of a hand key.

Realizing that my feet were in better control than my hands, I devised a foot-controlled key. It consisted of a battery clip mounted on edge, under which was a microswitch actuated by the battery clip as I pressed on it with my foot. This arrangement provided me with the ability to form recognizable Morse code characters. Because of the effort involved, however, a speed of not more than four or five words a minute was attainable and this only for short periods. I had to try something else.

Lurking in the back of my mind had been the thought of a voice-actuated device. I had seen a few circuits in past issues of amateur radio magazines for voice-controlled relay circuits used for break-in. It had occurred to me that I might be able to modify one of these circuits to send

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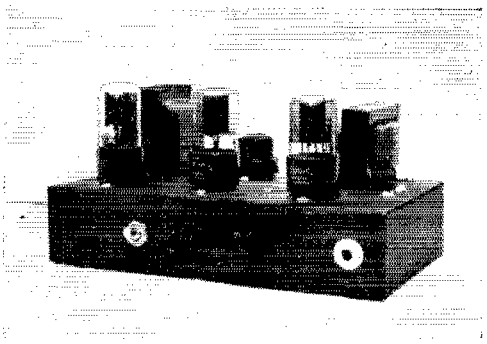
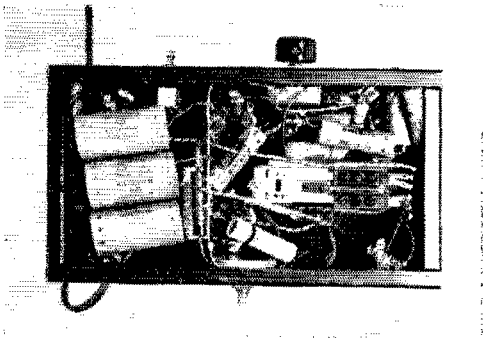




code with my voice.

In the fall of 1952, I came across an article in *Life* Magazine about a young man similarly affected by cerebral palsy, who had been able to construct a device that operated an electric typewriter by the action of sequenced puffs into a set of four microphones. This ability to be able to control a typewriter with one's breath was much more complicated than what I wanted to do, and it encouraged me in my search for a circuit to send Morse code with voice. I discussed the idea with my dad and he said, "You devise the circuit and I will draw it up and build it."

Encouraged, I looked through my file of past issues of radio magazines and found a circuit[1] which was desirably simple but in itself was incomplete. It consisted of a voltage amplifier, transformer coupled to a rectifier, the output of which biased the grid of a relay control tube. In the plate circuit of this tube was a high-resistance relay. To this was added a pre-amplifier stage so the unit could be directly connected to a microphone. A power supply was added to make the unit self-contained. The *RC* time constant in the grid of the relay control tube had to be shortened in order to speed up the action of the relay.

The operation of the complete circuit, Fig. 1, is as follows:

The output of the microphone is amplified by three 6SN7 triode sections, V_{1A}, V_{1B}, V_{2A}. This amplified voltage is transformer coupled to the plate of the 6H6 diode, V_3. The negative voltage output of this rectifier, which is proportional to the sound impinging on the microphone, is used to bias the control tube (the fourth 6SN7 triode, V_{2B}) to cut-off. When this occurs, the relay is actuated. Its armature is released, thus closing the normally closed contacts. Therefore, any "dit" or "dah" spoken into the microphone will

(*Continued on page 164*)

[1] Flanigan, "A Simplified Voice-Operated Keyer," *QST*, September, 1950, p. 28.

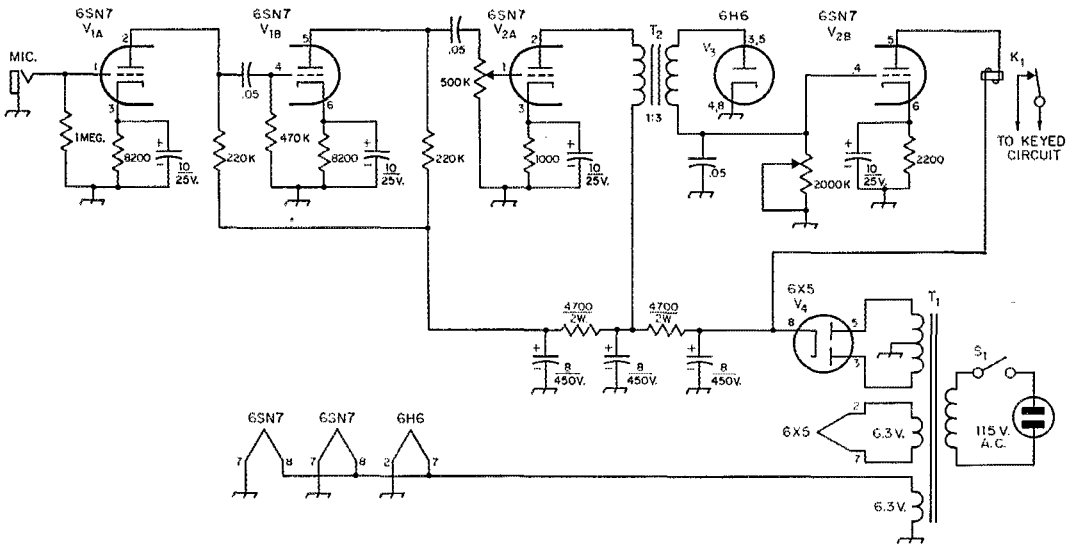


Fig. 1—Schematic diagram of the voice-operated keying system used by VE4VJ. Capacitances are in μf. Those marked with polarity are electrolytic. Resistors ½ watt unless specified.

K_1—10,000-ohm telephone-type relay, normally-closed contacts.

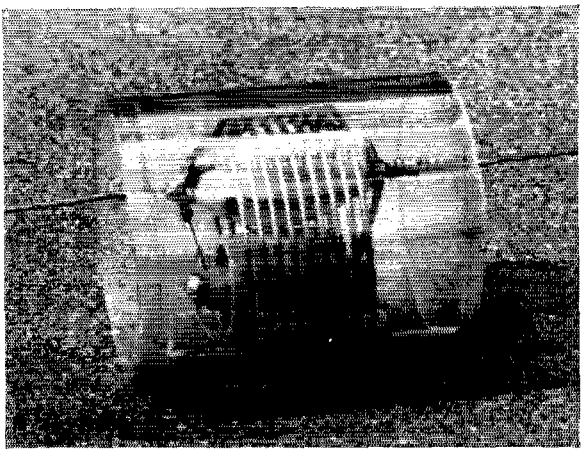
T_1—Power transformer, 500 v. c.t., with two 6.3-volt windings.

T_2—Interstage audio transformer, 1:3 ratio.

Four-Band Dipole With Traps

Design for the 7- to 28-Mc. Bands

BY DAVID P. SHAFER,* K2GU



The 14-Mc. trap is enclosed in a weatherproof cover made of plastic sheet. The ceramic capacitor and strain insulator are inside the coil.

THE four-band antenna system described herein may be of interest to the ham who wishes to work on several bands but does not have sufficient space for a dipole equipped with traps for five-band operation. Unlike the five-band system,[1, 2] which requires more than 100 feet, this multiband trap antenna spans less than 60 feet. Low standing-wave ratios on 10, 15, 20 and 40 meters are obtained.

The purpose of the resonant traps is probably well known but will bear repeating. The traps are constructed to be resonant at the desired operating frequency in the 20-meter band — in this case, 14.1 Mc. The "inner" sections, *A*, as indicated in Fig. 1, form a dipole which is also resonant at 14.1 Mc. The "outer" sections, *B*, are effectively isolated (at this frequency) by the traps.

When operating in the 40-meter band, the capacitive reactance of the traps increases and the inductive reactance decreases. The net effect is that the traps act as inductors between sections *A* and *B*, permitting the entire antenna to resonate as a loaded 40-meter dipole.

When either the 21-Mc. or 28-Mc. band is used, the inductive reactance increases and the capacitive reactance decreases. The traps then act as capacitors between sections *A* and *B*. The antenna becomes a 3/2 λ harmonic radiator on the 15-meter band and 5/2 λ on the 10-meter band.

The dimensions shown in Fig. 1 are for half-wave resonance at 7.2 Mc. and 14.1 Mc. and for harmonic resonance at approximately 21.2 Mc. and 28.2 Mc. Since each trap is 4 inches long, the over-all antenna length is 55 feet. In this case, the dimensions of sections *A* came out very close to the figure of 16 feet 7 inches obtained from the formula for the average length of a 14-Mc. dipole. This indicates that the traps do, in fact, isolate sections *B* at the trap frequency.

* Western Union Bldg., 60 Hudson St., New York, N. Y.

[1] Buchanan, "The Multimatch Antenna System," *QST*, March, 1955.

[2] Greenberg, "Simple Trap Construction for the Multiband Antenna," *QST*, October, 1956.

Values of L and C

The choice of *L* and *C* is simple if only the 20-meter and 40-meter bands are considered, since sections *B* can readily be cut to produce 40-meter antenna resonance for any reasonable combination of *L* and *C* which is resonant at 20 meters. However, sections *B* should also produce 15- and 10-meter resonances with the same traps. The trick, therefore, is to arrive at an *LC* combination and a length *B* which meets all these requirements.

Construction

As shown in the photograph, each trap is literally built around an "egg" or "strain" insulator. In this type of insulator, the hole at one end is at right angles to the hole at the other end, and the wires are fastened as in Fig. 2. These insulators have greater compressive strength than tensile strength and will not permit the antenna to fall should the insulator break, since the two interlooped wires prevent it. There is ample space within the inductor for both the insulator and

Since the introduction of the trap-type multiband dipole by W3DZZ, a few years ago, interest has been divided about equally between his arrangement and the parallel-dipole system. While the latter has some mechanical disadvantage, it can easily be made to fit a smaller space when necessary simply by sacrificing the dipole for the lowest-frequency band. If a similar reduction of the trap antenna is wanted, the system must be redesigned. This article shows how to do it.

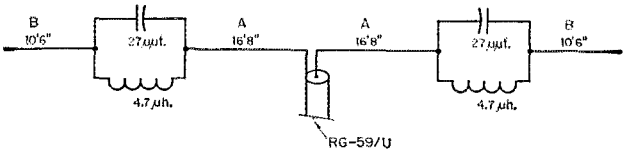


Fig. 1—Sketch showing dimensions of a trap dipole covering the 40- through 10-meter bands.

capacitor. The plastic covers are not essential but are considered desirable because they provide mechanical protection and prevent the accumulation of ice or soot and tars which may not wash off the traps when it rains.

Electrically, each trap consists of a 25-$\mu\mu$f. capacitor shunted by 4.7 μh. of inductance. Centralab ceramic transmitting capacitors 857-25Z, rated at 15,000 volts d.c., were available and used since they will safely handle a kilowatt. Undoubtedly other similar capacitors rated at approximately 6000 volts would be satisfactory, as well as cheaper. The inductors are made of No. 12 wire, 2½ inches in diameter, 6 turns per inch (B & W 3905-1 coil stock).

One may wish to choose a different frequency in the 20-meter band for which optimum results are desired; for example, 14.05 Mc. for c.w. operation, 14.25 Mc. for phone operation, or perhaps 14.175 Mc. for general coverage. The author's choice was 14.1 Mc. In any case, the number of inductor turns is adjusted accordingly.

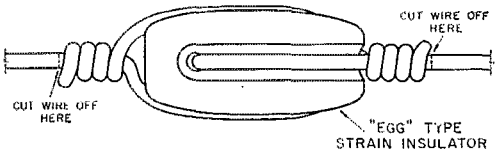


Fig. 2—Method of connecting the antenna wire to the strain insulator. The antenna wire is cut off close to the wrap before checking the resonant frequency of the trap.

Trap Adjustment

As a preliminary step, loops of No. 12 wire are fitted to one of the egg insulators in the normal manner (see Fig. 2), except that after the wraps are made, the end leads are snipped off close to the wraps. A capacitor is then placed in position and bridged with short leads across the insulator and soldered sufficiently to provide temporary support. The combination is then slipped inside about 10 turns of the inductor, one end of which should be soldered to an insulator-capacitor lead. Adjustment to the resonant frequency can now proceed, using a grid-dip meter

Coupling between the g.d o and the trap should be very loose. To insure accuracy, the station receiver should be used to check the g.d.o. frequency The inductance should be reduced ¼ turn at a time. If one is careful, the resonant frequency can easily be set to within a few kilocycles of the chosen figure.

The reason for snipping the end leads close to the wraps and the inclusion of the loops through the egg insulator soon becomes apparent. The resonant frequency of the capacitor and inductor alone is reduced about 20 kc per inch of end lead length and about 350 kc. by the insulator loops The latter add approximately 2 $\mu\mu$f. to the fixed capacitor value and account for the total of 27 $\mu\mu$f. shown in Fig. 1.

Assembly

Having determined the exact number of inductor turns, the trap is taken apart and reassembled with leads of any convenient length. One may, of course, connect the entire lengths of sections *A* and *B* to the trap at this time, if desired. But, if more convenient, a foot or two of wire can be fastened and the remaining lengths soldered on just before the antenna is raised.

The protective covers are most readily formed by wrapping two turns (plus an overlap of ¼ inch) of 0.020-inch polystyrene or lucite sheeting around a 3-inch plastic disk held at the center of the cylinder so formed. The length of the cover should be about 4 inches. A very small amount of plastic solvent (a cohesive cement that actually softens the plastic surfaces) should then be applied under the edge of the overlap and the joint held firmly for about two minutes to insure a strong, tight seal. The disk is pushed out and the inner seam of the sheeting sealed.

The trap is then placed in the plastic cylinder and the end disks marked where the antenna wires are to pass through. After drilling these holes, the disks are slipped over the leads, pressed into the ends of the cylinder and a small amount of solvent applied to the periphery to obtain a good seal. Some air can flow in and out of the trap through the antenna-wire holes, and this will prevent the accumulation of condensation.

Length Adjustment

It is well known that s.w. ratios are not uniform throughout the band or bands for which an antenna is designed. In a trap antenna, the choice of frequencies for best performance is a compromise. After making the traps resonant at 14.1 Mc., sections *A* were adjusted for resonance. Sections *B* were then adjusted for resonance at approximately 7.2 Mc and simultaneous readings were taken in the 10- and 15-meter bands. For the dimensions shown, with the antenna about 250 ft. above street level and 35 ft. above electrical ground, the author obtained an s.w.r. of virtually 1 to 1 at 7 2 Mc., with maximums of 1.3 and 1 1 at 7 0 and 7.3 Mc., respectively. In the 20-meter band, the s.w.r. was also 1 to 1 at 14.1 Mc., 1 1 at 14.0 Mc. and 1.3 at 14.3 Mc In the 15-meter band, the values show the effect of dimensions favoring best operation on the other three bands. However, they are quite satisfactory — 1.9 to 1 at 21.15 Mc., with maximums of 2 at 21.0 Mc., and 2.2 at 21.4 Mc. In the 10-meter band, the s.w r was 1.3 to 1 at 28.0 Mc., 1.1 at 28.4 Mc., 1 5 at 29 Mc., and only 2 4 at the upper

extreme of the band.

RG-59/U 73-ohm coaxial cable forms the transmission line and is connected to the antenna through a Continental Electronics & Sound Co. "Dipole Dri-Fit Connector." After connecting the cable and antenna wires, the connector was coated with several layers of insulating varnish to make certain that the junction was watertight.

For those who prefer to operate mostly in the phone portions of each band, optimum performance will be obtained with somewhat different dimensions than shown in Fig. 1. The traps should be resonant at approximately 14.25 Mc. Each section *A* probably will be about 2 inches shorter, since the resonant frequency changes about 65 kc. for an inch of change in *A*. Dimension *B* is, of course, affected by any change in section *A* as well as the loading effect of the traps. For resonance at 7.25 Mc. and 14.25 Mc., sections *A* and *B* will measure about 16 feet 6 inches and 10 feet 6 inches, respectively. To arrive at the correct lengths, s.w.r. measurements should be taken in the 10- and 15-meter bands, in addition to those made in the 20- and 40-meter bands, since at the higher frequencies antenna resonance varies rapidly with changes in length.

The antenna should be resonant, independently of the transmission line, at the desired frequencies. Since the impedance of the antenna, at resonance, depends on height, proximity to nearby conductors, and other factors, it is wrong to assume that the antenna and feedline impedances are matched. Usually, they are not.

To enable one to "look" at the antenna separately while it is in its working position, the length of the transmission line should be adjusted to a halfwave length or some multiple thereof. This length can be determined, if coaxial cable is used, by shorting the feedline at its junction with the antenna and (using a grid dipper loosely coupled to a small link across the station end of the cable) varying its length until a dip occurs at the chosen trap frequency. Here, as before, the station receiver should be used to check the grid-dipper frequency.

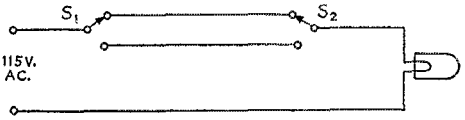
The transmission line is then reconnected to the antenna and transmitter and dimensions *A* varied until a minimum s.w.r. (which will be very nearly 1 to 1) is obtained at the trap frequency. The antenna is then resonant at this frequency. Dimension *B* is similarly found for the desired frequencies in the 40-, 15- and 10-meter bands.

In the determination of exact antenna length, the usual method is to start with too much wire and observe the effect on the resonant frequency as the wire is pruned. Where two sections (*A* and *B*) are involved, as here, one may wish to see the effect of undercutting one section, varying the length of the other, and so on. To simplify this procedure, it is suggested that several 2-inch links of wire be prepared so the antenna can readily be lengthened or shortened. If the ends of the links are given rather sharp bends and crimped when put together, the resulting hook joints are strong enough to support the experimental antenna safely. After final dimensions are decided upon, the links and piece-out sections are replaced with unbroken lengths and the completed antenna pulled up to its working position.

It might be mentioned here that the antenna erected by the author is made of enameled wire. After the wires at the free ends of sections *B* were looped through the supporting egg insulators, the wraps were soldered. This was done so that the electrical length would be the same if others chose to use bare wire.

The antenna described is sufficiently broad to give very acceptable results on all four bands. With low s.w. ratios, one has the satisfaction of knowing that most of the transmitted power is placed where it belongs — in the antenna. The time and effort put into its construction should be quite rewarding to the ham who must compete with beams and rhombics.

This month's switcheroo was submitted by Carl Jockusch, Jr., K5CRU of San Antonio, Texas. He figures you all know how the familiar "three-way" switching system works in a house, where either of two switches can control a light or set of lights. In case you don't know how it's done, the sketch below shows you. The Quiz this



month: Devise a "four-way" switching system, in which any of three switches can control a light or set of lights. Hint: don't confine yourself to the use of single-pole switches.

—•••—

If you properly redrew last month's baffling problem, you found that you had nine 10-ohm resistors in parallel, and the resultant is 10/9 or 1.111 ohms.

QUIST QUIZ QUIDDITY

Making 23 the Hard Way

2300 28th Ave.,
San Francisco 16

Dear "Quiz":

The answer to the capacitor question in July Quist Quiz as given in the August issue is somewhat labored. Anyone familiar with binary nomenclature would have disconnected between Nos. 1-2, 3-4, 7-8 and between 15-16. This is the normal binary break-up.

The number of capacitors might as well have been increased to 31, since to do so would not require more than the five groups of capacitors required in the published solution which permits only a total of 23 μf.

— *Hal S. Ayers, WGNGV*

Transistor Mobile Converter

Crystal Control in a Compact, Dry-Battery Powered Unit

This is mobile reception with a minimum of installation problems — no digging into the car broadcast receiver for power, no worries about ignition noise conducted along power leads, no wiring to do. Two plug-in connections — for the antenna and for the i.f. output to the car receiver — do the trick.

BY M. F. DE MAW,* W8HHS

THE crystal-controlled converter described in this article has many features that should make it especially appealing to the mobile operator, as well as to the experimenter who is interested in transistor circuitry. One of the most interesting characteristics of the circuit is its simplicity. It is a crystal-controlled, fixed-tuned converter which can be made very compact and exhibits excellent performance when used in conjunction with the automobile receiver. With slight modification of the oscillator frequency, it can be used effectively in conjunction with the popular Q5-er from the Command Set series. This should also be a particular attraction to the Novice who desires additional band spread for 80 and 40 meters.

All of the components for the converter are housed in a small Minibox that can be concealed behind the dashboard of the car. This contributes to much better family relations in cases where the XYL objects to the many dangling devices that some of us so frequently mount in plain sight under the dash.

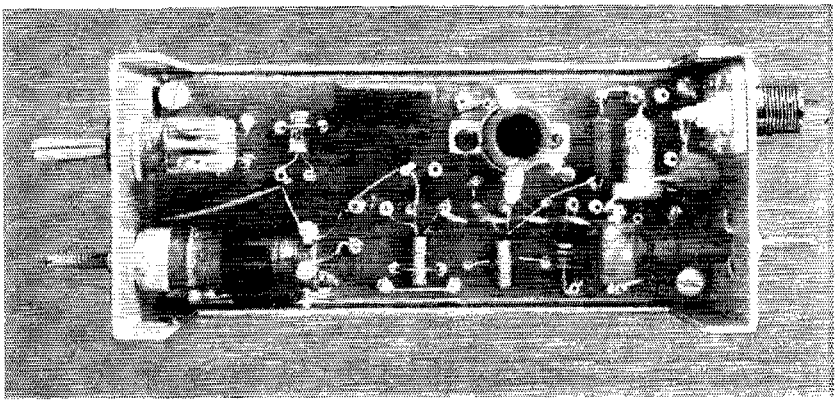
Special consideration was given to the stability of the unit. For this reason the author decided to incorporate crystal control in the oscillator circuit. This not only contributes to stable operation but reduces the complexity of initial adjustment.

The Circuit

The oscillator circuit is a transistorized version of the ever-popular triode Pierce. There is nothing tricky about its operation. Injection for the mixer is taken from a small link which is wound over the cold end of the collector tank coil. The emitter of the mixer transistor is returned to ground through this link. The mixer circuit corresponds to a triode vacuum-tube mixer utilizing cathode injection from the oscillator, the major difference being the low input impedance of the transistor base as compared with the relatively high input impedance of a vacuum-tube grid.

The crystals used in the oscillator portion of the converter are of the surplus variety for fundamental operation. Although many surplus crystals lend themselves to overtone operation quite readily, the author has experienced difficulty on various occasions in getting some of them to oscillate easily in the overtone mode, and more satisfactory results should be obtained

* Box 164, Luther, Mich.



The converter is built on a plastic sheet mounted inside a 2¼ x 2¼ x 5-inch Minibox. The two SB-100 transistors are at the bottom center in this view. Oscillator and mixer tuned circuits are at the right and the i.f. output circuit is on the left wall of the box. Layout is not critical. This unit uses a zener diode (upper left, beside the toggle switch) instead of the NE-2 shown in Fig. 1. The electrolytic capacitor beside the coax connector at the upper right, a bypass across the dry-cell supply, is not shown in the circuit since it was found to be unnecessary.

by using overtone crystals for 20-, 15- and 10-meter operation.[1]

The inductances are wound on slug-tuned forms and shunted with the capacitances shown in Table I.

The circuit shows an NE-2 neon lamp connected from the high impedance end of L_1 to ground. This gives a measure of protection for the mixer transistor in the event that an unsafe amount of r.f. energy is introduced into the converter. A "zener" diode such as the ZA-6 may be substituted for the NE-2 and will break down at lower voltage (6 volts) to give better protection.

Power Supply

The converter requires 3 volts d.c. for operation and takes on the order of 3 ma. of current. For all practical purposes two penlite cells, series connected, seem to be the logical choice for powering the circuit. The choice of dry cells serves two important purposes. First, it eliminates one of the prime sources of ignition interference. Various noises from the electrical system of the car are carried into the converter via the leads which supply power to it. By using self-contained batteries this possibility is eliminated. The second appealing feature resulting from the use of dry cells is that it is unnecessary to make any power-supply connections either to the car receiver or car battery. This saves considerable time during installation and makes the unit readily adaptable to portable operation should the occasion arise.

Construction

The chassis used by the author was made from ⅛-inch Plexiglass. Convenient tie points were made by using 4-40 nuts and bolts which held small solder lugs to the chassis. Small holes were drilled through the chassis where needed to facilitate bringing leads from one side of the board to the other. Transistor sockets can be used, but this is not necessary; the transistor leads can be soldered to small lugs on the board and the transistors tied to the chassis with small pieces of bus wire.

No particular layout is required. No instability was experienced as a result of lead and component placement. Keep all leads as short as possible and mount all the parts securely to the chassis. This will prevent the leads from breaking as a result of the vibration which occurs in mobile operation.

Wiring

Because of the small current and voltage requirements of the converter, it is not necessary to use standard hook-up wire in the circuit. No. 30 insulated wire is entirely adequate and results in a much more compact and neat-appearing finished product. Care should be exercised when soldering the transistor leads into the circuit, since the transistors are easily damaged by heat. The leads should be held with long-nose pliers, above the point to be soldered, while installing them in the circuit.

[1] A trial of the circuit in the *QST* lab gave negative results in attempted overtone operation with surplus crystals of the FT-243 type. However, all crystals designed for actual overtone operation worked very well. — *Editor.*

TABLE I
TUNED CIRCUIT DATA

Band	Coil	C_1 μμf.	C_2 μμf.	Crystal Freq.	I.F. Range
28 Mc.*	L_1, 12 turns No. 20 enam. Tap at 4th turn. L_2, 2 turns No. 20 enam. L_3, 12 turns No. 20 enam. L_4, 2 turns No. 24 enam.	15	15	9283 kc. (3rd overtone; 27.85 Mc.)	650-1600 kc.
21 Mc.	L_1, 15 turns No. 20 enam. Tap at 5th turn. L_2, 3 turns No. 20 enam. L_3, 15 turns No. 20 enam. L_4, 2 turns No. 24 enam.	15	15	6783 kc. (3rd overtone; 20.35 Mc.)	650-1100 kc.
14 Mc.	L_1, 23 turns No. 24 enam. Tap at 6th turn. L_2, 5 turns No. 24 enam. L_3, 26 turns No. 24 enam. L_4, 3 turns No. 24 enam.	15	15	4450 kc. (3rd overtone; 13.35 Mc.)	650-1000 kc.
7 Mc.	L_1, 35 turns No. 28 enam. Tap at 10th turn. L_2, 6 turns No. 28 enam. L_3, 40 turns No. 28 enam. L_4, 4 turns No. 28 enam.	33	33	6350 kc.	650-950 kc.
4 Mc.	L_1, 58 turns No. 33 enam. Tap at 16th turn. L_2, 8 turns No. 33 enam. L_3, 80 turns No. 33 enam. L_4, 5 turns No. 35 enam.	40	40	2850 kc.	650-1150 kc.
1.8 Mc.	L_1, 140 turns No. 40 enam. Tap at 25th turn. L_2, 10 turns. L_3, 100 turns No. 36 enam. L_4, 10 turns No. 36 enam.	40	40	2700 kc.	700-900 kc.

* 28.5 to 29.45 Mc.

All coils close-wound on ½-inch diam. slug-tuned (iron slug) forms. Tap on L_1 to be made near cold end of coil. L_2 wound over cold end of L_1.

NOTE: Because the odd-numbered wire sizes specified for the 4-Mc. coils are difficult to obtain the next-smaller even-numbered size may be used, by reducing the number of turns 10 to 15 per cent to maintain approximately the same inductance. Alternatively, commercially-made slug-tuned coils such as the North Hills 120 series or the CTC LS3 series may be used for this and other frequency ranges, with links as described above added and L_1 tapped approximately ⅛ the winding from the bottom end. C_1 and C_2 should be chosen to resonate, in a given amateur band, with the inductance of the particular coil used; the L/C ratio is not critical.

B_1—Penlite cells.
C_1, C_2—Silver mica or NPO ceramic; see Table I for values.
C_3—0.005-μf. disk ceramic.
C_4—250-$\mu\mu$f. silver mica or NPO ceramic.
J_1, J_2—Coax chassis-type connectors.
L_1-L_4, inc.—See coil table.
L_5—Broadcast-band r.f. or mixer coil, replacement type.
L_6—30 turns No. 33 enam. close-wound on cold end of L_5
Q_1, Q_2—SB-100 (Philco) or types having equivalent alpha cut-off frequency.
S_1—S.p.s.t. toggle.

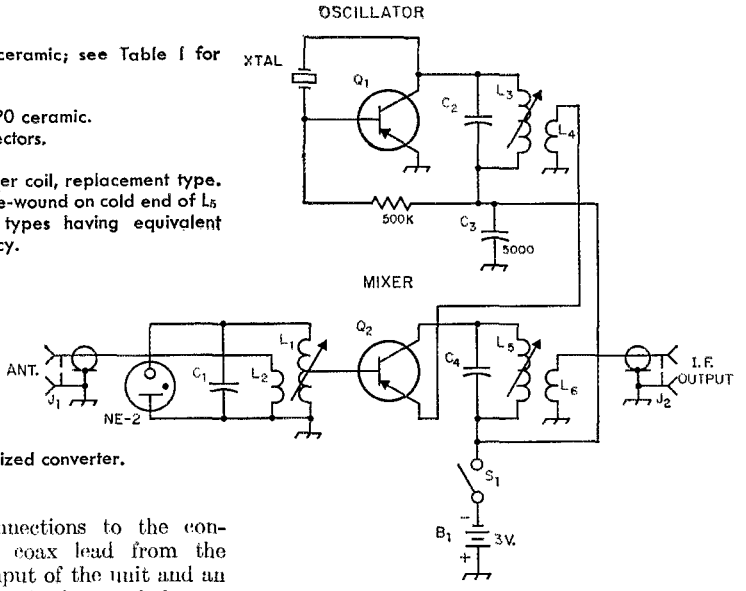


Fig. 1—Circuit of the transistorized converter.

Only two external connections to the converter are necessary. A coax lead from the antenna must go to the input of the unit and an output coax connection to the input of the car radio is required.

Adjustment and Testing

When the unit is wired and ready for testing it will first be necessary to make certain that the oscillator is functioning. An easy method for determining this is to turn the converter on and listen on the home receiver for the signal from the oscillator. Tune the receiver to the oscillator crystal frequency and adjust the slug in L_3 until the signal is heard. The oscillator will not oscillate until the collector tank (C_2L_3) is resonant. If the converter was built for operation on 20, 15 or 10 meters, it will be necessary to tune the home receiver to the third harmonic of the crystal frequency while making the above adjustments.

After the oscillator is known to be operating properly, install the unit in the car. With the car radio tuned to the intermediate frequency of the converter and the converter turned on, adjust the slug in L_3 for maximum background noise as heard on the car receiver. Next, adjust the slug in L_1 for maximum noise, or select a weak signal and peak it up for maximum gain. After this adjustment is completed, set the car radio for the center of the i.f. frequency band to be used with the converter. Adjust the slug in L_5 for maximum gain. If only one segment of a particular band is going to be used, additional gain can be realized by peaking the coils for that portion of the band. Example: Peak the converter for 3800 to 4000 kc. rather than 3500 to 4000 kc. if 75-meter operation is contemplated and you are interested primarily in the phone band.

Results

The converter built by the author has been in constant service for seven months and the two penlite cells are still delivering plenty of voltage. Under normal circumstances they should last their regular shelf life. The measured current drain of the converter was 2.7 ma.

The sensitivity of the unit on the lower frequencies is comparable with that of a 3-tube converter which was originally used in the writer's mobile installation. It does not compare as favorably with a vacuum-tube converter when used on 15 and 10 meters because no r.f. amplifier stage is incorporated. However, it proves to be adequate, and an S6 signal or better is comfortable copy at these frequencies.

Changing to a transistorized converter was one of the most gratifying experiments I have undertaken and was well worth the effort. I'm sure you will find the results equally satisfactory.

Strays

A new QSO marathon record is claimed by K2RRV and K2EGP. Using 50 Mc., they maintained contact for 33 hours and 11 minutes. Another pair of lads (W7GIA and K7CYQ) challenged on 21 Mc. but collapsed at the 32 hour and 30 minute mark. Both were phone efforts.

—···—

CAA has a number of openings in the Second Region for electronics technicians at salaries of $4980. For complete details write to the Board of Civil Service Examiners, Civil Aeronautics Administration, Fort Worth, Texas.

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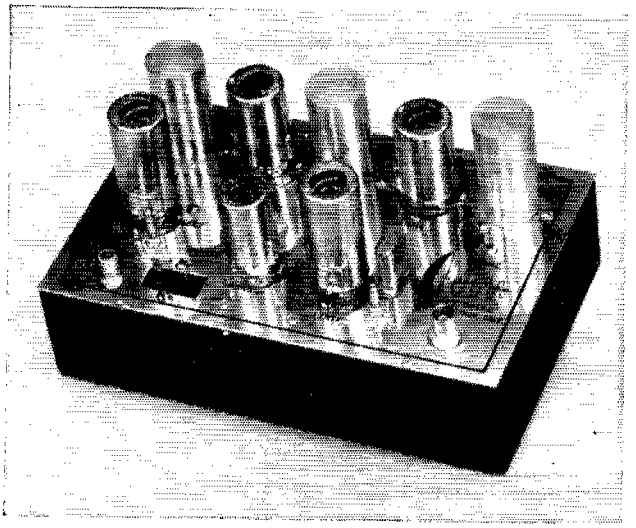
KN2JQP says that KN2SHE is an XYL.

• Recent Equipment—

The Centimeg 432-Mc. Converter



The Centimeg 432-Mc. Converter has two 6AM4 grounded-grid r.f. stages with silver-plated coaxial tank circuits, rear, a grounded-grid mixer and cathode follower, left, and a 3-stage injection system using two tubes.

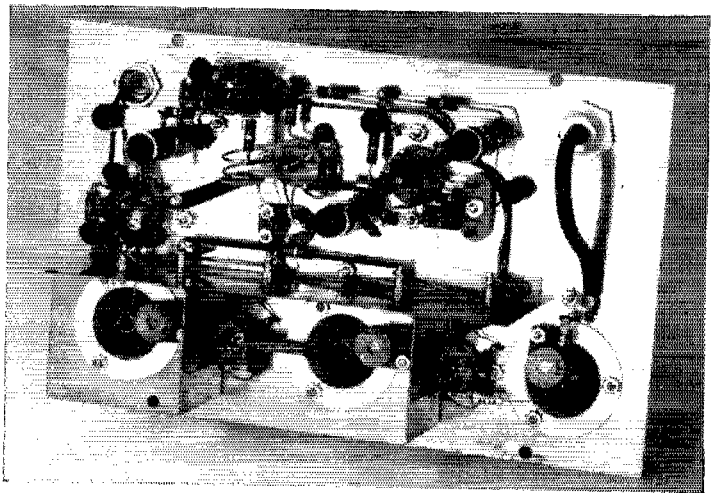
HERE IS a real rarity — a piece of commercial equipment for amateur u.h.f. use. Part of a 3-converter line (others are available for 144 and 220 Mc.), the Centimeg Converter [1] for 432 Mc. makes high performance available to the u.h.f. enthusiast who doesn't want to build his own receiving gear.

The principal feature of the Centimeg product, aside from its remarkably clean layout and wiring job, is the use of silver-plated coaxial tank circuits in the r.f. portion. These 1-inch cylinders, 2 inches long, with ¼-inch inner conductors, are used in the cathode circuits of the two 6AM4 grounded-grid r.f. stages, and in the cathode circuit of the grounded-grid mixer. This last tube is a 6BK7B, with its other triode operating as a cathode follower.

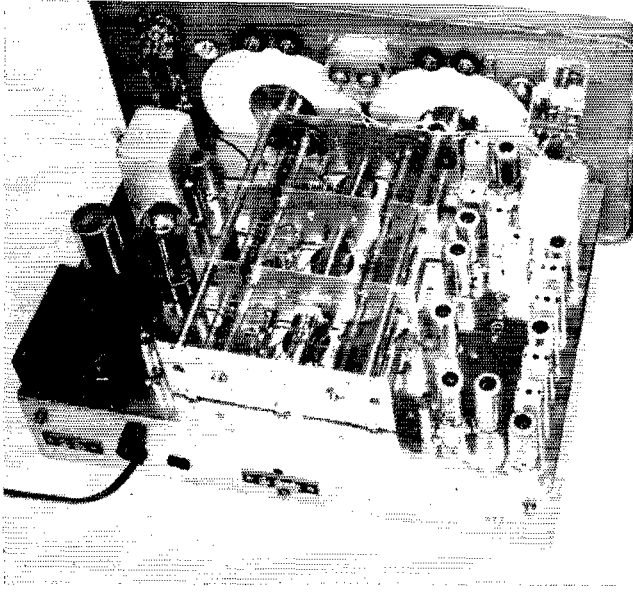
The injection system has a 12AT7 Butler oscillator and frequency tripler, followed by a 6AK5 tripler, the injection frequency being 418 Mc. Tuning range, for 432 to 436 Mc., is 14 to 18 Mc. Other i.f. ranges are available on request. The oscillator uses a 46.444-Mc. overtone crystal. Alignment of the converters is done at the factory with the aid of a sweep generator, resulting in a substantially flat response across 432 to 436 Mc., with steep slopes above and below these limits.

— *E. P. T.*

[1] Centimeg Electronics, Inc., 312 East Imperial Hwy., El Segundo, Calif.



Bottom view of the Centimeg Converter, showing the coaxial tank circuits.



The dust cover has been removed from the tuning-capacitor gangs to show the construction. That variable capacitor at the upper right of the front panel is the tuning control for the rejection notch slot frequency.

The Hammarlund HQ-160

IF ONE has been in ham radio since the late 30s and interested in receivers, he will have no trouble in spotting the Hammarlund HQ-160 as a direct lineal descendent of the old HQ-120, circa 1938. Of course you have to exercise a little imagination and you have to know what to look for to spot the hereditary traits, but they are there. The HQ-120 was a two-dial (bandspread and bandset) receiver that covered the range 0.54 to 31 Mc. in six bands with smooth-running directly-calibrated dials. The 160 has two smooth-running directly-calibrated dials, with good big knobs very unlike the diminutive ones on the 120. The single-conversion HQ-120 and its descendents used the first wide-range selectivity crystal filter [1] that became the standard in the field for many years. The 160 has gone double conversion and the crystal filter has been discarded. But don't worry, *selectivity* hasn't been discarded! In the 160 you have an adjustable notch for knocking out an undesirable carrier or interfering signal plus a variable bandwidth *Q* Multiplier for peaking a signal. The appearance of the 160 is in keeping with the other current Hammarlund receivers — cast panel, perforated metal case, gray paint — and a far cry from the 120 and its staid black finish.

The block diagram, Fig. 1, will point up many of the general electrical features. The tunable front end uses a 6BA6 r.f. stage, a 6BE6 mixer and a 6C4 grounded-cathode oscillator. In the two low ranges (.54 to 3.2 Mc.) the receiver is a single-conversion affair; the 6BE6 mixer works into the 6BE6 converter at 455 kc., and the converter operates as an amplifier. On the other bands, the first conversion is to 3035 kc., where three tuned circuits start knocking out a few of the undesired signals. The crystal-controlled 6BE6 converter heterodynes the signals to 455 kc. where the selectivity can go to work. One triode section of a 12AU7 (marked V_{9A} in the diagram) serves as a *Q* multiplier and furnishes a peak that is sufficient for single-signal c.w. reception or broad enough for one sideband of a phone signal. The *Q* multiplier has two panel controls, one to set the frequency and the other to adjust the band width. The bifilar T trap behaves like a bridged-T notch filter and uses the circuit that

[1] Oram, "Full-Range Selectivity with 455-kc. Quartz Crystal Filters," *QST*, December, 1938.

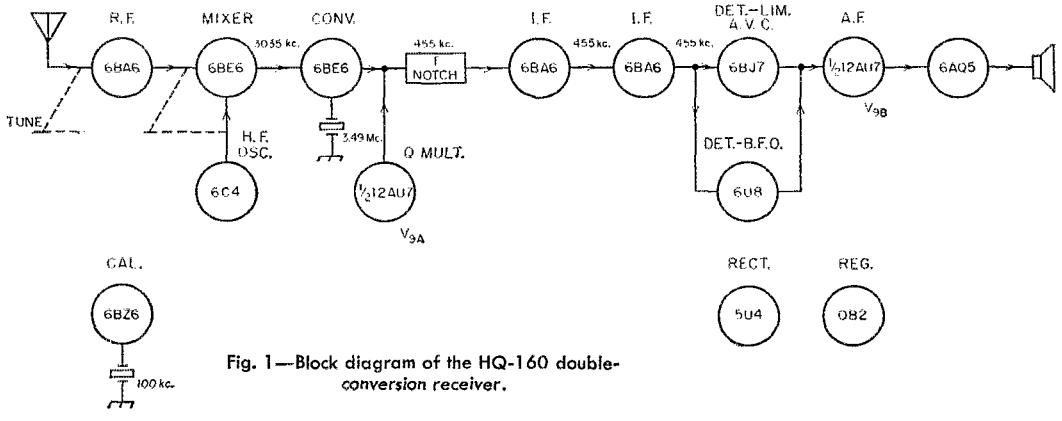
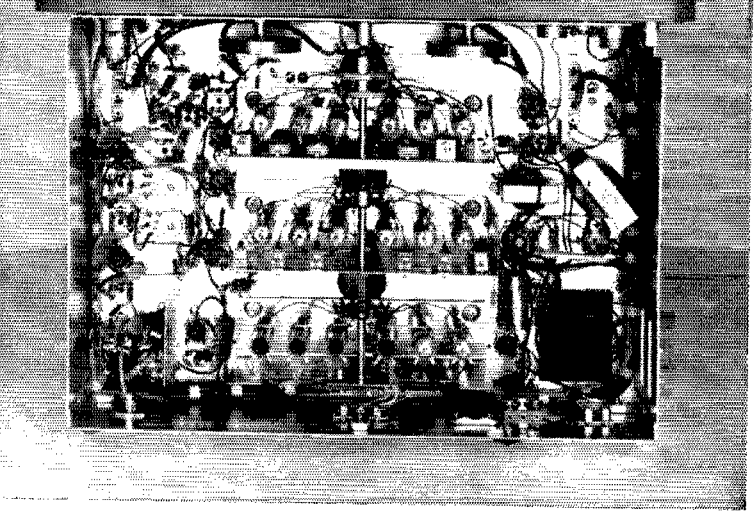


Fig. 1—Block diagram of the HQ-160 double-conversion receiver.



Using packaged circuits at several points and laying the bulky cabling around the edge of the chassis adds to the clean appearance of the HQ-160. Heavy flywheels on the tuning knobs contribute to the traditionally smooth tuning of the HQ receivers.

was first introduced in the HC-10 Converter; the circuit was described in an earlier issue of *QST*[2]. It provides a sharp rejection notch of adjustable depth and frequency; two panel controls are provided for this purpose. There is no way to cut the T trap out of the circuit; when you don't want it you just tune it to outside the pass band.

Following the selective elements, there are two stages of i.f. amplification with four tuned circuits between each stage. Selectivity of the tuned circuits alone (no *Q* multiplier) is 3.7 kc. at −6 db. and 17 kc. at −60 db. For a.m. detection one diode of a 6BJ7 is used, with the other two diodes serving as a.g.c. rectifier and as audio limiter. When the b.f.o. is turned on, for c.w. or s.s.b. reception, a 6U8 pentode section serves as a conversion detector, with the 6U8 triode section furnishing the b.f.o. voltage. A three-position switch gives the operator a choice of b.f.o. reception (no S meter or a.g.c.), manual (diode detector, no a.g.c. or S meter) and a.g.c. (and S meter). A separate switch turns the limiter on and off; the noise limiter is the carrier-adjusted type users of the HQ series of receivers have always admired.

The audio end of the receiver consists of the other triode of V_9 (12AU7) and a 6AQ5 output stage. The Hammarlund "Auto-Response" circuit[3] is again used here; it is a negative-feedback circuit that reduces the bandwidth of the audio amplifier at low signal levels and increases it at high levels.

In the power supply end, the 0B2 furnishes a stabilized +105 volts for the r.f., mixer and i.f. screens.

Manual gain control is applied to the r.f. and the two i.f. stages, and a.g.c. voltage is fed to the grids of the r.f. and first i.f. tubes. The S meter indicates the change in voltage at the i.f. cathode as the a.g.c. voltage is increased; chassis adjustments permit changing the S meter sensitivity to anything within (or outside of) reason; they are factory-adjusted so that an input signal of 50 μv. will give a reading of S9.

[2] *Recent Equipment*, "The Hammarlund HC-10 Converter," *QST*, August, 1957.

[3] Given in Recent Equipment, *QST*, Jan. 1957.

Last but not least is the 6BZ6 calibrator. This is a 100-kc. crystal-controlled oscillator that furnishes the markers for setting the band-set dial. Factory-set, its accuracy can be checked at any time by comparison with WWV. We used its harmonics to check the dial calibration; there was excellent agreement on the several ranges we checked, but with a built-in calibrator one can always be sure where he is, even if the dial is a bit off. As an aid to bringing the dial into agreement on any band, adjustable-from-the-panel hairlines are provided on both dials.

Speaking of the 100-kc. oscillator, the circuit involves only the 100-kc. crystal, a variable capacitor and some fixed capacitors and resistors (Fig. 2). In the HQ-160 most of the fixed resistors and capacitors are made up in one single packaged circuit (Hammarlund Part No. 38981-1 RC Network, calibrator), and it would be a very simple job to throw together a 100-kc. oscillator like this when such a packaged circuit is available. This isn't the only packaged circuit in the HQ-160; packaged circuits are used in the audio amplifier, the automatic noise limiter and the diode detector.

Some slight mention was made earlier of the external appearance of the HQ-160, and the two

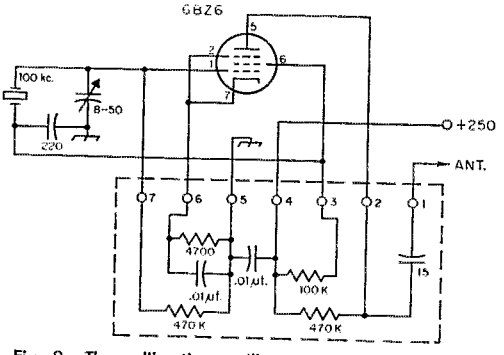


Fig. 2—The calibration oscillator circuit in the HQ-160 uses a printed circuit (enclosed by dashed lines). Capacitances in $\mu\mu$f. unless otherwise indicated.

photographs show some of the interior. The bandspread dial is calibrated for the bands 80 through 10 meters, 80, 40 and 10 meters require about 9 knob revolutions to cover the bands, 20 takes 8 and 15 requires 6. The bandset dial uses 9 revolutions to cover its ranges: 0.54 to 1.32 Mc.; 1.32–3.2; 3.2–5.7; 5.7–10.0; 10.0–18.0 and 18.0–31.0 Mc.

Most of the panel controls have already been mentioned or implied. There is an antenna trimmer control, and a send-receiver switch that removes the screen voltage from the r.f. and second i.f. stage. A standard power receptacle at the back of the chassis is marked "Relay," which may make a few customers think that an antenna relay can be controlled by the send-receive switch through this outlet. To the contrary, this is where you connect to the extra normally-closed contacts of an antenna relay, so that the receiver will be turned on and off by the *externally-controlled antenna relay*. It might be less confusing if the outlet were labeled something else so that a customer wouldn't think this might be an outlet where the transmitter or relay could be controlled by the receiver send-receive switch.

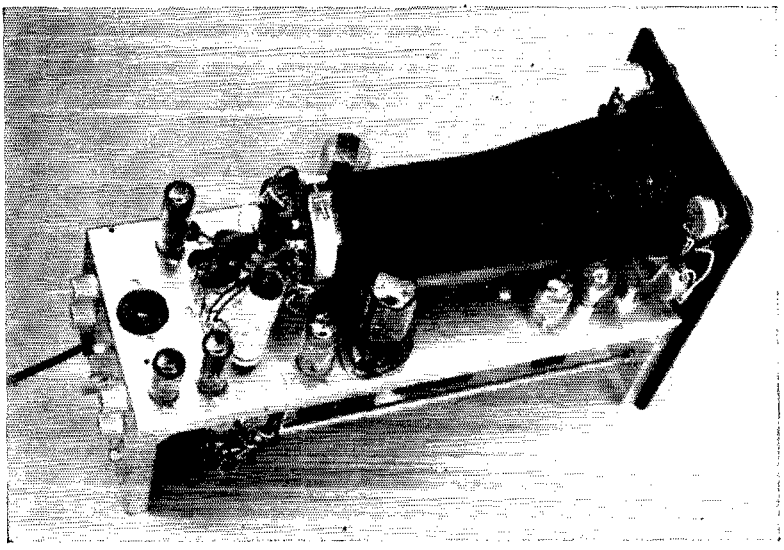
As mentioned at the start, the HQ's have a long lineage; the 160 should continue to make it a proud one. *B. G.*

The Central Electronics MM-2 R.F. Analyzer

ONE OF the marvels of amateur radio (at least to the writer) is the fact that so many phone transmitters have been put on the air and operated without a monitoring oscilloscope of any kind. Having on several occasions done exactly the same thing (put a phone rig on by rules of thumb or by guess and by gosh) and then checking later with a scope to see how bad the thing was (it was bad!), the writer never has any confidence unless there is a monitor 'scope nearby. That he is not alone in this reaction has been brought out many times in conversations with other hams.

Years ago, of course, there was every good reason for not having a 'scope in the shack. They hadn't been invented or they were too expensive/complicated/esoteric. Those excuses no longer hold. Oscilloscopes in kit form make it possible for all but the most impecunious amateur to own a cathode-ray monitor, for continuous observation of the transmitted signal and for the occasional testing and adjustment of the rig. True, the available oscilloscopes have not always been designed with the operating amateur in mind, although they can be modified to work fairly well without too much trouble.

The Central Electronics MM-2 R.F. Analyzer is a monitor oscilloscope designed expressly for the operator. As normally used in the station for everyday operating, it will monitor the outgoing signal to indicate modulation level and also show when the overload (distortion) point is reached. With an adapter (more on this later) it will automatically switch to your receiver i.f. when you aren't talking, to show what the incoming signals look like at r.f. (before demodulation). For transmitter tests it can be quickly switched to give a linear sweep or an audio sweep, for the observation of envelope patterns or trapezoid patterns. And, just in case you are ready to complain that you can't make some of the tests because you don't have an audio oscillator, the MM-2 has a built-in audio oscillator that delivers a low-distortion tone around 1000 cycles! With an MM-2 hooked into your station, you don't have to ask "How's my modulation?" You know. And of course using a 'scope for monitoring means that you can keep the peak modulation (on a.m.)



The MM-2 R.F. Analyzer is a versatile oscilloscope designed expressly to monitor outgoing transmissions and also what is coming through the receiver i.f. The empty socket visible here takes an adapter tuned to the receiver i.f. The small lamp near the panel is not for illumination; it is the stabilizing element in a low-distortion 1000-cycle audio oscillator.

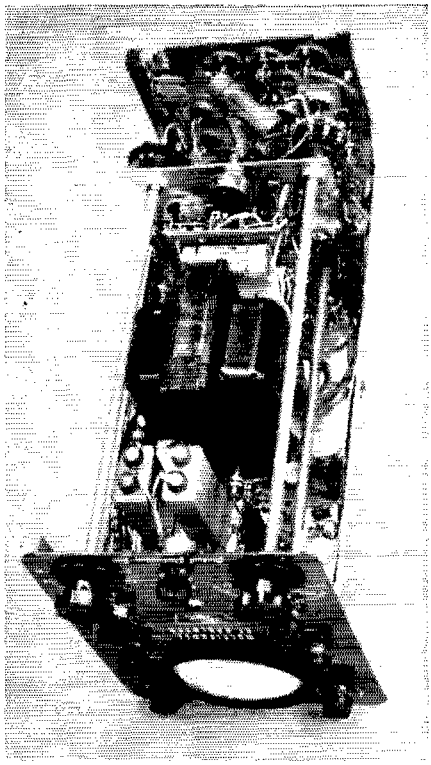
or peak amplitude (on sideband) right up to the point where you are getting the maximum without distortion.

For the simplest form of test with the MM-2, you connect the coax from your transmitter to a receptacle on the MM-2, and then connect another length of coax from the MM-2 to the antenna or antenna coupler. If you don't use coax you connect a small antenna or pick-up loop to one of the fittings. R.f. from the line or antenna passes through a panel-controlled attenuator on to a vertical plate of the 3BP1 3-inch oscilloscope tube. The MM-2 doesn't dissipate any of your r.f. power; the two fittings are there to make it easy to sample the output of a transmitter. The r.f. sampled from the transmitter also actuates a 6X4 "keying rectifier", and the 6X4 output controls a 6U8 "keying tube." These have nothing to do with c.w.; the 6U8 keying tube controls a pair of diodes (6AL5) that "switch" the horizontal sweep for the 'scope tube. For example, you may use an audio sweep from your transmitter to give a trapezoid pattern on "transmit"; when the r.f. is removed (when the transmitter is turned off) the 6U8 will switch, via the diode, to an internal sawtooth sweep and the r.f. from your receiver's i.f. string.

The sweep oscillator mentioned above is a cathode-coupled 12AT7 that can run free or sync in with an internal 1000-cycle sine-wave oscillator (12AT7) or an external audio signal. The 1000-cycle oscillator is brought out at two levels (1.5 and 0.015 volt) at the rear of the MM-2, where it can be piped to the audio stages of the transmitter for test or tune-up purposes. A 6AU6 horizontal amplifier is provided to build up the various sweeps to a suitable level.

To pick up the signals at i.f. and transfer them to a vertical deflection plate, a Central Electronics Model RM adapter is required. These little units, available for 455, 80 and 50 kc., use a 6AN8 tube and a suitable tuned circuit. The i.f. is fed to the grid of the pentode portion of the 6AN8, and the triode section serves as an output stage. A socket is provided on the MM-2 chassis for the plug-in RM units.

A 24-page instruction book explains how to connect the MM-2 into the station for the many possible methods of utilization. It also includes over 11 pages of typical patterns, explaining what they are and what good or bad things they tell about your signal.



In the best tradition of short leads for r.f., the switches are mounted at the rear of the MM-2, near the r.f. input receptacles. One switch is an input attenuator (3-db. steps) and the other is the function switch that selects the type of operation (linear sweep, sine sweep, audio sweep). Small knobs handle the usual scope functions: vertical/horizontal centering, focus, intensity, sweep speed and sweep width. The last knob turns on the unit and the 1000-kc. oscillator.

After working with the MM-2 at home for a few evenings, putting it through its paces, the only criticism we had was that the available sweeps were a little too fast for a decent presentation of a c.w. keying characteristic at normal sending speeds. This just goes to show how far we had to reach for a criticism, because somehow or other we can't imagine very many hams buying MM-2s so that they can study their keying envelopes! — *B. G.*

WBE

The WBE (Worked British Empire) award is issued by the Radio Society of Great Britain upon proof of contact with a British Empire station in each of the five continental areas — North *or* South America, Europe, Africa, Oceania, and Asia. RSGB has recently increased its awards fee (for non-members of RSGB) to $1.00. Three types of awards are available: all phone, all c.w., and mixed (a combination of phone and c.w.). Amateurs residing in the U. S. A., Possessions and Canada may submit their confirmations for the award through ARRL. Those living elsewhere must apply directly to the RSGB headquarters, New Ruskin House, 28/30 Little Russell Street, London W.C. 1, England. The WBE award is the *only* foreign award handled by ARRL.

How I Come to Be a Ham

BY FLOYD C. DENCE,* K2RGH

Now this here account is what I been a going to write fer quite a spell, 'cause I thought it would maybe keep somebody from making all the fool mistakes I did, and show 'em it ain't so tough to be one of these here hams.

It all started when my boy got a ham license. Right away he started tinkerin' with a mess of wire and little pieces of somethin' with colored marks on 'em and wires stickin' out on both ends, and a few other dingusses I never had seen before.

I was pretty busy for a spell, and didn't notice what was a goin' on 'til I thought I'd see how the kid was a gettin' along, and so I stopped by the shack, as he calls it, to find out.

Wal, there he was with a couple tin boxes with knobs on 'em and some light bulbs what wouldn't light very good, and wire runnin' all over the she-bang, an' he was just settin' there making a lot of noise on a little lever, and I asked him what he was doin' and he sez he is talkin' to another ham, so I thought I would set a spell and see what they said to each other.

Wal, the kid would rattle on the little lever for a spell, then he'd quit and then the thing would start rattlin' back. I set there for a half hour and didn't hear anybody say a thing, so I asked the kid when he was goin' to start talkin', and he sez he'd been talkin' to a guy in BuZalo. It sure got me. I never heard nobody say nothin'. All I heard was that rattlin', so I went and done the chores.

It was a long time 'til I stopped again to see what was a goin' on, and this time he had some more boxes only bigger and he had a telephone fastened on one and he was a hollerin' "see cue" in it, and so I set down again to listen, and I sure thought that the kid was nuts for sure.

He'd holler "see cue" for a spell, and then say some letters and a number and then some more "see cues" and some more letters, and then he'd turn some knobs and listen.

I could hear somebody hollerin' back but he paid 'em no never mind, and I asked why he didn't talk to them and he sez they weren't talkin' to him. They was talkin' to some other ham.

I don't know how he could tell who was talkin' to who, but after a spell of hollerin' he got a guy to talk back to him. Wal, I listened for quite a spell and he talked to some more fellers, and he called all of 'em old man and that started me wonderin' a little — maybe he was the only young squirt in the outfit.

I couldn't make much out of what was said, somethin' about beams and power supplies, and one feller said somethin' about a plate and plate supply, and said he used spaghetti for somethin' and had a tap and I thought he was maybe goin' to a supper at some beer joint.

I got so I stopped by the shack about every day now to listen a spell, and everytime the kid got someone to talk to him he would call him old man, so I says how come and he says all hams are old man or young lady, which got me a little excited, 'cause if all the hams was old men and all the gals was young ladies, then I sure aimed to be one of 'em, 'cause I wasn't too far along that I couldn't enjoy kiddin' with some young gals.

So I asked the kid if I could be a ham, he said sure, and I said what do I have to do, and he says I'd have to send for a novice ticket, learn the code, and keep a log.

Wal, I could send for the license O.K. and I already knew the code — you just done what was right by the people — but why I had to keep a log I didn't see no sense to, but I got the old mare out and went up to the woods and cut a log. It wasn't too big a one 'cause I was alone and the mare was kinda old, but I got it down to the shack all right.

The kid seen me comin' and wanted to know what I was gettin' fire wood for now, seein' as how he had the woodshed full, and I says you told me I had to have a log so I got one, and he says "you old knuckle head, a log is a book you keep your records in." I was kinda put out, all that work for nothin', but I am learnin' all the time that you don't know as much about talkin' as you think you do. I found out an alligator clip ain't a bite from one of them critters, and a pig tail ain't the end of a hog and Henry or Jack ain't a couple more hams. Then there's a bug what ain't a bug, and a bleeder don't mean you've cut your finger, and hash ain't what's been put together for supper.

And you know, I found out that all them OMs and YLs ain't exactly what I was thinkin', either.

*Box 3, Lisle, N. Y.

Strays

If you can stand another coincidence — both W1EBO and K2EBO live in the city of Norwich — Connecticut and New York.

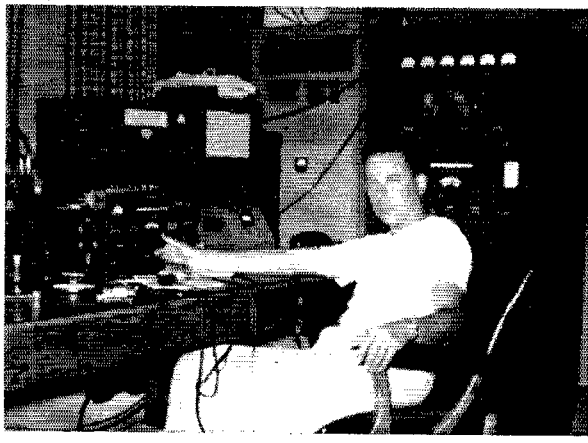
Obviously unhampered by the blustery weather, W3LOE was far ahead of the nation's c.w. men with 922,355 points. Landing 125 countries on 3.5–28 Mc., Bob used home-designed receivers and kw. rigs to win the Md.-Del.-D. C. certificate. During the fray, split 'phones were often brought to bear, each ear listening to a different receiver on a different band, with instant selection of the appropriate transmitter. Antennas were four rotaries for 28 to 14 Mc. and a ground plane and zepp on lower bands.

Official Results—
24th ARRL International DX Competition

On MARCH 20, one day before the second c.w. week end got underway, a blizzard came churning up the Atlantic seaboard. Jillions of tons of wet snow twisted beam elements, crumpled towers, knocked out commercial power lines. Many DXers jumped to the fore to handle emergency traffic for isolated communities, several instances of which have already been covered in "With the AREC." Others counted on hastily-erected random-length wires to raise such DX as they could, but understandably most scores in W2, W3, and W4 dropped when compared with those of last year. One member of an east coast club termed the gavel race, "the battle of the dipoles."

Opinions on band conditions, procedures and such were mixed, depended largely on where you were and whether you were the seeker or the sought. Said VK2GW: "Conditions both periods were fantastically good, the best I have experienced in a major contest, and there were more W's on than ever." Said 4-watt SP6XA: "It was a great pleasure to work so many FB American ops. Intended to do more but the solar eruption the last day (c.w.) made this impossible." Said KH6BG: "First Test and what QRM, what pile-ups, wotta panic but, boy-oh-boy, what *fun!* A golden opportunity for a fast WAS." Said XE2FA: "While some fellows 'tailed' wisely, others called immediately after I stood by for a specific station. This practice would surely get them in bad with the DX under noncontest conditions." Said ST2AR: "Enjoyed every minute. The bands were superior the first week end but what happens to the rarer states like North and South Dakota during the Test? If they don't come out of hibernation on these occasions they never will." Said W1MIJ: "Got four new ones but some of the fellows are getting bloodthirsty. Heard one poor DXer plead for the W's to wait until he finished before calling but to no avail. I don't mind stiff competition but much of it is just plain lid-antics." Said PAØLOU: "The bands were excellent the first c.w. part and very poor the second. However I am more than satisfied with a score tenfold last year's. Thanks to all the boys for their excellent work. Moreover, the contest gave me Nevada for WAS at last!" Said ZL1APM: "As a not-so-rare station I was agreeably surprised at the courteous operating procedures encountered. When I needed a repeat in a pile-up, use of $\overline{KN}$ always cleared the channel for the weak signal. It's great fun to put out one CQ Test and peel them off for a four-hour stretch!" Said W2OWX: "It's too bad the DX tolerates tail-enders and QSO-busters although I guess all's fair in love, war, and the DX Test." Said ON4LX: "Once when conditions were at their best I made the mistake of signing twice and had to wait three minutes quiet as a mouse until the bedlam toned down. Even then, operating standards were outstanding. Only once in more than 600 QSOs was I bothered by W QRM during contact."

As QSL managers around the globe wrestled with the post-Test card deluge and the log jam hit 38 La Salle Road, W2SKE was pounding out something called "The Battle of the Hams" for the June 30 issue of *Sports Illustrated*. An experienced accumulator of sparkling phone totals, Bill Leonard knew whereof he spoke and succeeded admirably in describing the almost incredible enthusiasm which besets the diehard contester. In an aptly-phrased comment later



The battle over, two tired DXers relax. *Left:* W9HUZ got 539,850 points, honors for top W9, and the Illinois c.w. Certificate of Performance aided by a pair of 813s at 800 watts and an impressive collection of twirlers and dipoles .–.–.– *Right:* With 658,698 on c.w. and 219,564 on phone, versatile W6ITA easily bagged both Los Angeles Section awards, was fourth nationally on mike and key, and became the first ever to lead the Sixes on the two modes. Gordon attaches his Collins gear to an 80-meter half-wave or a triple-band beam.

published by the magazine, W4RNP declared: ". . . Hams will doff their headphones to *Sports Illustrated* and Leonard for combining on the most readable piece on the hobby seen anywhere outside of publications devoted to it. Any ham who has ever battered his way through a DX contest can thank Leonard for making it all seem plausible, exciting and even reasonable — something few amateurs can ever achieve with their neighbors, friends and wives in describing the miserable ecstasy of a DX contest." Amen, anyone?

Now a somber note. Out west during both code periods, FCC had conducted some surprise power-input checks in a move heartily approved by the Body Amateur. Some were given a clean bill of health ("A Hot Contest," May *QST*). Some weren't (p. 9 last month). Happily, the crackdown's deterrent effect probably kept a few other lawbreakers QRT.

Following the 1957 Competition, the cry "Where were the Canadians?" was raised. Because the score of those abroad depends on a maximum band-multiplier of 19 (made up of the ten U. S. licensing areas, the eight in VE, and VO), the concern was natural. Before this year's affair, therefore, preprints of the rules were circulated to Dominion clubs urging participation. Yet again in 1958 DJ1BZ, DJ3JZ, DJ3KR, DL7AH, EI9J, G2HPF, G3FKH, HB9QO, VK2GW and ZS6AJO bemoaned the lack of VE/VO activity. With a ham population three per cent of the U. S., Canada actually holds its own; the chances of swarms of them taking part parallel the odds of landing six ZAs in an hour stint on 14 Mc. or hearing AC4s on 160 meters. But for what it's worth: *Canadians, the DX wants YOU in '59!*

Rules preprints also went to IARU Societies, to foreign QSL bureaus, and to many individual amateurs in "multiplier" spots. Such advance publicity brought '58 Test announcements in two dozen IARU publications and helped bring out the usual slam-bang degree of DX activity. Our thanks to the hundreds of hams who spread the word in prior on-the-air pep talks, to OK1AAJ of the Czech Central Radio Club, to EA4ER

Be there a contester who hasn't had a ten-second rat-a-tat exchange with KH6IJ? Katashi counted on eight bands for 5487 QSOs all told, paced those outside U. S. and Canada on c.w. and phone with 1,139,488 and 535,311 points, boosted his multiplier with fourteen 50-Mc. contacts. Mr. Nose became the second amateur in Test history to surpass 1,000,000, following in the 1957 footsteps of XF1A. Note tilted mounting of Ranger and 75A4 at the consoletype operating position.

of URE, to SP2DX of PZK, to Mr. S. Matlin of the Soviet Central Radio Club, and to all the rest who afterwards collected and forwarded entries from their countries.

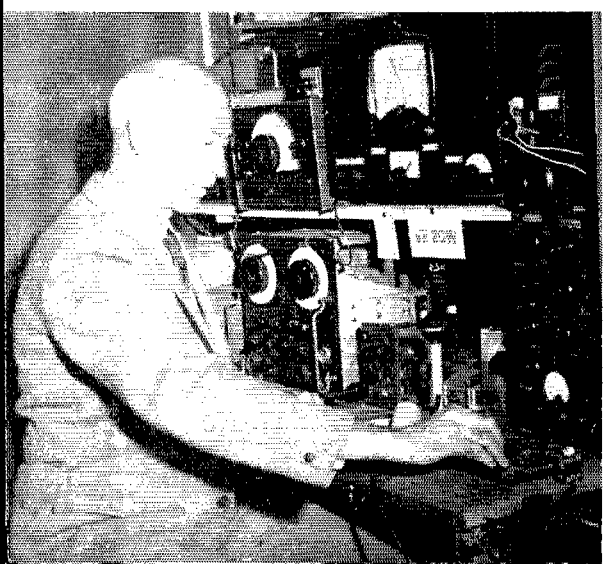
The number of logs received, one yardstick of the success of the Acid Test, shaped up at 1672 (1158 c.w. and 514 phone) and 337 Certificates of Performance are en route at this writing. These are divided as follows: 66 U. S. mainland and Canadian c.w. single-operator ARRL Section winners, 6 U. S. c.w. multioperator stations, 91 foreign c.w., 65 U. S. mainland and Canadian phone section winners, 62 non-W/K/VE/VO phones, and 47 club leaders.

C. W. Highlights

W3LOE paced the U. S. c.w. contingent in score (922,355), multiplier (365), and number of contacts (854). In his slipstream was W3BVN, another Marylander, with 668,118 points, 318 multiplier, and 701 QSOs. Third nationally was Virginia's W4KFC who was presented with a brand-new daughter during the second week end, resurrected his downed antennas by much floundering about in a foot of snow, and still managed to post 662,936 points.

The following also scored more than 400K at one-man setups: W6ITA 658,698, K2DCA 589,057, W1NMP 574,948, W2WZ 565,812, W1BIH 553,185, W9HUZ 539,850, W8BKP 538,986, K6EWL 519,588, W9LNM 491,604, W3ECR 478,380, W1JYH 466,200, W4BGO 441,180, W6TT 426,096, WØNUC 416,556, W3GRF 407,778, W2BYP 402,204, W2GUM 401,506.

Meet two famous gentlemen from Down Under. Bottom is VK2GW who ground out 401,310 points, a new high Australian c.w. tally. Lyell reports the recent hiking of the VK power limit to 150 watts, so doubtless VK2GW's signal soon will be up a couple of db . – . – . – The knitted jersey identifies New Zealand's c.w. and phone winner. Cliff has tackled more than 100 contests postwar and consistently plies the bands 160 meters to 420 Mc. Biggest thrill, states ZL1MQ, was a February 23 Test swap with W6PUZ, his first W on 50 Mc. If all goes well, he will be gunning for 500K points in the '59 affair.



Lined up by call area highs:

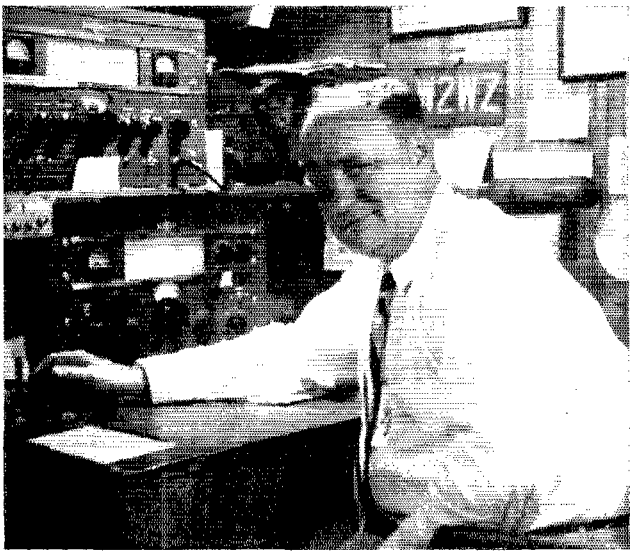
W1NMP	574,948	WØNUC	416,556
K2DCA	589,057	VE1EK	23,115
W3LOE	922,355	VE2WW	181,764
W4KFC	662,936	VE3CCK	128,979
W5CKY	283,176	VE4XO	31,200
W6ITA	658,698	VE5VL	38,236
W7PQE	189,700	VE6NX	26,625
W8BKP	538,986	VE7ZM	138,528
W9HUZ	539,850	VO2NA	24,924

A number of brasspounders banded together (usually to boost a club total) in the multiple-operator category. Over in Western Pennsylvania W3AOH, capably staffed by five W3s, rolled up 728,931 points with 721 QSOs, a 337 multiplier and 118 countries worked. Other top multiop scores: K6EVR 612,600, W3MFJ 596,835, W3BES 575,064, W4YHD 511,128, W3FYS 508,446, W6WWD 502,200. Special section awards for such doings were earned by W3BES, W3MFJ, WØLNI, W6BIP, K6EVR, and W6ALQ.

In Africa, where CN8GU's 820,620-pointer set a new record for the continent, these other FB totals were reported: CR6AI 296,730, EA8BF (20 watts to an 807) 171,867, OQ5GU 157,092, CN8LJ 88,200, ZS6AJO 75,200, ZE2JS 75,164, FF8AJ 74,037, VQ4FK 57,165, ZE6JX 56,430, CR6DA 54,648. Every last African competitor ran 150 watts or less, proving the old adage that you don't need much steam when your prefix is in demand.

In Asia, the Japan Amateur Radio League must have done some promoting because 60 per cent of the logs from this area floated gently into ARRL on JA rice paper. With 381,872 points and 2198 contacts, JA1VX led for the second straight year, after which came JA3AB 200,150, JA3LK 58,793, KR6BF 52,107, OD5BZ 48,321, VS1HU 44,577, JA2JW 36,363. QRP anchor man in the Far East: JA6FB and 5 watts to one perspiring 6SK7.

Europe, source of 60 per cent of all DX entries, was marked by nip-and-tuck duels for country honors between OZ1W and OZ7BG, G3HJJ and G2QT, F9MS and F8VJ, DJ1BZ and DL7AH, HA8WS and HA5BW, PAØLZ and PAØLOU, and 34 single-op scores of 100,000 or more (against 1957's 24). Continental leader was SVØWP (W3JTC Stateside) with 400,530 points, a 65 multiplier and 2054 contacts. Next came OZ1W with 303,117 and the number-one Euro multiplier of 69, followed by OZ7BG 281,724, F9MS 280,170, PAØLZ 252,882, EA4GA 234,688, EI9J 229,524, DJ1BZ 225,018, DL7AH 221,760, PAØLOU 207,963, F8VJ 197,056, PAØBW 172,026, PAØVB 159,552, I1ALU 153,615, OE3RE 152,460. Also over six digits were DJ3KR, DL4AB, EA1AB, F8ZF, G2DC, G2HPF, G2QT, G3HJJ, G3FKH, GM3EOJ,



Both N. Y. C.-L. I. awards went to W2WZ for scores of 565,812 c.w. and 185,871 phone. There are separate triode finals for each band, three 5- and 6-element rotaries, 3-wire folded dipoles on 80 and 40, a 7-Mc. ground plane, and V beams. As an added signal booster, Al has thousands of feet of radials buried beneath the skyhooks.

HA5BW, HA8WS, HB4FE, HB9EU, HB9QO, OE1RZ, OE6HV, ON4LX and TF2WCT. DJ3JZ's team turned in 384,120, as OK1KTI's 159,636 and SM6APH's 130,389 points rounded out the multioperator picture.

In North America (outside U. S. and Canada), XF1A wasn't present for a change but XE2FA kept Mexico on the map with 985,423 points and 3391 stations worked. Second was VP7NG, efficiently keyed by visiting W0NWX to the tune of 922,320 points. Other outstanding work in the Possessions and Caribbean: KL7CDF 404,712, XE1YF 387,288, CO7PG 173,880, KV4AA 153,627, PJ2ME 143,782, KL7BPK 122,670, KZ5LY 121,695, KL7AUG/KL7 117,798, VP9CR 105,948, HI8BE 102,438. KV4AA's QSO total of 1249, by the way, represents a cool *80-per-hour average.*

Oceania was dominated by KH6IJ's world-beating 1,139,488 and the 810,810 and 790,335 points of KH6MG and KH6AYG. Other highs: VK2GW 401,310, ZL1MQ 304,902, KH6BVM 169,984, ZL1APM 162,864, KH6BIB 155,550, VK2APK 150,050, DU7SV 125,874, and ZL3OB 107,226, while toothsome multipliers were furnished by FK8AS, YJ1DL, ZC5AL, ZK1AK and ZK2AD. After vacationing in Australia proper the first period, VK9XK returned to Papua to latch onto 96,096 points March 22 and 23. Guam was *in evidence courtesy of four separate* multiop setups paced by KG6FAE's 522,915 and KG6AAY's 183,520 points. In another combined effort KX6AF & Co. polled 305,868. A Test first: Operation Deep Freeze's KC4USB log worth 296,274 points was sent via RTTY to the Navy's K1NAP and thence forwarded to the League.

In South America, ever-reliable CE3AG (who became CE0AA in '53 and will create even more excitement should plans to open up from Robinson Crusoe's Juan Fernandez Islands materialize) racked 970 contacts and 192,060 points with a KWS-1 and a spicy collection of multielement rotaries. Excellent tallies came too from ZP9AY 147,565, PY7AN 140,538, OA4BP 137,535, PJ2AN 124,431, PY7AFK 111,642.

Phone Highlights

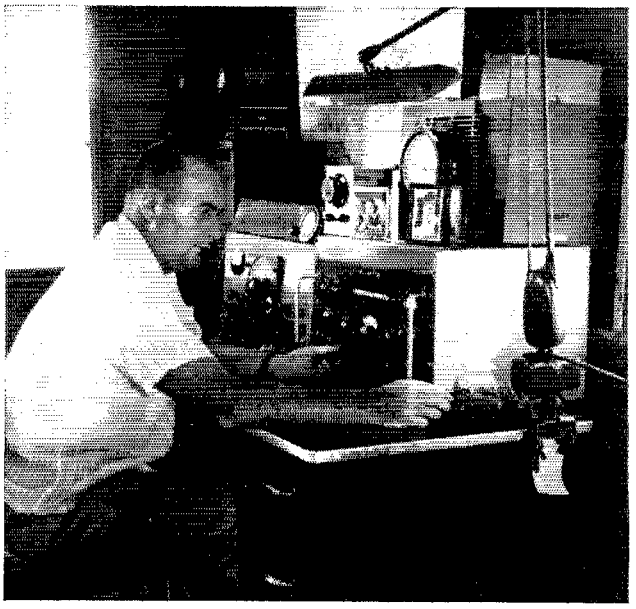
Plenty of very hardy folk took part on A-3 and of them all none was hardier than Ohio's W8BKP who showed that the Midwest can top the U. S. (as did W8BHW on c.w. back in '49). Running 500 to 800 watts into 10–15–20 meter twirlers and a 640-foot long wire on lower bands, George poked out 278,568 points, a 219 multiplier, 424 QSOs in 53 hours of yakking to lead the single operators comfortably. Close on his heels was none other than W1ONK (see photo) and then came Frankford Radio Club's W3DHM with *220,584 points, 182 mult, 404 contacts.*

These 15 solo performers also got 100K or more: W6ITA 219,564, W8NXF 210,684, W8NWO 196,944, W9EWC 190,576, W2WZ 185,871, top VE VE3CCK 165,789, W8ZOK, 163,680, W3ALB 156,529, W1QWI 140,840, W3ECR 136,320, W1FZ (whose awesome antenna structure was pictured last month on p. 58) 133,960, W1BIH 129,297, W6AED 122,715, W8SDD 109,980, W1GET 103,750. VE5VL and his 91,390 points was Canada's runner-up.

Single-op license area leaders:

W1ONK	255,056	VE1OD	15,408
W2WZ	185,871	VE2AXC	25,956
W3DHM	220,584	VE3CCK	165,789
W4NBV	91,608	VE4RP	3108
W5KC	74,763	VE5VL	91,390
W6ITA	219,564	VE6NX	10,400
W7LEV	19,800	VE7ZM	26,160
W8BKP	278,568	VE8FO	4960
W9EWC	190,576	W4VRP/VO2	18,309
W0GEK	97,333		

The multioperator teams were paced by four talkers at W3AOH and their 308,940 points, 190 multiplier, 542 QSOs in 96 countries. Other joint



CN8GU produced 820,620 points, a new c.w. record for Africa, and 2910 contacts with foot-switch controlled rig. Ray, who signs W9FJY at home, handled the QSL chores of ZD7SA until recently.

accumulations that should be mentioned: W3VKD 267,699, W6AM 238,266, W8NGO 222,855, W6NJU 148,260, W3FYS 122,265, W3BES 120,984, W3KFQ 116,375.

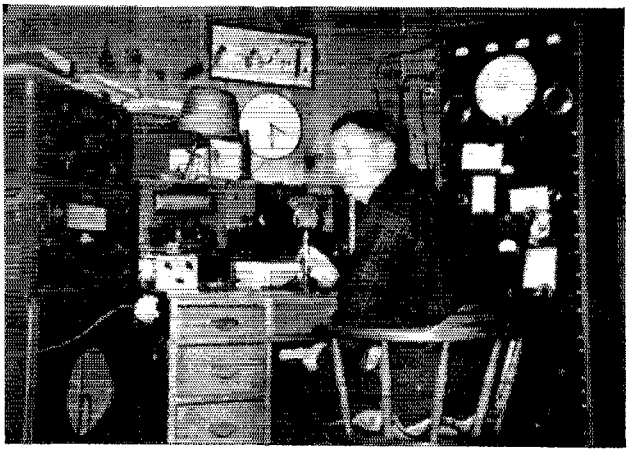
ZS6UR and ZS5JY engaged in a free-for-all for Dark Continent honors, the former triumphing 161,246 to 143,832. Canaries' EA8CF fared well with 93,993 as CR4AD, CR4AS, OQ5DG, VQ4FK and ZE2KR kept the boys hopping and hoping with scores ranging between 10 and 60K. Although ZS5NZ/ZS7 consummated just 27 contacts, his presence was responsible for quite a bit of furor March 8.

In Asia, KA2RB cut a swath into W6 and W7 on 7-Mc. a.m. and managed to land 70,980 points for Asia's top tally, and in the Middle East OD5BZ's 59,459 points came about through 100 watts to 6146s and a quad.

F8PI's 192,942-pointer lead Europe's 57 competitors and Paul's 1194 QSOs was also in front. DL4AAP — of SVØWQ "Invasion of Crete" fame — was second scorewise (174,582) and contactwise (1098), after which came G3HCL's 139,722. Holding forth on five bands ON4OC garnered the biggest Euro mult of 63 and a score of 136,899, thereby extending his Belgian winning streak to five straight. Other leaders across the pond: DJ1BZ 113,664, G3DO 100,944, G3HJJ 95,628, EA3JE 91,434, I1AIM 81,576, EI5I 55,440, G2DYV 54,810, G2PU 53,808, OH5PE 50,055.

In North America VP9L, who swears he's QSLing all 834 contacts via the bureaus, led with 212,670 markers. Next: CO2USA 133,008, TI2OE 107,916, CO2HB 50,028, XE1RE 46,110, CO3HD 22,680.

In Oceania, we have KH6IJ 535,311, KX6AF (multiop) 117,183, ZL1MQ 79,980, VR2BC 22,275, DU7SV 20,355, VK5XN 18,090, VK5WO 13,962.



W1ONK talked his way to second-ranking single-operator W/K score of 255,056 and Eastern Mass. phone plaudits with maximum input of 250 watts.

CLUB SCORES

	Score	C. W. Winner	Phone Winner
Potomac Valley Radio Club	5,932,620	W4KFC	W3KDP
Northern California DX Club	5,093,292	W6TT	W6AED
Frankford Radio Club	5,059,337	W3ECR[1]	W3DHM
Southern California DX Club	4,376,281	W6ITA	W6ITA
Kauai High School Radio Club (Hawaii)	2,013,502	KH6IJ	.....
Bellowers and Chirpers Society (Pa.)	1,490,940	.....	.....
Rochester DX Assn.	1,330,108	W2FBA	K2PMZ
San Diego DX Club	1,319,926	W6ZVQ	W6CHV
Ohio Valley Amateur Radio Assn.	1,274,172	W8EV	W8SDD
Order of Bolled Owls (N. Y.)	1,143,414	W2HMJ	.....
The DX Club of Greater St. Louis	1,029,935	W9HUZ	W9GEK
Connecticut Wireless Assn.	989,570	W1BIH	W1BIH
Hampden County Radio Assn. (Mass.)	769,794	.....	.....
Dade Radio Club (Fla.)	737,466	.....	.....
Garden State Amateur Radio Assn. (N. J.)	700,108	W2GUM	.....
Milwaukee Radio Amateurs' Club	605,318	W9GIL	W9GIL
El-Ray Amateur Radio Club (Mass.)	454,225	W1BOD	.....
Westpark Radiops (Ohio)	410,199	W8ETU	W8AJW
The DX Club (Pa.)	396,596	W3GHS	W3GHS
South Jersey Radio Assn.	367,605	W2TE	W2ZX
South Lyme Beer, Chowder & Propagation Soc. (Conn.)	351,227	W1VG	.....
Hamfesters Radio Club (Ill.)	327,081	W9JJN	.....
Lake Success Radio Club (N. Y.)	249,561	K2YOR	.....
Four Lakes Amateur Radio Club (Wis.)	205,882	W9MBF	.....
Chicago Suburban Radio Assn.	180,426	W9WFS	W9FVU
Citrus Belt Amateur Radio Club (Calif.)	172,775	W6HAL	.....
Joliet Amateur Radio Society (Ill.)	131,595	W9YYG	W9YYF
Southeastern DX Club (Ga.)	111,831	W4BFR	.....
Swan Radio Club (Ill.)	105,024	.....	.....
Denver Radio Club	99,806	.....	.....
Niagara Frontier DX Assn. (N. Y.)	99,540	W2SSC	.....
Columbus Amateur Radio Assn. (Ohio)	90,818	W8IBX	W8VOW
Westside Amateur Radio Club (La.)	62,924	.....	.....
Catalpa Amateur Radio Society (Mich.)	52,524	.....	.....
Central High School Radio Club (Iowa)	43,059	W0DSP	K0LFA
Michiana Amateur Radio Club (Ind.)	40,685	.....	.....
Johnson County Radio Amateur Club (Kans.)	21,345	.....	.....
Atlanta Radio Club	18,900	W4ZKU	.....
Springfield Amateur Radio Club (Ohio)	8756	W8LVH	.....

[1] W3MFW, opr.

VP3HAG's 135,040 topped South America and then came OA4AO 81,510, HC1HL 63,455, HK7LX 60,255, OA4V 22,032, VP4LO 17,010, CX1AK 16,925, ZP9AU 15,972, OA4FA 14,752. Wonder where all the LUs and PYs were hiding.

The Clubs

Each of the dozen postwar Tests has been characterized by heated races for possession of the cocobolo gavel with the silver band, and anyone who has set eyes on one of the handsome hammers will know the reason for the fervor. Although the afore-mentioned inclement weather precipitated a nosedive to four million points less than last year's aggregate, Potomac Valley Radio Club grabbed its second gavel in a row (and ARRL's W1ZDP was tickled to present it to Prexie W4ZM at the National Convention's contest forum August 16 in Washington). In a determined bid, Northern California DX Club forged ahead into second place in the standings with a hair over five million, as Philly's Frankford Radio Club held firm in the show spot. Thirty-nine clubs were in there fighting and the calls of their 30 c.w. and 17 voice certificate winners can be seen in the accompanying box tabulation.

Disqualifications

In accordance with contest rule 14, the following have been deemed ineligible for score listings and awards. In each case disqualification is for violation of Sections 12.111, 12.113, 12.23 or 12.133 of the amateur regulations as confirmed by one FCC citation or two accredited ARRL Official Observer measurements: *C.w.* — K2OEA, K6IYJ, W9EXY, KN9HLW; *phone* — W2DJT, W2VCZ, W3ROA, W4OM, K4PHY, K6CTV, K6IAP, K6OHJ, W8BMX, W8GKB, W9IRH, K9BLY, KP4VA.

Twenty-Fourth ARRL International DX Competition

Operator of the station first-listed in each section and country is winner for that area. . . . The multiplier used by each station in determining score is given with the score — in the case of U. S.-Canada this is the total of the countries worked on each frequency-band used; in the case of non-W/K/VE/VO entries it is the total of the U. S.-Canada districts worked on each band. . . . The total number of contacts is listed next. . . . The letters A, B, and C approximate the input to the final stage at each station; A indicates power up to and including 150 watts; B indicates over 150 watts, up to and including 500 watts; C indicates over 500 watts. . . . The total operating time to the nearest hour is given for each station and is the last figure following the score. . . . Example of listings: W3ECR 478,380-268-595-C-46, or final score 478,380; multiplier 268; 595 contacts; power over 500 watts; total operating time 46 hours. . . . Stations manned by more than one operator are grouped in order of score following single-operator listings in each section or country tabulation; calls of participants at multi-operator stations are listed in parentheses. . . . In sections or countries where three or more multiple-operator entries appear, the top-scoring station is being awarded a certificate.

C. W. SCORES

ATLANTIC DIVISION

Eastern Pennsylvania

W3ECR....478,380-268-595- C-46
W3DBX....342,124-217-524-AB-75
W3ALB....253,260-210-402- C-40
W3LEZ....232,245-195-397- C-60
W3GHS....213,120-192-370- B-36
W3KT.....160,776-154-348- C- –
W3EQA....146,400-160-305- C-45
W3WPG....113,805-135-281- C-78
W3MLW....88,972-118-254- B-60
W3NGV....70,288-104-224- C-39
W3IMV....64,092- 98-218- B-24
W3GHD....59,220- 94-210-AB- –
W3CTJ....49,020- 95-172- C-20
W3ARK....46,248- 94-164- B-27
W3GRS....40,924- 84-162- A-16
W3ADZ....38,622- 82-157- C-18
W3KDF....33,957- 77-147-BC- –
W3VDV....32,766- 86-127- B-40
W3EAN....28,080- 72-130- C-19
W3RIP....26,412- 71-124- A-21
W3QLW....16,371- 51-107- A-44
W3EVW....14,535- 51- 95- C-14
W3SOH....11,454- 46- 83- A-10
W3CHH.....6720- 40- 56-BC- –
W3MDO.....4752- 33- 48-AB- –
W3HUS.....4371- 31- 47- C-10
W3ANZ.....4176- 29- 48- B-16
W3GHM.....3865- 28- 46- C-10
W3RCV.....1575- 21- 25- B- 8
W3CMN.....1512- 18- 28- B-16
W3MDE.....714- 14- 17- B- –
W3OCU.....585- 13- 15- C- 2
KN3BGM.....138- 6- 8- A-17
W3BES (W3s BES GXP GYP)
575,064-294-652- C-90
W3CGS (W3s CGS WJD)
253,890-195-434- C-60
W3KFQ (W3s KFQ QKV)
216,942-173-418- C-70
W3BB (W3s BB CSS)
92,250-125-246- C- –

W3BYX (W3s BYX DAO)
81,066-118-229-AB-90
W3QMZ (K2JXX, W3QMZ)
33,945- 73-155- C-62
W3IIF (W3s IIF IKB)
3990- 30- 45- B-15

Md.-Del.-D. C.

W3LOE...922,355-365-854- C-89
W3BVN...668,118-318-701- C-64
W3GRF...407,778-266-511- C-43
W3MSR...352,758-227-518- C-80
W3MSK...350,595-245-477- C-40
W3EIS...253,368-207-408- C-66
W3IYE...225,762-197-382- C-46
K3CBQ...198,258-173-382- C-77
W3TMZ...170,859-169-337- C-25
W3PYW...132,519-163-271- C-60
W3ZQ....106,038-137-258- C-46
K3CIO....87,375-125-233- B-48
W3KDP....85,344-127-224- C- -
W3FRZ....38,700- 86-150- B-50
W3EPR....24,960- 80-104- C-22
W3WG.....20,085- 65-103- A-30
W3QQL....16,380- 70- 78- A-20
W3BKE....15,834- 58- 91- B-24
W3AEL....14,976- 48-104- C-10
W3HVM....9180- 45- 68- A-12
W3RNY....8160- 40- 68- C-40
W3JZY....5184- 36- 48- A-10
W3VTH....3240- 30- 36- A- -
W3VD.....756- 14- 18- A-16
W3YHR....675- 15- 15- A- 6
W3GRO....147- 7- 7- A- 5
W3MFJ (W3MFJ, W4TKR)
596,835-299-665- C-85
W3FYS (W3FYS, W6HOH)
508,446-282-601-AC-90
W3WV (W3s PZW WV)
253,800-200-423- C-49
W3DRD (W3s DRD IYE)
211,455-185-381-BC- -
W3CPB (W3s CPB WSE)
157 368-166-316- B-52
W3GQF (W3s KHA UGE WZL)
72,510-124-195- C-34

Southern New Jersey

W2GGL...159,630-170-313-BC-60
W2TE....130,500-145-300- B-32
W2SDB....66,930-115-194- C-40
K2ERC....41,580-84-165-ABC-25
W2FXN....33,867- 71-159- B-22
K2MIO....32,496- 69-128- C-16
K2CPR....29,988- 84-119- A-40
W2QKJ....28,560- 68-140- B-48
W2QDY....21,528- 69-104- A-25
W2BUI....17,664- 64- 92- A 18
W2UA.....11,466- 42- 91- C-28
K2SWZ.....7869- 43- 61- A-25
W2HDW....3024- 28- 36- A- 6
K2MPB....2394- 21- 38-AB- 8
K2GHM....1920- 20- 32- A-15
K2PPV.....1512- 18- 28- - -
W2ILN.....1458- 18- 27- A- 5
K2AIM.....810- 15- 18- A- -
W2BLV.....48- 4- 4- A- 2
W2PAU (W2s ESX PAU)
58,140-102-190- C-36

Western New York

W2FBA...294,036-214-458- B-47
W2SAW...256,710-199-430- C-80
W2PTI....232,192-202-382- B-60
W2TQR...210,714-173-406- A-60
K2VFR...208,980-180-387- B-55
W2YRH...135,072-134-336- C-50
W2RJH...134,472-156-288- C-56
W2JHS...130,536-147-296- C-75
W2QJM....66,435-103-215-AB-25
W2GGE....50,197-101-167-BC- -
K2PMZ....48,547- 93-168- B-52
K2PFC....42,375- 85-165- B-28
W2SSC....23,814- 81- 98- B- 8
K2FG.....20,460- 62-112-AB-34
W2AXR....14,040- 52- 90- C-36
W2TXB....11,439- 41- 93- C- -
W2PZB.....7503- 41- 61- B-10
W2TKO.....7380- 41- 60- A-13
W2DKS.....4050- 30- 45- B-10
K2GXN.....3675- 25- 49- A-20
W2ZCZ.....2808- 24- 39- C-19
W2AW......2475- 25- 33- B- 5
W2CNT.....1782- 22- 37- C- 9
W2FXA.....1134- 18- 21- A- 2
W2PZI.....756- 14- 18- B- 3
W2PDB.....468- 12- 13- B- 3
W2TOP.....135- 5- 9- A- 5

Western Pennsylvania

W3ZAO...237,518-206-385- B-56
W3KTW....80,850-110-245- B-33
W3RNQ....45,000- 75-200- B-5
W3PZC....25,410- 70-121- A-35
W3NCF.....9981- 52- 64- B-21
W3ZWT.....9618- 42- 77- A-18
W3MBN.....8133- 39- 69- A-22
W3KQD.....2400- 20- 40- A- 9
W3LOS.....1767- 19- 31- A-26
W3KNQ.....450- 10- 15- A-10
W3JHT.....80- 5- 6- A-10
W3AOH (W3s AOH LMM MVQ QJJ, K3DKD)
728,931-337-721- C-90
W3VKD (W3s VKD WGH)
185,370-167-370- C-36

CENTRAL DIVISION

Illinois

W9HUZ...539,850-305-590- C-80
W9GRV...327,321-243-449- C-64
W9ERU...284,919-219-436- C-75
W9FKC...257,706-206-417- C-48
W9NII....132,342-161-274- B-65
W9WFS...111,618-159-234- B-56
W9WIO....77,490-126-205-BC-34
W9QIY....69,110-123-190- B-57
W9PVA....29,295- 63-155- B-40
W9JJN....28,782- 82-117- A-32
W9MUJ....27,264- 71-128-AB-33
W9YYG....24,120- 67-120- B- -
W9KMN....23,040- 80- 96- A-12
W9FVU....21,300- 71-100- B-23
W9YYF....21,000- 70-100- A-15
W9DWQ....17,877- 59-101- A-30
W9UBI....17,271- 57-101- B-33
W9PNE...16,926- 62- 91- B-28
W9ZRG...14,040- 52-90-ABC-17
W9WYB...12,087- 51- 79-AC-25
W9EU.....10,710- 42- 85- C-10
W9LQF....10,224- 48- 71- A-16
W9MZP.....6562- 39- 56- B-23
W9ZSQ.....6105- 37- 55- A- -
K9DCF.....5733- 39- 49- B-14
W9SCB.....4902- 38- 43- A-30
W9KHG.....4536- 28- 54- B- 8
K9GTK.....3078- 27- 38- B- -
W9AZP.....2415- 23- 36- B- 9
W9FNX.....2160- 24- 30- A-16
W9LNQ.....945- 15- 21- A- 8
W9EVX.....924- 14- 22- A- 8
W9LNF.....714- 14- 17- A-12
W9GIH.....429- 11- 13- A-15
W9CNF.....324- 9- 12- A- -
K9CDK.....288- 8- 12- B- 4
K9CYV.....198- 6- 11- A-10
K9IFB.....147- 7- 7- A-12
W9ALI.....126- 6- 7- A- 2
K9BLY.....108- 6- 6- A- 4
W9IZ.....12- 2- 2- - -
KN9JDP.....3- 1- 1- A-20
W9IRH (W9s FVT IRH)
294,372-222-442-AC-78
W9OFR (W9s RCJ REA UBI YRH YYG, K9ATZ)
68,688-108-212- B-93

Indiana

W9UKG...103,635-141-215-BC- -
K9CLO....102,960-132-260- C-64
W9NH.....23,562- 77-102-AB- -
K9DWK....15,132- 52- 97- A-37
W9WCE...13,724- 49- 89- B-23
W9FYM.....3264- 32- 34-BC-15
W9MUR.....3192- 28- 38- B- -
W9PKE.....1764- 21- 28- A-13
K9CWD.....960- 16- 20- A-18
KN9IGP.....3- 1- 1- A- -

Wisconsin

W9LNM...491,604-284-577- C-75
W9GIL....280,511-217-431- C-75
W9QYW...76,693-121-211- A-76
W9YNB....62,640-116-180-AC-41
W9DYG...41,710- 97-145- B-48
W9YAE....41,292- 93-148- B-30
W9KXK....36,240- 80-151- B-51
W9VZP....33,078- 74-149- A-35
W9GWS....30,096- 76-132- B-21
W9RKP....27,648- 72-128- B-40
W9RH.....23,040- 60-128- C- -
W9LSV....16,830- 55-102- A- -
W9FDX....15,553- 63- 77- C- -
K9CAN....10,404- 51- 68- C-10
W9MBF...10,200- 50- 68- A-14
W9PQA.....4386- 34- 43- A- -
W9YDQ.....2142- 21- 34- A- -
K9ELT.....1848- 22- 28- A- -
W9MDG.....360- 10- 12- B- 5
W9VQG.....189- 7- 9- B- 6
W9YT (W5YSC, W0s DIK LPL SZR ZQA, K9EZY)
127,872-148-288-BC-57

DAKOTA DIVISION

North Dakota

WØEOZ....23,616- 64-123- C-17
WØSDN....13,833- 53- 87- A-47

South Dakota

WØBLZ...102,060-135-252- C-35
WØSMV.....3567- 29- 41-AB-25
WØFOQ.....1584- 16- 33- A-21
WØWUU.....126- 6- 7- B- 3

Minnesota

WØMPW..177,561-181-237- C- -
WØYCR...157,410-160-328- C-66
WØJSN....52,104-104-167- B-50
WØVIP.....3600- 30- 40- B- -
WØRZU.....1539- 19- 27- A-13

DELTA DIVISION

Arkansas

W5MY.....12,948- 52- 83- C-12
K5HOL.....7515- 45- 57- B-24
K5FJQ.....3393- 29- 39- A-20
W5BYJ.....1560- 20- 26- A-12
K5GRT.....259- 7- 13- B- 7

Louisiana

W5KC....211,470-190-371- C-55
W5PYU....78,084-108-241- B-60
W5BUK....58,736-107-183-BC-70
W5NOP....12,408- 44- 94- C-16
W5CEW.....5292- 36- 49- C- -
W5EKF.....3726- 27- 46- B-14

Mississippi

W5CKY...283,176-228-414 -C-45
K5BKK.....261- 9- 11- A- 8

Tennessee

K4LPW...238,008-188-422- B-70
W4NBV...216,504-194-372- C-50
K4PHY.....192- 8- 8- A- 8
W4GQL.....27- 3- 3- B- -

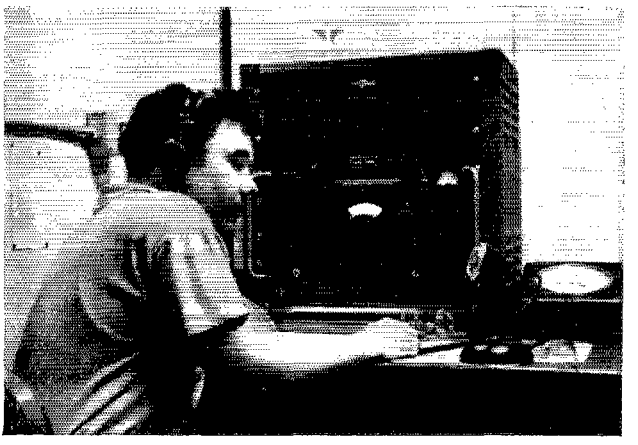
GREAT LAKES DIVISION

Kentucky

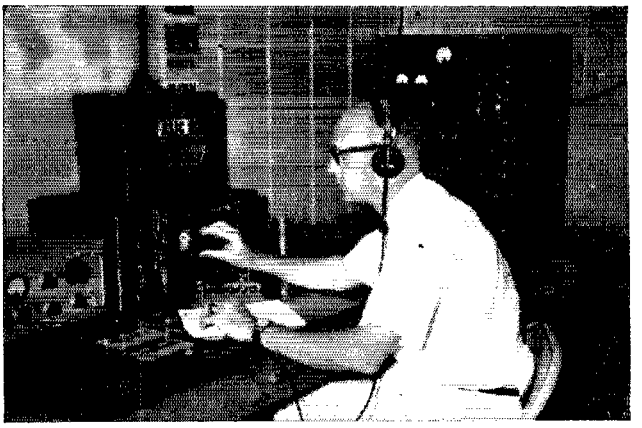
W4EPA...105,903-123-287-AC-30
W4JBQ....68 040-105-216- C-30
W4OMW...15,930- 59- 90- B-19
W4OES.....27- 3- 3- A- 4
K4OCN (W4OMW, K4OCN)
18,522- 63- 98- C-25

Michigan

W8OUT...313,941-227-461- C-69
W8UPN...287,004-222-429- C-51
W8DUS...271,488-224-401- C-80
W8TUO...112,038-142-267-BC-47
W8ONA....60,816-104-195- B-44
W8WVU....47,808- 96-166- A-55
W8SZS.....35,880- 92-130- B-20



KL7CDF, ex-W9KLD, ran a full gallon to a 14-Mc. rotary and a long wire on four other bands to garner an all-time high Alaskan code tally of 404,712.



Among the best Asians catchable was Thailand's HS1C who brasspounded his way to 11,016 points.

W8OOR....19,647- 59-111- B-49
W8MCC....13,050- 58- 75- A-17
W8QQH....6840- 40- 57- B-25
W8KX.....5940- 36- 55- A- -
W8YBH....2112- 22- 32- A-36
W8IZS....2001- 23- 29- A- 7
K8GTI.....585- 13- 15- A- 8
W8SPO.....90- 5- 6- B- 4
W8QZR (W8QZR, K8BQD)
462- 11- 14- A-13

Ohio

W8BKP...538,986-287-626-BC-76
W8EV....204,660-180-379-BC-47
W8FGX...177,847-179-331- C-20
W8BOJ...159,830-173-310- C-28
W8SDD..134,946-147-306-ABC-34
W8ZJM...126,882-159-266- B-42
W8BTI....103,356-132-261- C-20
W8ETU...100,035-135-247-BC-45
W8AJW....92,224-131-236- A-39
W8IBX....60,830-110-185- B-35
W8JSU....43,296- 88-164- C-23
W8YPT....40,449- 97-139- A-26
W8NP.....35,190- 85-138- B-39
W8GKB....26,499- 73-121- A- -
W8BQV....20,196- 66-102- A-30
W8ELB....20,085- 65-103- B-34
W8TTN....17,325- 55-105- B- -
W8LOF....17,298- 62- 93- A-15
W8KC.....13,083- 49- 80- B-20
W8PCS....12,960- 54- 80- B-13
W8NWR....11,664- 48- 81- A-20
W8GJG....11,385- 55- 69- B-12
W8UMA....10,592- 46- 84-AC-30
W8DWP....10,800- 48- 75- A-45
W8GMK....10,212- 46- 74- A-25
W8ZNQ.....9447- 47- 67- B-27
W8FDC.....8775- 39- 75- A-38
W8BMX.....8307- 39 -71- A-25
W8FEM.....7293- 39- 63-AB- -
W8FIT.....3510- 30- 39- A-20
W8LVH.....2664- 24- 37- A-18
W8OG......1901- 23- 29- B- 3
W8VOW.....1800- 20- 30- A-18
W8KMP.....1782- 22- 27- A- 6
K8ETK.....1710- 19- 30- A-12
W8RTF.....1653- 19- 29- B- 6
W8VZE.....1188- 18- 22- B- 9
W8BVF.....1122- 17- 22- A- -
W8PTG.....828- 12- 23- B-12
W8BUM.....810- 15- 18- B- 2
K8AAG.....630- 14- 15- A- -
W8AJH.....561- 11- 17- A- 5
W8LQQ.....297- 9- 11- A-10
W8QHW.....192- 8- 8- A- 4
K8EJL.....192- 8- 8- A- 8

HUDSON DIVISION

Eastern New York

W2BYP....402,204-242-554- C-75
W2BBV....306,774-207-494- C-80
W2HO.....212,940-182-390- C-71
W2FBS....150,192-149-336- C-47
W2AWF....131,772-139-316-BC-58
W2HSZ....130,200-155-280- B-50
W2VCB....66,690-118-190-AC-69
W2CJM....43,362- 99-146- B-36
W2NCI....23,320- 60-124- B-38
W2LL.....11,868- 45- 87- B-38
W2IP.....714- 14- 17- A- -
K2IRO.....630- 14- 15- A- 3
K2YFI.....24- 3- 3- A- 3

N. Y. C.—L. I.

W2WZ....565,812-279-676- C-58
W2HMJ...358,974-222-539-AC-61
W2AYJ....296,877-211-469- B-50
K2YOR....228,672-192-397- C-69
K2OPJ....169,248-172-328- A-55
W2SUC....144,666-141-342- C-65
W2OBX....134,100-150-298- A-54
W2MUM...108,030-130-277- A-53
W2IRV....89,670-122-245- B-65
W2BRV....63,555- 95-223- B- -
W2NQZ....59,832-108-185-AC-47
K2BSM....59,700-100-199- C-35
K2OLS....52,920- 90-197- C-54
W2AZS....51,255- 85-201- C-32
W2WMG...44,322- 83-178- C-40
W2HAQ....39,858- 73-182- B-28
K2DGT....22,713- 67-113- C-16
W2DUS....22,320- 62-120- A-35
W2AWH....14,280- 56- 85- A-40
W2ICO....14,259- 49- 97- B- -
W2ESO....12,180- 60- 68-ABC-14
K2SIF.....5841- 33- 59- A-12
W2HAE....4278- 31- 46- A-16
K2PRP.....4200- 28- 50- A-21
K2RUR.....3906- 21- 42- A-20
W2JB......3780- 28- 45- B- 6
K2CMV.....3483- 27- 43- B- 8
W2BYN.....2520- 28- 30- B- 8
W2JOA.....1320- 20- 22- A- 6
K2TVP.....868- 28- 31- A- -
W2JCA.....612- 12- 17- - -
K2PXN.....315- 7- 15- A-18
K2UBC.....270- 9- 10- A-30
K2ZHH.....72- 4- 6- A- 2
K2OEG.....27- 3- 3- A- 3
K2VNS.....27- 3- 3- A- 2
W2LRJ.....12- 2- 2- B- 4
W2MYK.....12- 2- 2- A- 5

Northern New Jersey

K2DCA...589,057-301-655- C-89
W2GUM...401,506-238-563- C-80
W2EQS....233,496-207-376-AC-73
W2JVU....227,562-194-391- C-60
W2TQC....200,910-185-362- B-70
W2GJD....170,496-148-384- C-60
W2CWK...136,245-155-293- B-36
K2KFP....112,344-151-248- A-50
W2YTH....111,744-128-291- C-28
W2HZY....95,760-133-240- C-36
W2LYO....92,460-134-230- A-65
W2AQT....49,290-106-155- B-39
K2BJA....48,870- 90-181- B-55
W2BVN....38,340- 90-142- A- -
W2YLS....27,720- 84-110- B-42
K2DOB....25,876- 72-120-BC-26
W2CGJ....22,644- 74-102- C-22
W2EHN....22,302- 59-126-AB-35
W2HTX....16,470- 62-90-AB-29
W2DJT....16,452- 56- 99- A-17
W2ZXL....11,781- 51- 77- B- -
W2LSX.....8190- 42- 65- B-15
W2KIN.....6090- 35- 58- A- 9
W2CVW.....3888- 27- 48- B- -
K2CSC.....3534- 31- 38- -10
K2QAR.....2070- 23- 30- A-20
W2OWX.....1986- 21- 32- A-16
W2FZY.....1449- 21- 23- B-13
K2PTU.....288- 8- 12- B- 2
W2MBY.....27- 3- 3- A- 6
K2QHL.....12- 2- 3- - -
K2GHV (W2MDF, K2s GHV QZR)...113,022-138-273- -96

MIDWEST DIVISION

Iowa

WØNUC...416,556-261-532- C-92
WØFDL....56,640-118-160- C-31
WØZYB....25,200- 70-120- B-47
KØDQI.....6498- 38- 57- A-38
WØDSP.....3960- 30- 44- C-12
WØGXQ.....2700- 25- 36- A- 9
WØDVZ.....720- 15- 16- C- 5
KØLFA.....612- 12- 17- A-14
WØLNI (WØs DSP WDK YSE, KØs CZQ DPH)
31,995- 79-135- C-53
KØGXR (KØs CLQ ESH GXR)
21,321- 69-103- C-60
WØWDK (WØWDK, KØCZQ)
2394- 19- 42- B-24

Kansas

WØGDH..349,170-226-515- C-76
WØDAE...257,094-207-414- C-58
WØVBK...108,468-131-276- C-68
WØVFE....16,920- 60- 94- A-28
WØGBP.....1248- 16- 26- B-12
KØIGN/Ø.....48- 4- 4- A- 4
KØCVN/Ø.....27- 3- 3- A- 3

Missouri

WØBMM/Ø
111,384-136-273- C-60
WØGUV....72,720-120-202- C-40
WØPGH....68,900-106-217-AB-49
WØDU.....55,160- 96-195- B-50
WØAJU....33,129- 81-137- C-30
WØGCI....27,720- 79-117- A-33
WØETV....21,060- 65-108- A-18
WØQDF....11,607- 53- 73- C- 8
WØMCX....8760- 40- 73- A-14
KNØLTB....5508- 36- 51- A-30
KØITF.....3325- 25- 43- C-13
WØPME.....1368- 19- 21- B- 8
KØLFY.....918- 17- 18- A-14
WØYKE (K5LFD, WØQWS, KØIFQ)..53,410- 98-182- A-48

Nebraska

WØWLO.....5565- 35- 53- A-26

NEW ENGLAND DIVISION

Connecticut

W1NMP...574,948-292-657- C-79
W1BIH....553,185-285-652- C-70
W1ODW...299,676-221-452- C-70
W1VG[2]...253,539-197-429- B- -
W1TX....162,624-176-308-BC-46
W1OJR....157,080-170-308-AB-50
W1ZDP[2]...122,553-153-268- A-47
W1CSC....115,902-135-282- B-50
W1AW[2,3]...104,544-144-242- C-21
W1LVQ[2]....70,400-128-185- B-33
W1NJM[2]....20,412- 63-108- B-10
W1IKE[2]....12,264- 56- 73- B-10
W1NLM....11,094- 43- 86- B-20
W1HV.....4059- 33- 31- A-11
W1JKS.....624- 13- 16- A- 5
W1RST.....468- 12- 13- B- 4
W1FTX.....462- 11- 14- B- 3
W1OOS.....126- 6- 7- B-10
W1BDI[2].....48- 4- 4- A- 1
W1SK.....27- 3- 3- A- 3

Maine

K1AHS....11,799- 57- 71- C-33

Eastern Massachusetts

W1AXA...330,336-222-496- C-67
W1AZY....306,720-213-480- B-60
W1ADM...296,916-218-454-BC-60
W1BOD....294,256-216-440- C-54
W1HZ.....274,050-210-435- C-62
W1QJR....198,576-168-394-BC-36
W1CTW....74,340-105-236- C- -
W1NS.....54,237-101-179-AB-29
W1KXP....50,652- 84-210- A-31
W1AJO....48,804- 98-166- A-37
W1PEG....35,880- 78-157-ABC-5
W1AQE....33,696- 72-156- A-24
W1TW.....30,000-100-100- C-21
W1NIY....22,557- 73-103- B-26
W1BQL....17,574- 58-101- A-22
W1UUU....15,876- 54- 98- B-30
W1BU[4].....10,956- 44- 83- C-48
W1DYV.....9768- 44- 74- C- -
W1HPL.....9116- 43- 72- B-21
W1DDO.....9027- 51- 59- A-13
W1LQQ.....7830- 45- 58- A- 7
W1KT.....7626- 41- 62- B-15
W1JSM.....6156- 36- 57- A-13
W1NQT.....2772- 21- 44- A-20
W1PLJ.....189- 7- 9- A-15
W1JMS.....36- 3- 4- B- -
W1NJL.....3- 1- 1- A- -
W1AF (W1VGX, K2DLJ, W8-HIF, KØBIB)
16,920- 60- 94-BC-44

Western Massachusetts

W1JYH...466,200-280-555- C-65
W1EOB....287,754-241-398- C-50
W1EFQ....85,790-115-249- C-38
W1WF.....1800- 20- 30- A- 7
K1DXW.....1587- 23- 23- B-18
KN1DFC.....40- 4- 4- A- -

New Hampshire

W1GET...330,450-234-483- B-64
W1FZ.....224,154-189-396- C- -
W1ARR....15,624- 62- 84- A- 8
W1HKA....8442- 42- 67- A- -

Rhode Island

W1CJH...148,800-155-320 C-55
W1LQA....17,952- 58- 98 - A-21
W1AWE....13,959- 47- 99- - -

W1KYK.....7236- 36- 67- B- 8
W1HFC.....315- 7- 15- A- 8

NORTHWESTERN DIVISION

Idaho

W7IY.....1008- 14- 24- A-40

Montana

W7JLD.....4284- 28- 51- A-22

Oregon

W7OCL...129,078-142-303- B-75
W7JLU....43,596- 84-173-AC-33
W7SNA....10,800- 45- 80- B-48
W7TDT.....3300- 25- 44- C-30
W7TML (W7s TML WJB)
148,584-151-328- C-84

Washington

W7PQE...189,700-175-362- C-60
W7BGH...160,320-167-320- C-54
W7CNM...52,734- 94-187- B-50
W7ESN....41,574- 82-169- A-44
W7AJS....29,970- 74-135- C-40
W7BUL....26,331- 67-131- B-65
W7GWD...23,316- 58-134- A-24
W7CMO...16,848- 48-117- A-32
W7LEV....14,688- 51- 96- A-20
W7JC.....11,985- 47- 85- A-25
W7YAQ....11,205- 45- 83- A-13
W7EMY....10,824- 44- 82-AB-17
W7CAB.....8424- 36- 78- B- -
W7FZB.....2574- 22- 39- A-13
W7ZVY.....336- 8- 14- A- -

PACIFIC DIVISION

Nevada

W7KEV....63,630-105-202- B-45
W7TVF....12,300- 41-100- B-25
W7YKQ....4200- 28- 50-ABC-20
W7VIU.....3900- 25- 52- B-17

Santa Clara Valley

W6FOZ...313,092-223-468- C-67
W6HOC...258,000-215-400- C-58
W6JWT...223,552-179-416- C-73
W6SR....222,855-179-415- C-74
W6UF....164,049-149-367- C-58
K6ENX...110,484-132-279- C-42
W6ASH....98,454-122-269- C-45
K6DCE....73,710-105-234- C-55
K6LSG....64,896-104-208- A-48
W6QDE....59,388- 98-202-AC-35
W6KNM....31,104- 72-144- A-21
W6BAX....31,098- 71-146- C-14
W6ZZ.....8772- 43- 68- A-31
W6RFF.....8532- 36- 79-BC-18
K6HOR.....6936- 34- 69- A-18
K6CQM.....2961- 21- 47- A-25
W6JKJ.....2325- 25- 31-AC- -
W6CLZ.....2268- 18- 42- B-15
K6UYZ.....1488- 16- 31-BC-26
W6GMF.....630- 14- 15- B- 4

East Bay

W6TT....426,096-269-528- C-85
W6LDD...328,725-225-487-AC-88
W6KG....190,575-175-363- C-66
W6GIZ....173,010-158-365- C- -
W6RCC....131,652-138-318- C-75
K6GS.....120,690-135-298- C- -
W6KEK.103,416-124-278-ABC-45
W6BUY....100,965-127-265- C-59
W6LW.....72,546-107-226- C-48
W6KXG....66,300-100-221- C-35
W6VJW ..50,184-102-164-AC-28
W6IPH....46,719- 87-179- C-30
K6QHC...38,760- 76-170-ABC-32
W6CTL....32,696- 72-156- C-20
W6FLT....29,376- 64-153- C-36
K6QXF....26,304- 64-137-AC-40
W6PQW....21,924- 58-126- B-35
W6ZSS.....16,170- 49-110- A-57
W6TI.....10,080- 48- 70- C- 9
W6YUS.....560- 35- 72- A-15
W6EJA.....6300- 30- 70- B-12
W6AW.....4472- 26- 58- A-32
K6LZI.....1632- 17- 32- -

San Francisco

W6WB....187,878-173-362- - -
W6ATO...138,474-147-314- C-83
W6GPB....90,321-119-253- C- -
W6GQK....67,038-106-211- C-58
W6GWQ....46,740- 95-164- C-46
W6MUF....43,824- 83-176- C-40
W6RZS....21,600- 60-120- B-32
K6EIE.....16,464- 56- 98- A-30
W6YC.....8856- 41- 72- B-14
K6CNV.....324- 9- 12- A- 2
W6BIP (W6s BIP HVN)
101,001-131-257- C-21
K6ANP (W6PZA, K6ANP)
28,275- 65-145- A-88
K6KTP (K6s KTP LRN)
405- 9- 15- A- 8

Sacramento Valley

K6EDE...182,397-163-373- C-85
K6SXA...124,848-144-289- A-65
W6SIA....123,015-139-295- C-51
W6NRZ....106,368-128-277- C-64
W6NOZ....106,110-131-270- C-61
W6DBP....43,350- 85-170-AC-24
W6AHZ....38,010- 70-181- C-37
W6EFM....32,400- 80-135- C-21
W6NHA....17,100- 50-114- C-19
W6OWM....14,688- 51- 96- C-17
W6CEI....12,825- 57- 75-BC-21
W6BIL.....4235- 35- 45- C-18
W6OKK.....3159- 27- 39- C-12
W6LGD.....768- 16- 16- - -
K6RFT.....264- 8- 11- B-12

San Joaquin Valley

W6BYH...123,216-136-302-BC-25
W6BVM....46,719- 87-179- - -
K6AYA....40,848- 74-184-AC-50
W6EFV....29,601- 69-143- C-17
W6AFH.....8160- 34- 80- C-29
W6EUH.....3146- 26- 41- B-13
K6LZU.....1683- 17- 33- A-23
W6WWD (W6s BAX WWD)
502,200-279-600- C-82

ROANOKE DIVISION

North Carolina

W4AIX...152,046-162-311- C-70
K4HXF....62,658-118-177- C-25
K4QIJ....49,383- 93-177- B-42
W4LYV....24,090- 73-110- C-15
K4IEX....13,992- 53- 88- A-76
W4EFX.....9552- 48- 67- B-20
K4SXR.....6498- 38- 57- A-29
K4MWB.....3726- 27- 46- A-14

South Carolina

W4AIS.....70,774-114-207- C-24

Virginia

W4KFC...662,936-346-640-AC-53
K4BZL....199,092-188-353- C-62
W4PNK...193,725-175-369- C-40
W4JAT....192,738-182-353- B-59
K4GMX...166,770-170-327- C-70
W4CXA...160,683-158-339- C-56
W4PRO...139,050-150-309- A-51
W4GF....113,022-138-273- B-78
W4CC.....78,975-135-195- C-23
W4NH.....41,096- 88-149-AC-30
W4HZZ....36,168- 88-137- B-32
W4OM.....21,696- 64-113- C- -
K4MXF....17,388- 63- 92-AB-44
W4LK.....14,040- 60- 78- B- -
W4WBC....13,833- 53- 87- B-36
W4ZM.....8795- 45- 65- A- 9
K4ORQ.....6222- 34- 61- A-24
W4KMS....4692- 34- 46- - -
W4ALJ....3120- 26- 40- B-14
K4KWW....867- 17- 17- A- 3
K4ELG.....798- 14- 19- A- -
W4WSF.....612- 12- 17- A- 4
K4EJG.....363- 11- 11- A-14
K4BRI.....75- 5- 5- C- 7
KN4OKZ.....3- 1- 1- A- 2
W4YHD (W1YFM, W4YHD
KN4TTG)
511,128-279-611- C-85

West Virginia

W8UMR...65,805-107-205- A-23
W8LSJ....10,950- 50- 73- A-18
W8FNI.....1460- 20- 25-AB-15
W8CDV....1134- 18- 21- B-14

ROCKY MOUNTAIN DIVISION

Colorado

WØCDP...148,404-166-298- B-48
WØSBE....55,800-100-186- B-55
KØEPK....33,449- 83-135- B-44
WØQPO.....528- 11- 16- B- 4

Utah

W7BAJ....26,112- 64-136- A-45
W7HLX....2205- 21- 35- A-16

New Mexico

W5CK....121,716-106-207- A-41
K5LXE.....6840- 40- 57- A-22
W5ECP.....1728- 16- 38- A- 9
W5LEF.....1395- 15- 31- B- 9

Wyoming

W7ABO.....2451- 19- 43- B-19

SOUTHEASTERN DIVISION

Alabama

W4ENO....52,569- 99-177- C-36
W4DS.....12,798- 54- 79- B-47
W4WOG.....6270- 38- 55- A-14
K4BDJ.....1656- 23- 28- B-21
K4RJM.....572- 13- 15- A- 4

Eastern Florida

W4BJ.....323,568-214-504- C-84
W4LVV....296,964-219-452- C-65
W4AZK....135,840-160-283-AC-51
W4WHK..109,800-150-244- B-70
W4EIE....23,384- 74-106- B-47
W4IEH....91,254-134-227- C-56
K4DRO....16,380- 60- 91- A-20
W4DXL.....8370- 45- 62- A-30
W4FNR.....8352- 48- 58- A-30
W4FFF.....4185- 31- 45- B- 8
W4ZQK.....1827- 21- 29- A-24
W4EFO.....1026- 18- 19- A-10
W4JEW.....765- 15- 17- A-10
K4CTU (K4s CTU GHA SCT)
369,534-242-509- C-70
K4NCN (W4KXV, KN8JIF,
W9GHX)
136,800-160-285- C-80

Western Florida

W4BGO...441,180-258-570- C-75
W4BFR....64,170-115-186- B-40
W4BYU....26,448- 76-116- C-13
K4HRG....16,638- 59- 94- C-13
W4KR.....16,020- 60- 89- A-21
W4ZKU....14,469- 53- 91- A-16
W4JH.....4515- 35- 43- B-10
K4PBK.....2625- 25- 36- B-25
K4HIG.....2376- 22- 36- B-18
W4LLD.....975- 13- 25- A-12
K4JWL.....921- 16- 19- A-14

SOUTHWESTERN DIVISION

Los Angeles

W6ITA...658,698-311-706- C-87
K6EWL...519,588-283-615- C-88
W6FSJ....295,320-214-460- - -
W6IBD/6..241,605-195-413- C-80
W6TZD....234,060-188-415- C-59
W6ANN...207,090-177-390- C-68
W6NKR...153,075-157-325- C-80
K6CTV....111,510-135-276- C-49
W6HAL....77,280-115-224- B-64
W6MKL....75,435-107-235- C-41
W6LWY....74,520-108-230- B-70
W6ZMX....70,959-109-217- B-65
W6WWQ....55,014-106-173- C-62
W6CIB.....45,924- 86-178- C- -
W6CYV.....40,587- 83-163- C-31
K6IRK.....35,280- 80-147- C-26
W6ID.....25,738- 66-131- C-45
K6JBP....25,610- 65-132- B-38
W6CLL/6..23,768- 68-117- A-43
W6TBP....21,938- 59-124- C-21
W6AJJ....19,008- 64- 99- A-48
W6ETJ....18,150- 50-121- B-25
K6KII....17,976- 56-107- A-30
W6JST....17,577- 63- 93- C-20
W6FYN...14,337- 59- 81-AB-25
K6JIC.....13,677- 47- 97- B-50
K6OXU.....8880- 50- 74- B-24
W6VBX.....5021- 32- 53- B-13
W6JU.....4836- 31- 52- C-10
K6HKF.....4104- 24- 57- A- -
K6RUR.....3978- 34- 39- A-30
K6DDO.....1653- 19- 29- A- 6
K6IAP.....1638- 21- 26-BC-36
KN6ZXG.....216- 6- 12- A- -
W6CTO.....12- 2- 2- C- 1
K6EVR (W6s NJU UED VSS, K6s
EVR LGF)
612,600-300-682- C-96
W6AM (W6s AM KFV OZ)
336,960-234-484-AC-88
K6LTA (K6s BYB CEO DDO
ELL ELX HBA HKG LPJ)
163,680-160-341-AC-96
W6OSU (W6s MXN OSU UCX)
12,555- 45- 93- C-25

Arizona

W7CJZ....88,376-122-236- C-52
W7ATV....80,000-128-209- C-48
W7ENA....27,903- 71-131- A-25
K7BWH...18,603- 53-117- C-50

San Diego

W6ZVQ...286,974-214-447-AB-80
W6LRU...181,131-173-349- A-68
W6KSM...164,793-163-337-AC- -
W6JVA....146,454-154-317-AB-60
W6RAN...109,755-135-271-BC-53
W6AMO....79,920-111-240- B-58
W6CHV....52,128- 96-181- B-39
W6OME....46,656- 81-192- C-28
W6ISQ.....40,950- 75-182- B-27
W6CAE....38,836- 76-171-AC-23
K6TEQ.....29,748- 74-134- B-31
K6EC.....28,080- 72-130- B-27
W6MCY....27,930- 70-133- A-44
W6VNQ....24,990- 70-119- B- -
W6BKZ....24,918- 63-126- B-30
W6JH.....7881- 37- 71- B-21
W6BGF.....4560- 38- 40- B-19
W6WSV.....798- 14- 19-AB-14
K6VWL.....264- 8- 11- A-30
K6CQF.....18- 4- 4- B- 1
W6NW1 (W6s BLL HAW HLB
NDH NWI)
23,400- 60-130- C-30

Santa Barbara

W6ULS...188,964-174-362- C-60
W6YK....105,994-134-269- B-66
W6AGO....60,669-107-189- C-30
W6ALQ (W6s ALQ OHX)
266,706-198-149- C-87
W6PQJ (W6s JLZ PQJ)
6954- 38- 61-C-10
W6JTA (W6s JTA PRZ)
1023- 11- 31- A- 6

WEST GULF DIVISION

Northern Texas

W5RDL....91,500-122-250- C-50
W5QF.....64,746-109-198- A-40
W5GSE....43,344- 84-172- A-56
K5MBB....19,215- 61-105- B-15
W5WW.....6150- 41- 50- C-28
W5UVR.....3321- 27- 41- B-30
W5AWT.....1794- 23- 26- B- 8

Oklahoma

W5LW.....90,024-124-242- B-60
W5ALB.....8436- 37- 76- A-15

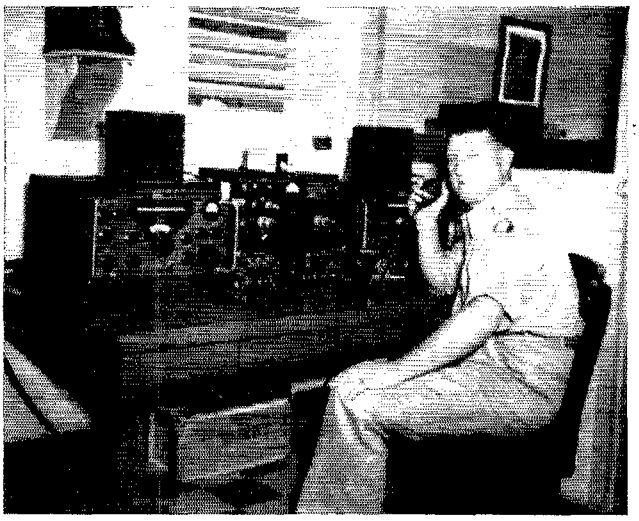
Southern Texas

W5ZD....149,307-157-317-BC-65
W5LBC....57,876-106-182- C-46
W5MCO....57,645-105-183- A-65
W5LGG....42,084- 81-167- A- -
W5BRR....28,542- 71-134- A-44
W5PM.....17,733- 59- 99- B-31
K5JZY.....8756- 44- 67- A-70
W5INJ.....2640- 22- 40- B-23
K5FJL.....90- 5- 6- A-18
W5IAH (W5s IAH OSW PRV TH,
K5KWC).66,552- 94-236- C-70

CANADIAN DIVISION

Maritime

VO2NA...24,924- 62-134- B-55



CO2USA netted 133,008 points and Cuba phone honors. Jack got 46 states the first week end but never did find Utah and Wyoming.

VE1EK....23,115- 67-115- A-29
VE1PQ....22,995- 73-105- B-24
VE1YB....15,687- 63- 83- B-30
VE1EP....14,535- 57- 85- C-13

Quebec

VE2WW...181,764-198-306- B-48
VE2BP....23,718- 67-118-AB- -
VE2AKF.....60- 4- 5- A- -

Ontario

VE3CCK..128,979-153-281- B-70
VE3DIF....53,088-112-158-BC-36
VE3QU....36,207- 81-149- B-29
VE3API....21,240- 59-120- A-25
VE3DT....14,280- 56- 85- B-60
VE3ADV.....297- 9- 11- A- 1
VE3GI.....189- 7- 9- A- 3
VE3RIT (VE3s BCJ CKA ELM)
1377- 17- 27- A-20

Manitoba

VE4XO....31,200- 80-130- B-30
VE4SX.....5184- 36- 48- A-17
VE4MF.....120- 5- 8- - -

Saskatchewan

VE5VL....38,236- 79-162- B-59
VE5PM.....1377- 17- 27-AB- 7

Alberta

VE6NX....26,625- 71-125-AB-36
VE6BY.....7257- 41- 59- A-24

British Columbia

VE7ZM...138,528-148-312- A-71
VE7YE.....3504- 24- 50- B-23

AFRICA

Angola

CR6AI...296,730- 70-1415- A-68
CR6DA...54,648- 36- 506- A-20

Belgian Congo

OQ5GU...157,092- 52-1015- A- -
OQ5IE....18,036- 27- 226- A- -

Canaries

EA8BF....171,867- 59-971- A-56
EA8BK....12,259- 23-179- A-22

Cape Verde

CR4AD....16,864- 31-184- A-13

French West Africa

FF8AJ.....74,037- 37-667- A- -
FF8BF.....2847- 13- 73- A- -

Gambia

ZD3G.....21,714- 22-329- A- -

Kenya

VQ4FK....57,165- 37-515- A-28
VQ4KPB.....6405- 21-105- A- -

Liberia

EL1K.....14,364- 28-173- A-21

Libya

5A5TK.....1199- 11- 37- A- 4

Madeira

CT3AB.....36,240- 40-302- A-17
CT3AV.....25,552- 27-193- A- 7

Morocco

CN8GU...820,620-94-2910- A-70
CN8IJ.....88,200- 40-747- A-45

Mozambique

CR7LU....30,804- 34-304- A-18
CR7CI.....1917- 9- 71- A- -

Southern Rhodesia

ZE2JS.....75,164- 43-583- A-63
ZE6JX.....56,430- 38-502- A-36
ZE4JY.....6786- 13-174- A- -

Spanish Morocco

EA9AP.....49,536- 43-386- A-24

Sudan

ST2AR.....31,875- 25-425- A- -

Union of South Africa

ZS6AJO....75,200- 47-534- A-33
ZS6AOU....11,732- 28-141- A-14
ZS1O.....3520- 22- 56- A- -
ZS6AMG.....819- 7- 39- A- -
ZS6UE.....546- 7- 26- A- -

ASIA

Asiatic Russian S.F.S.R.

UA9KCC...14,448- 16-303- A- -

India

VU2RM.....7999- 19-141- A-17
VU2JA.....420- 7- 20- A- -

Israel

4X4IL.....5202- 17-102- A- -

Japan

JA1VX....381,872-58-2198- C-74
JA3AB....200,150-50-1341- B-71
JA3LK....58,793- 37-530- A-57
JA2JW.....36,363- 31-391- A-34
JA3BB.....18,825- 25-253- B-17
JA0FZ/1...15,732- 18-293- A-24
JA8AA.....7785- 15-173- B- -
JA2WB.....6264- 12-174- A-33
JA3AA.....2678- 13- 71- C-19
JA6FB.....1844- 7- 88- A-13
JA1AFF....1743- 7- 85- A- -
JA1PS.....732- 4- 63- A- 7
JA1AA.....220- 4- 19- A- 5
JA2BL.....105- 5- 7- A- -
JA3MD.....18- 2- 8- A- 1

Lebanon

OD5BZ....18,321- 39-414- A-31

Mongolia

JT1AA.....9440- 16-203- A-10

Ryukyus

KR6BF....52,107- 33-527- A-49
KR6SF....27,846- 21-442- B-23

Singapore

VS1HU (G3JFE VS1HU, VS2FW)
44,577- 39-381- A-19

Thailand

HS1C.....11,016- 12-306- B-24

EUROPE

Aland

OH0NC.....8814- 13-226- A-14

Austria

OE3RE...152,460- 55-924- B-65
OE6HV...127,296- 51-839- A-74
OE1RZ...118,014- 51-772- A-66
OE3VP....89,347- 47-635- A-50
OE3WB....2736- 18- 51- A-10

Azores

CT2BO....32,040- 24-445- A-38

Belgium

ON4LX...102,926- 53-654- A-48
ON4SH....18,078- 23-264- A-32

Channel Islands

GC2FZC...13,200- 25-177- A-14

Corsica

F9QV, FC...75,636- 44-573- A- -

Czechoslorakia

OK1AWJ...95,616- 48-664- A- -
OK1AEH...54,646- 44-414- A-40
OK1AJB...37,050- 38-325- A- -
OK2KAU...15,540- 28-185- A- -
OK1ASF...11,716- 29-136- A- -
OK1KFG....8796- 18-143- A-46
OK3WW.....4968- 18- 92- A- -
OK1EV.....3938- 11-121- A-15
OK2KJ.....2448- 12- 68- A- -
OK1AW.....2020- 10- 70- A- 6
OK1KJC.....1344- 7- 64- A- -
OK3KMS.....729- 9- 27- A- -
OK1MG.....540- 6- 30- A- -
OK1JX.....357- 7- 17- A- 2
OK1KTI (2 oprs.)
159,636-53-1010- A-52
OK1KKJ (5 oprs.)
12,661- 37-388- A-64

Denmark

OZ1W.....303,117-69-1465- A-78
OZ7BG....281,724-68-1381- B-60
OZ7G.....83,385- 45-621- A-53
OZ4FF.....62,135- 43-482- A- -
OZ7SN.....17,887- 31-194- A-25
OZ7BZ.....12,342- 17-244- A- -
OZ7BQ.....918- 9- 34- A- -
OZ1H (OZs 1H 4SM 7CP)
29,667- 29-341- A-50

England

G3HJJ....145,390- 62-784- A-70
G2QT.....137,160- 60-762- A-54
G3FKH...128,838- 62-693- A-58
G2DC.....113,736- 56-677- A- -
G2HPF...101,565- 61-555- A- -
G3EYN....17,520- 45-352- A- -
G3APN....26,952- 24-376- A-60
G2AJB.....5472- 24- 76- A- 8

Estonia

UR2BU.....8322- 19-146- A-18
UR2DX.....360- 5- 24- A- 5

European Russian S.F.S.R.

UA3AF.....64- 2- 11- A- -
UA2KAW (multiopr.)
25,080- 22-380- B- -
UA3KWA (3 oprs.)
21,672- 24-301- A- -
UA2KAA (UA2s 12232 12240)
20,853- 21-331-AB- -
UA3KKB (multiopr.)
2880- 10- 96- A- -
UA3KAE (multiopr.)
1260- 10- 42- A- -

Faeroes

OY7ML.....90- 5- 6- A- 3

Finland

OH2LA....73,032- 34-717- A- -
OH6OR....35,840- 32-375- A-50
OH5NF....14,931- 27-187- A-17
OH2MC....14,364- 28-171- A- -
OH1SN.....9840- 16-210- A- -
OH7NW.....9025- 19-159- A-15
OH3TH.....7476- 28- 89- A- -

OH2KQ.....6446- 22- 99- A- 9
OH5PB.....2520- 14- 60- A- –
OH5RO.....1903- 11- 58- A- –
OH5OV.....1872- 12- 52- A- –
OH2IZ.....1419- 11- 43- A- –
OH1TL.....1120- 10- 38- A- 3
OH2GF.....1014- 13- 26- A- 4
OH2HW.....990- 10- 33- A- 3
OH3NY.....972- 9- 36- A- 2
OH6PW.....900- 10- 30- A- –
OH2FT.....360- 8- 15- A- 2
OH9QL.....54- 3- 6- A- –
OH5PG.....48- 4- 4- A- –
OH2GU.....36- 3- 4- A- –
OH2GJ.....12- 2- 2- A- 4
OH7PJ.....3- 1- 1- A- 4

France

F9MS.....280,170-66-1415- A-60
F8VJ.....197,056-64-1028- A-49
F8ZF.....120,060- 60-675- A-48
F8TQ.....85,488- 52-553- A- –
F8AT.....32,130- 34-315- A-18
F8TM.....18,981- 37-171- A- –
F9BB.....7038- 18-133- A- –
F2BS.....6420- 20-107- A- –
F9DW.....5543- 23- 81- A-12
F3II.....2400- 16- 50- A- 8
F8KA.....2400- 10- 80- A- –
F8HO.....1296- 8- 54- A- –

Georgia

UF6FB.....115- 5- 8- A- –

Germany

DJ1BZ.....225,018-54-1389- B-65
DL7AH.....221,760-63-1178- A-78
DL4AB.....144,760- 55-878- A-46
DJ3KR.....100,062- 54-623- B-58
DL7CW.....43,044- 34-422- B- –
DL1IA.....28,638- 37-258- A-38
DL1QT.....17,835- 41-145- A-13
DL1LZ.....7875- 25-105- A-16
DM2ADB.....6840- 19-120- B- –
DJ2AE.....4992- 13-129- A- –
DL6CL.....3960- 20- 66- A-30
DL1BR.....3390- 10-113- A- –
DL1EV.....2730- 15- 61- A- –
DM3KPN.....630- 10- 21- B- 5
DL1YA.....240- 5- 16- B- –
DM3KDN.....240- 8- 10- A- –
DL9ZE.....168- 7- 8- A- 6
DJ3JZ (DLs 1CR 3AO, DJs 1BP 3JZ) 384,120-66-1940- B- –

Greece

SV0WP...400,530-65-2054- B-65

Hungary

HA8WS...164,670- 45-778- A- –
HA5BW...100,110- 47-710- A- –
HA5DH.....71,250- 38-625- A- –
HA5BS.....22,592- 32-237- A-18
HA9KOB..18,699- 23-271- A-29
HA5BI.....7625- 25-105- A- –
HA5DU.....7337- 23-115- A- –
HA5AM.....6762- 23- 98- A- –
HA2MF.....1134- 9- 42- A- –
HA5AIR.....60- 4- 5- A- –

Iceland

TF2WCT..105,210- 42-835-A- 40
TF3AB.....11,466- 26-147- A- –

Ireland

EI9J.....229,524-62-1234- A-42
EI5G.....19,404- 33-200- A-11
EI9F.....165- 5- 11- A- 2

Italy

I1ALU....153,615-49-1045- A-47
I1BLF.....55,512- 36-514- A-38
I1ZCN.....12,581- 23-186- A-20
I1ER.....11,984- 28-142- A-20
I1BCB.....6867- 21-109- A- –
I1REK..... 972- 12- 27- A- 4

Moldavia

UO5AA....10,566- 20-176- A- –

Netherlands

PAØLZ....252,882-63-1338- A-75
PAØLOU..207,963-63-1094- A-75
PAØBW...172,026-57-1006- A-66
PAØVB....159,552- 64-831- A-60
PAØYN....13,494- 26-173- A-30
PAØCE.....5000- 20- 84- A- –
PAØPZW....2820- 10- 94- A- –
PAØWTJ....2771- 17- 55- A- –
PAØLU.....2475- 11- 75- A-10
PAØLY.....1989- 13- 51- A- –
PAØFF.....1890- 14- 45- A- –
PAØWAC....864- 8- 36- A- –
PAØWTM....172- 4- 15- A- –
PAØTA.....48- 4- 4- A- –

Norway

LA2HC....58,752- 36-544- A-40
LA4SE.....18,693- 31-201- A- –
LA6CF.....17,980- 29-207- A- –
LA1K[5].....15,024- 24-211- A-30
LA3UF.....8316- 21-132- A-32
LA4K.....45- 3- 5- A- –
LA2Q.....12- 2- 2- A- –

Poland

SP8CK.....81,356- 43-632- B- –
SP9EU.....41,921- 37-381- A-42
SP1KAA[6]...37,824- 32-394- A-66
SP3DG.....26,082- 23-378- A- –
SP2AP.....11,781- 21-191- A-11
SP4JF.....8304- 16-174- A- –
SP1JV.....6426- 21-102- A- –
SP6FZ.....5773- 23- 84- A-19
SP8HR.....5040- 14-120- A-24
SP6XA.....4320- 18- 80- A-25
SP5KAB[7]....3744- 16- 78- B- –
SP2CO.....2166- 9- 38- A-14
SP2EQ.....855- 9- 32- A- 8
SP2LV.....306- 6- 17- A- 1
SP9KAD (SP9s 128 138 148) 43,365- 35-445-AB-41

Roumania

YO3RF....42,408- 38-375- A-32

Scotland

GM3EOJ..109,604- 47-780- A- –
GM3MCH...672- 7- 32- A- 5

Spain

EA4GA..234,688-64-1226- A-50
EA1AB....108,597- 53-683- A-36
EA5CS.....84,700- 44-647- A-38
EA3KT....52,640- 40-448- A-64
EA4CE.....42,120- 36-390- A-30
EA4FZ.....26,810- 35-249- A-35
EA5BA.....25,398- 34-249- A- –
EA4ED.....6240- 20-104- A- 8
EA1CP.....4410- 15- 98- B- 3

Sweden

SM5CCE...78,390- 39-670- B- –
SM7BVO...56,320- 40-470- A- –
SM7EH.....14,688- 24-204- A- –
SM5AEV....8352- 15-185- B-12
SM5UU.....7854- 22-119- B-18
SM5WZ.....1947- 11- 59- A- –
SM5ATK....1512- 12- 42- B- –
SM5AHJ.....360- 6- 20- A- –
SM4ASJ.....288- 6- 16- A- –
SM4BPJ.....40- 4- 10- A- –
SM6APH (SM6s ANC APH BSK CZE NN) 130,389- 49-889- B-85

Switzerland

HB4FE[8]...127,764-36-1183- B- –
HB9QO....106,248- 57-622- A-45
HB9EU....102,361- 49-699- B-24
HB9QA.....3060- 12- 85- A-10

Yugoslavia

YU1SF.....10,304- 16-221- A-33

NORTH AMERICA

Alaska

KL7CDF..404,712-77-1754- C-60
KL7BPK..122,670- 58-705- A-34
KL7AUG/KL7 117,798- 58-677- A-22

Bahamas

VP7NG[9]..922,320-108-2852- A-50

Bermuda

VP9CR..105,948- 54-654- A-24

Canal Zone

KZ5LY..121,695- 61-669- A-22
KZ5BC....13,644- 12-379- B- –
KZ5TO.....4818- 11-146- B- 7

Cuba

CO7PG..173,880-54-1084- A-49

Dominican Republic

HI8BE....102,438- 63-542- A-13

Greenland

OX3UD.....1024- 8- 13- A- 3

Mexico

XE2FA...985,423-97-3391-AC-73
XE1YF...387,288-66-1956- A- –
XE1MB.....5250- 14-125- A- –

St. Maarten

PJ2ME...143,782- 58-843- A-25

Virgin Islands

KV4AA...153,627-41-1249- C-16

OCEANIA

Antarctica

KC4USB (W3ZJJ, KL7BFW) 296,274-67-1474-BC- –

Australia

VK2GW..401,310-78-1715- A-60
VK2APK..150,050-50-1004- A-56
VK5MY....29,775- 25-397- A- –
VK5WO....13,860- 28-165- A- 9
VK3XB....10,488- 23-152- A-24
VK3ZC.....8784- 24-122- A- –
VK5JT.....7714- 19-136- A- –
VK4XW.....5904- 12-164- A-19
VK3CX.....4368- 14-104- A- 8
VK3KS.....3042- 13- 78- A-10

British North Borneo

ZC5AL.....53,532- 36-496- A-39

Cook Islands

ZK1AK.....6201- 13-159- A- –

Hawaii

KH6IJ..1,139,488-112-3396- C-81
KH6MG..810,810-90-3003- C-77
KH6AYG..790,335-91-2895- C-75
KH6BVM..169,984- 64-910- A-33
KH6BIB..155,550-51-1030- A-42
KH6BG.....93,912- 56-559- B-22
KH6CFE....3522- 11-138- A-17
KH6BXE....3192- 19- 56- A- 4
KH6CFC....3025- 11- 92- A-22
WH6CQG....2412- 12- 67- A-30
WH6COL.....12- 1- 4- A-10
WH6CRP.....6- 1- 2- A-10

Marianas

KG6FAE (W4WHP, W4RYG, K4s AQL OPI) 522,915-71-2465- B-96
KG6AAY (7 oprs.) 183,520-40-1535-ABC-30
K4AQL/KG6 (2 oprs.) 2013- 11- 61- A- 3

South American phone leader VP3HAG got 704 QSOs and 135,040 points with parallel 807s and dipoles but has a three-band quad ready for the '59 doings.

W4WHP. KG6 (2 oprs.)
774- 6- 43- A- 1

Marshalls

KX6AF (W3VVE, W6NDP)
305,868-71-1436- B- -

New Caledonia

FK8AS. . . 3298- 17- 68- A- -

New Hebrides

YJ1DL. . . . . 6552- 13-168- A- -

New Zealand

ZL1MQ. . . 304,902-78-1303- A-36
ZL1APM. . 162,864-48-1131- A-54
ZL3OB. . . . 107,226- 42-851- A- -
ZL1MT. . . . 67,450- 50-450- A-25
ZL2AXU. . . 12,195- 15-271- A-11
ZL1TB. 8442- 14-201- A-12

Niue

ZK2AD. . . . . 1551- 11- 47- B- -

Papua

VK9XK. . . . 96,096- 48-668- A-26

Philippines

DU7SV. . . 125,874- 42-999- B- -

SOUTH AMERICA

Argentina

LU4HU. . . . 75,040- 35-718- A- -
LU9DL. . . . 35,910- 35-342- A-20
LU5WP. . . . . 7536- 16-157- A- -
LU1UB. . . . . 5868- 12-163- A- -
LU7CW. . . . . 3550- 10-119- B- 8

Brazil

PY7AN. . . 140,538- 59-794- B-52
PY7AFK. . 111,642- 48-809- A-38
PY4OD. . . . 85,080- 40-709- A- -
PY4AO. . . . 35,706- 22-541- B-27
PY3TY. 9552- 12-267- A-41
PY7AEW. . . . 7410- 19-132- A- -
PY2AQL. . . . . 3315- 13- 85- B- 5
PY1KJ. . . . . 1272- 8- 53- A- 1
PY1BFR. . . . . 270- 6- 15- C- -

Chile

CE3AG. . . 192,060- 66-970- C-22
CE4AD. . . . 42,924- 28-511- B-17
CE1AD. 7920- 20-132-AB-13

Colombia

HK1FF. . . . . 9999- 33-101- B- -

Ecuador

HC1HL. . . . 56,862- 27-702- B-30

Netherlands West Indies

PJ2AN. . . . 124,431- 59-703- A-35

Paraguay

ZP9AY. . . . 147,565- 55-999- A-70

Peru

OA4BP. . . . 137,535- 53-875- B-46
OA4FA. . . . 71,424- 48-506- A-36

Uruguay

CX9AJ. . . . . 12,192- 16-254- A- -

Venezuela

YV5BJ. 29,913- 39-256- A-12

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[1] W3MFW, opr. [2] Hq. staff — not eligible for award. [3] W1WPR, opr. [4] W1PYM, opr. [5] LA6GF, opr. [6] SP1-001, opr. [7] SP5ZA, opr. [8] HB9GK, opr. [9] W9NWX, opr.

PHONE SCORES

ATLANTIC DIVISION

Eastern Pennsylvania

W3DHM. . 220,584-182-404- C-66
W3ALB. . . 156,529-157-333- C-45
W3ECR. . . 136,320-160-284- C-30
W3KT. . . . . 56,172- 93-202- C- -
W3GHS. . . . 46,718- 94-166- B-22
W3ZSS. . . . 39,342- 83-158- C-44
W3LEZ. . . . 30,492- 77-132- B- -
W3MQC. . . 24,804- 53-156- C-38
W3IMV. . . . 24,780- 59-140- B-24
W3EQA. . . . 24,480- 68-120- C-32
W3GHD. . . 20,988- 66-106-AB- -
W3ORU. . . . 18,081- 49-123- B-18
W3BIP. . . . 16,074- 57- 94- A-40
W3GHM. . . 14,952- 56- 89- C-15
W3GRS. 9720- 45- 72- A-11
W3KDF. . . . . 7722- 39- 66- B- -
W3QLW. 7611- 43- 59- A-25
W3TJW. . . . . 6195- 35- 59- B- -
W3EXM. . . . . 5400- 36- 50- C- 9
W3QIR. 4320- 32- 45- B-12
W3DVY. 2691- 23- 39- A-13
W3EAN. . . . . 2016- 21- 32- C- 6
W3CHH. . . . . 1197- 19- 21- B- -
W3CMN. . . . . 576- 12- 16- A- 9
W3SOH. . . . . 108- 6- 6- A- 2
W3MDO. . . . . 75- 5- 5- - -
W3MDE. . . . . 48- 4- 4- A- -
W3CQC. . . . . 27- 3- 3- A- -
W3EVW. . . . . 18- 2- 3- C- 1
W3BES (W3s BES GXP GYP)
120,984-142-284- A-90
W3KFQ (W3s KFQ QKV)
116,375-125-311- C- -
W3CGS (W3s CGS DQG)
93,330-122-255- B-50

Md.-Del-D. C.

W3IYE. . . 99,144-136-243- C-43
W3DRD. . . 70,668-117-202- C-35
W3KDD. . . 63,036-103-204- C-35
W3KDP. . . . 23,040- 64-120- C- -
W3NNX. . . . 13,992- 53- 88- A- -
W3FEP. 3125- 25- 42- B-13
W3JPT. 2970- 30- 33- A-17
W3HSP. 2916- 27- 36- A-11
W3ZQ. . . . . 2160- 24- 30- B- 5
K3CBQ. 1764- 21- 28-AC- 7
W3HZG. 912- 16- 19- A-13
W3VTH. 585- 13- 15- A-40
W3FYS (W3FYS, W6HOH)
122,265-143-285- C-70
W3GRF (W1UGW, W3GRF)
36,408- 82-148- - -

Southern New Jersey

W2ZX. 21,648- 66-110- C-15
K2MIO. . . . 21,054- 58-121- C-21
K2MPB. . . . 15,600- 50-104-AB-10
K2MBT. . . . 11,730- 46- 85- A-17
W2SZP. 6882- 37- 63- A-20
K2OEA. 3564- 31- 38- A-25
W2SDB. 1740- 20- 29- C-10
K2CPR. . . . . 147- 7- 7- A- 2
W2BLV. . . . . 27- 3- 3- A- 2

Western New York

K2PMZ. . . . 14,979- 87-173- A-50
W2QWS. . . . 38,025- 75-169- B-33
W2TQR. . . . 21,390- 69-104- A-13
W2RWN. . . . 14,523- 47-105- B-34
W2WSZ. 7912- 43- 62- A-14
W2SNI. 7080- 40- 59- B-27
K2TQC. 3654- 21- 58- A-10
K2ITM. . . . . 3564- 27- 44- B- 8
K2UNY. . . . . 2662- 22- 41- A- -
W2IOK. . . . . 1938- 19- 34- C- 7
W2CZT. 1863- 23- 27- C-10
W2TOP. 1491- 18- 28- A-15
W2EDE. . . . . 140- 7- 7- B- 3
W2TXB. 27- 3- 3- C-11

Western Pennsylvania

W3KTW. 6720- 32- 70- A-12
W3BST. 6669- 39- 57- A-17
W3ZAO. 1575- 21- 25- B-16
W3MBN. . . . . 363- 11- 11- A- 5
W3AOH (W3s AOH LMM MVQ QJJ)
308,940-190-542- C-86
W3VKD (W3s VKD WGH WPY)
267,699-181-493- C-90

CENTRAL DIVISION

Illinois

W9NZM. . . 96,624-144-227- C-55
W9EVT. . . . 47,400- 79-200- C-96
W9WKU. . . 30,212- 83-124- C-36
W9FVU. . . . 17,850- 70- 85- B-20
W9PVA. . . . 15,900- 53-100- B-40
W9SD. 13,224- 58- 76- C-27
W9KMN. . . 11,832- 58- 68- A-12
W9PHZ. 2574- 26- 33- A-20
W9RYU. . . . . 2394- 21- 38- A- 7
W9WFS. . . . . 2100- 25- 28- B- 8
W9LQF. . . . . 1134- 18- 21- A- 6
W9PNE. 630- 14- 15- A-15
W9PNY. . . . . 585- 13- 15- A- 5
W9IGK. . . . . 192- 8- 8- A- 2
W9WIO. . . . . 126- 6- 7- B- 4
K9DCF. . . . . 108- 6- 6- A- 4
W9YYG. . . . . 75- 5- 5- A- 2
W9IZ. . . . . 18- 4- 4- C- 1
W9NLF. . . . . 27- 3- 3- A- 4
W9UBL. . . . . 12- 2- 2- B- 1

Indiana

W9CSV. . . . 26,565- 77-118- B-43
K9CUY. . . . 11,500- 46- 85- B-35
W9LRH. 3510- 30- 39- C-23
K9DWK. 2772- 28- 34- A-25
W9KWC. 675- 15- 15- B-10
W9WCE. . . . . 396- 11- 12- B- 6
W9PKE. . . . . 27- 3- 3- A- 3

Wisconsin

W9EWC. . 190,576-172-370- C- -
W9GIL. . . . 60,180-112-180- C-55
W9HPS. . . . 38,190- 67-190- B-53
W9VZP. . . . 37,074- 74-167- A-33
W9MBF. . . . 34,362- 83-138- A-36
W9PQA. . . . 16,575- 65- 85- A- -
W9RH. 6042- 38- 53- C-16
K9CAN. . . . . 5781- 41- 47- - -
W9FDX. . . . . 3840- 32- 40- - -
W9VQG. 1575- 21- 25- B-11
W9OMZ. . . . . 243- 9- 9- C- -
K9CJK. . . . . 192- 8- 8- A- 8
K9ALP. . . . . 27- 3- 3- A- 2
W9YT (W9s LPL SDC SZR
K9EZY). . 31,600- 79-137-BC-63

DAKOTA DIVISION

South Dakota

WØPRZ. . . . 39,632- 86-154- C-30
WØACT. 5436- 36- 60- A-10
WØBLZ. . . . . 1638- 21- 26- C- 5
WØWUU. . . . . 147- 7- 7- B- 3

Minnesota

WØEEA. . . . 16,350- 50-109- C- -
WØVAF. 7260- 44- 55- A-24
WØVIP. . . . . 1824- 19- 32- B- -
WØRZU. . . . . 168- 7- 8- A- 6
W9CEL/Ø. . . . 147- 7- 7- A-13

DELTA DIVISION

Arkansas

K5GRT. . . . . 170- 5- 12- B- 7

Louisiana

W5KC. 74,763-117-213-AC-50
K5BHV. . . . 11,907- 49- 81- A-26
W5INL. 462- 11- 14-AB- 5

Mississippi

W5DQK. . . . 54,900-100-183- A-39
K5EXW. . . . 16,500- 55-102- B-36

Tennessee

W4NRV. . . . 91,608-132-234- C-50
K4LPW. . . . 10,260- 44- 76- B-24
K4HLW. . . . . 2217- 23- 33- -16
W4GQL. . . . . 48- 4- 4- B- -

GREAT LAKES DIVISION

Kentucky

W4CDO. 5916- 34- 58- B-20
W4OES. 528- 11- 16- A-12

Michigan

W8NWO. . 196,944-176-373- B-80
W8WT. 14,352- 88-168- A-45
K8CFU. . . . 27,720- 70-132- A-29
W8IQF. 17,100- 50-114- A-28
W8SZS. 16,182- 62- 87- B-21
W8KX. . . . . 1128- 17- 18- A- -
W8IUP. 676- 13- 18- A-23
W8TIC. . . . . 243- 9- 9- B- 5
W8AQF. . . . . 184- 8- 9- A- 3
W8NGO (W8s CLR NGO ONA)
222,855-179-415- B-93

Ohio

W8BKP. . . 278,568-219-424-BC-53
W8NXF. . . 210,684-194-362- B-63
W8ZOK. . . 163,680-155-352- B-73
W8SDD. . . 109,980-130-282-BC-44
W8AJW. . . . 82,943-119-233- A-41
W8AJH. . . . 25,344- 66-128- A-29
W8ELB. . . . 15,300- 51-100- B-30
W8VOW. 8514- 43- 66- A-26
W8IBX. 7020- 39- 60- B-15
W8GMK. . . . 3969- 27- 49- A-13
W8KC. 3780- 28- 45- B-16
W8NDJ. 3600- 25- 48- A-22
W8TTN. . . . . 3159- 27- 39- A- 8
W8LVH. 2175- 25- 29- A-11
W8FEM. 1925- 25- 26-AB-14
W8LOF. . . . . 1254- 19- 22- A- 3
W8MZF. 882- 14- 21- A-15
K8AAG. . . . . 792- 12- 22- A- -
W8YPT. . . . . 672- 14- 16- A- 9
W8PCS. . . . . 648- 12- 18- B- 4
K8ANX. . . . . 126- 6- 7- B- -
W8RTF. . . . . 75- 6- 5- B- 2

HUDSON DIVISION

Eastern New York

K2TCD. . . . 18,780- 60-105- A-17
K2UTC. 8976- 44- 68- A-38
K2ZAU. . . . . 2726- 29- 33- B- 8

N.Y.C.-L.I.

W2WZ. . . . 185,871-167-371- C-54
K2OPJ. . . . 53,010- 93-190- A-43
W2AYJ. . . . 19,398- 61-106- B-28
K2DZU. . . . 12,804- 44- 97- A-35
W2MCO. . . . 4590- 34- 45- A-11
K2SIF. . . . . 1632- 16- 34- A- 6
K2TSW. 1080- 15- 24- A-10
W2YMH. . . . . 936- 13- 24- - -
K2DEM. 585- 13- 15-BC- 3
K2GKU. . . . . 546- 13- 14 A 12
W2HAE. . . . . 147- 7- 7- A- 3

Northern New Jersey

W2BTG. 7872- 41- 64- B-15
W2OXG. 6975- 31- 75- A-10
K2KBO. 3600- 25- 48- B-12
W2LYO. . . . . 330- 10- 11- A- 3

MIDWEST DIVISION

Iowa

WØFDL. 5400- 36- 50- C-10
KØLFA. . . . . 90- 5- 6- A- 5
KØHFW. . . . . 60- 4- 5- B- 5
WØLNI (KØs CZQ DPH IIL LFA)
1248- 16- 26- B-14

Kansas

WØVFE. 5832- 36- 54- A-30
WØQMS. 4872- 29- 56- A-14
WØGBP. 896- 14- 22- B-18
KØITL. . . . . 12- 2- 2- A- 4

Missouri

WØGEK. . . . 97,333-131-251- C-63
WØGUV. . . . 29,988- 84-119- C-35
WØITF. 15,876- 63- 84- B-24
WØZVM. . . . . 7104- 32- 74- A- -
WØQKC. 3617- 28- 43- B-10
WØGCL. 2160- 24- 30- A-20
WØAJU. . . . . 675- 15- 15- C- 5
WØMCX. . . . . 429- 11- 13- A- 6
WØETV. . . . . 330- 10- 11- A- 5

Nebraska

WØEHF. . . . 43,176- 84-172- C-35
WØEXU. 7038- 34- 69- C-26
WØBBS. 3696- 28- 44- C-23
WØAYR (WØs AYR UTN)
816- 16- 17- C- 6

NEW ENGLAND DIVISION

Connecticut

W1BIH . . . 129,297-141-309- A-15
W1QFQ 33,891- 79-143- A-38
W1FYF 5832- 36- 54- A-23
W1AW[2] . . . . 4650- 31- 50- C- 7
W1OOS 1230- 30- 47- B-10
W1LVQ[2] . . . . 1920- 20- 32- B- 8
K1BEB 1638- 14- 39- A-13
W1ZDP[2] . . . . . 962- 13- 26- A- 6
W1BDI[2] . . . . . 27- 3- 3- A- –
W1NLM . . . . . 12- 2- 2- B- –

Maine

W1DIS 37,620- 76-165- C-33
W1UOT 5542- 34- 55- A-38
W1PCD 2451- 19- 43-ABC-10
K1ACR . . . . . 189- 7- 9- A- 6

Eastern Massachusetts

W1ONK . . 255,056-188-454-AB-72
W1QWI . . . 140,840-140-336- B-73
W1JCX 83,961-123-237- C-58
W1JXM 34,965- 63-187- B-34
W1LQQ 8064- 42- 64- A-10
W1BU[3] 896- 16- 19- C-20
W1DYV . . . . . 495- 11- 15- C- 2
W1JMS . . . . . 259- 7- 13- B- –
W1RWU . . . . . 108- 4- 9- B- –
W1PLJ . . . . . 3- 1- 1- A- 8
W1AF (K9ABP, KØBIB)
11,562- 41- 94- B-33

Western Massachusetts

W1RF 37,425- 75-168- A-25
W1LIB 16,698- 46-121- A-17
W1JYH 15,840- 55- 96- B-25
W1DXS 12,032- 47- 88- B-12
W1NEP 8256- 43- 64- A-21

New Hampshire

W1FZ . . . . . 133,960-136-329- C- –
W1GET . . . 103,750-125-284- B-65
W1KKT . . . 31,236- 67-156- A- –
W1JNZ 18,444- 53-116- B-15
W1KVG 1485- 15- 33- A-12

Rhode Island

W1CJH . . . . . 6240- 32- 64- A- 9
W1LQG 2457- 11- 39- B-23

Vermont

W1HFN 12,519- 39-107- A-21

NORTHWESTERN DIVISION

Montana

W7FIN 8307- 39- 71- A-32
W7HLH 2244- 22- 34- A-20

Oregon

W7EJS 1368- 19- 24- B-19

Washington

W7LEV 19,800- 60-110- A-10
W7LAV 5280- 32- 55- B-22
W7ESN 4082- 26- 53- A-27
W7GDS 2829- 23- 41- A-16

PACIFIC DIVISION

Nevada

W7KOI . . . . . 243- 9- 9- A- 4

Santa Clara Valley

K6UXV 9006- 38- 79- B-32
K6LVT 2700- 25- 36- A-11
W6ZZ . . . . . 126- 6- 7- A- 9

East Bay

W6PQW 14,040- 45-104- B-38
W6KG 12,420- 46- 90- C-12
W6LDD . . . . . 2100- 25- 28- A- 8
W6KEK 1050- 14- 25-BC- 6
W6MMH . . . . . 12- 2- 2- A- 6

San Francisco

W6GPB 40,338- 83-162- C-20
W6YEJ . . . . . 216- 8- 9- A- 9

Sacramento Valley

W6AED . . . 122,715-135-303- C-57
W6SIA 16,740- 62- 90- C-35
K6SXA 17,355- 65- 89- A-15
W6GVM . . . . . 6600- 40- 55- C- –

San Joaquin Valley

W6BVM . . . . . 4930- 34- 49- – –
W6EFV . . . . . 12- 2- 2- – –

ROANOKE DIVISION

North Carolina

K4QVK 71,868-113-212- B-74
W4EFX 68,145-105-217- B-40
W4AIX 59,607-111-179- B-65
W4NHF 18,018-104-154- B-30
W4KYI 23,280- 80- 97-AC-39
K4BZJ 22,125- 59-125- A-25

South Carolina

K4HHL 7548- 37- 68- B-21
W4EPL 5513- 37- 50- A-13

Virginia

K4LKH . . . . . 826- 14- 20- A- 6
W4YIA[4] . . . . . 351- 9- 13- C- 6

West Virginia

W8UMR . . 35,550- 75-158- A-18

ROCKY MOUNTAIN DIVISION

Colorado

WØNWW . . . 13,176- 54- 82-BC-29
WØSBE . . . 10,557- 51- 69- B- –
WØCDP 4551- 37- 41- B-38

New Mexico

W5GGX 192- 8- 8- B-11
W5LEF . . . . . 126- 6- 7- B- 2

SOUTHEASTERN DIVISION

Alabama

W4HA 11,934- 51- 78- C-15
W4DS 7998- 43- 62- B-20

Eastern Florida

K4CTU . . . 54,036-114-158- B-19
W4LVV . . . 16,932- 68- 85- A-25
K4SJU 5216- 32- 55- A-20
W4FNR 1281- 21- 21- A-15
W4DXL . . . . . 192- 8- 8- A- 6
W4EEO . . . . . 108- 6- 6- – –
W4GNT . . . . . 75- 5- 5- B- 4

Georgia

K4KKV 864- 16- 18- A-12
W4KAC . . . . . 243- 9- 9- C- 4
K4KKW . . . . . 216- 8- 9- A- 9
W4JII . . . . . 60- 4- 5- B- 2

SOUTHWESTERN DIVISION

Los Angeles

W6ITA . . . 219,564-171-428- C-88
K6IYJ 3444- 28- 41- B-17
K6KII 3078- 27- 38- A-12
W6LWY 2496- 26- 32- B-23
K6IRK 1501- 19- 27- C-15
W6SYG . . . . . 735- 15- 17- C- –
W6NKR 664- 16- 18- C-10
W6HAL . . . . . 468- 12- 13- B- 6
W6CLL 6 . . . . . 300- 10- 10- A-10
W6AM (W6s AM BXL KFV OZ, K6EWL)
238,266-183-429- C-90
W6NJU (4 oprs.)
148,260-140-353- C-90

Arizona

W7ENA 2304- 21- 32- A-12
W7LBN . . . . . 1932- 23- 28- B- 6

San Diego

W6CHV . . . 27,552- 82-112- B-34
W6JVA 10,998- 47- 78- A-20
W6BKZ . . . . . 3192- 28- 38- B- –
W6AMO . . . . . 504- 12- 14- B- 2
K6CQF . . . . . 300- 10- 10- A- 3

Santa Barbara

W6AGO 21,945- 77- 95- C-35
W6YK 16,166- 59- 94- B-66
W6ALQ 10,701- 41- 87- C-20

WEST GULF DIVISION

Northern Texas

K5AHZ 18,360- 68- 90- C-40
W5YKU 8505- 45- 63- A-30
K5HWY . . . . . 1458- 18- 27- B- 8

Oklahoma

W5ALB 64,800- 90-140-AB-56
W5LJI . . . . . 6840- 40- 57- B- –
K5BBA 2688- 28- 32- A-25

Southern Texas

W5LBC 7011- 41- 57- B-16
K5EDM . . . . . 810- 15- 18- A- 6
W5OP 5 . . . . . 495- 11- 15- A-15
W5ELN 385- 11- 12- A-13
W5INJ . . . . . 216- 8- 9- B- 6
W5PM . . . . . 108- 6- 6- B- 2

CANADIAN DIVISION

Maritime

W4VRP VO2
18,309- 51-123- B-35
VE1OD 15,408- 56-101- A-28
VO2NA 7020- 39- 60- B-30

Quebec

VE2AXC . . . 25,956- 63-138- A-33
VE2ACU 1458- 18- 27- A-11

Ontario

VE3CCK . . 165,780-169-327- B-78
VE3QU 37,884- 77-164- A-29
VE3PE 28,137- 83-115- B-36
VE3API . . . . 3393- 29- 39- A- 7
VE3RIT[5] . . . . . 147- 7- 7- A- 2

Manitoba

VE4RP 3108- 28- 38- B-16

Saskatchewan

VE5VL 91,390-130-237- B-68

Alberta

VE6NX 10,400- 50- 70- B-21

British Columbia

VE7ZM 26,160- 80-109- A-25

Yukon — N. W. T.

VE8FO 4960- 31- 54- C-15

AFRICA

Angola

CR6AU . . . . . 3438- 18- 64- A- 9
CR6DB . . . . . 144- 6- 8- A- 1

Belgian Congo

OQ5DG . . . . 22,836- 22-347- A- –

Canaries

EA8CF 93,993- 51-615- A-49

Cape Verde

CR4AD 22,688- 32-237- A-16
CR4AS 12,600- 25-168- A-16

Kenya

VQ4FK 43,344- 28-516- A-25

Liberia

EL1H . . . . . 1221- 8- 51- B- –

Madeira

CT3AF 4386- 17- 87- A-21

(*Continued on page 66*)

Mozambique

CR7DS 1701- 9- 63- A-10

Southern Rhodesia

ZE2KR 58,302- 41-476- A-45
ZE7JR . . . . . 216- 2- 36- A- –

Swaziland

ZS8NZ ZS7 . . . 810- 10- 27- – –

Union of South Africa

ZS6UR . . . . 161,246- 69-779- A- –
ZS8JY 143,832- 52-922- A-80
ZS6TB . . . . . 72- 4- 6- A- –

ASIA

Israel

4X4FV 2292- 12- 65- A-11

Japan

KA2RB[6] 70,980- 39-610-AB-32
KA2LL 12,750- 25-170- A-22
KA2AP 4954- 13-127- A-12
KA2NY 2880- 15- 64- C-10
JA8AA . . . . . 2100- 10- 70- B- –
JA3MD 1600- 10- 54- A-11
JA3BB 1122- 7- 11- B-11
JA1CE . . . . . 420- 5- 28- A- –

Lebanon

OD5BZ 59,459- 37-536- A-35

EUROPE

Åland

OHØNC . . . . . 3861- 13- 99- A- 8

Austria

OE2YL 45,008- 29-518- A-34

Balearic Islands

EA6AR . . . . . 378- 6- 21- A- –

Belgium

ON4OC . . . 136,899- 63-728- A-62

Channel Islands

GC2FZC . . . . . 1551- 11- 47- A- 8

Czechoslovakia

OK1LM . . . . . 504- 8- 21- A- –

Denmark

OZ2JF . . . . . 34,357- 43-268- A- –
OZ1I . . . . . 2772- 9-101- A- –
OZ7BG . . . . . 552- 8- 23- A- 3

England

G3HCL . . . 139,722- 58-808- A-55
G3DO 100,944- 48-701- A-55
G3HJJ 95,628- 52-619- A-60
G2DYV 54,810- 42-435- A-10
G2PU 53,808- 59-304- A-87
G2ACC . . . . 35,927- 37-324- A- –
G5CP. A . . . . 6426- 14-153- A- –
G2AJB . . . . . 1836- 9- 68- A- 6
G3HTW . . . . . 234- 6- 13- A- 3

Estonia

UR2BU 3072- 16- 61- A-15

Finland

OH5PE 50,055- 47-355- A-30
OH3NY . . . . . 60- 4- 5- A- 1
OH5AB (OH5s OP QY RA)
2184- 13- 56- A-10

France

F8PI 192,942- 54-1194- A-58
F7BX . . . . . 10,149- 17-119- A 20
F3IL . . . . . 1464- 8- 16- A- –

Germany

DL4AAP . 174,582- 53-1038- B-51
DJ1BZ 113,664- 48-794- B-55
DL4YE . . . . 35,532- 28-423- A- –
DL4OU 31,314- 34-309-AB-46

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

It's an infinitesimal world. The Lt. G. J. Raymond, USAF, who unwittingly supplied our April shortie on "The World's Smallest Colonial Possession" (via K9EFU and the *Western Stamp Collector*) turns out to be numbered among *QST*'s readership. We might have suspected as much. Who but one fired with the ham and DX spirit could have scored his point with such heraldic zeal? More from Gale:

6035 Hornwood Drive
Houston 36, Texas

Dear OM:

I was delighted to see your reprint of my article on Fort Sao Joao Baptista de Ajuda. Yes, I'm a regular *QST* reader and was working on my own General ticket when polio hit me while flying as navigation instructor at Ellington AFB, Texas. Both hands are still paralyzed but I can get one finger stiff enough to punch this mill. Can't push a bug, though — darn it. I do have hundreds of ham friends, particularly in the more remote areas, who are most kind in mailing philatelic covers to me for my collection of postmarks and material on postal history. An S-53A provides many enjoyable hours of short-wave listening and a special thrill is the receipt of a cover posted from some DXpedition. I appreciate it when the ham gang remembers me by sending covers from the odd spots, even if only handwritten endorsements to the effect that they originated from DXpeditions to Clipperton, Galapagos, etc. 73.

— *Gale J. Raymond*

We trust it won't be long before this stout heart is logging *two*-ways with our rover set. Yes, you never can tell what will pop out of the "How's" mailsack from month to month. Some well-seasoned cogitation nourishment from a recent visitor to the Continent:

Madrid, Spain

Jeeves, OM:

I had the pleasure of meeting a 200-country EA2 yesterday. He tells me he is growing sick and tired of DXing because American amateurs are "poisoning the sport with dollars." On a tentative trip to Rio de Oro he said he was offered a transmitter if he would send all his QSLs through a certain W who planned to get back the money for the rig, etc., by charging for the cards. He is deeply resentful that more than a few DXpeditions have gone so far as to reply first to QSLs bearing "contributions" — even so far as to have the gall to emblazon TNX FOR CONTRIBUTION on their DXpeditionary confirmations. He feels strongly that radio amateurs who undertake DXpeditions should use their own capital.

— *Marty, W1FII*

In casual DX days before inevitable supply-vs.-demand economics barged into our QSL picture any Yank swapped cards with his Baluchistan or Christmas Island counterpart on the same basis that he exchanged QSLs with a fellow down the street: mutual desire. Rarely is this so today. As a concession to undeniable imbalance in QSL-swap desires we have come to recommend individual defrayals of bona-fide QSL postage expense — in stamps or IRCs. But we hold that solicitations for the financing of DXpeditionary enterprises are a matter to be kept independent of on-the-air activity, QSL exchanges and the pages of "How's".

W1CTW closes this little forum with comment bearing on last month's theme:

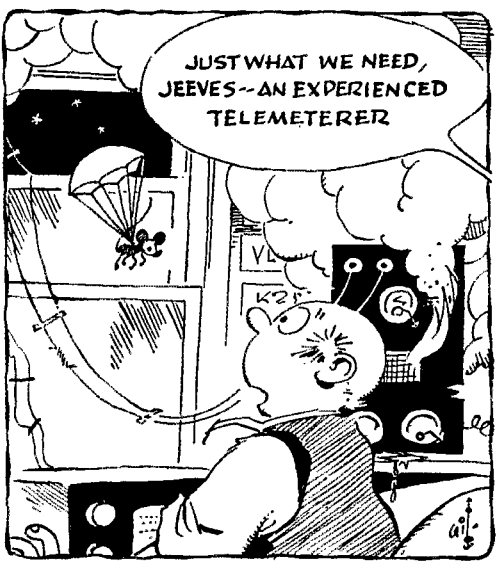
> . . . There is much emphasis on putting times of QSOs on QSLs in Greenwich Mean Time to avoid confusion but I have seen no suggestions to avoid conflict in dating methods. For instance, 12/1/57 and 1/12/57 (European style) for December 1, 1957. I *spell* the month.

Budding DX hounds ordinarily spot this pitfall when they inspect their first batches of European pasteboards. Adopt a spell-out-the-month habit early to thwart OM Ambiguity's raids on your QSL returns. And *do* use GMT.

What:

Kennelly-Heaviside pyrotechnics brighten our October DX horizon. Those dazzling displays of ham radio's unique togetherness, the pile-ups, zoom to new heights of frenzy. Recent annexations to your ARRL DXCC Countries List — the VP2 spread, Lord Howe Island and the Chathams — occasion heavy fire. And then there are the old stand-bys, such perennial DXpeditionary targets as the Galapagos, Clipperton, Seychelles, Revillagigedos, Zanzibar, Andamans & Nicobars, Lower Slobovia and Outer Baldonia ready to erupt at any time. Frankie's right: we've got the world on a string, or headset cord if you prefer! What else is available on what bands and when? Well, let's quote word from the herd. . . .

20 c.w.'s late-summer antics draw typical comment from K6THZ: "Boy, what a *crazy* month — one minute they're coming in 599, the next minute they're all getting weak, and finally it takes superskip to get the soup out to your own antenna." This view is generally seconded



* 4822 West Berteau Auenue, Chicago 41, Ill.

by reporters W1s AZW BDI CTW ICP MBX TS, K1s CBR DFC GBF (25 worked), W2s GVZ HMJ JBL, K2s AYC PGP QXG UYG, W3s DKT GYP LOS, W4s CYY TVQ, K4s DRO (156/127), IEX MWB (76/46), PHY (79/55), SXR (95), W5s MPG QMJ, K5s IJU KBH KBS KIZ, W6s KG ZZ, K6s ALH CTV LAS SHJ SXA THZ, W7s DJU FBD QNI, K7AWH, W8s CSK IBX (121/104), TDD, K8HTI, W9JJN, K9s JIN KDI, W0WHW, VE3EIL, HR1JH, I1ER, KL7CDI and KP4AOO who account for **AC4AX** (14,098 kc.) 1200-1300 GMT, **BV1US** (22) 11, **CE0AC** (70) 5 of Easter isle, **CNs 2AQ 2BK** (80), **8DJ 8GU** 22, **8LC, CRs 6CK 7CI 7CK** (58) 22, **7DQ 9AH 10AA, CTs 1CB 2AI** (50) 1, **2BO 3AN, DMs** 2AEJ 2AFE (57) 23, 2ASH 2XLO 3KUN, **DUs** 1OR 7SV 9JO, **EAs 6AW** (70) 2-4, **8BF 9BU** 22, **EL1X, ET2s** KY (10) 22, TO, **F9QV/FC, FB8s** BC (55) 15, XX of the Kerguelens, ZZ of Amsterdam, **FE8AH, FF8s** AC BA (30) 1, **FG7s** XC XE, **FK8s** AS (82) 11, AT (345) 7, **FO8AC** (72) 8, **FP8AP** (80), **FQ8HA** (78) 6, **FU8AD** (130), **GD3UB** 8, **HAs** 3YF (57) 23, 5DD 5FB (50) 6, 8KCK 8KWG (65) 7, **HC1HM, HE9LAC, HK4JC, HLs** 1KWC 6KEF 9KT 9KY, **HS1C** (22) 11, **IIDCO/M1** (44) 23, **IS1s** CXF ZEI, **JAs** 1AB 1AG 1AVV 1CB 1CG 1SA 3AA 3AQ 3GM 3IS 3MR 4AG 4AJ 1HM 5CP 6TA 7IW 8AA 8FO 9AA 9EV 9IW 0KZ, **JT1YL** (90) 13, **JZ0HA** (60), **KAs** 2KS 2LN 2RS 8KW (58), **KB6BJ** (30, 340) 5, **KC4USK** (34) 5, **KGs 1DJ 1DL** (25) 5, **1DT 1EE 6AAY 6FAE, KM6s** AX (43) 12-13, BK (42) 9-10, BL, **KP6AL, KR6s** AC AO (43) 10, QW, **KS6AG** (20), **KV4s** AA (50) 21-1, AC (50) 15, **KX6s** AF BU CW, **LU1ZE** of Argentina's icebox, **LX2GH** (33), **LZs** 1AF (44) 4, 1KSP 2KAG (65) 3, **OAs** FT FV, **OD5LX, OX3UD** 19, **OY7ML**, Dutch **PI1s** LC LS, **PJs** 2CJ 2ME of Sint Maarten, 3AB (5) 3, **PZ1AM** (50) 22, **RAEM** of Moscow, **ST2AR, SV0s** WB of Rhodes, WC WN of Crete, WP WR 1, **TI2s** ES LA PZ WR, **UAs** 1KAE/3 of Russia's antarctic effort, rarish 2KAW, 9CM (25) 3, **9KCK 9KDL 9KSA** 9SA (20) 4, **9VB 0AZ 0KCO 0KDA 0KFG 0KIA 0KZA** of Kamchatka, **0LK**, gobs of UB5s, **UC2s** AA (20) 3, AU BB CB, **UD6s** AM (15) 3-4, DD, **UF6s** CC (78) 2, KAC, **UG6AG, UO5s** KBR (59) 1, PK, **UP2s** AT NM, **UQ2s** AB AK (56) 3, AN (15) 3, BP 4, **UR2s** AK (87) 10, AT 6, BU KAE (70) 22, VE8PX, **VKs** 2FR of Howe, **9AD** of Norfolk isle, **9NT 9RR 9XK 0AT** (75) 9-10, **0TC** (100) 5, **VPs 1AJ 2GL** (30) 1, **2LO 2VB** (80) 6-7, **3YG** 1, **5FH** (20), **6RG 7BT 7NG 7NM** (80), **8CR** (82) 6, **9AK 9DO 9IVM 9Y, VQs 2GW** 21, **3CF 8AJC 8AQ, VRs 1C 2DA** (93) 7, **2DG** (12-40) 11-12, **VSs 1BB** 18, **1FJ 1FW 1GC 1HU** (43) 10, **1HX** (26) 10-11, **6AE** (29) 11-12, **6DS 6DX 9AC** (49) 4, **9MA** (32) 15 of the Maldives, **VU2s** AJ (20) 12, KM RA (16) 11, **Ws 6IVL/KG6 0BKL/KG6, XEs** 1MB 1YF 1YJ 3BL, **XW8AI** (18) 14, **XZ2TH** (80) 12-13, **YJ1DL, YN4AT, YOs 2KAM 3FB 3RCC 3RI** (36) 6, **YS1O** (24) 3, **YV5s** BQ (105) 10, HL (5) 23, **ZB2s** A Z, **ZC3AC** (106) 15-17, **ZDs 1FG** (70) 8-9, **7SA** (79) 21, **ZEs** IJN 1JT 7JF 7JJ 7JV 7JY, **ZKs 1AK** (40) 5, 2AD ZL1ABZ of the Kermadecs, one ZM7F, **ZP5ET, ZS2MI** (20) of Marion Island, **3A2CF** (32) 4, **4S7DT** (but see "Whence"), **4X4s** CJ (20), CK FU JT JU KK KR, **5A2TY, 9G1CR** 0-1, **9K2s** AN and AO.

20 phone makes it possible for W1ICP, K2QXG*, K4s DRO IEX MWB, W5MPG, K6s LAS* SHJ TXA, W8YIN*, W9UBI*, K9KDI, VE3EIL, KL7CDI, KP4AOO and HR1JH to voice their approval of **AC4AX** (98) 12-13 **BV1USC, CT3AN** (140), **ELs** 3A (140) 6, 5A (130) 7, **FK8AS, FU8AD, HKs** 7LX (170) 8, **0AI** of San Andres, **HL9KS** (140) 13, **HP1ME** (225) 18, **HR1s** JS (152) 4, OL (147) 4, VS (130) 23, **JZ0HA** (160), **KB6BK, KG6s** AAY CGA, **KW6CJ** (230) 6, **KX6s** BP BT (260) 13, BY, **SV0s** WB/Rhodes WN/Crete, VE3BQL/**SU, VK9s** AD* (305), BS (180) 14 of Papua, **VPs 1FF 3EFG 5CB, VSs 1EW** (110) 13, 4JT* (305), **VU2ES** (170), **XW8AL** (151), **YS1MS** (180), **YVs** 1CJ 5HM, **ZC3AC** (106), **ZDs 1FG** (175) 6, **7SA** (52) 22-23 and **ZE5JU**, asterisks denoting s.s.b. buffs.

15 c.w. stayed with us all summer but it was touch and go at times. W1s BDI MBX TS, K1CBR, W2HMJ, K2ZNH, W3CMN (46/35), K3ARV, K4s DRO LAY OTG PHY RFI RJN, W5KLB, K5s IJU KBH KBS KGF KIZ, K6s SXA TXA, W7QNI, W8IBX, K9JIN, KØARS, I1ER and KP4AOO scored effectively with **CE1s** AD DC, **CNs 2AY** 22, **8DJ 8LC** 8MM, **CR6AI** (58) 18-19, **CT3AB, CX1FB, DU7SV, EL1K, ET2US, FA9s** IO RW (52) 23, **FE8AH, FQ8AP, FR7ZB, HAs** 5DH 8WS, **IT1ZDA, JAs** 4HM 6PA 6TA 7AD, **JT1s** AA YL, K4AQL/**KG6, KB6BJ, KG6FAE, KM6BK, KP6AL, KX6AF**, shipboarder **LUØAC** (50), **M1B, MP4BAI, OEs** 1FF 5PV, **OH0NB** of the Alands, **OQ5s** GI GU HH IG RU, **OX3LD** (80) 2, **PJ2AF, SL5AB** of the Swedish military, **SM1BVQ** of WASM rarity, **SPs** 3SQ (20) 16-17, 6NF 9JA 9NH, **ST2AR** (97) 21, **SV0s** WP WY, **TI2LA, UAs** 1KBB 3HI 4FE 4IF 6UG 9CM 9OI **9VB 0KCO, UB5s** CI CK FG KBV, **UC2AX, UF6KAC, UI8FR, UJ8AF, UO5AA, UQ2AN, UR2s** BU KAE, VE8PS, **VPs** 1EE **2GL 7BT 7NM 0AA, VQ4s** EV FF KPB, **VR2s** CC DG, **VS2BS, WH6COV, WP4s** AKS ALC AMR, **XE3BL, YOs** 2CD 8MS, YV5HL, **ZB1s** DZ SS, **ZC4s** BL IP RF, **ZP9AY, ZS3AG** 22, **4X4s** DR IL IV and **9G1CR**.

15 phone established itself No. 1 voice slot as summer ebbed. W1MBX, K1CBR, W3CMN, K3ARV, K4s DRO IEX PHY RFI, W5KLB, K5s IJU (62/30), KIZ, W6ZZ, K6s CTV TXA, W8KML, K9s ISP JIN, I1ER and HR1JH captured **CE1DC, CN8FV, CPs** 1AM 5EC (250) 15, **CR4AS, CTs** 1HF 3AN (180) 1, **CX1FL, DU1GF, ELs** 2F 2N 8 D, **ET2US, FG7XE, HC5MT, HI8GA, HK7AB, HP1GP, HR2MT, HS1E, JZ0PB, KA7HH, KB6s** BH BJ, **KC4USK*, KM6s** BI BK BL, **KR6s** IP RB, **KX6s** AF BQ BT (320) 5, CI, **OAs** 4HM (348) 22, 4IGY 71, **OK3EM, SP8CK, SV0s** FR WA* (413), **TGs** 7JD 0AA, **UA4FE, VKs** 3MX 4VD 5NE 9CP 9NT, **VPs 1WY 2AB 2DA 2DJ 2GV 2LB 3HAG 3VN 4TF 5AB 6LT 6ZX 7NM 9CE, VQs 2DC 3PBD 4EM 4GU 5GJ, VSs 1EW 6DJ, VU2SS,** W2OAW/VO1, XE1s AAA AX SO, **XQ8AG, YN1s** CC EW JW, **YS1MS, ZBs** 1DC 1RT (360) 1, 1VV 2A, **ZK2AB, ZLs** 1APM 2AHZ 2ANZ 2AX 3HH 3WB 4HJ, **ZP5s** AM CG MQ, **ZS8I, 4X4s** FV HK, **5A5s** TC and TS, plus mobile-mariners Ws 4HFT 5AXI 6SCI 6NWU, Ks 1DAN and 6DJA.

15 Novice news is light but we have KNs 1DPB 4RJN (now N-less), 4VJD and WV6AFI tangling with **CO2s** JK QP, **KX6AF, LU7GP, PJ2ME** of Dutch Saint Martin, **PY3XE, VP2VB, WP4s** AOB AOD AOF, **WV4BW, YU1XG, YV5FH** and **ZB2A**. _ _ _ _ **Forty's** Novice contingent does almost as well in this month's mail. **KNs** 4TKM 5QJR (10 watts), 9MAF and WV6AFI made the long haul to **WG6AAG, KH6CJG, WH6s** CGK and COK.

10 phone is just beginning to roll again as OM Sol swings southward. "Summer conditions were extremely *louzay*," epitomizes K4DRO. W1MBX, K6TXA, W8IBX and KØHJV agree, taking time out from short-skip fun to find K2PMN/**KL7, OA4IM, TG7JD, YN1JR** (529) 20, **YV5BX, ZK1BS** and **ZP5EC** leaking through. _ _ _ _ On **c.w.** the story is equally sad. K4DRO, W8IBX and I1ER scraped up **VQ3PBD**, W8QOH/mm, **XE1YF, ZD6JL** and **ZS3AG** to keep us solvent. _ _ _ _ We bid farewell to **eleven** meters after a decade of intermittently interesting 27-Mc. activity. This range never was available to amateurs on a world-wide basis so its full DX potential was unrealized. So long, pal — nice to have known you!

40 c.w. yawns, stretches and flexes its propagational muscles for the fall season. Summer's drouth inspired W3LAX to remark, "Lots of DXers on 7 Mc. but not enough DX. We need more DX on 40!" One can but agree. Meanwhile W1OOW, K2PGP, W3CMN, K5s HWE JVF KGF KIZ, K6SXA, W7DJU, W8IBX, KØBMN and KP4AOO swap amenities with **CT2AI, DM2ADL** (24), **HH7NM, JAs** 1BJH 1BRS 1BX2 0AN, **KM6BK, OA4EZ, OH7NF, OKs** 1KUR 21D, **PJ2s** ME (18) 3, MF, UA1DZ, VE8SQ (15) 3, **VPs 2GL 7BT, XEs** 1BU 2UA, YU3CNO, YV5AL and **4X4AB** (5) 3. _ _ _ _ On **phone** HR1JR and KP4AOO report **CO2UG, VP2s** AB DA, **YN4AT** and **YV5BQ** (105) catchable.

All told, 1958 has run close to 1957's DX form and the scope of activity recorded this month is surprisingly identical to the October story of a year ago. This bodes well for coming months — right now, in fact. Good fishin'!

Where:

Hereabouts — W9DSO, ARRL W9/K9 QSL manager, puts this well: "The major problem of the bureau is disposing of the accumulation of cards for which no forwarding envelopes are on file. At present we have cards for over 1500

KS6AG, teacher in science at American Samoa High School, also gives impromptu instruction in geography, ionospheric propagation and the radio code on 20 meters. Dotty's rig is a DX-35, the receiver a military-surplus RBG affair and the radiator is the two-element rotary formerly used by W6UOU/KS6.

VQ2JB is among the more DX-inclined of our Northern Rhodesia colleagues with a self-assembled v.f.o.-807-parallel 807s r.f. section modulated by 6SJ7-6SN7-6SN7-AB$_2$ 807s. Plenty of W/K/VEs regularly bang hrough on that SX-42. *(Photo via W6NXP)*

stations and no self-addressed envelopes in which to mail them. As hundreds of pieces of mail are received each month it is necessary to check them against the unclaimed cards and this slows down the entire processing job. Regular No. 10 white envelopes often require that cards be folded, something we try to avoid. In making up your reply envelopes please *print* your call plainly in the upper left-hand corner in letters at least one-fourth-inch high. Place a four-cent stamp on each envelope; this will take care of six or seven QSLs." W9DSO is assisted ably by W9s ABI CQG GDI KKN PCF PVD QIY UIK RRX and other members of the Homewood, Ill., Tri-town Radio Club . . . . . "I will be handling QSLs for PJ2ME until further notice," informs K2SWZ-W3EKK whose address follows. "If direct replies are desired, s.a.s.e. are necessary. In foreign cases an IRC is required with each application. Stations otherwise will receive cards via bureaus at monthly intervals." . . . . . KV4AA reports lack-of-GMT difficulties in answering cards received for VP2VB's Aves and British Virgins ventures. OVARA stresses the date change often required in GMT conversions. For example: 8 P.M. EST, October 31st, becomes 0100 GMT, November 1st . . . . . KZ5BC tells the WGDXC gang that U. S. stamps are unusable in the Canal Zone — save 'em.

South America — "I wish to state that all cards for CEØAG's activity have been sent out as of July 10, 1958," communicates K6GKU. "We sent about 200 cards direct to those who enclosed self-addressed envelopes, the remainder via respective bureaus. All legitimate QSOs per Doug's log have been taken care of and I have no more cards in stock. Further CEØAG matters and correspondence regarding K6BAZ/FO8 and K6BAZ/OA4 should be taken up with Doug himself at 8913½ Broadway, San Gabriel, Calif. Thanks to all who have been patient and I apologize for any delay at this end." Well done, K6GKU . . . . . W8CSK understands that K1NAP files QSLs for KC4s USA USB USC USH USK USN USV and USW. Also see last month's general data on Antarctic QSLs . . . . . "Ex-CP1AM tells me he spent a month in a Panama hospital," says W1LIY. "He is now moving to Alabama where it will take him six weeks or so to unpack and settle down. He assures the DX gang that he will answer every QSL received." . . . . . From W6YK: "HC4IM (W6GTO) QSLs 100 per cent, has worked all United States save No. Dak. but still needs cards from seventeen. Pete often runs phone on 14,183 kc. around 0300 GMT." . . . . . W6KG hears that former KC4USK operator Don Edman can be reached in care of the post office at Solomons, Maryland . . . . . W0s AGO LUX and WGF stocked up on 3000 four-color HC8 QSLs prior to their Galapagos odyssey . . . . . VP8CE's next mail arrives by boat in January, learns WØDMA. The last post departed in April . . . . . Former LU1ZS operator K4MKN is accessible for QSL purposes at his home address, notes the NNRC DX newsletter.

Europe — "I have a considerable stack of cards from IS1MM for all call areas and a number of countries in South America, Europe and Asia," advises K4EHA. "Many of them concern contacts made back in November, 1956. A self-addressed stamped envelope will get yours immediately. Otherwise I'll distribute them through the various bureaus." . . . . . Someone prematurely borrowed 3A2CF's call for fishy business on 10 meters this spring. W1IUU still seeks the real one . . . . . K1DAN/mm's many QSOs from the European theatre will assuredly be confirmed.

Asia — As of September 1 the Okinawa Amateur Radio Club QSL Bureau should be addressed: APO 331, San Francisco, Calif. . . . . "OK1MB tells K8ERU he has shipped 750 YK1AT QSLs," writes W8CSK. "He still awaits YK1AT's logs dating from February, however." . . . . . W3ZA/3W, now dispensing permissible Vietnam QSOs (see "Whence") specifies these QSL instructions: W/K QSLs via W2JXH with self-supplied postage; Pacific island stations to MSUG, Box 34, Navy 150, FPO, San Francisco, Calif.; and all others to MSUG, 137 rue Pasteur, Saigon, Vietnam, with IRCs if possible . . . . . The Japan DX Radio Club understands that any North Korean station can be QSLd via Box 39, Pyongyang . . . . . W9DSO's Nine bureau recorded passage of some three dozen XW8AB QSLs recently, these for 1955–'56 operation. Obie reports our Bad Break of the Month: W9RRX's VS9O QSL came through filled out for W9RXX. Was it Freud or Kinsey who once inquired, "Isn't it best not to raise 'em at all — than to have 'em louse up your call?"

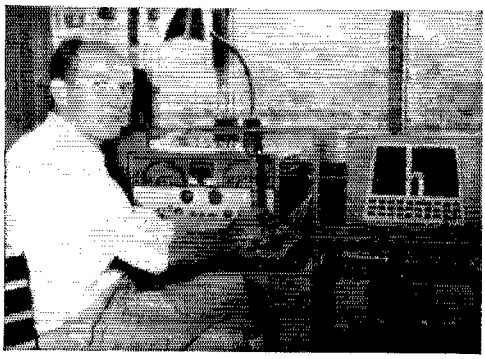
Oceania — ZK1BS directs our attention to the current correct Cook Islands bureau address: Bill Scarborough, Radio Station, Rarotonga. OM Holloway, the previous QSL manager, is long gone from the islands . . . . . W2CTN continues as Lord Howe Stateside QSL agent for VK2s AYY and FR . . . . . "Mail pick-up at KB6BJ occurs once weekly by plane," informs W8CSK . . . . . In WGDXC's organ we see that W6ZEN desires s.a.s.e. — nothing more — for his ZK2AB QSL assistance . . . . . NCDXC has it that ex-VK9JF, now VS2JF, is quite receptive to QSL inquiries at the address to follow.

Africa — "VQ5EK complains that many W/Ks use his old QTH which results in delays of as long as six months. The Box 391, Kampala, address should be used." This courtesy WØAGO . . . . . Accepting charter as VQ3CF's North American QSL representative, W2CTN reminds all beneficiaries that self-addressed stamped envelopes are the thing . . . . . W1s BDI CTW EST HTR ICP IKE PMZ TS TUW VG WPO, W2s HMJ JBL, K2s AYC HVN PGP QXG UYG, W3s CMN DKT, K3ARV, K4s IEX MWB, K5KBH, W6s KG NXP YK, K6s ALH LAS ZBN, W7s DJU FBD IXH QNI, W8s CSK KML, W9s JJN UBI YFV, K9s ELT KEV, WØs AGO DMA, VE3EIL, F7CO, HR1JH, DeRidder (La.) DX Club, Japan DX Radio Club, Newark News Radio Club, Northern California DX Club, Ohio Valley Amateur Radio Association, Southern California DX Club and West Gulf DX Club join in offering these QTHs for your approbation:

AC4AX (via Indian bureau)
CT2BO (via W6NJU)
ET2KY, c/o MARS Radio, Kagnew Stn., APO 843, New York, N. Y.
FF8BZ (via REF)
FG7XC, P. Antenor Habazac, Raizet Airport, Guadeloupe, F.W.I.
FM7WU, Box 61, Forte de France, Martinique
FO8AT (via W6KSM)
FP8s AT AU (via K2GMV)
FP8AZ (to K2IAD)
FP8BA (to K2YLD)
FU8AG, Box 44, Vila, New Hebrides
FU9AY, J. le Goff, via Base Chaleix, Noumea, New Caledonia
HC2AGI (to WØPHT)
HH7DH, Box 71, Aux Cayes, Haiti
HI8GA, Dr. Delgado 44, Ciudad Trujillo, D. R.
HK4JC, J. Amaris (HK3JC), Box 2311, Medellin, Colombia
HLs 1KAA 6KEF, Box 39, Pyongyang, North Korea
HL1SK, Minurl Kim, 69 Wooni-Dong, Chongro-ku, Seoul, Korea
HL9KR (via W6IAL)
HL9KT, 304 Sig. Bn., APO 301, San Francisco, Calif.

1958 Pan-American Contest

Peru's RCP invites amateurs in North and South America to work one another in its 1958 Test, this to take place from 1200 Oct. 11 to 2400 Oct. 12 (phone) and again from 1200 Oct. 18 to 2400 Oct. 19 (c.w.), times Eastern Standard. The customary five- or six-digit exchange, made up of RS/RST plus QSO serial number, will prevail. One's own country may be worked once per band for purposes of multiplier, which follows the ARRL Countries List except that HP and KZ5 count as one. For score, multiply contacts, worth one point apiece, by total band-multiplier. Logs must include at least one OA contact and be mailed within 20 days to RCP, Casilla 538, Lima, Peru. A handsome array of prizes is available to winners and runners-up in the various countries.



VK9AA enjoys 15-meter rag-chewing with Stateside friends and also collects his share of rare ones. His postal QTH is ambiguous but he's actually in the Territory of New Guinea. *(Photo via K5KBH)*

HP2ER, E. D. Russo, Box 568, Colon, Panama
HR1EU, A. Ehrler-Ugarte, P.O. Box 545, Tegucigalpa, Honduras
HR1OL, Col. O. Lopez, Apartado Postal 672, Tegucigalpa, Honduras
K1DAN/mm, G. E. Vandenberg, USCGC *Yakutat* (WAVP-380), State Pier, New Bedford, Mass.
K2DGP/KC4, D. Maziarz, 175 Hewes St., Brooklyn 11, N. Y.
K5BAW/VO1, J. Monroe, VW-15, Electronics Divn., FPO, New York, N. Y.
KA2MK, S/Sgt M. Kaplan (W2VRP), 6041st OPSRON, APO 994, San Francisco, Calif.
ex-KA5ZS (see XE0UWL)
KB6BK, Canton Island, Phoenix Gp., So. Pacific (air only)
KL7s CDI CDJ, Capt. J. H. Emerson, HQ AAC, OC-3, APO 942, Seattle, Wash.
KP4APA, M/Sgt C. E. Smith, Box 500, APO 845, New York, N. Y.
KR6JF (via OARC — see preceding text)
KR6LP, S/Sgt L. Peterson (K6EDV), Det. 4, 623rd AC&W Sqdn., APO 235, San Francisco, Calif.
MP4BCK, Box 3, Bahrein Island, Persian Gulf
OA4BW/8 (to OA4BW)
OE7FB, Innst. 21, Innsbruck, Tirol, Austria
OH5RO, P. K. Lampila, Valtakatu 61, Kuusankoski, Finland
OK1MX, O. Mentlik, Malostr. N-5, Praha III, Czechoslovakia
PA0DB, H. N. van Dongen, Speelhuislaan 5, Breda, Netherlands
PA0GD, G. H. Bergman (ex-PA9GH), Arnhemseweg 48, Leusden, Netherlands
PJ2ME, c/o B. Swedloff, K2SWZ, Box 82, Blackwood, N. J.
PY8DA, Box 28, Belem, Para, Brazil
PZ1AM, A. Meubelman, Box 12, Coronie, Surinam
PZ1AR, Box 547, Paramaribo, Surinam
TF2WCD, G. Johnson, 932nd AC&W Sqdn., APO 81, New York, N. Y.
TF3KA, K. Thormar, P.O. Box 801, Reykjavik, Iceland
UP2KCB, Pedagogical Institute, Shaulyai, Lithuanian S.S.R.
VK9XM (via VS1FJ)
VP2KF (via KV4AA)
VP8CE, Pete Cattow, FIDS Base J, Fenin Head via Port Stanley, Falklands
VQ3CF (via W2CTN)
VQ4BM (via RSGB)
VQ9GU (to VQ4GU)
VR2CC, F. Carter, Korolevu Beach Hotel, Korolevu, Fiji
VS2JF, J. Fulton (ex-VK9JF), c/o Cable & Wireless Ltd., 44 Northam Rd., Penang, Malaya
VS9MA, D. Tranmer (4S7DT), RAF, Gan Island, BFPO 180, Maldives via Singapore (or via RSGB or MARTS)
ex-VS9O, P. Rackham (G3IRQ), Bounds Farm, Ardleigh, Essex, England
W3ZA/3W (see text preceding)
W0BKL/KG6, A. Rainous, Box 1363, Agana, Guam
XE2MS, Box 143, Gomezvalacia, Durango, Mexico
XE0UN (to W3UN)
XE0UUE (to W0UUE)
XE0UWL, Z. Sprague (W6UWL), 452 E. Olive St., Oxnard, Calif.
XW8AI, P.O. Box 115, Vientiane, Laos
XW8AL, Houmphanh Saignasith, Director of Service, Statistique de Laos, P.O. Box 115, Vientiane, Laos
YN1TF, Apartado 189-G, Managua, Nicaragua
YV5HM (via RCV)
ZS3E, K. du Buisson, P.O. Box 66, Welwitschian, S.W. Africa
ZS6AQQ/ZS9 (via W4IYC)
3A2CG (via G4ZU)
5A2CS, c/o U. S. Embassy, Benghazi, Cyrenaica, Libya
5A4TJ, APO 231, New York, N. Y.
9G1CS, P.O. Box 529, Accra, Ghana

Whence:

Asia — Gay tidings from W3ZA/3W: "On August 7, 1958, FCC approved the portable operation of W3ZA/3W in the Republic of South Vietnam. The Commission's letter states in part, 'Communication between that station and other amateur stations licensed by the Commission is not prohibited.' This does not change the status of Vietnam with regard to Article 42, Section 1, of the International Radio Regulations (Atlantic City, 1947). Vietnam still is on the banned list but W3ZA/3W, *licensed by FCC*, is definitely off and okayed for work with W/K stations." . _ . _ . W9s YFV and AMU pooled efforts to supply Maldives club station VS9MA with two spare power transformers and a reactor for the outfit's DX-35. VS9MA's receiver is an English-model HRO and the radiator is a long-wire type. . _ . _ . K6DV finds JA1AUJ listening in on local U. S. QRM while studying agriculture near San Diego. He returns to Japan in December . _ . _ . Sapporo's Hokkaido Fair displayed operation by JA8s LW LX LY and LZ while JA1s AJU APY AQD BGK BLN SA US and others joined in exhibiting JA1s SA and YC in a Tokyo shopping center early in June. These public relations notes from W5IRP and K6DV . _ . _ . KR6LP's location, Okino Erabu Shima, "is a Japanese island with calls issued from the Ryukyus. I am the only operator to work from here and I'll be QRT in about nine months." By the way, Pete originated the "DX Roundtable," an informal Far East 14-Mc. phone schedule group which includes many a juicy prefix among its membership. Check with KR6LP, KA9MF or K6ZBN for details. KR6LP keeps his 600-watt BC-610E, BC-779B and ground-plane warm on 20 almost daily and he's planning a cubical quad . _ . _ . VS9AC tells W2HMJ of the impending Aden availability of one VS9AT. Aug also is interested to note that VU2GF crosses the pole handily with a mere eight watts . _ . _ . "UI8FR is another Asian YL," reports K4LAY. "Ann uses a pair of 812s." . _ . _ . Dissonant DX note regarding Ceylon's ham status: W1UED of ARRL Hq. is told by 4S7GD that "a campaign of abuses against the authorities" caused the prime minister to advise the country's postmaster general to take possession of all transmitting equipment on the island, suggesting that it may be "some little time" before 4S7s are heard again . _ . _ . DeRidder DX Club diggers divulge that W9MOW, an airplane driver in the Middle East, is authorized to sign YA1AA . _ . _ . W1ICP comes up with zorchy AC4AX, 14,098 kc, around 1200-1230 GMT, who claims to be ex-VU2AX-FN8AD . _ . _ . NOTE: The *top* caption is the mate for the VS9AP photography gracing page 73 of last month's *QST*. Caption No. 2 refers to VS1BB/VS9 photos which did not appear.

Africa — VQ9GU's subtle Seychelles B&W-equipped 21-Mc. s.s.b. stand in August produced W/K QSOs in limited quantity. W2HMJ enjoyed the chase but comments, "In addition to taking up half my vacation it required me to put the 21-Mc. wire back on my cube quad and borrow single side-band gear from a neighbor for two days. Surely makes things more interesting when they're tough to catch! But now how can I live down the fact that I have one country in my 264/254 total I couldn't raise on c.w.?" . _ . _ . W2HMJ also notes that ET2KY is manned by K4LUE . _ . _ . ZD7SA's 80-watt 807s and dipole squirters continue to panic the pack from 7 through 28 Mc. W8YIN finds Bob considering s.s.b. possibilities . _ . _ . VQ3CF apprises K4IEX of a yen for Idaho, Nevada and North Dakota contacts, 20 c.w. preferred. The holdout at CN2AY is South Carolina, says K4PHY . _ . _ . An ex-FL8AB (F8UD)

CAUTION

Under this country's treaty obligations and on formal notice received from other nations, FCC-licensed amateurs are warned to engage in no communications with stations in the countries listed below. This is in accordance with FCC Public Notice of December 21, 1950 (p. 23, Feb., 1951 *QST*), and as since revised.

Cambodia (FI8, XU), Indonesia (PK, YB-YH), Iran (EP-EQ), and Vietnam (FI8, XV, 3W).

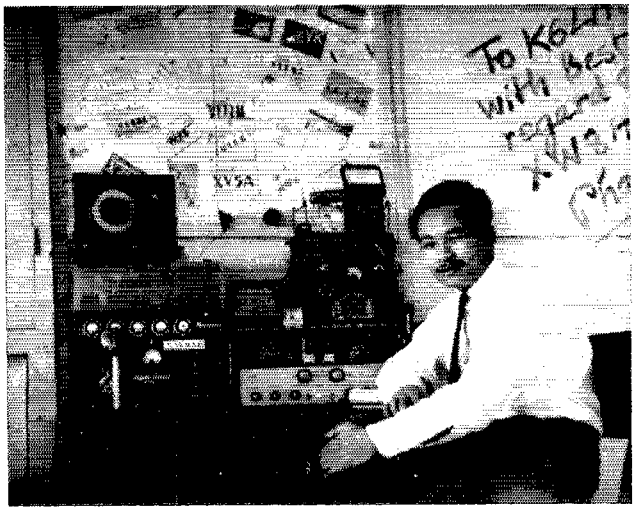
For those whose *QST* files do not go back to 1950 we will gladly supply, upon request, literature describing the circumstances of this prohibition.

VS1BB/VS9 highlighted and delighted this spring's DX season by making the Maldives workable on 10, 15 and 20 meters with a DX-35, HRO-MX and dipoles. Here Barry faces camera while second op Vic makes with the log. A view of the encampment's "Sunset Boulevard" also appears. Equipment used by VS1BB/VS9 remains on the scene for the use of 4S7RD and friends who now sign VS9MA. Meanwhile VS1BB sets his sight on something even rarer: the Nicobars and Andamans. *(Photos via W7PHO and W9YFV)*

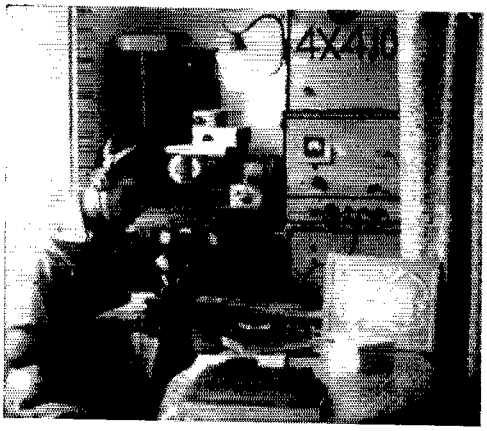
letter to W8KML confirms the absence of authorized French Somaliland activity as of August. FL8s AA AB and AC closed down on July 1st, May 30th and July 9th, respectively . _ . _ . _ K6CTV was delighted to find former colleague WØWET behind the ET2TO key . _ . _ . _ SU1IC forwards a rare prewar copy of the *ERSE Bulletin*, organ of the Experimental Radio Society of Egypt circa 1939. Some calls which appear: SU1s AM AX CH DB HB JM MS MW PG RD RO SG TM WM. SU2s JR TW and SU3HC. Remember? . _ . _ . _ WGDXC has VQ4ERR contemplating Seychelles shenanigans a year hence. How's this for *advance* notice? . _ . _ . _ OVARA's *Ether Waves* deduces that Tromelin isle will be operationally dormant for some time to come, FB8BK being in no rush to reactivate.

Oceania — ZL3DX (ex-VR2CG) sails to the Chatham Islands in high spirits with extensive s.s.b. intentions and gear assembled with the assistance of ZL1AAX. Twenty-meter resident ZL3VB expects to remain a Chathamite for several years but he chooses to remain rather rare . _ . _ . _ VK2AIR, who racked up some 1900 c.w. QSOs (over 1400 with W/Ks) in his August VK2AYY/LH skirmish, hopes to return to Lord Howe isle in February accompanied by VK2QL. The West Gulf gang observes VK3CX cooking up an L.H. phone fling, too . _ . _ . _ WITS encountered FO8AC with W6BYB at the 14-Mc. key in early August. This Six also scheduled tours to VR2 and ZM6 climes . _ . _ . _ KS6AG and her OM expect to leave Samoa in short order . _ . _ . _ W9MUJ confirms the phoniness of the 15-meter fibber signing KP6AK and KP6AK/VR4. Such childishness can only be exhibited by personnel possessing signally unfunctional cranial cavities — poor fellow . _ . _ . _ KM6BK advises W1AZW that Vermont and Maine so far have eluded his 14-Mc. snare.

Europe — K1DAN, W1ESU and K1CHN crossed the Atlantic aboard USCGC *Yakutat* this summer, escorting sailing bark USCGC *Eagle*, and the trio logged some 500 contacts as K1DAN/mm on 10 and 15 meters. A DX-100, HQ-110 with RME preselector and a center-loaded whip raised over thirty countries between stops at Amsterdam, Dublin, Lisbon and Bermuda. W1QFQ in New London maintained regular skeds to keep the salts in touch with home. Writes K1DAN: "We also visited the Brussels Fair and worked its amateur station, ON4UB. There are only four USCGC ships with ham rigs, incidentally — ours, *Spar*, *Courier* and *Northwind*." We're fairly familiar with *Courier's* work at Rhodes, of course . . . . . "One way to spread them out," observes W1TS. "One YU5 has a 20-kc. drift on a long CQ and when he finishes he's got the mob distributed over half the band." . _ . _ . _ W3MDO confirms that SSA (Sweden) has upped certification fees for WASM from 10 IRCs to 10 Swedish crowns (two Yank dollars). For full information write SSA Diploma Manager, SSA,



XW8AL, a recent addition to the Vientiane gang, makes his DX mark with a WRL-50, SX-99 and long-wire radiator. Phanh favors phone, 14-Mc. style. *(Photo via K6LAS)*



The two-year DX career of 4X4JO has enabled many a North American to score his first Asia contact. That's a homespun 40-watt rig, the receiver is an HQ-129X and the skyhooks are dipoles. *(Photo via W9MES)*

Stockholm 4. W3DKT adds that WG8A award details are obtainable from 8M7ID (ex-8M6ID) at Box 2005, Kristianstad 2, Sweden . . . . . "Just for the record, I was down in Monaco operating as 3A2CG on the 19th–21st of March," reports G4ZU to W1WPO. "Best DX included VKs 3AHO 6MO and ZL2BE on 21-Mc. phone. The rest of the contacts were mostly Fs and I1s — called my head off for some of my G-land pals but no joy. That mountain at the back surely is a dead loss. No W/K QSOs either, unfortunately." . . . . . W3DKT notes that YU2s QO and YH are DXing brothers at the same QTH . . . . . W4IAN declares, "Had a swell time visiting the hams of Norway in July. Holland next!" . . . . . W8CSK has ZB1DZ returning to GW3-LEW soon . . . . . LA6CF tells WGDXC members that next summer is the earliest possible time for the next Jan Mayen activation.

South America — Operation Turtle 1958, the Galapagos project of WØs (HC8s) AGO LUX and WGF, enjoys close liaison with Ecuador's Quito Radio Club. Equipment includes an HT-32, SX-101, KWM-1, Telrex tribander, Hi-Gain trapper, HC1FS's 2.5-kw. power plant plus an Onan 500-watter, and abundant photographic and recording gear. HC1LE and other HC brethren are slated to accompany Ron, Paul and Victor to ensure 'round-the-clock operation on 10, 15, 20 and 40 meters for several weeks using s.s.b., a.m. and c.w. WØAGO warns, "If DX hoggery gets too rough we will simply shut down, for we have sixty-two islands to visit and a considerable amount of movie and still film to shoot. Please assist by not QRMing our skeds with home. We will be away from Minnesota for almost two months and must keep in touch with our families. Operators will be on hand to man our home stations." Turtle terminates early this month . . . . . Check with APRA, the Paraiba Radio Amateur Association, rua Duque de Caxias, No. 250-10 Andar, Sala 3 — or P.O. Box 285 — Joao Pessoa, Pb., Brazil, for full scoop on the club's *Cabo Branco* certification. This one is based on two-ways with ten or more PY7s in Paraiba province, all QSOs dating since APRA's inception, September 1957. Possibilities include PY7s EW LA LE LF LM LN LS LX MA MD MF MM MN MO MP MS MU MV MX MY and MZ . . . . . K9ELT explains the booming signals of OA4s AGI and IGY. OA4AGI uses 4-400As and a 3- or 5-element beam, while sister station OA4IGY has a Viking-500 and similar radiators. Tracking satellites takes priority over DX efforts, however . . . . . ARRL QSL Bureau chiefs Ws 9DSO and ØDMA pass along notes from the fur south. VP8CD prefers 15 phone with his 600 watts and dipole at Port Lockroy, Grahamland. VP8CE endures a lonelier ordeal at Base J, Fenin Head, and must operate entirely from 6-volt battery supply. Pete has three human companions and 28 huskies. When not QRL with skeds, charging batteries and feeding the hounds VP8CE could stand some spare reading material . . . . . W6KG found HC4IM (W6GTO) chatting about his duties as radio engineer for an Ecuadorian tuna fleet. [Wonder if Pete can tune a tuna. — *Jeeves*]

Hereabouts — FO8AT, an endeavor of the San Diego DX Club, inspired a vast Clipperton following over much of August. Licensing arrangements expedited by FO8AC plus handy transportation from Scripps Institute of Oceanography enabled W6KSJ and K6RXM to tote ashore a KWM-1 and associated apparatus. Limited to about five hours of action daily, the boys nevertheless accommodated the c.w. and phone crowd efficaciously on 20, 15 and 10. SDDXC, fresh from its Clipperton triumph, now contemplates a Revillagigedos rampage before the year is out . . . . . An outbreak of VP9 smallpox queered current Anguilla aspirations of W6ITH . . . . . VP2VB, *Yasme II* and friends continue their roisterous rounds of Caribbean hot spots along the Federation strand. St. Kitts, Antigua and Montserrat follow earlier stops at Aves and the British Virgins . . . . . Veteran "How's" contributor W2GVZ retires from business just in time to catch this autumn's DX run. Younger contributor W1ARR braves California's concentrated r.f. to undertake military studies near San Francisco . . . . . HR1JH advises that HR1OL is chief of Honduras' armed forces. Easy on that zero-beat . . . . . W7QNI deserves a share of credit for contributing August's DL3TG shack shot . . . . . W9s FID KA and NN reveal that ex-FB8BB-F9ET now resides in Arlington Heights, Ill. Mac scheduled a visit to W9-DXCC festivities at Chicago's Sheraton on the thirteenth of last month . . . . . FG7XC tells K2HVN that ex-FG7XB, now F2NA, plans eventual return to Guadeloupe . . . . . KP4OO's dad now signs KN8LHL and tackles tough 7-Mc. schedules with Roger . . . . . K2SWZ learns that PJ2ME intends to become an FS7. Bernie also finds VP5FH-VP7BN closing down in favor of W6HNX/Ø activity. Ex-VP2LU will seek to fill Seth's Caribbean shoes . . . . . W1WQC will appreciate hints on confirming his February 1953 QSO with ZD4BK. K2PGP seeks a lead on ex-KG4AU for the same purpose, and W1KRS would like to do something about the paucity of 4S7YL QSLs . . . . . W5s GNG and KBU signed on for another perspicacious year as West Gulf DX Club *DX Bulletin* co-editors while W5s KC and FFW now serve as the organization's prexy and veep, respectively . . . . . CO7NR advises that the Amateur Radio Association of Camaguey (ARAC) is throwing a radiotelegraphy contest in which all amateurs are invited to contact as many CO7s as possible on 7 and 14 Mc. only. Periods will be from 1500 EST Saturday through 1900 EST Sunday Oct. 25–26 and Nov. 1–2. Call "CQ AC." CO7s will send RST and QSO number, others RST and power (like ARRL-DX Competition exchanges). Logs postmarked by February 15, 1959, should go to ARAC, Box 28, Camaguey, Cuba.

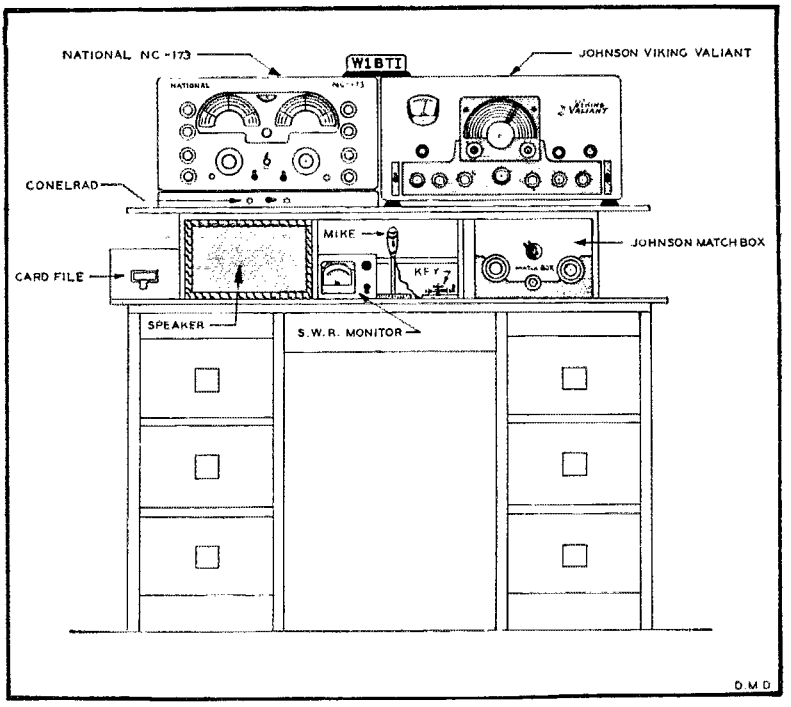
Ten Years Ago in "How's DX?" — In October, 1948, we observe a moment of respectful editorial silence for the increasing number of rare DX stations being trampled by the swelling country-hungry W/K crowd . . . . . W4BRB and 3.5-Mc. friends report imminent 80-meter activity by EL5B, PZ1FM, VQ8AY, YN1AA and ZB1AP . . . . . Forty's best are KM6AH, PJØXP, RV2/FO8 and W4DGW/KJ6 . . . . . The 14-Mc. c.w. set is agog over C's 7OK 9AS, EK1TF, F9LG/OX, HL1s AE AG, HP2X, Js 2AHA 2NZI 4KLT 6AAG, LX1s AS AW, OY3IGO, PI1L, PKs 3XIN 5TEST, TAs 1AA 3FAS, VR5PL, VS7s LA NX PII, Ws 6ODD/CR8 7KMV/Iwo 8WEA/Truk, XALF/VQ4, YR5I, YU7AF, ZC6NT, ZD8B, ZC6NT, ZS4Z and 4UN/Rhodes . . . . . On 20 phone there are 1IP1LC, J9s ACN ATT, KA1AI, KH6KH KB6, LX1JW, MB9BA, XAFG/Trieste and W2EJV/PK3 . . . . . Ten phone awakens from its summer snooze to provide QSOs with KW6AJ, MD5KW, Ws 4FVI/KX6 and 7JEF/KG6 . . . . . Oddments: Marion Island joins the ARRL DXCC Countries List and the Mongolia entry becomes Mongolian Republic (Outer). . . . Britain's exit from Palestine shuts down many a ZC6. . . . Chilean WACE certification No. 1 falls to W6AM. . . . Pictures of QRP ace VK3NC, G8RS/P on British Field Day, PY1AJ and GW4CX embellish the column while Jeeves is tempted to electrocute the boss.

Strays

Kit builders will be interested in an operating table now available from Electro-Voice, Buchanan, Mich. Designated the KD88, this kit is made of tongue-and-grooved gumwood with a masonite top. It has a sloping portion along the rear edge, to permit easier reading of receiver and transmitter dials. Stowage is provided for log and call books, and there is a pull-out shelf for additional writing space.

FEEDBACK

With reference to the transistor power supply and modulator in September *QST* (p. 19) the polarity of the 5 μf. electrolytic across R_1 should be reversed.



Neat and Clean

BY DOMENICK M. DeVITO,* W1BTI

No doubt there is many an amateur who has found himself in my position. If we, the XYL and I, could have found four rooms, one room could have been used as a spare room and I might have found myself operating from room number four. The best we could do was a three-room apartment, and decisions had to be made as to just how I could operate — with the least inconvenience to all.

The XYL's desire to have the TV set in the bedroom gave me only one choice, the living room, and it was a very desirable one for me for several reasons.

I could operate early in the morning without disturbing the XYL's sleep, and late in the evening and into the morning I could operate while the little lady watched her late, late, late, 2nd late, late, late movies etc.

The next step was to make the operating position as neat as possible. I got myself an unpainted six-drawer desk, keeping in mind all the things I could put out of sight in these drawers, that usually find their way in a big heap in the shack.

Next, I made up from plywood a platform which would give me some writing space, also a place to set in my Match Box, speaker, s.w.r. monitor, key, etc. This kept these items from being piled sky-high on top of the rig or receiver. At the very top of this special platform (or shelf, if you like) went the receiver and transmitter. To balance the tops of the rig and receiver I had to use some method for raising the receiver. This was done with two strips of wood, which allowed me to take advantage of space below the receiver for my conelrad system which uses two pilot lights in series with the secondary of the output transformer of a radio set that is out of sight behind the desk. A toggle switch throws out the lights and then the speaker takes over if the audio from the radio is desired. This system was written up in *QST*.

The platform is screwed to the desk top and in the event that a new QTH is obtained the equipment can be dismantled, the platform removed, and the desk separated for easy moving.

* 57 Bracewood Lane, Stamford, Conn.

Strays

Anyone who has children in the family will appreciate W6JAT's definition of a decibel: One decibel equals the amount a youngster turns down the TV set after being told it is too loud!

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If you'd like a frequency list of all the North American a.m., f.m, and TV stations, try the 50¢ booklet published by Vane A. Jones Co., 3749 N. Keystone Ave., Indianapolis 18, Ind.

Operation Alert, 1958

A Symposium of Amateur Participation

BY GEORGE HART,* W1NJM

INCREASING international tension during the week preceding May 6, 1958, created a serious situation, and on that date a sudden, surprise attack was launched on all major U. S. cities and target areas. If you were busy working DX or chewing the rag, you probably didn't even know it, but quite a number of amateurs were very much aware of what was going on and were in the thick of it. In fact, 42 reports were received from amateurs, most of them AREC [1] or RACES [2] leaders, in 26 states telling us what they did during OPAL 1958. Only those with a RACES status were requested to take part in the exercise this year, which somewhat limited amateur participation.

The enemy was kind enough to let us know the day on which he would attack, but other details were withheld in sealed envelopes which were not placed in the hands of state and local civil defense directors until the day of the attack. The envelope contained the exact time of the attack, location of ground zero, type of burst, size and yield, and other information. Some of the attacks included chemical, biological and sabotage aspects. During the first day, communications were supposed to be available as if there were no interruptions or damage. On the second day, communications were to go to (simulated) pot and emergency facilities be invoked. This, of course, is where RACES came in.

We are sure that many amateur groups other than those reported took part in the exercise. This is really only a sampling. But *these* are the ones who told us about it, so here's what they did:

The Winthrop (Mass.) c.d. director (standing) was an interested spectator as W1DLY dispatched traffic from sector headquarters. That's W1DEL on the right. *Photo by W1BB (RO).*

Alabama

The Jefferson County RACES group set up at City Hall in Birmingham on four frequencies: 3955, 29,560, 145,350 and 50,700 kc. Local communication on the three high frequencies was excellent, but considerable difficulty was experienced on 3955 because of both man-made and atmospheric noise. Twenty-eight took part.

California

In San Francisco, Operation Alert was a huge success. Communications with all wardens was 100% and all messages were delivered prior to 2300. The control station was manned by K6ANP on 29,450 kc. while the mayor, police chief and fire chief looked on. Thirteen other amateurs took part from home and field stations, plus members and member stations of the Mission Trail Net, American Legion Net and Northern California Net. Coverage also extended to Marin, Sonoma, Mendocino, Alameda, San Mateo, Santa Cruz, Santa Clara and San Benito countries.

Colorado

The Montrose *Daily Press* reports a "dastardly vicious hydrogen bomb attack on Grand Junction" which spread death over the western slope area. They had a simulated disaster almost more real than the real thing, in which the RACES station was the only link between Grand Junction and Montrose for three days. KØDCC did the communicating from Montrose.

Connecticut

The Newington RACES, under RO W1DXT, participated in the Connecticut Area 3 OPAL Drill, six amateurs taking part. Other towns in Area 3 likewise were in the area net, conducted under the supervision of W1WYM, area radio officer.

Florida

A 2-KT bomb fell on central Florida, wiping out Orlando, rocking Tampa and causing some fallout over St. Petersburg. In the latter city, a school evacuation was held in which eleven amateurs participated. Everyone was well pleased with the smoothness of the operation.

State Communications Officer W4UHY reports (in *Florida Skip*) that this year's OPAL placed great importance on communications, especially on RACES. A new half-kw. rig at state headquarters gave a good account of itself, operating strictly on c.w. in contact with stations in Jacksonville, Miami, Orlando, Tampa, Tallahassee and Pensacola. County RACES organizations also were active from Dade, Orange, Pinellas and Manatee Counties. Others may have been active but are unreported.

Illinois

The Bond County RACES organization operated both days of the alert. Radiological data were relayed from the

* National Emergency Coordinator, ARRL.

[1] What, you never heard of AREC? It stands for "Amateur Radio Emergency Corps."

[2] This is, of course, the Radio Amateur Civil Emergency Service. Where have you been?

RAD Officer in Greenville to W9CLW in Springfield via the Target City Net. W9HOT monitored the two meter net for traffic from E. St. Louis and Belleville. Novices and restricted phone operators also helped considerably.

Two full days of operation took place in the joint communications center at Swansea, Ill., for Belleville, E. St. Louis and St. Clair. Six base stations were in operation on 3503.5, 3997, 29,640, 29,520, 50,580, 145,650 and 147,300 kc. Twenty-eight amateurs took part.

The Southern Wisconsin and Northern Illinois (SWANI) Amateur Radio Club took part in the alert at Woodstock. Messages were exchanged between two fire trucks and the civil defense directory via amateur radio, and liaison was maintained between the amateur group and the sheriff's police radio.

Indiana

The problem in Terre Haute was to determine the amount of fallout from a simulated H-bomb which hit St. Louis. Mobile units relayed the readings from the radiological teams to ed headquarters in a completely successful operation. The "buddy" system (two operators to a car) was used in providing operator reliefs and continuous operation. Twenty-one amateurs were on hand.

Iowa

The Iowa-Illinois Amateur Radio Club operated equipment at the Des Moines County C. D. Control Center in Burlington. Contact was maintained with the state control center in Des Moines at all times. Operation was conducted on 80, 6 and 2 meters and everything went well, although there was less traffic than last year. When the 80-meter feeders became twisted, the fire department's ladder truck was pressed into service to untwist them. This group is fortunate to have the financial cooperation of the city civil defense in procuring equipment for its RACES operation.

The Davenport Radio Club took part "with 100% success in getting all traffic through promptly" and the local and state c.d. directors were pleased with the work done.

Kansas

In Atchison, six operators worked for 16 hours during the alert, keeping constantly in touch with Topeka headquarters at all times. Radio officer is KØCPD, EC is WØIWS, and they work together.

Kentucky

W4JSH reports on the activity in Kentucky's statewide net consisting of a station from each of the five Mobile Support Groups. The net was on c.w. and experienced much QRM from other c.w. stations and nets operating in OPAL. W4BAZ reports for the Third Mobile Support Group that nets were established on ten, six and two meters with a participation of 27 amateurs, all AREC members. At First Group headquarters W4NBA and W4SUD were active. Sixteen hours of activity took place in the Second Group, under W4TQD, using seven mobile units and 8 AREC members. No inter-county activity in the Fifth Group, but W4JSH handled traffic between Lexington and Louisville.

Maryland

Amateurs in St. Mary's County, operating under their approved RACES plan for the first time, handled a total of 43 c.d. messages smoothly and without delay. Ten meters was used for local work, 75 for contact with state control. Only seven amateurs were available, but months of regular drills paid off in efficiency which brought high praise from the county c.d. director. W3BUD, W3ZZK and W3BCP head up this organization.

Five amateurs took part in OPAL in Carroll County, under RO (also EC) W3FVK. Contact was maintained with state headquarters on ten meters.

Massachusetts

Stew Perry, W1BB, the enterprising and energetic radio officer (and EC) for Winthrop, was particularly proud of his gang's showing in its local drill. Only five of the group of 35 knew the day or time of the simulated attack, yet within 5 minutes they had 14 stations on the air, 18 stations within 10 minutes and 22 stations within 15 minutes. This speaks well of Winthrop's alerting system; however, even if telephone communications had not been available, the net is "self-alerted" to get on the air in any emergency. The Winthrop control center also participated in the statewide drill, starting at 0830 and continuing until 2230.

The Concord RACES group took part in OPAL operations on May 3rd, 6th and 7th on 2, 6 and 10 meters, under Radio Officer W1WNP. On May 3, contact was made with Sector 1-D headquarters in Bedford for working out the details of radiation problems. On May 6, AREC junior members monitored 2, 6 and 10 meters after school until the regular team reported at 1900. Eight amateurs participated. On May 7 the same procedure was followed, including a test evacuation in which RACES mobiles cruised the "damage" area and reported to the base station. Part of the activity was conducted under AREC, part under RACES, depending on whether or not RACES was authorized in the various areas covered.

Five amateurs participated in OPAL at Cambridge under EC W1COL. Although a RACES plan exists, the operators are still under AREC. However, the c.d. director authorized them to operate under RACES for this drill. Control Center Station W1ZBR was covered the full time of the alert.

Michigan

Washtenaw County was put under heavy simulated attack because of the existence there of Detroit's Willow Run Airport. EC/RO W8JYJ had the civil defense control station on the air and some 15 amateurs participating in the local exercise. About 50 messages were handled and all were delivered. The c.d. director had high praise for the amateur circuit which, he said, functioned on several occasions when telephone communications failed.

Minnesota

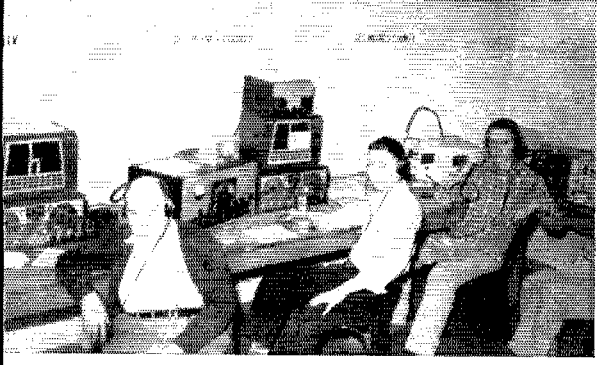
The state control station was set up in Mankato and remained in contact with all RACES nets in the state throughout the alert, on 80 c.w., 75 phone and 2 meters. Contact was also maintained with the highway patrol. Each RACES unit handled several messages pertaining to simulated bomb drops. The group in Rochester used 6 and 75 meters while those in Alexandria, Fairbault and Mankato used 75.

Further details of the operation in the twin cities area comes from St. Paul EC WØPDN. Approximately 20 St. Paul amateurs took part using fixed stations only. Station on 2 and 10 meters were set up at the c.d. headquarters, with five sub-stations in operation throughout the city. Operation was directed by RO WØIPN.

Missouri

Our only Missouri report comes from an almost-readable club bulletin which (we think) indicates that the St. Louis area drill was mostly on paper as far as public participation was concerned. The explosion of the simulated hydrogen bomb knocked down all lowband antennas. RACES had the

In the Woodstock, Ill., Operation Alert, K9HKJ checks out a portable unit with the Woodstock c.d. director, who is also chief of police.



Shown in a corner of the radio room at the c.d. control center at Burlington, Iowa, are (l. to r.) Chief Operator WØQVA, KØDJV and KØHMN.

principal function of confirming telephone and teletype messages.

New Jersey

The Monmouth County RACES Control Center was operated for a 12-hour period each day, using emergency power. A total of 2880 word groups were handled, much of it by radio-teletype. Circuits on 2 and 80 meters were maintained to state control in Trenton. Within the county, operation was on 10, 6 and 2 meters. The county now has 121 amateur stations, 74 municipally-owned stations and 239 RACES amateurs in its lineup.

New Mexico

Bernalillo County RACES was right in there with its amateurs in Operation Alert. The group, under RO W5UWA, maintained communication between the various evacuation areas, established the feasibility of a 2-meter net for communication with Santa Fe and San Ysidro, and successfully operated a c.w. net with Santa Fe. The alert began at 0819 on May 6, and within a half hour all units were on their way to their assignments throughout the area. This included five evacuation areas, an 80-meter link to state headquarters, activation of the 10-meter station at c.d. headquarters, a couple of 2-meter portables and two ten-meter mobiles at San Ysidro. The following day, the entire c.d. headquarters was evacuated from Albuquerque, and 15 minutes after arrival at the new location the headquarters stations were back on the air, communication being maintained meanwhile from mobile units. All in all, it was a great demonstration of RACES versatility, with mobiles traveling an average of 300 miles and all operators putting in two days of hard work which included camping out over night. Twenty-five amateurs participated in all.

New York

The c.d. authorities of Erie County evacuated a token convoy of six cars containing 25 people from Buffalo into Allegany County. The Allegany County RACES was to pick up the convoy and follow them through the various stages of their medical check and welfare care. County Radio Officer W2SRB alerted the local county RACES net on 160 meters, while the convoy operated on 10 meters, liaison between the two nets being conducted by K2GQG. As soon as the convoy entered the county it was joined by a 160-meter mobile unit, which thereafter maintained contact with the county net. The control center in Wellsville was kept informed of the exact whereabouts of the convoy, and Area X control in Lancaster was kept posted on the 10-meter frequency. The convoy entered the county at 1250 and left at 1545. This was the first time that a joint exercise was conducted with personnel of Erie and Allegany County working together, and the Allegany County c.d. director pronounced it "another job well done by the RACES net."

OPAL 1958 started in Erie County at 1030 May 6 with the activation of all RACES nets in the area. Two-meter contact was established with Lockport, Springville, Jamestown and Mayville. Communication with all points was excellent and the exercises continued until 2200. The following day (May 7) four evacuation convoys were sent out to points in surrounding counties, each equipped with 2 and 10 meter mobile equipment. Constant communication was maintained with all convoys during the entire period they were en route to their destinations. During the two-day period a total of 195 messages were handled by the control center, approximately 175 amateurs taking part.

North Carolina

Two statewide nets were established, one on 3997 and one on 3509.5 kc. All 42 of the state's counties covered by RACES reported to the Command nets during the exercise, which was conducted by State Radio Officer W4HUW and his assistant, W4LOV. Plenty of QRM was experienced and worked through successfully. Some counties held drills on 2 meters, but with considerable difficulty because of the mountainous terrain, and this band was nearly useless at area or state level. Thanks to W4RRH for this information, our only report from N. C.

Oregon

The Coos County Radio Club provided the operators for the county RACES net on 3917 kc., in which 19 stations participated on May 6 and 17 on May 7, about twelve hours each day. Five mobiles and a total of 29 stations were active all told. Traffic was handled between county control and county stations, and between county control and state control in Salem. Some 50 messages were handled. The mobiles had a special job in connection with assistance in routing traffic during the dynamiting of an old chimney. About 30 amateurs took part under the direction of W7BLN, EC and RO for Coos County.

Pennsylvania

The AREC of Philadelphia participated in OPAL on May 6, in cooperation with the Philadelphia Council of Civil Defense. RACES nets were active on 75, 10 and 2 meters. SEC W3DVB operated from the city communications van, which moved out of the city at the yellow warning. Three other amateurs participated, including W3PST, Phila. RACES radio officer.

Montgomery County AREC/RACES was also active on 10, 6 and 2 meters during the alert. The operation was divided into two phases on May 6. The first phase, from 1100 to 1300, saw four stations in the ten meter net and four in the two meter net, with two operators at the control center. Some traffic was handled intercounty and with the state control. In Phase II, the county c.d. headquarters station was activated on 10, 6 and 2 meters with five operators. Attendance was much better, with 32 stations in the 10 meter net and 14 in the two meter net. Approximately 20 messages were handled during this period, mainly from local directors to county c.d. headquarters. All areas of the county were well represented and all presently-installed zone control centers were in operation, although 90% of the operation was on 10 meters. W3ZXV and W3FSZ conducted the operation during the absence of RO W3CNO.

W3CFM reports that 18 amateurs were on hand for the Lackawanna County OPAL with good coverage of the county, competing favorably with the telephone company for speed in message relay. Since the major activity was to the south of them, the traffic was not heavy.

South Carolina

Last minute RACES authorizations made it possible for the Charleston Amateur Radio Club to assist in Operation Alert. Stations on 75 and 2 meters were set up at County Hall and contact made with state headquarters in Columbia and U. S. Army Engineers in Charleston. The two-meter link worked fine, but conditions were impossible on 75.

South Dakota

WØZLB headed up operation from Aberdeen, emergency capital and c.d. headquarters, using three other operators in one ten-hour and one 7½-hour session on May 6 and May 7 respectively. During the first session, 113 incoming messages were received, and 44 similar messages were handled during the second session: total time, 17½ hours, traffic 157. A very creditable performance, despite difficulties which

forced a move from c.d. headquarters to amateurs' homes. Contact was made with FCDA regional headquarters in Denver by WØELV, but conditions made the passing of traffic impossible.

Tennessee

A fine report from Oak Ridge RO W4CXY tells of an initial alert at 1052 which set off a prearranged plan involving immediate activation of control centers at Rockwood and Oak Ridge to make contact with each other and with Knoxville c.d. headquarters, all on six meters. This contact was maintained solid throughout the drill. Additionally, contact was made with Nashville on 75 phone and 80 c.w., the mode used depending on which was getting through best. The Oak Ridge control station was closed at 2130. Opening at 0830 May 7, the same channels were again set up, but this time contact was made with Nashville on 6 meters instead of 80 c.w., enabling both Oak Ridge and Knoxville to route their Nashville traffic on that band. The operation was concluded at 2025. Seventeen amateurs took part, four additional reported but were not used, and seven others stood by to help if necessary.

In Memphis, the club station W4EM was set up at the c.d. control center on 2, 10 and 75 meters, and K4SHJ was set up on 6 meters to handle traffic with the U. S. Public Service Hospital. Out-of-town traffic was handled on 75/80 meters with Nashville and other outlying cities. Operation continued on May 7, but considerable difficulty was experienced on 75 meters because of conditions. About 20 amateurs were active.

Virginia

The Tri-County RACES Organization covering the counties of Mathews, Gloucester and Middlesex had participation only from its control station, K4AET, which was very useful in relaying traffic from many of the area stations which could not be copied at state control. Three zone control stations were ready to operate but were not called on, as were three additional supporting stations.

In Falls Church, the sealed envelope with instructions was not opened until 0100 May 6. Three members of the RACES organization were available. Contacts were made with Fairfax County RACES headquarters and with regional headquarters. Telephone service was not available.

In the Fredericksburg area the alert began at 1006, May 6. The RACES part of the operation was conducted by three amateurs, who maintained a 13-hour radio watch.

West Virginia

State Radio Officer W8HZA gives us a concise report of operation of the state group on 3890 kc. Two target cities, Wheeling-Moundsville and Charleston, showed good amateur participation. Elsewhere in the state, a great increase in participation was shown, 52 amateurs in all. Kanawha County operated a six-meter net, with W8CLX as control, a "first" for this county. AREC in the state supported the operation wholeheartedly. Message traffic totalled 55, with 20 West Virginia municipalities represented.

Wisconsin

We know that Milwaukee amateurs were in the c.d. alert because K9GDF reported operation for six hours. Other than that, we have no information.

SCM W9KQB reports information received from two main CD control stations, one in Watertown under RO W9NRP and another at Stevens Point. At the Southeast Reception Area at Watertown, 95 messages were handled by nine amateurs, while at the Central Reception Area at Stevens Point RACES handled about 100 messages with nine amateurs on duty. The tests were considered successful.

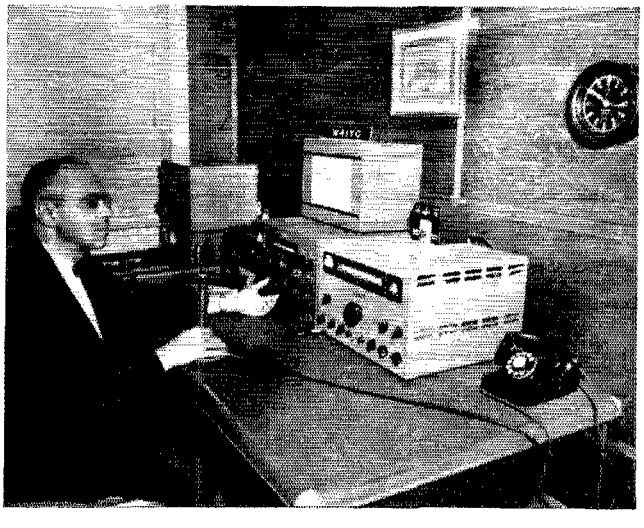
Comments

Alabama RO W4GET says that traffic handling on 3955 was practically impossible and recommends that RACES be given additional frequencies in the 7.2-7.3 Mc. band segment. He also recommends the establishment of a RTTY frequency in the 7.0-7.2 Mc. segment. W4BAZ feels that c.d. exercises of this type should be held at least quarterly to eliminate some of the "boo-boos" which always crop up in the annual tests. W4HOJ, also from Kentucky, lists some of the common mistakes made which could be corrected by more practice: long and poorly-worded messages; poor penmanship; unwieldy message forms; lack of c.w. facilities. Says WØPBY, Chief of the RACES Branch, Minnesota c.d., "We need more practice and training in drills to keep interest in the RACES program." W4CXY, Oak Ridge, Tenn., RO comments favorable on the whole operation, but observes a few shortcomings: RACES frequencies for statewide operation are not at all satisfactory; frequencies in the 40 meter band are needed, as well as additional space on 80. More information and drill on the c.d. message form are needed, since it differs from the standard form used by amateurs. Conflict in the information passed out to RACES from higher levels should be coordinated. A meeting of ROs throughout the state to resolve these difficulties should be called after each alert.

K4AET, RO for the Tri-County c.d. in Virginia, points to lack of personnel to keep stations operative (not prevalent in his own area, but obvious elsewhere), and thinks that more amateurs should be trained for phone traffic work. Also, misuse of the 3997 kc. frequency makes its intended use (as interstate) largely impracticable. He recommends a stricter set of rules and more control from the top.

Strays

Interest in two-way sideband DXCC is running high, and there are a number of fellows who now have confirmed two-way sideband QSOs with more than 100 countries. One of the leaders (possibly he has the top score) is W4IYC, in Richmond, Va., who has 143 worked and 130 confirmed on two-way s.s.b. W4IYC has been active since 1923 in many phases of ham radio and has held a number of ARRL appointments. He has been an enthusiastic sidebander since 1953. His present rig consists of an Eldico 100F driving a Johnson Kilowatt, while the beam is a W3DZZ three-bander and the receiver a 75A-4.



Hints and Kinks For the Experimenter

NOTES ON THE GONSET COMMUNICATOR III

One possible characteristic of the Gonset Communicator III is hum modulation of the transmitted signal. This occurs only during push-to-talk operation when microphones similar to the surplus T-17 are in use. Under these conditions, modulation by a.c. hum or vibrator whine can be quite severe. A glance at the microphone circuit will show that the relay circuit and microphone "talking" circuit have a common return wire in the microphone cable. Therefore, these circuits are coupled across the resistance of a common wire, namely the resistance of a five- or six-foot length of wire. This condition can be alleviated if a four-wire microphone cable is substituted for the original three-wire cable. This eliminates the common return lead and reduces hum modulation to negligible proportions. Self-coiling four-wire cords which are ideal for this purpose are sold as replacement cords for some types of dynamic microphones. One possible trouble which will remain after this modification is the contact resistance between the sleeve of the PL-68 and the jack. Be sure that the PL-68 is clean and bright, and that it is not worn to a sloppy fit.

— *R. A. Johnson, K2EOC*

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Some owners of the popular Gonset Communicator III have run into difficulty with the push-to-talk arrangement. Carbon mikes which do not have a conventional push-to-talk circuit, or do not open the mike circuit when the button is released, have been found to cause feedback. In addition, when a conventional push-to-talk mike is used, hum is often evident. This hum disappears when the front-panel "transmit-receive" switch is used instead of the push-to-talk button. The hum is caused by the a.c. component of the voltage drop in the mike control wire appearing on the grid of the speech amplifier. Both of the above difficulties may be remedied by making the following modifications.

First, locate the 1.5-megohm resistor connected at pin 2 of the 12AX7. This is R_{31} in the 6-meter or R_{32} in the 2-meter model. Lift the other end of this resistor from ground. At this end, connect a 0.1-μf., 200-volt capacitor and a 470,000-ohm resistor. The free end of the capacitor is then grounded to a convenient spot, such as pin A of the heater terminal strip. The free end of the 470,000-ohm resistor is then connected to the tip prong of the mike jack which already has a .01-μf. ceramic and a 68,000-ohm resistor connected to it.

If your transmitter is stamped with "M-1" or higher on the rear chassis lip, the above modification has already been made at the factory.

— *Samual M. Bases, K2IUV*
— *Rudolph Schwerdt, Jr., K2QVU*

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To copy c.w. with a Communicator III simply plug in a crystal having a frequency at the i.f. of the Communicator. The function switch is thrown to "spot" for weak signals. For stronger signals requiring greater injection, the switch is thrown to "exciter." In this way, a crystal controlled b.f.o. is furnished. A 2.3-Mc. crystal is used for the 6-meter Communicator and a 6-Mc. crystal for the 2-meter model.

— *Irvin L. Schroeder, W9VCL*

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The accessory v.f.o. for the Communicator III can be employed as a b.f.o. for both the 6- and 2-meter Communicators by throwing the v.f.o. switch to "spot" and beating the c.w. signal with the v.f.o.

— *Woodrow Smith, W6BCX*

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While trying out a factory-fresh Gonset Communicator III, I was intrigued by how I could arrange my surplus 243 crystals in the six position socket. The spacing is too close to accommodate more than three crystal holders. Two adjacent crystal positions will accept FT 243 crystal holders back to back.

Examining my 243 crystals I found that they all have about the same outside dimensions, but that some cases are shallow with thick plastic covers and some are deep with thin metal covers. Using parts from a handful of junk crystals, I assembled my crystals in "thin" FT 243 holders made up of a shallow case with a thin cover. The modified cases measured about 3/8-inch thick and racked up neatly in the crystal sockets.

Before starting this project, be sure to clear your working space since crystals may look just alike when out of their holders. Clean the rubber gasket off the metal cover, then insulate the center, at the point of spring bearing, with a bit of plastic electrician's tape. Use the YL's tweezers to handle the crystals and pressure plates. The three screws will be too long, so cut them down with a file using a nut as a thread guard. Seal the modified crystal cases with a plastic spray after assembling and checking. Be sure to mark the cases with the correct crystal frequency if the covers have been changed.

— *Phares W. Calliham, W4ZIO*

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Late productions of all models of the Gonset Communicator III incorporate the following circuit modification. The purpose of this change

is to delay the application of a.v.c. voltage to the *cascode* r.f. amplifier, thereby improving signal to noise ratio on medium strength signals. (Receivers having a.v.c. stamped on the rear apron of the receiver chassis have been wired with this change at the factory).

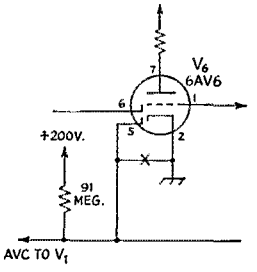


Fig. 1—Diagram showing modification to Communicator III a.v.c. circuit.

First remove the jumper connected between pins 2 and 5 of the 6AV6 socket (X in Fig. 1). Also remove the lead between pin 5 and the ground lug. Disconnect the .01-μf. capacitor lead from pin 5 and connect to the ground lug. This frees all connections from pin 5. Next, locate the three lug terminal strip mounted between the v.h.f. oscillator coil and i.f. transformer no 5, see Fig. 2. Connect a 3-inch length of No. 20 solid insulated wire between pin 5 of the 6AV6 socket and the forward lug of the terminal strip. Then connect a 91-megohm, ½-watt resistor between the forward and aft lugs of the terminal strip. Now replace the 3rd i.f. amplifier tube (V_5) with a 6BJ6 tube.

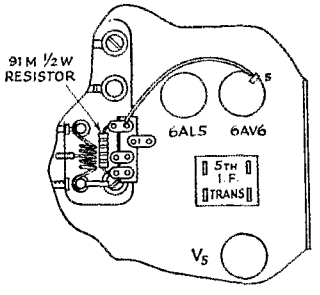


Fig. 2—Sketch showing placement of the 91-megohm resistor and the new lead to the 6AV6.

The above modification is very desirable, but obtaining a 91-megohm resistor may be a problem. However, it is a standard Motorola replacement part on certain late model Motorola auto radios and probably can be found in service shops which specialize in repair of Motorola sets.

— *Woodrow Smith, W6BCX*

MODIFICATIONS TO THE ELMAC AF67

FROM time to time minor changes are made at the factory in the circuitry of the Elmac AF67 to improve the performance of the transmitter. Here are some of these modifications that are simple to install and use a minimum of parts.

Fig. 3 shows a jumper wire (heavy black lead) mounted between two sections of the final coil band change switch SW_{51C} and SW_{51B}. The addition of this wire will reduce TVI and will effectively short out L_{54} (the 80-meter coil) when the rig is in operation on 10 meters.

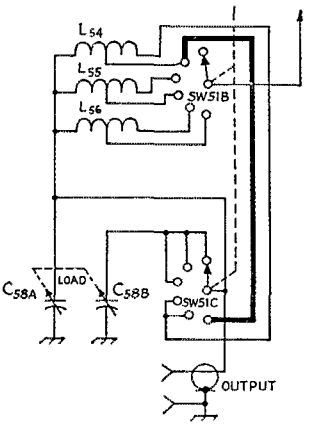


Fig. 3—Circuit change to reduce TVI.

Because of the extensive shielding in present-day receivers, especially the Elmac PMR-7, it is somewhat difficult to hear the v.f.o. spotting signal. Fig. 4 shows how to cut one wire (at X) and add another (heavy black lead) to put the 6AQ5 in the spotting circuit. The spotting signal will now be much stronger.

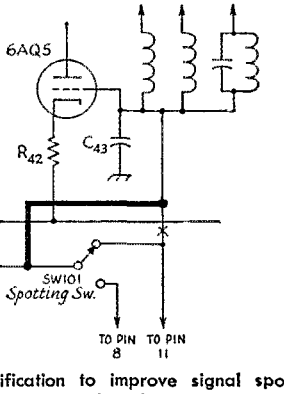


Fig. 4—Modification to improve signal spotting with the v.f.o.

Transmitters manufactured several years ago did not incorporate the 6146 filament by-pass capacitors The addition of a .01-μf. 1500-volt disk capacitor very close to pins 2 and 7 of the 6146 will suppress audio oscillations.

Another possible modification in the speech section is the addition of a 250-$\mu\mu$f. capacitor from each grid (pin 5) of the 5881 modulator tubes to ground. A 250-$\mu\mu$f. capacitor is also connected from the grid (pins 2 & 7) of the 12AU7 to ground.

It has also been noted that some transmitters

have a high modulation resting current. This high static current of 60 ma. or more is usually caused by one of two things. A defective bias battery may be at fault, but the most likely reason is excessive voltage on the screens of the 5881 modulator tubes. This "low level voltage" is the same voltage that operates the v.f.o., buffer, driver, and speech tubes. It is recommended that this low voltage be about 225 volts. If you are using a M-1050 or M-1470 power supply and it provides 300 volts (which is much too high) for the "low level voltage," it is suggested that terminal K be switched from I to J in the low voltage section in the M-1050 or M-1470 power supply. This change will lower the receiver voltage, the low level voltages, and the total B plus when the supply is used on the transmitter. The modulator static current should now be about 30 ma.

— *Harry Stewart, W8PSV*

BOOK HOLDER-OPENER

HAVING trouble keeping *QST* or the *Handbook* open to the right page while at the work bench? An old coat hanger is the simplest answer.

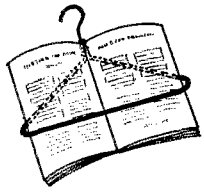


Fig. 5—Neat application of a coat hanger.

No bending is necessary. Just slip it over the favorite article as shown in the sketch.

— *Bob Ellis, W5YVQ*

MOUNTING QSL CARDS

MOUNTING QSLs on walls without marring wall paper, paint, or damaging the QSLs is always a problem. One solution is to mount the QSLs with folded stamp hinges, the type used by stamp collectors for mounting stamps. Put a hinge on the back of the corner of each QSL, wet the other half of the hinge and hold in place for a few seconds. After the hinges are dry they will hold the QSL in place indefinitely, and they may be removed when dry without the slightest danger to walls or cards.

— *Mike Kaufman, K6VCI*

CHEAP AND EASY SHIELDING OF POWER CABLES

PLATE, filament, power mains and relay control leads are expensive and difficult to shield by conventional methods. However, such shielding can often result in a substantial reduction of TVI. The idea is to slice an 18-inch roll of heavy duty aluminum foil into 2-inch-wide rolls with a single-edge razor blade. Then spiral wrap the power cables with a 1-inch overlap to provide good contact. The ends can be fastened tightly with metal cable clamps to which the grounding system is connected. This method easily accommodates wires fanned out of the cable. Lacing or spot tieing of the cable before shielding helps to make it a neat job.

It should be noted that it is essential to use heavy duty aluminum wrap since the lighter foil tears easily.

— *Jack Blindbury, W6VIO*

MAKING SLUG-TUNED COILS FROM COAX

TUNABLE coil forms for v.h.f. and u.h.f. converters or transmitters can be made from scrap pieces of coax cable, such as RG8/U or RG87/AU. The outside shield and inner conductor are removed and the end product is a polyethylene or teflon tube with an o.d. of 0.3 inches and an i.d. just large enough for a 6/32 tap. The plastic tube can be cut with a tube cutter or a small hack saw to any convenient length. The 6/32 thread is tapped clear through; this allows you to fasten one end to the chassis with a short screw and a star washer to prevent turning. The brass screw

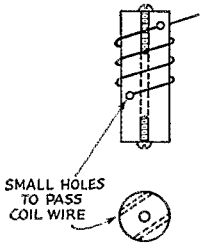


Fig. 6—Sketch showing the slug tuned coil made from a piece of coax.

changes the inductance enough to shift the frequency a few megacycles. The wall thickness is about 0.1 inches which allows a small hole to be drilled between the outside wall and the center. Choose a drill to obtain a snug fit for the wire being used.

— *James Theodore, W7LJA*

NOTES ON THE GONSET V.H.F. V.F.O.

IN ORDER to minimize spurious emissions, the Gonset V.F.O. for 6 and 2 meters has an output of 24 to 27 Mc. In spite of the fact that this is mentioned in the instruction manual, some hams seem to think that the v.f.o. is operating in the 8-Mc. range. This is not the case. When the v.f.o. is used with equipment other than the Communicator, it may be necessary to modify the crystal oscillator circuitry if the oscillator was designed for 8-Mc. crystals. The Communicator III crystal oscillator is designed to work either with an 8-Mc. crystal or from the 24-27 Mc. output of the v.f.o.

—*Woodrow Smith, W6BCX*

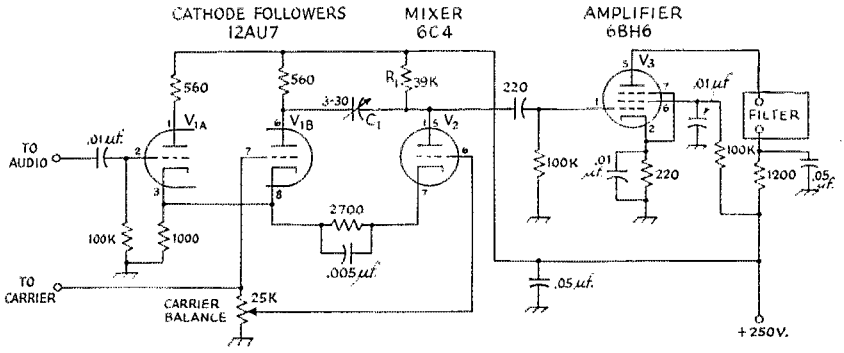


Fig. 7—Diagram of the balanced modulator W9WIO used with the "Edmunds exciter." Unless otherwise indicated, capacitances are in µµf., resistances are in ohms, resistors are ½ watt.

A BALANCED MODULATOR FOR THE W1JEO EXCITER

For the last five years I've been using a W1JEO exciter (*QST*, November 1950) with very good results. Reports were always excellent but I sometimes received comments on a trace of carrier. After being reminded many times about the carrier I decided to install a balanced modulator. I was interested in something simple that could be installed without too much difficulty.

I went back to a technical topic by Byron Goodman, W1DX, in *QST*, February 1957, in which the operation of the Crosby balanced modulator was explained. An article by Dan Healey, W3HEC, in *QST* December, 1957, was also consulted.

After studying the above material I came up with the circuit shown in Fig. 7. A conventional amplifier (V_3) was added to the Crosby circuit to boost the output to a higher level. Also, a 39,000 ohm resistor, R_1, was used as a plate load for the mixer instead of an r.f. choke. C_1 is a neutralizing capacitor that compensates for capacitive feedthrough between V_{1B} and V_2.

—*James Zvolanek, W9WIO*

CHANGING CRYSTAL FREQUENCIES

The usual procedure for changing crystal frequency involves grinding which is fine for making large changes or for certain low frequency crystals. However, for small changes ensuring stability of frequency when reached, and also for insuring that the activity of the crystal is not diminished by the change, etching is preferred.

Etching material used commercially (ammonium biflouride) is not commonly found at the corner drugstore. Fortunately there is a ready source of this chemical in a preparation sold as an aluminum cooking utensil cleaner called "Aluminum Brite." Since it attacks glass or ceramics, it comes in a plastic bottle.

When etching crystals, put about an ounce in a plastic dish (or you can use copper or stainless steel) at room temperature. The action is greatly accelerated by heat but by the same token becomes harder to control. Bend a copper wire hanger to hold the crystal blank in the etching solution. As an indication of the speed of etch, it takes about eighteen minutes to move a 7-Mc. crystal 8 kc.

Determine the frequency accurately before starting, and make a trial etch of five minutes. Wash and dry the crystal and contact electrodes and reassemble in the holder. Use the same holder for checking that will finally be used with the crystal so that capacity, pressure, etc., will not be changed. Cleaning is important for high frequency crystals for two reasons. First, the crystal will have difficulty oscillating if not clean; second, the solution apparently leaves an invisible deposit, which if not removed will load the crystal and give a lower than true frequency.

Since etching reaches all surfaces of the crystal there are no changes in the proportions. Hence the activity is unchanged for moderate frequency shifts. There is less danger of chipping or breakage since handling is at a minimum. Grinding leaves a microscopically fine dust in the surface pores of the crystal which gradually comes off and causes an upward drift in frequency. Etching eliminates this problem.

—*J. H. Ellison, W6AOI*

REMOVING STATIC ELECTRICITY FROM PLASTIC METER COVERS

A static charge, as noted on plastic meter covers of various test instruments and meters, can in most cases be greatly reduced or eliminated by cleaning the plastic meter face with a liquid detergent. Use the detergent full strength, wipe it on and off the face of the meter with a clean soft cloth. —*Stuart Leland*

MEDICAL TOOLS FOR THE WORKBENCH

The act of holding the wire leads of a diode or transistor in place to absorb heat while soldering, holding a soldering iron in the other hand, and then reaching for solder with the third hand is quite a problem!

One solution is to use any of the large assortment of surgical clamps known by a variety of names: hemostats, snaps, mosquito forceps, kelly clamps. These instruments all have an automatic locking device yet have the same grasping action of pliers. They can be quite expensive if purchased new but probably can be obtained reasonably second hand or as discards from hospitals. —*Dr. Ernest S. Pentland, VE3DWP*

27-Mc. Band Deleted

Staff Notes . . . FCC Forms

27-MC. BAND DELETED

In time for only a brief announcement in September *QST*, in early August FCC made final its proposal of April, 1957, to withdraw the band 26,960–27,230 kc. from amateur use and assign it to the Citizens Radio Service. The Commission's order is some 30 pages in length, but we reproduce below only the text of that portion which deals with the strictly amateur aspects of the matter and outlines the reasons FCC took the action it did despite heavy amateur opposition as indicated in filed comments.

Reallocation of frequencies in the range 26.96–27.23 Mc.: The Notice of Proposed Rule Making in this proceeding recognized a need for additional spectrum space for personal use by any individual, especially those persons now holding authorizations for Class A stations in the Citizens Radio Service who will not be able to establish eligibility in any of the Industrial or Land Transportation Radio Services, as well as a substantial need for additional frequencies in the 28 Mc. range for use in the remote control of such objects or devices as model aircraft. Accordingly, it was proposed to reallocate frequencies in the band 26.96–27.23 Mc. from the Amateur Radio Service to the Citizens Radio Service for use by Class A stations for general purposes and, in addition, provide certain other frequencies to Class C stations exclusively for the purposes of remote control. The Commission stated that this reallocation appeared appropriate because the frequencies in this band are a part of a larger frequency band within which interference may normally be expected and must be accepted from industrial, scientific and medical (ISM) devices and because, as a result of the foregoing, only limited use of this band has been made by the amateurs. In addition, it was pointed out that amateurs, as individuals, would be able to obtain licenses in the Citizens Radio Service for either radio control or voice communication in this band.

In connection with this proposal, the Commission received a very large number of comments from both individual amateurs and modelers, as well as clubs and organizations representing persons active in each of these hobbies. In general, it may be said that all but a few comments from modelers enthusiastically supported the proposal and most of those from persons who are both amateurs and modelers also supported the reallocation. Most of the comments from other amateurs were in complete opposition to any use by the Citizens Radio Service of frequencies in this band. However, a substantial number suggested that the band be shared by the Amateur and Citizens Radio Services. A few amateurs suggested that other amateur frequencies by substituted in lieu of those proposed, or concurred in the proposed reallocation.

Typical of the reasons set forth by the amateurs opposing deletion of the availability of frequencies in the 26.96-27.23 Mc. range to the Amateur Radio Service are:

(a) The adoption of the Commission's proposal would constitute a derogation of the Atlantic City Radio Regulations to which the United States is a signatory nation.

(b) This band is the only one in the lower frequency ranges open to the amateurs where the Commission permits certain types of emissions and operations, and accordingly where the amateurs may engage in experimentation in facsimile, continuous carrier, and duplex operations.

(c) The characteristics which make these frequencies particularly good for long-range and international communications will cause too much interference and "skip," and prevent the widespread use of this band for short-range communications and remote control.

(d) The recent non-use of this band by amateurs is due to cyclical "sun spots."

(e) Other amateur bands are overcrowded, the service is expanding at a rapid rate, and the 26.96–27.23 Mc. band is the only area left for expansion.

(f) The fact that an amateur might obtain a Citizens Radio Service authorization is not an adequate substitute because some amateurs could not meet the age requirements of that service, and in addition, amateurs would not be permitted to make their own adjustments to a citizens radio station.

On the other hand, the modelers point out their dire and immediate need for additional frequencies, stating that the situation has been aggravated by recent authorizations of high-powered stations in other radio services on the frequency 27.255 Mc. for such purposes as traffic controls and remote radio paging. They further state that the use of frequencies in the 26.96–27.23 Mc. band for control of models is feasible and is similar to allocation practices found practical by other governments.*

The Commission is well aware of the history of the Amateur Radio Service in the development of the radio art and in providing a springboard of interest for future engineers and scientists. However, it must also be remembered that the remote control of models fosters a similar interest in young people and is a hobby in which young people are able to participate. The Commission is aware of the Amateur's outstanding record of assistance in local and national disasters. The Commission also recognizes that the Amateur Radio Service is a rapidly expanding service, but then, so is the number of persons engaged in the remote control of models expanding at an ever-increasing rate.

While both amateurs and modelers suggest that spot frequencies located in different portions of the spectrum might be more desirable for remote control, such allocations are simply not possible at this time with the present scarcity of spectrum space.

In addition to filling the need for additional frequencies for remote control purposes, the proposed reallocation would also fill an urgent need for additional frequencies for voice communications by persons who will be unable to establish their eligibility in any of the Land Transportation or Industrial Radio Services. Although the Commission may have originally underestimated the use of the 26.96–27.23 Mc. band by amateurs, the use of that band is still considerably less than in other bands available to the amateurs, a fact which is admitted by many amateurs and established by monitoring observations of the Commission.

As to whether the proposed reallocation would be in derogation of the Atlantic City Radio Regulations, the Commission considers that no derogation is involved. The primary world-wide allocation of that frequency band is to the Fixed and Mobile Services and the footnote permitting its use by amateurs is merely permissive. Therefore, the reallocation ordered herein and in the companion proceeding in Docket No. 11959 from the Amateur Radio Service to the Citizens Radio Service is not in derogation of the Regulations.

As stated above, the 26.96–27.23 Mc. band is a part of a larger band in which interference may normally be expected from ISM devices. Most of the reasons presented in opposition to the proposed reallocation of that band to the Citizens Radio Service were based upon potential use of this band in the future by the Amateur Radio Service instead of actual need or existing use of the band. Monitoring records indicate that this band is not heavily used by the Amateur Radio Service, due obviously to the interference hazard presented by the operation of ISM devices on 27.12 Mc.

* For example: It is understood that in England six frequencies for the remote control of model aircraft and five frequencies for the remote control of model boats have been allocated within the band 26.96–27.28 Mc.

and also due to the proximity of the more desirable 10-meter exclusive amateur band. The Commission feels that substantially greater use can be made of this band by the Citizens Radio Service and that the loss to the Amateur Radio Service is negligible. While it is true that certain operations have been possible in this band which were not permitted on lower frequencies available to the Amateur Radio Service, such operations are still possible on frequencies above 51 Mc. and frequencies in those ranges appear to be coming into even greater usage by the amateurs than the band here under consideration. Although the Commission realizes that, in many cases, an authorization in the Citizens Radio Service may not be an adequate substitute for the privileges lost in this band; nevertheless, the Commission finds that public interest, convenience and necessity requires the reallocation of the 26.96–27.23 Mc. band to the Citizens Radio Service for the purposes proposed. The recommendation that this band be shared by the two services involved is not adopted, since that action would be inconsistent with the Commission's position in international affairs regarding the shared use of amateur bands.

STAFF NOTES

We regret to record the resignation from the Hq. staff of C. Vernon Chambers, W1JEQ. A long-time member (28 years) of the League's crew, Vern's handiwork is well known to the construction-minded readers of *QST*, especially in the mobile and general transmitting fields (the 813 rig in our January, 1954, issue was built by more amateurs than perhaps any other *QST* design in history). His first job at Hq., at the tender age of 15, was in the strictly non-ham category of office boy; but the bug bit, and he soon became W1JEQ, whereupon his interest and developing ability made him a logical candidate for lab work. He shortly took over the Technical Information Service until War II interrupted with both Army and civilian service in the field of guided missles. Postwar, Vern has been a heavy contributor to both *QST* and the *Handbook* — the latter's tube tables, practically a career in itself, being one of his recent responsibilities.

We are mighty sorry to lose him, but Vern found an opportunity in the field of real estate he felt he could not turn down. In wishing him all the best, we know we are joined by the many hundreds of *QST* readers whose amateur stations have included at one time or another an example of W1JEQ-designed gear.

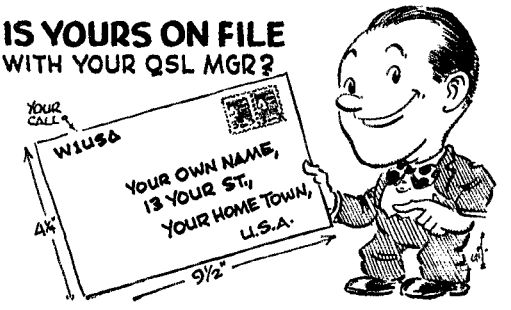
FCC FORMS

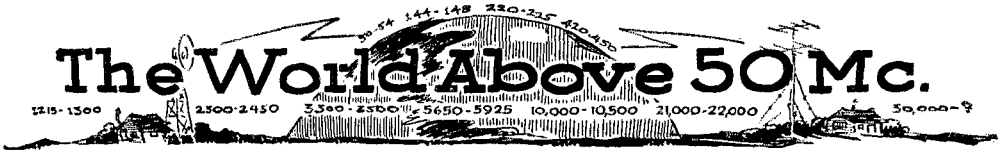
The Amateur Service Group at FCC in Washington, struggling to keep up with the thousands of license applications received each month, still finds one of its biggest problems is due to carelessness on the part of hams in filling out forms. Many licenses are being needlessly delayed, and the staff caused extra work, by minor slipups on the part of the applicant — he forgets to sign the paper; or he signs it but doesn't have it notarized; or he fails to answer one of the questions; or he shows the correct month and day of his birth but then adds "1958" for the year. All these and other incomplete papers have to go back to the applicant, a procedure consuming time which the staff would much rather spend on issuing new tickets. So, please — help FCC to help you, and double-check every space on your Form 610 or 405-A to make sure it is complete and accurate before dropping it in the mail.

A.R.R.L. QSL BUREAU

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

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.
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, W4IHYW, 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 Avenue, Oakland, Calif.
W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, 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.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — George C. Goode, VE2YA, 188 Lakeview Ave. Pointe Claire, Montreal 33, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 833 10th St., North Lethbridge, Atla.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd. Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay Labrador.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — KL7CP, 310–10th Ave., Anchorage, Alaska.
KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.





CONDUCTED BY EDWARD P. TILTON,* W1HDQ

WHATEVER else can be said of the 1958 Perseids, it is reasonably sure that this was the most exploited meteor shower in history. From Aug. 9 on, schedules were being kept in all sections of the country, and there were at least two well-organized expeditions to rare states. Results thus far reported range all the way from "very poor" to "excellent." We've not yet heard from all the major participants, but here are the reports we have on hand at press time.

WØIC, Denver, Colo. — W8PT, Benton Harbor, Mich.: pings and short bursts 8/9 and 10; calls exchanged 8/11. QSO 8/12, 0419-0430 MST. W8KAY, Akron, Ohio: pings 8/9; nil 8/10 and 11. QSO (best DX, 1240 miles) 8/12, 0440-0454 MST. W9WOK, Barrington, Ill.: pings 8/9; more pings 8/10. QSO 8/11, 0516-0530 MST. W5RCI, Marks, Miss.: many pings and short bursts, 8/9 and 10; QSO on 30-second burst at 0553 MST. W5RCI had best sig heard during shower, blocking receiver at times. Appears to be optimum distance for this shower, 900 miles. W5AJG, Dallas, Texas: call sequences heard 8/9, 0620, and 8/11, 0628 MST. Pings on other skeds. No QSO. Too close, 670 miles? W6NLZ, Palos Verdes Estates, Calif.: calls heard 8/9, 10 and 11. QSO on tremendous burst 8/12, 0638, still going when QSO concluded. W6WSQ, Pasadena, Calif.: near misses 8/9, 10, 11, 12, 13, 14. W7FGG, Tucson, Ariz.: near miss 8/10, on extended sked. Too close, 630 miles? W5DFU, Tulsa, Okla.: similar to W5AJG. W6AJF, Sonoma, Calif.: WØIC heard well, but transmitter trouble at W6AJF.

No results were achieved with W4WNH on a single sked, nor with W2CXY, W2AZL and W4ZXI daily, despite close liaison with these stations on 7095 kc. QSOs reported are firsts on 144 Mc. between Colorado and Michigan, Ohio, Illinois, Mississippi and California. Equipment at WØIC is a pair of 4X250Bs at 1 kw., feeding a 32-element collinear array.

W6LIT/7, Rock Springs, Wyo. — No QSOs 8/9 and 10, though pings were heard on skeds with W5LPG, W2CXY, W2ORI, W9GAB, WØSMJ, W9KLR, and W6NLZ. Worked W7VMP, Phoenix, Ariz., 0030 to 0130 8/11. Heard W6NLZ, W6WSQ and W5LPG. W6NLZ was worked, 0600-0630 8/12, and W6WSQ 0805-0855. The latter QSO was completed on a single long burst. W6PJA was heard well at 0745, and W5VWU once on a 0330-0430 sked. Skeds originally set up for Aug. 13 and 14 were abandoned because of generally poor results and fatigue.

Don comments that he and W6NGN found that keeping skeds over a continuous period of 10 to 12 hours, working both 7 and 144 Mc., is too much of a task for two operators. Adequate provision should be made for sleep and operator relief, where the expedition is to continue for several days at a stretch, particularly when a long trip to the working site is involved. Don and Ed wish to thank the people at Rock Springs, especially K7DLP and K7KLO, for their hospitality and help.

W2CXY, Chatham, N. J. — W5AJG worked after nearly 5 years of trying. QSO resulted when, after hearing nothing on direct path, W2CXY swept 45 degrees either side with his 52-element 4-Yagi array. Good bursts were heard on the south side of the path, and were found to peak *30 degrees* off the direct line. Also worked: WØQDH, Salina, Kan., WØIAY, Pawnee City, Neb., and WØEMS, Omaha. WØOHP, Lincoln, Neb. was heard. Both WØEMS and WØIAY were in the 100-watt power range. Signals from the west peaked on the direct path or slightly south of it.

The QSO with W5AJG was the best DX reported for the 1958 Perseids, 1360 miles. W2CXY's skeds at greater distances with W7JRG, W6LIT/7, WØIC, W5VWU, W7FGG and W7VMP produced absolutely nothing. Good liaison was maintained with these stations on 7 Mc. Addition of Nebraska and Kansas gives W2CXY a 37-state total, and every state inside the 1400-mile range. His nearest unworked state is now Colorado, the eastern boundary of which is about 1450 miles distant. This dismal pros-

1 WØZJB	14 WØHVW	26 WØMVG	38 W7ILL
2 WØBJV	15 WØWKB	27 WØCNM	39 WØDDX
3 WØCJS	16 WØSMJ	28 W1VNH	40 WØDO
4 W5AJG	17 WØOGW	29 WØOLY	41 K9DXT
5 W9ZHL	18 W7ERA	30 W7HEA	42 W6ABN
6 W9OCA	19 W3OJU	31 KØGQG	43 W6BAZ
7 W6OB	20 W6TMI	32 W7FFE	44 VE3AET
8 WØINI	21 K6EDX	33 WØPFP	45 W9JFP
9 W1HDQ	22 W5SFW	34 W6BJI	46 WØQIN
10 W5MJD	23 WØORE	35 W2MEU	47 WØWWN
11 W2IDZ	24 W9ALU	36 W1CLS	48 K9ETD
12 W7LLL	25 W8CMS	37 W6PUZ	49 WØFKY
13 WØDZM			

W1AEP	47	W4RFR	45	W7CAM	45	WØJOL	46
W1CGY	46	W4AKX	44	W7BOC	45	WØJHS	46
W1LSN	46	W4MS	44	W7MKW	40	WØOFZ	46
W1SUZ	46	K4DNG	44	W7JRG	40	WØQVZ	45
W1RFU	45	W4HHK	43	W7UFB	39	KØAKJ	45
W1ELP	44	K4GYZ	42			WØWNU	45
W1KHL	44	W4FNR	42	W8SSD	47	KØDXS	44
W1IKO	44	W4ZBQ	42	W8HXT	47	KØGKR	43
W1CLH	44			W8WPD	47	WØBTG	43
W1LGE	43	W5VY	48	W8HJR	47	WØPKD	43
W1FZ	43	W5LFQ	47	W8RFW	47	KØCLJ	41
W1TAM	42	W5ONS	46	W8LPD	47		
		W5VV	45	W8NOH	47	VE7CN	45
W2RGV	47	W5EXZ	45	W8SQU	46	VE1EF	42
W2BYM	47	W5FSC	45	W8OJN	46	VE7AQQ	40
W2FHJ	46	W5BXA	45	K8CIC	46	VE3AIB	39
K2ITP	46	W5KTD	44	K8ACC	46	VE2AOM	38
K2CBA	46	W5FXN	44	W8NQD	45	KL7AUV	36
K2ITQ	45	W5ML	44	W8UIZ	45	EI2W	35
W2SHV	45	K5ABW	42	W8ESZ	44	VE3BHQ	33
K2AXQ	43	W5HEZ	42	W8INQ	43	VE3DER	33
K2LTW	42	W5JME	42	W8EVH	42	VE1PQ	32
W2ORA	40	W5CVW	42			VE3OJ	32
		W5VVW	42	W9BRN	48	VE4HS	31
W3TIF	47			W9ZHB	48	XE1GE	30
W3KKN	45	W6UXN	48	W9QUV	48	SM7ZN	29
W3KMV	45	W6WNN	48	W9RQM	47	PZ1AE	28
W3RUE	44	W6IWS	48	W9MHP	46	VE1WL	28
W3MXW	44	W6ANN	47	W9AAG	46	CO2ZX	27
W3BGI	44	W6GCG	47	W9DSP	46	ZE2JV	26
W3OTC	42	K6JCA	47	W9EPT	46	LU9MA	26
W3FPH	42	K6HYY	47	W9JCT	45	ZS3G	26
W3NKM	42	W6NLZ	46	W9UIA	45	SM6ANR	23
W3ZYK	42	W6JKN	46	W9SWH	44	SM6BTT	23
		K6RNQ	45	W9EID	43	VE1ZR	23
K4DJO	47	W6AJF	45	W9KLR	43	CO6WW	21
W4UMF	47	W6CAN	44	W9IMG	42	LA9T	20
W4AZC	47	W6NIT	43	WØZTW	48	LA7Y	18
W4UCH	47	W6BWG	40	WØFKY	47	KH6UK	17
W4EQM	47	K6ERG	40	W6NFM	47	VQ2PL	16
W4CPZ	46			KØDTA	47	JA1AUH	16
W4FBH	46	W7DYD	47	KØJJA	47	JA8BU	14
W4FLW	46	W7YJE	46	WØDGE	47	ZE2JV	12
W4EQR	46	W7ACD	46	WØIBL	46	JA1AAT	12
W4LNG	45	W7JPA	46	WØEDM	46		

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

pect leaves Walt with the feeling, bolstered by some years of intensive effort, that he has reached the practical limit for a New Jersey 2-meter station, unless moonbounce can be made to produce.

W5AJG reports that the signal from W2CXY had a soft quality about it; mushy, but not rough like an aurora signal. "I got enough stuff from him for a dozen QSOs, the way meteor-scatter contacts often run!" Skeds were kept beginning 8/10, when pings parts of W2CXY's call were heard. Nothing was heard on the 11th.

W2CXY was heard at once at 0520 CST on the 12th. Work continued until after 0655, giving Leroy an opportunity to make comparisons between a 32-element collinear and a 15-element long Yagi. Signals appeared to be about 3 db. stronger on the collinear, though the noise level was lower on the Yagi. During the latter part of the QSO the W2CXY signal was heard almost constantly, as if by tropospheric propagation, but with bursts superimposed. The period from 0630 to 0655 was full of intelligence; probably when W2CXY changed his antenna heading to 30 degrees south of the direct path. Who has an explanation for this off-path success on a circuit that had been tried unsuccessfully on numerous occasions before via the direct route?

W5AJG also received good sequences from WØIFS and WØIC 8/10 and 11, but was unable to complete a contact. Tests with K2GQI and K2QJY were unproductive.

W4RMU, Oceanway, Fla. — Worked K2IEJ, W8KAY and W4LTU 8/10, K9AQP 8/11, W2BLV 8/12 and K2QJY 8/14. This was W2BLV's first experience with meteor scatter, but he is rarin' to go on other skeds now.

W9WOK, Barrington, Ill. — Worked W1OUN, Portland, Me., 8/10, WØIC 8/11, W5FSC, Houston, Texas, 8/12, and W5CVW, Ft. Worth, 8/13. This put W9WOK into a tie with W9KLR for leadership in 144-Mc. states worked, with 39. W9KLR worked W7JRG, Billings, Mont., for his 39th between 0515 and 0542 EST 8/12.

W1REZ, Fairfield, Conn. — Kept skeds 8/8 through 8/15 with W5DFU, W5KTD, W5JWL, WØYSJ, WØBJV, and WØEMS, but made no contacts. Identified all but W5DFU, and heard WØQDH on his sked with W2CXY.

W7FGG, Tucson, Ariz. — Worked W7JRG, W6AJF, W5PZ and W5DCV. Heard W5KTD, W7JIP, WØIC, W5JWL and W6LIT/7. Nothing heard from W9KLR and W2CXY.

W7VMP, Phoenix, Ariz. — Worked W7JIP and W6LIT/7. Heard W7WFB, WØQDH, W5JWL, W5DFU and W7JRG, the last with beam east. No results with WØIHD, KØEMQ, W4HJQ, W9KLR, W2CXY, W5LPG, WØBJV and W7RUX/7.

W8PT, Benton Harbor, Mich. — Worked WØIC at 0630 EST, 8/12. Got good signals from W7JRG. Nothing heard from W7RUX/5–7–9.

W5KTD, Shreveport, La. — Worked W7VMP in Perseids and K2GQI during Aquarids.

We also have a considerable list of contacts made during the Aquarids shower, at the end of July. Space does not permit detailing these here, but indications are that this shower was more productive than most of the ping jockeys had anticipated. And as always after a major shower, we have many post-mortems, some of which contain food for thought about operating procedures and contact certification. More on this at a later date.

Here and There

The 50-Mc. WAS Club has grown by 9 members since we last ran a tabulation. Awarding of certificates 41 through 46 was announced last month. WØWWN, Omaha, Neb., K9ETD, Hudson, Wis., and WØFKY, Grand Junction, Colo., are the latest additions. To stem the tide of inquiries, Alaska does *not* count. It won't until it officially becomes a state. See September *QST*, page 78, for the 49-state WAS picture.

U. S. v.h.f. enthusiasts who think that the world above 50 Mc. is an American colony would have been surprised by some of the information passed along to the v.h.f. group at the 10th ARRL National Convention by W3YHI-DL4WW. Jack reported that the level of v.h.f. activity is quite good throughout Europe, and that it is growing.

The southern end of the 225-mile 1296-Mc. record reported in September QST. Russ Robertson, W6DQJ/6, operating atop Mt. Pinos, is shown as he worked W6MMU/6 on Mt. Hamilton. Equipment was crystal controlled, both transmitting and receiving, and operation was by c.w. only. The path is obstructed at three points.

Sweden and Norway have 6-meter activity; American 6-meter men don't have to be told that. They also have some 2-meter stations, with more than 250 active in the two countries, mostly in Sweden. Denmark has about 70 stations, and there are a few on 420 Mc. Good-sized stacked-Yagi arrays are common. Western Germany has some 300 v.h.f. enthusiasts. Around 10 German stations work on 420, and there is a smattering of interest in still higher bands. Despite mountainous terrain (or perhaps because of it, in some instances) many German stations have worked all over Europe on 144 Mc. Their central location helps, too; a 500-mile radius from DL4WW takes in most of Europe.

France has around 200 v.h.f. stations, with 30 or more working on 420 Mc., largely during contest periods. (In Europe, too?) Even tiny Luxemburg has a few 2-meter men, with LX1SI most frequently heard. Swiss v.h.f. enthusiasts number about 50, several of whom combine mountain climbing with v.h.f. activity. HB9RG has operated (as HB1RG) from near the 13,000-foot peak of the Jungfrau. It is estimated that there are about 150 v.h.f. stations in Italy, and contact with them is made occasionally over the Alps. Czechoslovakia is a leader in v.h.f. interest, with several hundred operators active. These combine forces at club stations during European v.h.f. contests, providing formidable competition. There are perhaps 50 v.h.f. stations in Austria, 30 in Jugoslavia, 25 in Hungary, and over 50 in Poland.

Equipment is almost entirely crystal-controlled. Good-quality low-noise converters are used, and c.w. is employed perhaps more universally than in this country. Frequency usage is well organized; by voluntary arrangements in several countries stations are spread well through the band, which is only 2 megacycles wide. Though they were out of business longer due to World War II, European amateurs have made rapid strides in catching up with us. Lower power levels, largely because of government restrictions, keep them from exploiting scatter types of propagation very effectively, but considerable aurora work has been done recently. Meteor scatter on 144 Mc. has been pioneered by SM6BTT, who enjoys a 500-watt power limit. Europeans have one big jump on us: they can run up amazing totals of countries worked on 144 and even 420 Mc.!

You don't have to run high power, or even put up a very large array, to do well on 144 Mc. Both factors help, but W8GTK, Rochester, Mich., has made out well without them. Stan runs 10 watts input, phone and c.w., and uses a 6-over-6 array. With this he has worked 18 states in 7 call areas on 144 Mc. Just half this total were raised on c.w., and two of the states were worked via aurora.

Operating hint for American 50-Mc. men from ZE2JV, Hatfield, Southern Rhodesia: "You can't put out too much propaganda about staying off the low-frequency end of the band, and particularly off the frequency of DX stations!" Ray wonders what is different about 50-Mc. operators, because he has received less than 30 per cent QSLs. "Not that I'm bothered — just curious!" Even ZS3G, a rare one on any band, lacks confirmation from two of the 26 states he's worked on 50 Mc! ZE2JV is firing up for moonbounce on 144, by the way.

Another v.h.f. DX man interested in 144 Mc. is LU9MA, Mendoza, Argentina. Eugenio thinks that there is a possibility of transequatorial scatter work on 144. He has seen Channel 4 from Venezuela regularly and Channel 5 from Mexico now and then, during *TE* conditions. He says that reception of Channel 7 from Trinidad has been reported in the papers in Argentina. LU9MA currently has an 829B and a 7-element Yagi on 144.01 Mc. This fall he will have high power and a larger antenna. He would like test skeds with high-powered c.w. stations, particularly in southern U. S. A., during the fall *TE* season.

We have reported the 144-Mc. DX aspirations of CT3AE, Madeira Islands, before. Jose was at it all summer from 1900 to 2000, and sometimes until 2200 GMT, but he heard nothing on 144 Mc. He is working on converter improvements and a larger array, and will continue monitoring the 2-meter band regularly. If he hears anything in the way of DX he will put on higher power for transmitting, the power limit there being 1 kw. Commercial signals near 50 Mc. were heard from Europe during the E_s season, but no ham signals were logged. Nothing at all came from the U. S. direction, but CT3AE will be active again this fall. Watch for him on 50.08 Mc., phone and c.w.

In a tape recording played for the v.h.f. group at the National Convention, EI2W passed along word that he will be active daily through the fall and winter. Harry will be on 50.016 and possibly around 50.08 Mc., and will be looking particularly for stations in western U. S. A. He will work everyone he can, keeping contacts as short as possible when conditions are good. He asks your cooperation in keeping his frequency clear, particularly when the skip is right for stations west of the Mississippi.

Some notable long-haul 144-Mc. skeds are being carried out successfully by W4ZXI, Greensboro, N. C. Rus works W4RMU, Oceanway, Fla., consistently over a 425-mile path. W3GKP, Spencerville, Md., 280 miles, is a regular, and W2CXY, Chatham, N. J., 450 miles, is heard almost nightly. W8KAY, Akron, Ohio, 360 miles, is worked nightly at 2230 and 0030, the sked having run successfully for over a year. This is as rough a path of that length as can be found anywhere in the eastern half of the country. W4ZXI has a 500-watt rig abuilding for 220 Mc.

Here's a 144-Mc. s.s.b. hint from W4FJ, Richmond, Va. Ted tried a 6524, with 14-Mc. injection in the screen and 130-Mc. drive to push-pull grids. This did not work out well, so the 130-Mc. injection was changed to the cathode, which was raised above ground with an r.f. choke. The 14-Mc. s.s.b. energy was fed to the push-pull grids, and the screen run normally. With 280 volts on the plates (conventional plate line) this mixer gives adequate output to drive a 4CX300A final, at 500 watts input.

Looking for better noise figure, plus lower cross modulation? W6NLZ recommends trying the 6ES8, a premium dual triode designed for high-grade TV receivers. It is generally similar to other dual triodes used in TV r.f. amplifiers, except that it has a transconductance of 12,500. The 6BQ-K-Z7 series run from 6200 to 9300. Even if preceded by a high-Q tank circuit for rejection of spurious signals (in addition to the regular input circuit) the 6ES8, with its higher G_m, should make possible a better noise figure than is obtainable with other dual triodes, and with considerably better overload characteristics. Freedom from cross-modulation trouble is more marked when a grounded-grid amplifier circuit is employed, it appears, though the exact reason for this is obscure.

"I'm another sidebander on v.h.f. who is having trouble making contacts. Most of the boys just don't know what it is, and I get too many 'very poor audio' reports. I hope that your comments in *QST* will help to wake up more of the gang to the value of sideband, and encourage them to try to tune it in properly. If things don't improve soon, I'm going to give up!" — *W1YLB.*"

An outstanding event of the fall season for W1-2-3 v.h.f. enthusiasts is the V.H.F. Roundup, sponsored each year by the Syracuse V.H.F. Club. It's Oct. 11 this year. Place — the Three Rivers Inn. Time — from 1000 on, though the actual program gets under way at 1400. Main speaker — Walt Bain, W4LTU. Special events for the ladies. Price — $5.50; advance registration only. Tickets from W2EMW, 18 Homeland, N. Syracuse.

The fall DX season began early (or was it the spring cycle running late?) for the Southern California 6-meter men. The old reliable, LU9MA, was worked on Aug. 18 by W6NIT, K6EJO, K6UZD, W6PUZ, and probably several others. Our reporter, W6ABN, says that the opening began at 1840 PST and lasted for just over an hour. The

2-METER STANDINGS

Figures are states, U. S. call areas, and mileage to most distant station worked.

W1REZ	29	8	1175	W5ONS	9	3	950
W1AZK	24	7	1205	W5FEK	8	2	560
W1RFU	22	7	1120				
W1OAX	22	6	800	W6NLZ	12	4	2540
W1AJR	21	7	1130	W6DNG	9	5	1040
W1HDQ	20	6	1020	W6AJF	6	3	800
W1MMN	20	6	900	W6ZL	5	3	1400
W1IZY	19	6	875	W6MMU	3	2	950
W1AFO	17	6	920				
W1ZJQ	17	6	860	W7VMP	11	5	1280
W1CLH	17	5	450	W7JRG	6	3	1040
K1ABR	16	6	810	W7LHL	4	2	1050
W1BCN	16	5	650	W7JIP	4	2	900
W1KHL	16	5	570	W7JU	4	2	353
W2CXY	37	8	1360	W8KAY	38	8	1020
W2ORI	36	8	1250	W8WXV	35	8	1200
W2NLY	35	8	1390	W8LOF	33	8	1060
W2AZL	28	8	1050	W8PT	32	8	985
K2GQI	27	8	1000	W8SVI	30	8	1080
W2BLV	25	8	1020	W8SFG	30	8	1000
K2IEJ	24	7	1060	W8LPD	29	8	850
W2DWJ	23	6	860	W8EHW	28	8	860
K2HOD	23	7	950	W8WRN	28	8	680
W2AMJ	22	6	960	W8BAX	27	8	960
W2SM	22	6	940	W8DX	26	8	720
K2CEH	21	8	910	W8LC	25	8	800
W2LWL	21	6	700	W8JWV	25	8	940
W2RXG	20	6	700	W8NOH	21	8	975
W2UTH	19	7	880	W8LCY	21	7	610
W2RGV	19	6	720	W8BLN	21	7	610
K2RLG	17	6	980	W8BLN	18	7	780
				W8GTK	18	7	550
W3RUE	30	8	975				
W3GKP	29	8	1020	W9KLR	39	9	1160
W3KCA	28	8	1110	W9WOK	39	9	1150
W3TDF	28	8	915	W9GAB	32	9	1075
W3SGA	26	7	700	W9REM	31	8	850
W3FPH	22	8	1000	W9AAG	30	8	1050
W3NKM	20	7	730	W9ZIH	30	8	830
W3LNA	20	7	720	W9EQC	26	8	820
W3LZD	20	7	650	W9ZHL	25	8	700
				W9BPV	25	7	1030
W4HJQ	36	8	1150	W9PBP	23	8	820
W4HHK	35	9	1280	K9AQP	23	7	780
W4ZXI	34	8	950	W9LF	22	7	825
W4AO	30	8	1120	W9KPS	22	7	690
W4MKJ	28	8	850	W9PMN	19	6	800
W4UMF	27	8	1110	W9ALU	18	7	800
W4VLA	26	8	1000	W9JIY	17	8	790
W4JCJ	23	6	725	W9LEE	16	6	780
W4EQM	22	8	900	W9DDG	16	6	700
W4WNH	22	8	800	W9DSP	15	6	720
W4OLK	20	6	720				
K4EUS	19	6	710	WØSMJ	27	8	1075
W4CPZ	18	6	650	WØIHD	27	7	890
W4TLV	18	7	1090	WØBFB	27	8	1060
W4RFR	18	7	820	WØGUD	25	7	1085
W4MDA	17	6	650	WØRUF	23	7	900
K4YUX	16	8	830	WØLNI	21	6	830
W4CLY	15	5	720	WØUOP	21	7	900
W4RMU	10	5	860	WØTGC	21	7	875
W4LNG	10	5	800	WØZJB	18	7	1180
W4KCQ	10	4	860	WØRYG	17	6	925
W4GIS	9	2	335	WØIES	16	6	1100
				W6JHS	13	5	700
W5RCT	33	9	1215	WØIC	12	5	1240
W5DFU	25	9	1300				
W5AJG	22	8	1280				
W5JWL	21	7	1150	VE3DIR	28	8	1100
W5KTD	20	8	1250	VE3AIB	26	8	910
W5LPG	19	6	1000	VE3BQN	19	7	790
W5AMI	15	5	700	VE3AQG	17	7	800
W5PZ	14	6	1255	VE3DER	16	7	820
W5PSC	12	5	1390	VE2AOK	13	5	550
W5IHZ	12	5	1250	VE3BPB	14	6	715
W5CVW	11	5	1180	VE7FJ	2	1	365
W5NDE	11	5	625				
W5VY	10	3	1200	KH6UK	1	2	2540

signal had fading characteristics associated with trans-equatorial scatter.

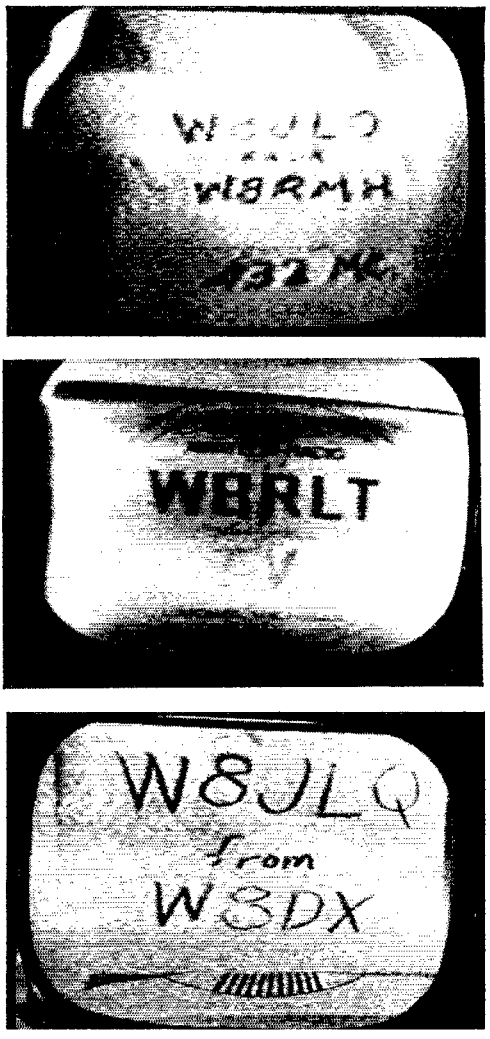
Being on the air in a hard-to-get state is not all gravy, says W7UFB, Casper, Wyoming. Bob complains that on the rare occasions when he hears double hop to the East Coast, and goes on the air to try for some of the 9 states he still needs, he is immediately overwhelmed by calls from all the stations at single-hop distances who need Wyoming, and just happen to be on at the time. W7UFB will do the best he can to provide his rather rare state, and he will QSL, too; all he asks is a little consideration from the gang in the single-hop range when the band is open for the rarer stuff. Look for Bob on back-scatter during the F_2 season. He says that he uses c.w. a lot for calls, but that too many people don't seem to have a b.f.o.!

ZS3G, Windhoek, Southwest Africa, picks us up on a statement made in June *QST*. We credited ZS6UR and HB9BZ with a "first" between their two countries. If you go by the ARRL Countries list, the statement still stands, but the first ZS-HB 50-Mc. QSO (if you state it in that way) was made by ZS3G and HB9BZ March 17. ZS3G has worked VQ4CH, VQ5GF, CT3AE, several ZS call areas, and 150 Ws in 26 states. His crossband list (to 28 Mc.) includes F9BG, 4X4IX, OD5AC and Z4IP. He will be active again this year, and is setting up on 144 Mc. also.

Two DXpeditions carrying 50-Mc. gear failed to produce positive results on 6. W1QMS and W1UXK spent their July vacation on Prince Edward Island without making a 6-meter contact outside of local. They did make a convert, however, and VE1ZM is now on 50.5 with 30 watts and a 3-element beam. W2ORA made a trip to FP8 but worked nobody on 6, despite a busy time on lower bands, working as FP8AO.

Here's a suggestion from VE3BPB that might well be taken to heart by the hotter c.w. operators on the v.h.f. bands. Ralph asks the gang on c.w. to slow down. Quite a few of the people on 6 and 2 are beginners, as far as knowledge of the code is concerned. More of them might have a go at working c.w. if they felt that they had a chance of copying the fellows they hear. Making more and better contacts and getting more people to use c.w. in v.h.f. work are legitimate aims that will be better served if those using c.w. send slowly and carefully, at least until it is established that the fellow at the other end can take it faster.

The Society for the Preservation of Amateur Radio's Kindred Spirit on 50 Mc. is the impressive name of a new club operating in the Pittsburgh area. W3YNZ says that technical advice and assistance to those experiencing difficulties with 6-meter gear are available on request. The club also has full construction information on simple equipment for mobile or fixed-station use, free of charge. A calling frequency of 50.2 Mc. is used, and crystals for this spot are supplied at low cost. For more information write SPARKS, Box 300, East Pittsburgh, Pa.



Amateur TV signals from W8RMH, W8RLT and W8DX, all of the Detroit area, as received in Toledo by W8JLQ. W8VCQ and W8RQI also receive the TV signals on 420 Mc.

Did It Happen?

One afternoon recently we received a telephone call from a New Jersey Novice reporting a 2-meter contact with New Zealand. We feel reasonably sure that the call was made in good faith, and that the caller was convinced that he had worked some choice 2-meter DX. If it was faked, the trickster at the other end went to some trouble to simulate DX conditions. But up to now there has been no confirmation, nor have we heard of other DX worked at that time.

In more than 25 years of v.h.f. work your conductor has had to deal with lots of reports like this one. Especially in the early years the writer was the object of innumerable pranks of this kind. It got so bad that when we heard our first sporadic-*E* DX on 56 Mc. we clammed up and said nothing about it, feeling certain that it was just another leg-pulling incident. That wasn't the only case where what seemed to be a gag turned out to be authentic. Who will say that it is *impossible* for a Novice to work New Zealand on 2? Not this department!

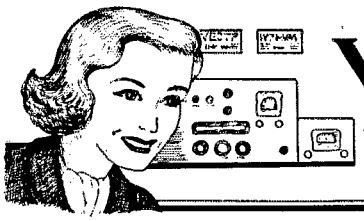
Coming — Lower U.H.F. Noise Figures?

Readers of technical journals are aware that the problem of lower noise figure, and therefore better reception, in the u.h.f. range is under attack on several fronts. One promising approach is the MASER principle, described in *QST* for December, 1947, page 184. This device is far removed from the world of amateur radio, requiring the super cold of liquid helium for effective operation.

Showing more promise, though still highly experimental, are the various forms of what is termed a "reactance amplifier" or "parametric amplifier" now under development in several laboratories. The *Bell Laboratories Record* for July carries some details of the work being done by that organization. The Correspondence Section of the June issue of *IRE Proceedings* has four letters dealing with the new techniques.

Those attending the morning v.h.f. session at the National Convention heard a talk by Walt Bain, W4LTU, Ross Bateman, W4AO, and Steve Martin, in which the theory of the reactance amplifier was discussed. W4AO and W4LTU have built experimental models of the reactance amplifier that work extremely well at frequencies in the h.f. range. They are confident that with the right diodes it will be possible to achieve far lower noise figures in the u.h.f. and microwave region than we have known to date. Watch *QST* for more along this line soon.

(*Continued on page 166*)



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

YL DOINGS AT THE TENTH ANNUAL A.R.R.L. CONVENTION

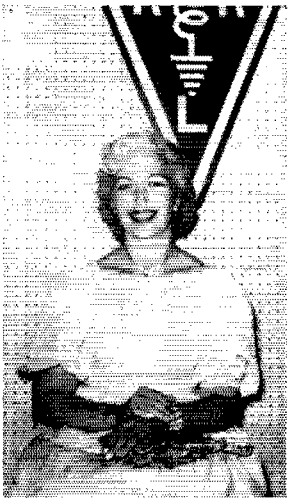
No two amateur conventions are alike. Each has its own special high lights and atmosphere. Perhaps this is what makes them all alluring and memorable.

At the Tenth National Convention of the ARRL in Washington, D. C., on August 15, 16, and 17, some sixty licensed YLs seemed to have one fine time. From start to finish the convention was filled with interesting events, the result of long months of planning by hard-working committees.

Scene of activities was the spacious Sheraton-Park Hotel on Connecticut Avenue. The capital city did its best to keep visiting hams happy by providing hot but not unbearable temperatures outdoors, while in the catacombs of the hotel some Yankees, unaccustomed to such artificial comforts, shivered amid the icebox effect of the air-conditioning system.

The hotel's Caribar Room was Ladies Headquarters. There a YL or XYL could meet friends,

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



Dorothy Strauber, K2MGE, dropped by the ARRL booth to say that she believes she is the first YL to have 100 countries confirmed using s.s.b. Back at her Lynbrook, N. Y., QTH, Dorothy uses an HT32 and 75A-4 with Gonset Tri-Band beam for her sideband QSOs.

The majority of YLs who attended the convention are shown together here. The girls considered it a special treat to meet Meg Cauffield, W3UTR, who occupies the wheel chair in the front row. Meg is on the air regularly from her Washington QTH.

play bridge, canasta, or bingo, or doff her shoes and relax. A hobby display of assorted handicraft done by YLs attracted much attention. For out-of-towners the wide choice of tours available made decisions difficult, but hardy conventionnaires shuttled about and "did" as many of the points of interest of the interesting city as possible.

Activities got into high gear Friday night with a cocktail party and buffet dinner-dance. At noon on Saturday YLs and XYLs assembled at the nearby Shoreham Hotel for the ladies luncheon, fashion show, and SWOOP initiation.

Ethel Smith, K4LMB, presided at the luncheon. Mrs. Grace Bissell, XYL of W3MSK, arranged for the fashionable fashion show. The models in their style-setting clothes were lovely to look at, but many a YL recoiled at the suggestion of wearing vivid red, blue, green, and purple stockings and of dyeing her hair to match each costume. Joan Thompson, KN3AMT, who worked with Mrs. Bissell on arrangements for the luncheon and fashion show, had departed before the convention on a mission for the Chinese Embassy and was presumed to be hunting tigers in China. Following the fashion show XYLs stepped forward to membership in the Suffering Wives of Operators' Protectorate, a kind of XYL Order of the Good Time.

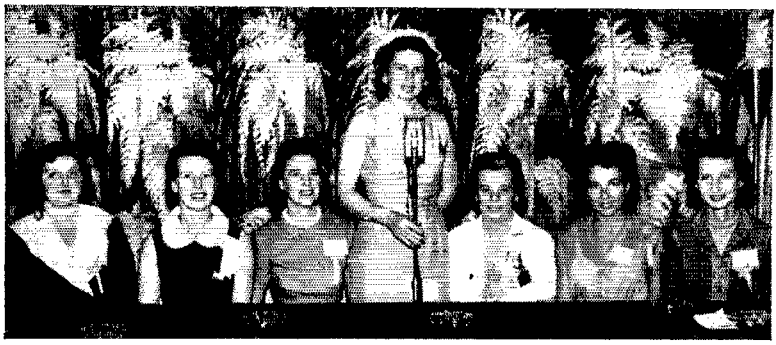
Meanwhile, back at the Sheraton-Park licensed YLs gathered for the YLRL session. Elizabeth Zandonini, W3CDQ, program chairman, opened the conclave, and Ethel Smith, K4LMB, founder and first president of the YLRL, and Irene Akers, W3RXJ, president of the Washington Area YLRC, made introductory remarks. Guest speakers were Kay Anderson, W4BLR, vice-president of the YLRL, Betty Frederick, W3PVH, past YLRL president, and W1QON. Claire Bardon, W4TVT, moderated the forum which followed. Letters were read from Beth Taylor, W7NJS, president of the YLRL, and Louisa Sando, W5RZJ, editor of the YL column in *CQ* magazine and author of *CQ YL*. W5RZJ's new book is a record of YL activities which had been requested by the YLRL at its First International Convention in Santa Monica, California in 1955.

The YLRL Forum was lively, with a variety of ideas presented and discussed. It was announced that thanks largely to the intense campaign made by the special membership committee during the last several months YLRL membership has reached a new high, with 804 paid-up members. Next year

W3BIW's smile grew still bigger when she learned later that she had won an all-expense-paid "Electronic Tour" of New York City, courtesy of Harrison Radio Corporation. Betty Aylor, W3SLS, and Roy Farwell, W4BJ, look over Eleanor Hammond's shoulder at the convention program.

W9GME's skirt was a spectacle to behold, too. Grace had spent many hours stenciling in the calls of DX stations she had worked, printing the calls exactly as they appear on their respective QSL cards. Ellen White, W1YYM, Madeline Greenberg, W2EEO, and Betty Whittaker, W3UXU, admire the handiwork which won Grace a special ladies prize.

Hailed as a diplomat and man of courage was Tex DeBardeleben, W3CN, OM chairman of the YL program. Tex worked peaceably and efficiently with WAYLRC members for months to produce an attractive program for all YL and XYL conventionnaires. Seated at the YLRL registration desk with Tex are three of his committee colleagues: Liz Zandonini, W3CDQ, Betty Whittaker, W3UXU, and Camille Hedges, W3TSC.



Highlight of the YL program was the YLRL Forum. Claire Bardon, W4TVT, served as moderator. Guest speakers were Betty Frederick, W3PVH, Ethel Smith, K4LMB, Irene Akers, W3RXJ, (W4TVT), Elizabeth Zandonini, W3CDQ, Kay Anderson, W4BLR, and W1QON.

will mark the twentieth anniversary of the YLRL, and W4TVT read a recommendation by W5RZJ that the YLRL consider plans for a third international convention, with the possibility of the affair to be held in New England and hostessed by the Women Radio Operators of New England. Other subjects discussed included the likelihood of printing a YL certificate directory, the satisfaction with the new method of producing *Harmonics*, and the type of news desired for *Harmonics*. The moderator regretted that there was not more time for further discussion. Expressions of opinion were noted and were to be reported to the YLRL President.

Early Saturday evening YLs had a choice of attending the S.S.B. or RTTY dinners or dining at Hogate's famed seafood restaurant. At ten P.M. everyone was invited to a floor show in the main hall, and at the stroke of midnight mysterious Wouff Hong rituals commenced.

Sunday brought more amateur sessions and meetings and more sightseeing tours. YLs were noted attending the ARRL and DX luncheons and the ARRL Forum in the afternoon. The highlight of the Hiram Percy Maxim Memorial Banquet Sunday evening was the visit by Vice President Nixon, who won the applause of 830 hams in the hall when he related his three experiences with amateur radio. Mrs. Glen Sachse,

(*Continued on page 182*)

Evelyn Wikoff, W4VCB/3, and Fran Darne, W3AKB, take time out to look at an issue of *Auto-Call*, which Editor R. V. Anderson, W3NL, published daily during the convention to keep everyone up to the minute on latest doings. W3AKB conducted the slow- and high-speed code contests.

An attractive YL inspects the loading coil of a mobile rig in a Continental III, one of hundreds of cars harboring mobile rigs which jammed hotel parking spaces. The YL: Virginia Knoerl, K4ETC/3 of Washington. Owner of the shiny red Continental: Byron Roudabush, W4AHG, general manager of the convention.

ANNUAL SIMULATED EMERGENCY TEST

October 11-12, 1958

THE above dates for this year's SET were first entered in the ARRL Activities Calendar in July *QST*, so they should come as no great surprise to those amateurs who have been intending to take part. For others, this is a reminder that the test is coming up and we hope that you can plan to be with us.

The annual SET is at once both a demonstration of our AREC facilities and versatility to the public and a look-see at our own emergency capability as it exists today. It resembles both the annual Field Day and the annual civil defense Operation Alert, but differs from the former in that it is not a contest and from the latter in that it is strictly AREC-sponsored and AREC-perpetrated. It is the annual nationwide exercise of our own Amateur Radio Emergency Corps, and the ARRL Emergency Coordinator is the king pin. It is primarily his job to develop, execute and report on the exercise.

Naturally, he cannot do this without the active support and cooperation of the amateurs within his area of jurisdiction. We urge all amateurs at this time, if you have not already done so, to notify your EC of your availability for this exercise and for continuing support of the AREC emergency-preparedness program in the future. You *know* you will be available if you are needed. Why not prepare for it? It won't take much of your time, and then you won't be just available, you'll also be *useful*

This year's SET will be conducted in the same fashion as that of recent previous years. Both local and national exercises will be conducted, the former in cooperation with local civic agencies, who are already planning to utilize your services, the latter by originating, relaying and delivering traffic destined for ARRL, OCDM, Red Cross, or state or regional officials of same. If you cannot do both, do one or the other. Most active amateurs will be in both phases of the test.

As previously stated, this is not a contest, like the Field Day, and not an activity devoted to one agency, like OPAL, but it is, like both of them, a test of emergency communications facilities under conditions of stress. Your "score" competes with no one, except your own last year's score, but it does add to the national score which we try to improve from year to year.

Here's how you can best participate in the SET:

(1) Contact your local Emergency Coordinator (if he doesn't contact you first) and get signed up in the AREC if you are not already registered (you should be). Even if you are, this is a good time to get that AREC registration card endorsed if it needs it. If you have no EC, get together with other interested local amateurs and recommend one to your SEC (see page 99) or SCM (see page 6).

(2) Take part in the local simulated emergency which your EC will organize for the October 11–12 week end (we hope). It may be that for local reasons he will throw this test on a different date, so it is important that you contact him. If no local SET is planned, appoint a temporary leader (who may later become EC) and see what you can "whomp up" around town. This is often a good way to make local amateurs emergency-conscious and at the same time interest your townspeople and town officials.

(3) Originate a message to ARRL headquarters indicating your participation. Remember, there are about 35,000 AREC members and if each one originates a message (we hope all do) we'll be swamped (and we hope we are), so keep them short. Ten words should be sufficient. Put the messages on the regular traffic nets of the National Traffic System (many of which will be conducting extra sessions for this purpose) or clear them on one of the National Calling and Emergency Frequencies (3550, 3875, 7100 or 7250 are usually best for this purpose, but 14,050, 14,225, 21,050 or 21,400 may serve some long haul purposes). Regular traffic men will be monitoring these frequencies and will be on the lookout for such traffic. W1AW and some of the ARRL staff, as well as other Connecticut amateurs, will be watching for traffic addressed to ARRL. Red Cross amateur stations will be monitoring for traffic addressed to National Red Cross.

(4) After the test, your EC will summarize results on a form with which he will have been provided. *See that yours reports, so your work will receive credit.*

By the time you read this, all ECs will have received a bulletin giving details of participation by Red Cross and civil defense stations, ARRL stations and others, setting down the scoring system (there are only group scores, no individual scores), suggesting some test exercises and publicity releases and providing a standard reporting form. *Will you be in the October SET this year, OM?* Hope so.

QSL CARDS

A great many amateurs — newcomers in particular — appear to be totally unaware that most QSL cards from other countries intended for W, K and VE amateurs do not come direct but rather through the ARRL QSL Bureau System.

If you have worked DX stations and sent cards but received few or none in return, chances are the QSLs came through the bureau system and are awaiting only your sending a self-addressed, stamped envelope to the volunteer manager of your call area. See page 79 of this issue for details.

June V.H.F. Party Summary

50-Mc. Openings Boost Scores and Activity

WIDESPREAD sporadic-*E* openings provided the great equalizer in the 1958 June V.H.F. Party. Just about every part of the country caught at least a little of the 50-Mc. DX, with the result that section multipliers and contact totals went soaring in areas where local contacts are hard to come by. The highest single-operator score came from a Florida station, and there were surprising totals from Texas, Montana, Wyoming, Colorado, Arizona and other areas where contest participation is often low or nonexistent. Section awards were won by 6-meter operators in 24 ARRL Sections.

If memory serves us correctly, the work of W4GJO, Sarasota, Fla., in the June Party represents a single-operator record for the spring and fall events. Grid made the most of the 50-Mc. opportunity, working 346 stations in 35 ARRL Sections. Adding 20 local contacts on 144 Mc. gave W4GJO a whopping 13,176 points. This was surpassed by only one two-operator home station, K2ITP, and three portable setups, each of the latter manned by large operator staffs and running simultaneously on two or more bands.

Those of us who stay home during v.h.f. contests owe a debt of gratitude to the hardy souls who take to the hills. By setting up Field-Day style in choice v.h.f. locations all over the country, these individual and group stations make the contest more productive and more fun for all. How large portable operation looms in the June and September parties can be judged by the 80 calls listed with a portable sign in the tabulation. Outstanding work in this department was done by W1MHL/1, W6EMM/6, W1HGV/1, W3KX/3, W3MPT/8, W3PGA/4, W6ZOP/6 and scores of others.

The Waltham Amateur Radio Association put W1MHL/1 into the top portable-station spot without going to their favorite New Hampshire site. Using Prospect Hill, a minor elevation in the home town, Waltham, Mass., they worked 437 stations on 4 bands for 16,065 points. The Two Meter and Down Club of Los Angeles made the "and Down" pay off handsomely. Operating from Green Valley Lake in the San Bernardino Mountains, W6EMM/6 ran up the highest contact total of the contest, 511 stations, on 50, 144, 220, 420 and 1215 Mc., for 14,350 points. This is probably the highest score ever posted in a v.h.f. party by a station west of the Mississippi. They had 30 QSOs in 3 sections on 220, 23 in 3 on 420 and 5 in 3 on 1215 Mc. These were no "manufactured" local contacts. Note the three sections on 1215. All work on this band was over distances in excess of 40 miles. Best DX was W6BUT, Taft, 146 miles away. W6NLZ, also a home station, was 86 miles distant.

The highest score in the contest was turned in by the Taylor brothers, K2ITP and K2ITQ. Keeping K2ITP on the air throughout the party, Hal and Joe made 300 contacts on 50 Mc., 113 on 144, and 16 on 220, for 20,470 points. They give credit to the 220-Mc. operators who are set up for c.w. for their fine showing (7 sections) on that band. On 6 they used c.w., a.m. and s.s.b., a 4-250A final and a 5-over-5 array. The 2-meter rig has an 829B final, feeding 3 stacked 6-element Yagis. On 220 they ran a 4X150A and a single 6-element Yagi.

The higher bands are coming into their own steadily. Some 49 stations (better than 10 per cent of those reporting) worked on 220 Mc. The 420-Mc. band was used by 27 contestants. At least 5 stations were active on 1215 Mc., though only 2 reported. W7PUA/7, the Valley Amateur Radio Club, used 10,000-Mc. gear, along with 50, 144, 220 and 420 Mc.

The fine conditions on 50 Mc. made nearly all 6-meter men happy, but none more than W9ROS, Roselle, Ill. Brownie caught WØGNS and W7JHX for his first North Dakota and Washington contacts, just before midnight Saturday. Sunday he worked W5EWW, Mississippi, for No. 48.

There are tricks to every trade, and posting winning contest scores is no exception. W1NSY, reporting for W1MHL/1, passes along a few suggestions:

1) Every operator should be briefed on how to keep a log, and should bear in mind that the correctness and legibility of his entries may win or lose the contest for his station. Legal aspects are important, too; everyone should sign his full name in the log for each of his shifts.

2) Intelligent use of c.w. is a *must*. Far too few v.h.f. men know how to use c.w. effectively.

3) Two receiving positions were used for both 6- and 2-meter operation. This enabled us to tune the band more effectively for answers, and despite heavy QRM we missed very few possible contacts. We also had two complete operating setups for each band, operated by the owners of these. They were not used simultaneously on a single band, of course, but with each operator being most familiar with his own gear, and using slightly varying techniques, they covered the territory with greater over-all effectiveness than either would have alone.

4) Get on at the start of the contest, regardless of available equipment. If high-powered gear is not ready, get on with anything. It's more important to be *on* at the start than to be loud at the start!

Several other operators commented on point 2. How about more and better use of c.w. in future contests? Don't be afraid of lack of skill; there are few hot shots with a key on the v.h.f. bands. There's no better time than a contest to get in

One of the outstanding single-operator jobs of the June V.H.F. Party was turned in by W6ZOP/6. With this Field-Day type setup on Ladd Peak, in the San Diego Section, W6ZOP worked 405 stations on 50 and 144 Mc., for 4050 points. Crystal-controlled converters fed a 75A-2 and an HQ-129. Transmitters ran about 90 watts on both bands, feeding vertical arrays.

some practice. You know what everyone's going to say, anyway!

— *E. P. T.*

SCORES

In the following tabulation, scores are listed by ARRL Divisions and Sections. Unless otherwise noted, the top scorer in each section receives a certificate award. Columns indicate the final score, the number of contacts, the section multiplier, and the bands used. A represents 50 Mc.; B, 144 Mc.; C, 220 Mc.; D, 420 Mc.; and E, 1215 Mc. or higher. Multiple-operator stations are shown at the end of each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3ARW..3128 78-34-ABCD
W3ZSS...2960-148-20-AB
W3CL....1485- 99-15-AB
W3ULC...1358- 97-14-AB
W2LQM/3
1313-101-13-A
K2LXI/3[1]..1275- 85-15-A
W3JXT...1241- 73-17-A
W3MPX..1040- 80-13-AB
W3SAO...1000-100-10-AB
W3ZOR...968- 88-11-A
K3BED...620- 62-10-A
KN3BPH/3
582- 97- 6-B
W3WJC...396- 44- 9-AB
W3FFY...368- 46- 8-B
W3AZE...354- 59- 6-B
W3YNC...342- 36- 9-AC
K3AKR...322- 46- 7-A
W3CLQ...300- 60- 5-B
KN3BUZ..285- 57- 5-B
W3SOM...198- 33- 6-AB
W3GCR/3..102- 34- 3-B
W3MDO...72- 18- 4-B
W3RHT....16- 8- 2-A
W3KX/3[2] (10 oprs.)
12,218-270-41-ABCD
W3HZU/3 (7 oprs.)
5886-205-27-ABC
W3LXM (4 oprs.)
5655-195-29-AB
W3OI/3 (9 oprs.)
5122-197-26-AB
W3TF (4 oprs.)
4368-162-26-ABCD
W3MUM (4 oprs.)
2193-122-17-AC
W3OLV (W3s OLV OSA)
1972-116-17-AB
K3CLR (W3ZJT K3s ADA CLR)..1360- 86-16-A
W3IQS (2 oprs.)
1080-108-10-A
W3ZRQ/3 (4 oprs.)
858- 78-11-A
W3SNM (6 oprs.)
837- 93- 9-B

Md.-Del.-D. C.

W3CGV...2574- 90-26-ABCD
W3BBG...1365- 91-15-AB
W3GKP...504- 42-12-B
W3HYE[1]..364- 52- 7-A
W3CYZ...360- 60- 6-A
W3BFD...255- 51- 5-A
W3LMC...245- 35- 7-B
W3TFA...224- 29- 7-ABC
W3UJG...216- 18- 6-C
W3LCC....40- 5- 4-C
W3JZY/3 (11 oprs.)
11,700-418-85-ABD
W3CJK/3 (10 oprs.)
5620-281-20-AB

S. New Jersey

W2BLV...3468-150-26-ABD
W2ESX...304- 38- 8-B
K2VPA...300- 50- 6-A
K2CRN...132- 22- 6-A
K2ITP (K2s ITP ITQ)
20,470-429-46-ABC

Western New York

W2ORI...1624-116-14-B
K2HRB[1]..1242- 66- 18-AC
W2SOK...608- 76- 8-AB
W2QNA...476- 63- 7-ABC
K2LXR....427- 61- 7-A
K2UXF...413- 59- 7-A
W2LXE...390- 78- 5-B
K2VYH...357- 51- 7-A
W2ELX...256- 32- 8-B
W2GBN/2..243- 27- 9-B
K2ZIE....236- 59- 4-B
K2ODI....132- 33- 4-AB
KN8JLC/2[3]
122- 61- 2-B
K2CUQ...108- 27- 4-AB
W2MQK...104- 26- 4-B
K2AXA....96- 48- 2-B
K2YTH....58- 29- 2-A
W2ZKF....51- 17- 3-B
W2KIO....44- 22- 2-AB
W2RHQ...21- 5- 3-ABD
K2QWC....20- 10- 2-A
K2DG.....13- 13- 1-B
KN2CEC...10- 10- 1-B
KN2OXU....4- 4- 1-B
K2QPC.....3- 3- 1-A
W2SPU/2[2] (14 oprs.)
8460-272-30-ABC
W2MAU/2 (10 oprs.)
8060-254-31-ABCD
W2JTE/2 (4 oprs.)
7380-164-41-ABC
W2JGJ/2 (7 oprs.)
4564-157-28-ABC
K2LZF (K2s DLM LZF)
2286-127-18-AB
W2SIC/2 (4 oprs.)
1848-168-11-AB
K2ERQ (W2s EWM MTA YLM)..1068- 89-12-A
K2OVB/2 (W2EJO K2OVB)
1066- 82-13-A
K2LHK (K2s LHK VWX)
984- 82-12-A
K2GMZ/2 (K2s GMZ ZFV)
315- 63- 5-AB

W. Pennsylvania

W3OMY..1955- 85-23-A
W3BWU..1326-102- 13-A
W8SFG/3..322- 46- 7-A
W3TYQ...304- 38- 8-A
W3MSR/3..270- 45- 6-B
K3BGV/3[2] (W3s IXM NWA RGV)....1830-122-15-A
W3KWH (4 oprs.)
1260-105-12-AB
W3TIF (4 oprs.)
1122- 66-17-AB

CENTRAL DIVISION

Illinois

K9HWY[1]..4422-201-22-A
K9CSI....3792-158-24-A
W9ROS...2771-163-17-A
K9EEC....192- 48- 4-B
W9LYA/9...39- 13- 3-B
K9DMW (W9VRW, K9DMW)..240- 60- 4-A

Indiana

K9ADJ...1905-127-15-AB
K9HEY..1482-114-13-A
W9HPV[1]..1400-100-14-A
K9KCQ...552- 69- 8-A
W9MHP...264- 33- 8-A
K9JJZ....198- 22- 9-A
K9AQP....168- 27- 7-B
K9INJ....90- 30- 3-A
K9DPU (K9s DPU DQE)
693- 77- 9-A

Wisconsin

W9JFP...1767- 93-19-A
W9ADM..1680- 84-20-A
W9TQ....203- 29- 7-AB
W9UJM....33- 11- 3-B
W9LGR....32- 8- 4-B
W9VCH....20- 10- 2-A

DAKOTA DIVISION

North Dakota

WØEOZ....90- 18- 5-A

Minnesota

KØAKJ....900- 60-15-A
W0JHS....434- 31-14-AB
KØDUO....69- 23- 3-A

DELTA DIVISION

Arkansas

K5AWT...286- 22-13-A

Louisiana

W5KTD..1971- 73-27-AB

Tennessee

W4HHK..1716- 65-26-ABD
W4IKK...1120- 70-16-A
K4QAQ...660- 44-15-A
W4ZZ....646- 38-17-AB
K4DNG...530- 53-10-A
W4RFR...280- 28-10-AB

GREAT LAKES DIVISION

Michigan

K8ACC[1]..2754-153-18-A
W8FEU..1860- 93-20-AB
K8AKQ..1080- 90-12-A
K8BGZ...752- 47-16-A
W8NOH...648- 54-12-AB
W8GTK...300- 50- 6-B
W8UJC....216- 54- 4-A
W8VRH....80- 20- 4-B

Ohio

W8LPD..6844-217-29-ABCD
W8UMF[1]..3611-157-23-A
W8SRW..1001- 91-11-B
W8NEE...902- 68-11-ACD
W8BAX...715- 61-11-ABCD
W8WRN...608- 62- 8-ABCD
W8AQ....390- 30-12-AB
W8EDS...371- 53- 7-B
W8BMO..236- 52- 4-ABCD
W8AYF....56- 14- 4-A
W8EQV....32- 16- 2-B
W8WFB/8 (W8s BKP WFB)
4050- 150-27-A

HUDSON DIVISION

Eastern New York

K2ISA...2392-100-23-ABC
W2HBC..1392-106-12-ABCD
W2WHX..1350- 90-15-AB
K2PRB...264- 44- 6-B
K2YTD...130- 26- 5-B
W2TMM...30- 15- 2-AB
K2CXP (7 oprs.)
9106-314-29-AB
W2NQW (W2NQW, KN2LZS)
30- 10- 3-B

N. Y. C.-L. I.

K2IEJ/2..5070-169-30-AB
K2VIX[1]..3216-201-16-A
W2YHP..2916-162-18-AB
K2VDR...1848-132-14-A
W2NDR..1463-133-11-B
W2AOC...1305- 72-15-BC
W2GLU...665- 95- 7-B
W2AOD...315- 40- 7-AD
K2AZT....270- 52- 5-AC
K2DZH...252- 63- 4-B
K2MMX...105- 35- 3-B
W2EW.....92- 23- 4-B
K2TGH/2[2] (2 oprs.)
4480-224-20-A
K2UMN (K2s IBY MTT UMN)..1920-160-12-A
K2LQL (3 oprs.)
250- 50- 5-B
K2TGQ (K2s TGQ TGR)
1- 1- 1-A

Northern New Jersey

K2OQQ...3528-168-21-A
W2DZA..1820- 76-20-ABCD
K2PRR...1090-109-10-B
K2KIB/2..700-100- 7-B
W2SJB....640- 80- 8-B
K2DGG....490- 70- 7-B
W2DEN...342- 57- 6-B
W2HZP/2..259- 37- 7-B
KN2LNS...184- 46- 4-B
W2GRD....144- 48- 3-B
W2CBB....110- 11- 10-B
WN2TIN...78- 39- 2-B
W2CVW....4- 4- 1-B
K2USA[2] (multiple opr.)
3738-178-21-AB
W2OXG (8 oprs.)
2576-184-14-AB
K2IAP (14 oprs.)
1036- 74-14-AB

MIDWEST DIVISION

Iowa

WØSMJ...3255-105-31-AB
KØEMQ...168- 21- 8-B
WØOFY.....2- 1- 1-C

Kansas

KØITF...2350- 94-25-A
WØZJB...2184-104-21-AB
WØBDK...288- 32- 9-AB
KØDDV...209- 19-11-A

Missouri

WØWEQ[1]..2090-110-19-A
KØLCM...546- 42-13-A
KØJNH...208- 52- 4-A
WØODI/Ø (5 oprs.)
2295-135-17-A

Nebraska

WØWWN.2400-100-24-AB
WØEET/Ø..893- 47-19-AB
WØBTG...396- 36-11-AB
WØRYG...104- 26- 4-B
WØIAY....76- 19- 4-B
KØBOO/Ø (2 oprs.)
1232- 77-16-AB

NEW ENGLAND DIVISION

Connecticut

W1RJA...7168-224-32-AB
W1PHR...3375-135-25-AB
W1KHL..2394-114-21-AB
K1CRQ...1485-135-11-B
W1YDS..1428-102-14-AB
W1OAX..1248-104-12-B
W1TXI...1122-102-11-B
W1BYX...1064- 76-14-A
W1LGE....765- 51-15-AB
W1HDQ[4]..616- 56-11-A
W1ORS[5]...588- 84- 7-AB

(Continued on page 170)

Correspondence From Members-

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

TWO KINDS OF HAM

16 Sycamore Lane
Levittown, N. Y.

Editor, *QST:*

I've been a ham actor (on several TV shows, including Garry Moore's, and in clubs) for a number of years; finally I'm an FCC-type ham, WV2AQE. I'm just as green as green can be. Only trouble is there are a lot of hams greener than me. I've been mistaken for South American DX so many times in my 2½ weeks on the air that I've already worked 17 states!

Seriously, though, if every op is as friendly and as eager to help other guys as some have been with me, I'm more than proud to join this friendly fraternity of brass-happy key-pounders.

— *Jack H. Smaha, WV2AQE*

SALES PITCH

Route 2
Childress, Texas

Editor, *QST:*

It's been many years since I attended a convention, but last month I managed to make one. Of course I enjoyed meeting old and new friends and all that, but I was dismayed, to say the least, at the apparent trend of the technical talks to commercialism, ARRL boys excluded. One talk listed on the program as "Technical Talk on Double Sideband" was no pretence of being a technical talk by any stretch of the imagination, but a simple high-pressure sales pitch, with no holds barred. I wonder how many conventions this same team has hijacked? While one fiddles to the ladies, the other jigs the males.

Let's keep the merchants in their booths, unless they keep their talks really technical. Let future program committees be hereby warned. . . .

— *Jack E. Cox, W5JPM*

HELP, DON'T HOLLER!

Sierra Itambe 4
Lomas de Chapultepec
Mexico 10, D. F.

Editor, *QST:*

Let's stop arguing about the Novice class operators and make the most of them. A sloppy novice signal indicates some general has overlooked his obligation to "help the other guy."

The XYL used to QRM me quite a bit. Now she is W6-YOU and there is peace in the family again. *Gracias a dios* for the novice license. Without it, she would probably have been an ex-XYL by now.

— *J. A. "Hank" Scharfe, W6SKC*

BICKERING

2906 Washington St.
Alameda, California

Editor, *QST:*

. . . I think our present bickering about licensing is most degrading if even in our own eyes alone. The sight we present to our contemporaries is not flattering.

From my own limited experience and successes (with a peanut whistle running less than a "Novice Kilowatt") a conclusion has been drawn, to wit: the most enjoyable contacts made are with those in our own power class, kw's mostly work other kw's; peanut whistles, other peanut whistles; and half gallons, other gallons. Then why not divide the various bands into power groups? Think of the enjoyment of each group working where and whom it wants to work, when desired. Think of the lack of interference. Think of the enjoyment of the smaller fellows working another one for real DX.

It would be no problem at all to segregate the bands in this fashion . . . rather like the left high-speed lane, the middle-medium speed lane, and the right-low speed lane, on our super-highways. Effective? We know it is . . .

— *Harry E. Blomquist, K6JSS*

202 Genesee
New Hartford, N. Y.

Editor, *QST:*

Damn these "against" amateurs!

Against Novices! Against Technicians! Against everything they aren't. How holy can one become?

The Good Lord gave us one radio spectrum and it should be respected. Amateur radio can be a friend to the lonely, a challenge to the contestant and technically inclined, and assistance to the distressed. It is *more* than fun; it is real pleasure.

It is work to enjoy amateur radio — not the work of getting a license, but the real grown-up work of doing something well. It is work to handle traffic, to contact a new country, to make another ham enjoy talking with you. It is work to think and hope, as one must in any line or activity if he is to secure lasting enjoyment.

It is exploration and discovery, not necessarily in the field of great or important techniques. Like every other great endeavor, this hobby gives an eager person the chance to discover himself, his limits as well as his abilities. It is dangerous to find one's limits, for only the strong of character can resist scorning those who can or even might better them.

On second thought, pity the "against" amateur, and *if you can*, help him.

— *David T. Geiser, WA2ANU*

FULL POWER POWWOW

9411 Hilgert Drive
Cleveland 4, Ohio

Editor, *QST:*

Cannot something be done about policing ham frequencies? I like to work DX on the 20-meter band. While waiting for a chance to work a VK the other morning at about 0140 EST, I was nearly knocked from my chair when a couple of local boys opened up and had a powwow for about half an hour. These fellows only live a few blocks from each other and its doesn't seem to be quite the right thing to rag chew on full power on 20 meters under the circumstances. . . .

— *Eric J. Young, W8RLE*

TECHNICIANS

P. O. Box 38
East Setauket, N. Y.

Editor, *QST:*

The purpose of the Technician Class License (page 15, *Radio Amateurs License Manual*) is said to be "To encourage a greater interest among *would-be* amateurs in experimentation on and development of the higher radio frequencies." This purpose has been entirely defeated; the result of the six-meter phone band being available to the Technician licensee. Most Technicians don't give a whoop about the development of the higher frequencies (220 and above), their only interest being ragchewing, mobile work, etc. on six phone. Please do not get the impression that I am speaking of all Technicians. There still are a few true experimenters, hobbyists and microwave enthusiasts around. The Technician license can be of great value. It is, for instance, of considerable importance to engineering students as it enables them to conduct a lot of on-the-air experimenting. But then again, there are those chaps on six doing anything but experimenting. For passing a childish 5-w.p.m. code

(*Continued on page 168*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.
ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Check-list! A new operational pledge devised by W5UYD was distributed by Alaska SCM KL7DZ. The check list is reproduced herewith. The preamble as well as the list itself rates some thoughtful reading. Ten specific points are concerned with your on-the-air operation. Points 3–4–5–6 doubtless were drawn with specific applicability to surmounting certain difficulties in mobile operations, but points 1–2–7–8–9–10 are of general application. These count for every minute and every time we each operate on the air.

A Ham's Pledge

W Ø ------

I am proud of this call because I am the only person in the world who has the privilege of using it. It identifies me more than my own name, as thousands of unseen friends will know me only by my call.

What I do when on the air with this cherished call, will bring me untold friends or enemies for life. It all depends on me as I will not be judged by looks or station in life, but by my manners and the consideration I show my fellow Ham while on the air.

I value my friends more than any possession. To make this friendship stronger, I pledge myself to be a better operator by following these good operating practices:

1. I will listen on the frequency before testing or transmitting.
2. I will give the frequency immediately to a station calling break or emergency. I will assume that his call is urgent.
3. I will acknowledge a joining station immediately as he may have an important message.
4. When wishing to join a QSO, I will announce my call only, between transmission breaks.
5. When working mobile or on known mobile frequencies, I will keep contacts short and allow time between transmissions for new callers or urgent traffic.
6. I will not forget mobiles are in motion and must have priority with short contacts. They are handicapped with low power and limited frequencies.
7. I will always be helpful and tolerant with my fellow amateur.
8. I will gladly take or give advice when I know it will help my fellow amateur or our hobby.
9. I will serve the public whenever the opportunity arrives.
10. I will do all in my power to cause my fellowman to respect all Radio Amateurs.

Composed by: RAY K. BRYAN, "W5UYQ"

Compliments of: "GENE" "KL7DZ"

It's a well-worded pledge to keep before us when operating; its originators are to be complimented. Study carefully . . . and let's make it good!

QN Signals — Op. Aid No. 9. On some nets procedure has reached the point of using phrases such as "up five with Jack and clear his two" or "who can handle one for Podunk?" You can properly say-it-with-procedure-words in a phone net. On c.w. such time-consuming methods occur where operators do not have the "Q" and "QN" sigs handy for reference. Net procedure properly used is a time saver for NCS direction or intelligent query between netters. Use of "Q" and "QN" signals is recommended. The ARRL "QN" signals plus the Q signals you already know or should know (p. 14, *Operating an Amateur Radio Station*) should be valuable adjuncts in all amateur operating, and especially in traffic work. In most common use are QNK and "QNR," QNK meaning to "*go ahead* with your traffic to ——" and QN*R* meaning "to answer and receive or relay the traffic that —— has for you." Netters and NCS alike enjoy most pride in their work and respect for their group, if they work with full use and mastery of international and ARRL operating signals.

ARRL this fall is announcing Operating Aid No. 9, one of the series of postcard size forms containing the special ARRL QN Signals for the traffic operator. If off the press in time one will be sent each active SCM appointee via the quarterly October-issue of the *CD Bulletin*. But it's available gratis on radiogram or mail requests for any individual trafficker who can use it and is dedicated to top results in all amateur traffic nets.

Slower Sending to Save Time? Whenever two well qualified operators hit it off in continental, the speed can be adjusted to that comfortably copied solid without any necessity for time-wasting repeats. For the newcomer we suggest *not sending faster than you can copy.* Any experienced operator normally will adjust to the speed one sends as that which he knows he himself can take!

Nets customarily are efficient users of amateur frequencies, and they are also efficient in terms of operator time and the intelligence conveyed or messages handled. Some forms of amateur work take a lot of testing, tuning up, or listening for a desired QSO, but not normally so with a net if all its supporters will report promptly on time and zero the frequency with care! A net's speed can be considered that of the slowest operator on the net whether phone or c.w. The NCS who keeps a steady pace for this operator will make the best time in the long run. But good procedures and use of operating signals in c.w. nets can speed the net business; also the individual stations paired off for traffic exchanges should each adjust their speeds (voice delivery or rate of keying) to the one justified by conditions, also the rate at which the receiving operator gets it all down correctly without having to ask for any fills. It is most heartening, however, to be asked for fills when this gives assurance one is working with an operator having a properly high sense of responsibility and pride in the absolute accuracy of his communications.

Concerning Station and Leadership Appointments. July *QST*'s article by K2KIR about the CD Party brought immediate response from a few contest-minded persons. It must be understood that the station-testing and fraternal quarterly parties are set up at quarterly periods only for appointee-workers in the field organization; appointment objectives must go *beyond*

contests. Detailed appointment requirements are set forth in the booklet, *Operating an Amateur Radio Station*, available to members on radiogram request. Types of operational service represented in the available SCM-posts are as follows:

ORS — Official Relay Station. Traffic service, 15 w.p.m. c.w. requirement.
OPS — Official Phone Station. Voice operating, example in setting operating standards, activity on voice.
OES — Official Experimental Station. Experimental operating on v.h.f., u.h.f. or s.h.f. bands, collection of propagation data.
EC* — Emergency Coordinator. Organizes amateurs of a community or other area for emergency radio service; liaison with officials and agencies served, also with local communication facilities. Assists in RACES implementation.
OBS* — Official Bulletin Station. Transmits ARRL and FCC bulletin information to amateurs.
OO — Official Observer. Sends cooperative notices to amateurs to correct signal difficulties, assist in frequency observance, insure high quality signals, and prevent FCC trouble.

*Available where SCM determines vacancies exist or quota of qualified workers is not full. Ask your SCM.

Unless you already hold some station-post, your SCM (if you are an active operator) invites your application for an official-station. ARRL-post. This should be along the lines of your natural interest. One good way to get in line for appointment is to report your station activities, traffic, and other operational accomplishments to your SCM (for the previous 30 days) the first two or three days of each month. Reporting regularly in your own state or section net once or twice a week helps make a good start.

Benefits in Club Membership. League benefits to radio clubs through affiliation are listed in CD-105 (on request to clubs). These include mailings of amateur news to clubs, national recognition, helps on club activities and publicity, and training aids material not available to non-affiliates. There are now over 1000 active ARRL affiliated club groups coast-to-coast. Probably but one FCC licensee amateur in every five, however, belongs to an active radio club.

Some clubs cater to just v.h.f., DX, mobile, RTTY or other specialty; however, most clubs like most amateurs are somewhat balanced in having interest in various forms of amateur doings, and arrange diversified discussion topics for meetings. Whether a club has a clubhouse, issues a local bulletin, or has a club-station for members to operate depends on the size and kind of group and the initiative of members and leaders to tackle such projects. Field Days, transmitter hunts, code and theory classes, field trips, picnics, auctions, hamfests and operating activities constitute group benefits often provided through a club. As a source of technical and operating betterment, such as comes through fraternal meetings and discussions you can hardly do better than to belong to a near-by club.

Some clubs may offer special benefits, unavailable to all clubs. Much depends on the desires of members and the leadership of the officers. A letter that the Garden State Amateur Radio Association sends its new members lists some 11 benefits available. We recite these as typical, since to amateurs not familiar with clubs it may suggest what can be gained through belonging to a local amateur group. The GSARA list: (1) club membership card, (2) club badge with call, name, etc. (helpful in large clubs, identifying new faces at meetings), (3) subscription to the "Scope," GSARA bulletin, (4) free ham-ads in the Scope, (5) QSL cards at reduced prices, club stock, (6) eligibility to hold office or for committees, (7) listing in GSARA directory of calls, (8) silver lapel pin with personal call engraved at nominal cost, (9) use of clubrooms, (10) use of club station W2GSA, (11) eligibility for club-group activities, contests, lectures and meetings.

October and the S.E.T. Have you asked your ARRL Emergency Coordinator about the local plans for the annual *Simulated Emergency Test?* If not, by all means do so at once when you receive this *QST*.

This test should be your occasion (1) to get re-registered in the Amateur Radio Emergency Corps, (2) to get reactivated in your thinking about your own mobile gear, and to determine if your emergency-powered radio provisions are *all* they could be, and (3) to make sure you are lined up in your AREC or RACES to use your amateur radio to practical advantage if and whenever the occasion arises. This test, like all others, is only what you make it!

Unlike the SS coming in November, and the Frequency Measuring Test opportunity of each September, this one is not sparkplugged by Headquarters at national level. *This one is strictly up to you and your Emergency Coordinator.* There's room for initiative, planning, station deployment, testing, operator instruction and critiques to the profit of both individual and organization. The test can be the first of the fall season in which the public can learn of your positive and useful capabilities, or it can be a quiet exercise in which you build a foundation for real service. The type contingency or emergency, the duration, degree of surprise, if it is held at all, is a matter for local determination as explained on page 80 of last *QST* and in other announcements. ARRL has the usual full operating program for the '58–'59 season. *Every* test is a chance to improve your station and operating and have real fraternal and com-

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.

munications enjoyment through Amateur Radio. Not every test, however, has the same degree of connection with possible Public Service as our S.E.T. This start of season dedication of a small part of your amateur capabilities to public service and emergency preparedness is therefore a special incentive and opportunity. Come those dates of Oct. 11–12 we'll be looking for *your radiogram* on the S.E.T.

—*F.E.H.*

How are your plans for the SET coming along? What, you have none? Well, let's get going! By the time you read this, the October 11–12 dates will be upon you (if not passed). Contact your emergency coordinator, see what he's doing about it. Full details elsewhere in this issue.

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Chester County (Pa.) Radio Officer W3DBL tells us he inadvertently omitted a list of amateurs participating in the snow emergency described on page 77, July 1958 *QST*. Here are the boys who did the job: *W3s* CFS MXW ZAT VXJ DBL DVL DBN WCG JRY BRU ZSD FTU, *K3s* BFP CZI DJO. Also worth mentioning are about twenty others who monitored the frequency throughout the emergency, ready to be of service if needed.

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On their way home from a committee meeting of the Lehigh Valley Amateur Radio Club in Macungie, Pa., on March 25, a group of amateurs heard a crash. Investigating, they discovered that 40 cars of a Reading Railroad train had derailed, spilling butyl alcohol and ethyl acetate over the tracks, thus creating a serious fire hazard. Immediate contact from the scene was made on 6 meters with state police, local police and fire department, and a firm equipped with foamite fire-fighting equipment. The Water Department in Allentown was also informed of possible pollution of the water supply, a source of which was nearby. After that, the group remained on the scene to assist in controlling traffic, install warning lights and enforce a strict smoking ban. The incident occurred at 0030 and the group remained on the scene to assist for four hours. Amateurs taking part were *W3s* LXM TEB MIU and FHP.

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The recently organized Huntington (W. Va.) Weather Net got its first real workout on May 7 when W8FUM was informed by the Weather Bureau that they were unable to get reports from the observer at Kermit. K8CAY was asked to monitor the net frequency of 50.55 Mc. and alert any net members. K8EEJ soon showed up and was able to make arrangements to get reports through. K8NAI stood by on the frequency to alert stations along the watershed. W8FNI was excused from school to report in. At 1700 W8FUM called the net to order, assisted by K8ARF and K8JTX. W8GLB and K8JTX were sent to the Cabell County courthouse to set up equipment and take over the net. The net also assisted the Huntington Automobile Club in obtaining information on flood-blocked roads, with K8GXR as liaison. Mobile *W8s* KNC NJL and CAY were used to scout road conditions in the area. A number of informal messages were handled for the Weather Bureau and the Auto Club. Other amateurs participating: *W8s* IEQ VBD BDD VA OGC, *K8s* DWU GOM IYU DKK ELS BIT JNF CYW AON BEL, K4ETA. — *W8FUM, EC Cabell Co., W. Va.*

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From 1900 on June 7, to 0300 June 8, and also from 0800 to 1830 June 8, mobile *W9s* SWD RYQ ZTD STW and JSE worked with the c.d. police in the Ravenswood section of Indianapolis in connection with flood conditions at that time. Their function was to give precipitation and river

The Davidson County, Tenn., Six Meter Emergency Net provided local coverage for TV station WSIX during an 8-hour telethon to raise funds for crippled children, March 29. Much favorable publicity resulted for amateur radio when the TV camera picked up occasional action shots like this one.

readings from over the state in cooperation with the Indiana Fone Net on 3910. Mobile operation was conducted on 6 and 2 meters. — *W9MHP, EC Marion Co., Ind.*

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A very heavy rainfall in Iowa on July 1 and 2 precipitated extensive amateur operation in Audubon County and vicinity. KØDVL reported the condition to KØCBC on six meters, then went out with the National Guard, as radio officer for the headquarters company. On the afternoon of July 2 WØUIZ and KØEFQ went to Audubon and put WØVAU on the air on 75 meters. This station was active continuously until July 6. On July 3, WØVAU put out a call for mobiles and operators. Some 70 amateurs responded from Iowa and Nebraska and worked with search parties, with the National Guard at crossroads and intersections, with Red Cross field units and with the county sheriff. Twelve nets operated in the area on 6, 10 and 75 meters. The National Guard (KØDVL ramrodding) estimated from 3,000 to 4,000 formal and informal messages were handled by the amateurs. Officials of Des Moines, Omaha, Webster City and several others had the highest praise for the work of the amateurs in this emergency. WØVAU submits the following additional list of those known to have participated in the emergency work: *WØs* AEM AEH BDZ BTR BBG DJN DQD CJW CQX CQU EHH ERP EXN GNY IVP JDV KJV MOB NWX NPA RBM RRG SGB TVP UEX VLT ZTW WSJ WBK YCP YZV YGH SMS YXY PJF LGG DO EEG EOE EDM FBY FRN GKN HXI IHC MMZ NTV NGS OLM ONY OPK PZO RND SJU SLC ZBM VDQ, *KØs* AEY DXS CFG CLP EQK EBJ GXY GXU HFQ HEA HOE IGX IJD IQR ILE IGU JHE JDK KGR LBY LYO MBT OAH OVO PXQ QHM BAN APL AVB AFQ BEC BJS CRF CRG CBC CVT DGX DYE EZJ EZQ KKV GHH GLH HTO JIU MSS MBT INC AHK CSD EUV, K5KUC/Ø, K5KDA/Ø, W7BRX/Ø, W8JSO/Ø. Thanks to WØVAU and KØDVL for this info.

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The AREC of Longueil, Que., went into action on July 6 when areas in St. Lambert, near Montreal, were inundated by high water. When St. Lambert police were unable to handle all the incoming calls, the c.d. director called out the amateurs organized under EC VE2KG. VE2KG and VE2BI put VE2ADX, the station c.d. headquarters, on the air. Calls for help relayed by the St. Lambert police were investigated by mobiles, which then reported the situation and a rescue truck was dispatched if necessary. The mobiles were run by *VE2s* AEW IK and SC. Every call was answered, the amateurs working from 0900 to 2300 to perform this public service. — *VE2KG, EC St. Lambert, Que.*

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On July 13, two teen-aged mountain climbers suffered a fall while attempting to scale Mt. Jefferson in Oregon. The Mountain Safety and Rescue Council formed a rescue operation and amateurs connected with that organization were asked to assist with communications. A net was formed on

3840, the frequency of the Oregon Emergency Net, which stood by. A call went out for mobiles near the scene, Breitenbush Lake. Three mobiles volunteered, *W7s* VWG FUZ and RCL. W7VWG and W7FUZ arrived at the Detroit Ranger station at 2300, and W7VWG went on to the rescue scene while W7FUZ remained at Detroit. W7JDX was net control station. Conditions were not the best, but communications were perfected through a number of relay stations. W7WFP and W7WFO took over the net at 0120, and later W7RVN took over for the balance of the day. W7DUX and W7DPV, both mobiles, were sent to relieve W7VWG and W7FUZ. Other stations which helped in the many relay operations were *W7s* FSU RVN BLN GNJ PPG ZHX BIO TBT VLE WKP ULR CPV LZS WJY MW SAA AZD FGC ENU, K7AJB. Many others offered their services but were not used. — *W7JDX, SCM Oregon.*

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The Chester County Emergency Net (Pa.) was called into action on July 27 to assist in communications connected with flood conditions along the Brandywine and other small creeks in the area. Mobiles checked on stream conditions, reported roads that were impassable, distributed flares at danger points and helped reroute traffic. They also supplied contact between c.d. headquarters and a rescue team searching for a missing boy. Amateurs participating were *W3s* VXJ DBL DBN ZAT CFS EW, *K3s* BFP DJO ATX. — *W3DBL, RO Chester Co., Pa.*

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June reports were received from 23 SECs representing 6523 AREC members. We welcome another new section reporting for 1958: Western Florida. The June record beats June of 1957 all hollow, when we had 16 reports representing 5285 AREC members. Other sections reporting: W. N. Y., NYC-LI, Conn., Ga., Minn., Mich., N. Texas, E. Fla., San Joaquin Valley, N. M., Colo., Wash., Santa Barbara, S. Texas, E. Bay, Ala., Santa Clara Valley, Mont., E. Pa., Wis., Maritime, Md.-Del.-D. C.

This brings us to the mid-year point and we find that the following sections have reported 100% so far: Ala., San Joaquin Valley, New Mexico, Colo., NYC-LI, E. Fla., Ga., N. Texas, Conn., E. Bay, Santa Clara Valley, Md.-Del.-D. C., Wis., a total of 13 100%-ers compared with 11 last year. The following chart will also show that mid-year 1958 exceeds any mid-year point so far reached since we started keeping these records in 1953. Let's hope that the progress will continue. We're encouraged!

Year	*Total Reports*	*Diff. Sections*
1958.....	142	38
1957.....	124	32
1956.....	113	30
1955.....	98	26
1954.....	77	21
1953.....	103	25

RACES News

Information from ODCM indicates that as of July, 1958, there were 1039 RACES plans on file at that agency. All 48 states are included, plus Alaska (which soon will be the 49th) and the District of Columbia. The number of plans in each state ranges all the way from Massachusetts with 245 to several with only one (presumably a state plan), such as Idaho, Mississippi, North Dakota, South Dakota and West Virginia. Other states with a high number of plans are California with 86, Connecticut with 90, New York with 85 and Pennsylvania with 52. However, it must be remembered that the number of RACES plans within a state is not necessarily proportional to the extent of RACES coverage therein. Much depends on how the state is organized and the area covered by each RACES authorization. In Massachusetts and Connecticut, for example, each town has its own plan, while in New Jersey and New York the RACES plans are by counties. Some states have a single plan to cover the entire state and do not provide for local RACES plans at all.

We note that 47 of the 48 states now have state RACES plans. The only one lacking is Texas, in which 13 local plans are on file. Alaska also has a territorial plan. We don't see Hawaii on the revised list. In order to keep all concerned up to date, we wish to publish herewith the complete list of names and calls of state radio officers, where known, just as we got it from ODCM. We were able to correct a couple of minor errors and fill in some call letters from personal knowledge. If you see others, let us know so we can correct, but blame ODCM, not us.

W7VWG was on the scene of the mountain rescue operation near Breitenbush Lake, Oregon, relaying rescue information to Portland via W7FUZ at the Detroit Ranger Station.

State	*Radio Officer*	*Call*
Alabama	Lawrence J. Smyth	W4SX
Alaska	James R. Heay	KL7TI
Arizona	Aaron Friend	W7DRC
Arkansas	Herman G. Stermer	W5AUU
California	James H. Grubbs	W6VYE
Colorado	Quentin R. Fuller	WØWIR
Connecticut	Thomas E. Hooper	W1RFL
Delaware	Roy A. Belair	W3IYE
D. C.	Walter C. Lockhart, Jr.	W3PWB
Florida	Arthur R. Melvin	W4UHY
Georgia	Andrew J. Farr	W4TJS
Idaho	William D. Mayes	W7MKS
Illinois	Jack W. Stanton	W9PSP
Indiana	William O. Nelson, Jr.	W9ZKX
Iowa	Charles J. Nord	WØUQG
Kansas	Safford D. Thacher	WØQV
Kentucky	William L. Grieb	W4BEJ
Louisiana	Richard T. Pursley	W5VAR
Maine	Donald W. Dean	W1BYK
Maryland	Cecil Harrison	W3CBW
Massachusetts	Ray E. Boardman	W1BL
Michigan	Jerome H. Hemmye	W8RDN
Minnesota	Arthur D. Lane	WØDKN
Mississippi	A. R. Cortese	W5OTD
Missouri	Joseph H. Carmichael	WØVBL
Montana	Benjamin K. Rush	W7GFT
Nebraska	Francis B. Johnson	WØJDJ
Nevada	George B. Criteser	W7ZT
New Hampshire	William E. Goldthwaite	W1BXU
New Jersey	Lloyd J. Manamon	W2VQR
New Mexico	Francis J. Gormley	W5KWR
New York	Vincent T. Kenney	W2BGO
North Carolina	Max J. Silvers	W4HUW
North Dakota	Alvin L. Anderson	WØVAZ
Ohio	George T. Young	W8ZQX
Oklahoma	Elmo Black	
Oregon	Leo A. White	W7AGS
Pennsylvania	Robert A. Blackburn	W3MPO
Rhode Island	Tom C. McCormick	W1PAZ
South Carolina	Carlton R. Commander	W4ZRH
South Dakota	Myron C. Jones	WØOXC

Tennessee	John M. Dortch	W4DDF
Utah	Floyd L. Hinshaw	W7UTM
Vermont	Michael Renalco	
Virginia	William Sampson, Jr.	W4NAD
West Virginia	John A. Davies	W8HZA
Washington	Eugene B. Carden, Jr.	W7SZE
Wisconsin	Theodore W. Kennedy	W9UFX
Wyoming	Richard P. Eversull	

TRAFFIC TOPICS

This month's words of wisdom are as follows: Got your net registered yet? We'd like to have *all* amateur public service nets registered, so if yours hasn't yet been entered, see this column in September *QST* for instructions and get that net of yours in the record.

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Hope we saw you at the National Convention. As this is being written, we are just in the throes of preparing to attend it and take a couple of weeks vacation afterward. Comments on the convention, and particularly the "Communications Meeting," next month.

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Net reports. For no good excuse that we can dream up, the report of the Interstate Sideband Net for June was omitted last month. Sorry, fellows. Their June report showed 30 sessions averaging 53 minutes, a traffic count of 638 and 1230 call ins. In July they had 31 sessions averaging 44 minutes, traffic count of 632 and 1302 call ins. North Texas Oklahoma Net had 31 sessions, a traffic count of 382, 988 check-ins. Transcontinental Phone Net incomplete report for July shows 1st Call Area, 1315; 2nd Call Area, 940; 4th, 5th, 8th, 9th and 0th Call Areas, 527; total, 2782. Early Bird Transcontinental Net had 31 sessions and handled 393 messages.

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National Traffic System. All NTS nets are reminded that the Simulated Emergency Test, coming up on October 11–12 of this month, usually produces a big stack of traffic addressed to ARRL headquarters. Far from being "junk," this is *test* traffic and should be given your best handling. In addition to ARRL traffic, there may be considerable for Red Cross and various civil defense offices. Many NTS nets operate seven days per week, but those that don't should give some consideration to holding an extra session, at least on October 12 (Sunday). Depending on just how you are situated astride most-used routes, you may have plenty of traffic or you may get none. But if you will report your SET traffic, we'll mention that you held an extra session in the *QST* writeup, and this will make NTS look good. Also, it should make your gang feel better about holding and extra drill.

July reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation (%)*
EAN.....	23	936	.720	40.7	95.7
CAN.....	31	941	.643	30.3	100.0
PAN.....	30	944	.484	31.5	82.3
1RN.....	26	412	.312	15.8	87.4[1]
2RN.....	49	436	.293	8.9	90.5
3RN.....	46	520	.498	12.6	82.6
4RN.....	54	432	.196	8.0	54.0
RN5.....	54	324	.160	6.7	79.8
RN6.....	18	440	.795	24.4	61.5[1]
RN7.....	49	210	.148	4.3	25.9
8RN.....	49	180	.146	3.7	80.3
9RN.....	50	769	.459	13.4	72.0
TEN.....	61	617	.303	9.2	63.3
ECN.....	24	50	.150	2.0	68.1[1]
Sections[2]....	634	4194		6.6	
TCC Central	62[3]	916			
TCC Pacific.	104[3]	730			
Summary...	1198	13021	RN6	9.5	CAN
Record.....	1198	15197	795	15.2	100.0

[1] Regional net representation based on one session per night. Others are based on two or more sessions.

[2] Section nets reporting: WVN (W. Va.); MSN, MSPN Evening & MJN (Minn.); Gator & FMTN (Fla.); Iowa 75 Phone; KYN (Ky.); GSPN (N. H.); QMN (Mich.); NJN (N. J.); SCN (Calif.); TLCN (Iowa); S. Dak. 40 Phone, So. Dak. 75 Phone & S. Dak. CW; CN & CPN (Conn.); MDD (Md.-Del.-D. C.); SCN (S. C.); AENB, AENP Morning & AENP (Ala.); RMN (Ariz.-Colo.-N. M.-Utah); QKS (Kans.).

[3] TCC functions reported, not counted as net functions.

Scouts and scout officials set up this station (K2HHJ) at the Boy Scout Camporee in Gloucester County, N. J., last summer. During the Camporee, they passed 104 messages from scouts to their homes. Hams in the picture are K2JKA (tuning rig), K2PQD (at mike) and K2SOL (standing).

Some missing net reports may be caused by our getting this copy in a bit early this month so we can grab a couple weeks vacation after the National Convention. We'll tack-list any that we missed in the above.

Getting so that most net managers just submit report figures and have little or nothing to say. Naturally, we'd like to have some news, but lack of comments usually means that things are going along normally. W9DO says it rained 38 times in July, so QRN was CAN's lot most of the time. W6PLG still reporting for absent K6DYX on PAN — doing a swell job, too. Take a look at 3RN's rate and traffic total — but Lindy says Pennsylvania attendance still dropping off. RN5 would welcome seven-day operation if it were made NTS standard. W6CMA has resigned as RN6 manager and the Pacific Area NTS Staff will recommend a successor; meanwhile, K6SXA sends in reports. RN7 reports some gain in effectiveness even during the summer. W4KKW asks for replacement as manager, says there is plenty of good material. ECN maintains its contact with Maritime Section by special schedule on 7 Mc.

Transcontinental Corps. In the Pacific Area, W6BPT submits data to show that traffic is about evenly divided as to eastbound and westbound, with Station G (receives traffic from Central Area Station E) handling the greatest percentage. TCC Pacific welcomes back W6ELQ, old-time RN6 manager and traffic man of yore, and also welcomes W7ZB, an old commercial telegrapher who knows how to wiggle that bug.

July reports:

Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Central.....	62	98.4	916	916
Pacific.....	104	87.5	1454	730
Summary.....	166	91.6	2370	1646

The TCC roster: Central Area (WØBDR, Dir.) — W9CXY, *WØs* BJR LCX LGG SCA. Pacific Area (W6BPT, Dir.) — W5DWB, *W6s* EOT ADB PLG VZT HC ELQ UTV, *K6s* DYX EQY HLR GES GID, *W7s* GMC ZB, *WØs* KQD WMK.

W1AW OPERATING NOTE

The W1AW summer schedule which appeared on page 100 of May *QST* will be maintained through October 25. The W1AW fall schedule, effective October 26 with the return to standard time, will be carried in next month's issue.

Temple "Buzz" Fay (left), W1EUT, winner of Massachusetts QSO Party, receives first prize from Ernest Coons, W1JLN, president of the Federation of Eastern Massachusetts Amateur Radio Associations. The contest was held early in the year to stir interest in the state's license-plate bill for amateurs. Participants exchanged license-plate numbers and reminded those contacted to write their state senators and representatives asking support of the legislation. *(Photo by W1VRK)*

RESULTS, JULY CD PARTIES

Here are the highest claimed scores of ARRL appointees and officials during the parties of July 19-20 and 26-27. Figures indicate score, contacts, and number of ARRL Sections worked. Final and complete results will appear in the October CD Bulletin.

C.W.

W6YMD...381,096-632-67
W6MUR/6..303,845-500-67
W6ZVQ....290,997-511-63
K6SXA.....254,667-419-67
W3TMZ....190,320-624-61
W3MSR....185,745-602-61
K6QHC....181,440-315-64
W6YHM....180,786-343-58
W1RAN....157,825-529-59
W6ISQ.....153,350-295-57
K5DGI.....151,891-493-61
W9YT[1].....149,270-500-59
W4PNK....146,160-522-56
K4BAI.....141,075-489-57
K2KIR.....137,400-451-60
W7RGL....136,939-254-59
K4CAX[2]....136,360-481-56
W1WEF....129,080-454-56
W8IBX....125,670-421-59
W2FEB....123,415-429-57
W4AKC....123,405-426-57
W8DJN....119,770-406-58
K4DAS.....118,525-426-55
W1AW[3]....117,600-413-56
W8GKB....115,640-392-59
W9LNQ....113,680-387-58
K5BSZ.....112,985-378-59
VE3BZB...110,880-392-56
K2PHF.....106,110-386-54
K4EZL.....106,000-393-53
W6WNI....103,895-206-55
W1UBC....103,530-400-51
K2DXV....103,400-371-55
W9GIL.....100,920-342-58
K9ELT.....100,890-350-57
W3NF.....96,880-339-56
W1ECH.....95,475-328-57
W9NLJ.....94,335-325-57
K8BPX.....93,690-347-54
K4DTI.....91,260-335-54
W8TZO.....91,160-337-53
W9BDR.....91,160-344-53
W9DYG.....88,550-316-55
W2DRV.....88,400-333-52
W4KFC.....87,495-300-57
KØAZJ.....85,400-301-56
W6YCF.....84,405-180-51
K2MFF.....82,415-305-53
W3ADE.....81,855-314-51
W8PBO.....81,120-308-52
W4FFF.....80,085-274-57
W1CMH....80,030-302-53
W1TS.....79,800-278-56
WØUOL.....79,800-280-56
K8EGX.....78,260-301-52
K9DWK....77,115-287-53
K4DRO.....76,250-300-50
K2QYT.....75,950-306-49
W2KFR.....75,900-271-55
W3YOZ.....75,705-304-49
K2SYB/7....75,456-173-48
W4HNV.....73,980-274-54
W1DZV.....72,420-278-51
W3GYP.....71,250-280-50
W8ZAU.....71,145-272-51
K9GDF.....69,580-279-49
W3LXU.....68,625-298-45
K5JCC.....65,800-235-56
K2QBW.....64,250-250-50
K4DSN.....63,495-249-51
W4ZM.....62,720-251-49
W1JYH.....62,660-234-52
W3EEB.....60,945-234-21
VE7AC.....60,818-141-47
K4AVU.....60,750-238-50
W1KGJ.....60.720-259-46
WØEEE[2]....60,155-223-53
K9ERH.....59,925-249-47
K4CEF.....56,710-214-53
W8SVL/5....56,400-236-47
W1AQE.....56,100-255-44
K4QES.....55,890-202-54
W9NH.....55,650-204-53
K5JCB.....55,350-200-54
W1HKA.....54,880-224-49
KØCYF.....54,480-221-48
W3EIS.....54,250-211-50
W9MEM....54,240-223-48
K2UTV.....54,225-237-45
W1DGL.....53,900-215-49
K2VTW.....52,920-249-42
K9BLY.....51,935-218-47
K2UYK.....51,920-233-44
W1FJJ.....51,700-229-44
K5ESW.....51,500-203-50
VE2DR.....51,120-207-48
VE3EAM....51,000-200-51

PHONE

W3TMZ.....27,555-167-33
W8NOH.....27,000-130-40
K2PHF.....21,735-154-27
W1DGL.....19.140-127-29
W9YT[1].....17,550-111-30
W1FYF.....16,000-128-25
W8GKB.....13,125- 75-35
W3NF.....12,875- 96-25
W3JZY.....9660- 78-23
W4WHK.....9000- 70-24
W2KFR.....8800- 75-22
K4LTA.....8640- 72-24
K1BCS.....8510- 68-23
W2COB.....8030- 73-22
K2ARY.....7810- 71-22
W2EWO.....7705- 62-23
W1KGJ.....7700- 65-22
W4ZM.....7200- 62-20
K2KIR.....6300- 56-20

[1] W9SZR, opr. [2] Multiple operator station. [3] W1WPR, opr.

PREVIEW, 1958 FIELD DAY

Here are some high claimed scores reported for the 22nd ARRL Field Day. These are subject to checking and grouping according to the number of simultaneously-operated transmitters at each station. Final and complete FD results will appear in *QST* as soon as the checking can be completed.

CLASS A — Portable Clubs and Groups

(Listings show call, club name, claimed score, and number of simultaneously-operated transmitters.)

W2GSA/2 Garden State AR Assn.....23,562-11
W2LI/2 Tri-County R Assn.....18,864-12
W2JIO/2 Fordham RC.....17,901- 8
W5SC/5 San Antonio RC.....16,056-11
W1OC/1 Concord Brasspounders.....15,129- 9
K6DTA/6 West Valley RC.....14,931-11
K2AA/2 South Jersey R Assn.....13,291- 6
W6UF/6 Emac Gang RC.....12,789-13
W2VDJ/2 Lakeland AR Assn.....12,537- 7
K6EA/6 Assoc. RA of Long Beach.....11,862-12
K6BAG/6 Pacifico RC.....11,823- 5
W2OYH/2 Morris RC.....11,061- 4
K6BF/6 (group).....10,899- 5
W2GTD/2 Ridgewood RC.....10,818- –
W7HZ/7 Valley ARC.....10,692- 6
W3RCN/3 Rock Creek AR Assn.....10,602-11
W2OR/2 Pompton Valley RC.....10,214- 4
W9RK/9 Northwest ARC.....10,134-11
W4FU/8 Ohio Valley AR Assn.....9963- 3
KZ5AF/KZ5 Albrook AFB ARC.....9552- 3
W2KOJ/2 Watchung Valley RC.....9000- 6
W2YKQ/2 Lake Success RC.....8814- 5
W9PCS/9 York RC.....8723- 4
W6UW/6 Santa Clara County AR Assn.....8682- 8
W6JBT/6 Citrus Belt ARC.....8658- 4
W7DK/7 RC of Tacoma.....8595- 7
W6TOI/6 Downey ARC.....8592- 9
W6PMI/6 United RAC.....8318- 5
W6MHM/6 Bell Gardens AR Assn.....7515- 3
W1EIA/1 Connecticut Wireless Assn.....7506- 3
W3TYU/3 Northeast RC.....7049- 3
W6NWG/6 Palomar RC.....6975- 3
W9SW/9 Chicago Suburban R Assn.....6849- 6
W8CZM/8 Westpark Radiops.....6645- 3
W3NKF/3 Naval Research Lab ARC.....6588- 3
W5EKK/5 Manzano Mountain . . . Society..6534- 1
K2FC/2 Order of Boiled Owls.....6525- 2
K6ACF/6 Rio Hondo RC.....6411- 4
W2CWW/2 Staten Island AR Assn.....6372- 4
W5DPA/5 Houston ARC.....6015- 8
W6LRT/6 North Bay AR Assn.....6007- 4

W7NCW/7	Lower Columbia AR Assn	5943- 9
W4NVU/4	Dade RC	5904- 3
K9AVE/9	Illinois Valley R Assn	5823- 5
W6JU/6	Crescenta Valley RC	5805- 3
W3BTN/3	North Penn ARC	5769- 5
W6CX/6	Mt. Diablo ARC	5769- 5
W2MO/2	Livingston ARC	5766- 3
K8AIR/8	Wright-Patterson Communicators C	5725- 5
W9SWQ/9	Four Lakes ARC	5688- 6
W5CF/5	Kilocycle C	5658- 7
K6AGF/6	Tri-County AR Assn	5643- 6
W6KA/6	Pasadena RC	5636- 3
W3OK/3	Delaware-Lehigh ARC	5615- –
K6QEH/6	Hughes ARC	5571- 3
W3MFW/3	Elizabethtown Area Gang	5562- 2
W3NEW/3	Capitol Suburban RC	5556- 4
KH6RS/KH6	Maui ARC	5517- 1
KP4WV/KP4	Ramey ARC	5472- 2
W2OTC/2	Larkfield ARC	5421- 4
K2KGB/2	Night Owl Net	5418- 2
W5KC/5	Baton Rouge RAC	5400- 3
K6BTR/6	Mountain View ARC	5372- 7
W6PW/6	San Francisco RC	5343- 7
K6CLZ/6	Aerojet RAC	5250- 3
K6LTA/6	Beachwood AR Klub	5229- 4
K6IL/6	Newport AR Society	5226- 5
W2UBW/2	Mid-Island RC	5130- 3
W6ULI/6	Fullerton RC	5106- 5
K6LDA/6	Crescent Bay Emergency Net	5103- 2
W3RDM/3	York Road RC	5076- 3
W1GLA/1	Framingham RC	5040- 7
W1ECO/1	Sub Sig ARC	5022- 7

CLASS B — Unit and Individual Portables

(Listings shown call and score.)

K6GOI/6	4725	K5DRC/5	2403
K6QIK/6	3969	W6IXK/6	2400
W3MSR/8	3843	W8MZA/8	2232
W2JBQ/2	3415	W5YFN/5	2214
K5DCO/5	3330	W5NXE/5	2187
W6DUS/6	3096	W7CAF/7	2136
VE2NI/2	2646	K9IBB/9	2133
K4DTI/4	2529	W9YYG/9	2117
K4KUZ/4	2448	W3TLN/4	2066
KN2LFK/2	2444	K2UTV/2	2061

CLASS C — Mobiles

W8PVC/8	5036	W8QAV/8	2336
K2TOM/2	4361	W8MWE/8	2268
K6EPC/6	3213	W8AEU/8	2255
W8OHA/8	2525	W8QXG/8	2255
W8GMK/8	2484	W8NYX/8	2201

CLASS D — Emergency-Powered Home Stations

K3CJT	495	W5RIN	221

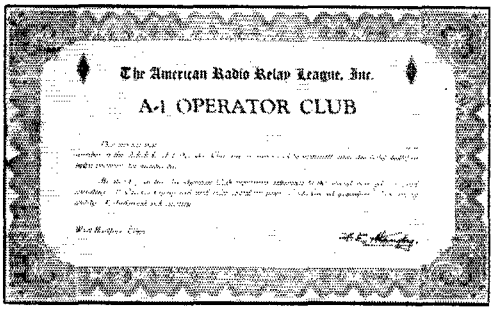
CLASS E—Commercial-Powered Home Stations

W6UPB	319	W3YWU/3	178
W4WKQ	298	W9BZW	163
K2EIU	195	W9NH	159
W4KFC	184	W1AW	150

A-1 OPERATOR CLUB

The A-1 Operator Club has been designed to recognize and promote good operating, phone, c.w. or other modes of work, in any or all the amateur bands. To become a member one must be nominated for membership by at least two operators who already belong. We are pleased to announce at this time the following additions to earlier ARRL A-1 Operator Club rosters.

W1s ACB AYJ CEL CI CJK DDF DVW DWH HCW IBE KYQ LQ MNG QIS UBC UGW UNG WCC WEF WK WPO WPR WSN YBH YNP YYM, *W2s* ANG ATA BXP CWK DOD DGW EAS EXM GT GXC HSZ IMU IVS IVU JXM JZX KAC KEB LI LPJ LST MWY NAI NNK PHX RG TXB UAP YGW/K2LSF ZRC, *K2s* BWQ CF CQP DSR DXV DYB ECL GFX GWN LUR RYH SIL, *W3s* BFF CA EOV FSY HA KIF LIN LMM NNS OY PQ QQE TMZ VKD VOS WG WZL ZFB, *W4s* AKC BGE BLR BYU BZE CEF CFJ CHD CVI DAW DDY DGH EEE EJZ FBH FE FOA GJW HHU HKK IMI KIX KJL KOR KWY MI ML MV MZO NTO PGZ PMJ PVG PXA QDY RHA RPV RWM TM TYC UHA WOG WW YE YTO YUM YZC YZY ZJW, *K4s* AET AOZ BTO BVX EJR JFN JKK LCD LPW OYR SJH, *W5s* BZT DGV DWB FEC GNG KBU MCO MRK NSN PIZ QDX QR TUS UOZ VGR VIR WNU, *K5s* AOV DHZ KFS LAP, *W6s* ADB AEE AHH BHG BPT DMN



EFV EOT GYH MOJ USY WVU, *W7s* AIB FWD GMC HKA LVB MKW NYJ OE OEB QYA RXH TH USO, *W8s* AL ARO CLX DUS ELW ESR FYO GKT HSG ILP IOR JKX JWX LAU PBO QOQ RAE YCP YFO, *W9s* ATH BEM CKU CQG CTF CYD CXY DEI DHJ DO DOK DPY DUD EGQ EGV ENS EQO FMJ GRN HPJ JBQ JCX JOZ KDV KQB KTX LZ MAK MNM MRQ NTA NZZ PCF QYQ TQC UKE UQP WZL YYG ZA, K9AMD, *WØs* BDR CKQ DQL DUN EBE ELA EOT FEO FVG HUI ITQ KJZ KLG KQD KSY LGG MYX PZO UNG VBQ WIN YFE ZXT, KØILM, VE2YU, VE3EBF, *VE6s* KX MJ NX OD PV WS, *VE7s* AUF KX TF, CN8MM, DL3RK, DL7AB, EA4BH, EI9Y, F3CT, FB8BR, *G2s* DHV DPY, *G3s* CGD CQE FXB JEA JUL, G4TM, G6YQ, GM3CIX, HA5AM, *HB9s* HT KB OP, *I1s* BLF BNU CZE, *IT1s* AGA TAI, *KH6s* BIH CMM, *KL7s* CP PJ, KV4BK, LA5HE, LZ1AF, MP4QAL, OH2YV, OY7ML, OZ2NU, OZ4FF, PAØLOU, *SM5s* AHK CCE KV, SVØWL, VK2AMB, VK3XO, VK5BY, VK6HC, *VQ2s* GR RG, VQ6LQ, VR1B, VS6DD, *VU2s* JP MD, YO3RF, YU3EU, ZC4GF, ZD2DCP, ZE3JL, ZL3BJ/-ZL4GJ, 4S7WP.

In choosing operators for the "A-1 Operator Club" the following points are considered by members: (1) *General keying.* Well formed characters and good spacing will be considered before "speed." Similarly, good voice operating technique, clearness, brevity, coöperation with other operators, careful choice of words, etc., may be used as criteria in nominating 'phone operators. (Credit is given for use of standard word-lists in identifying calls and unusual expressions.) (2) *Procedure.* Use of correct procedure is a natural qualification. Long CQs, unnecessary testing, long calls without signing, too much repetition when not requested, and all other such poor practices are grounds for disqualification. (3) *Copying ability.* This is to be judged by proficiency in copying through QRM, QRN and other difficulties, and accuracy of copy, as well as speed. (4) *Judgment and courtesy.* The "CUL 73" type operator can never make the grade. An operator should be courteous and willing to consider the other fellow's viewpoint. He should QRS or QSZ without "crabbing" when requested. He should embrace every opportunity to assist beginners.

These four points to be considered by A-1 operators in weighing candidates are applicable to all phases of amateur operating. Each counts a possible 25 points (of 100 total). No nominee should rate less than 15 on any qualification.

The operator primarily interested in DX should be weighed on his compliance with the recommendations of the ARRL DX Operating Code, his ability to work DX under difficult conditions, and his courtesy in waiting for a station to complete a contact before calling him. Other phases of operating, similarly should be judged on the four basic points, with the appropriate considerations applied to 'phone, traffic, v.h.f., etc., operating.

A.R.R.L. ACTIVITIES CALENDAR

Sept. 20–21: V.H.F. QSO Party
Oct. 1: CP Qualifying Run — W6OWP
Oct. 11–12: Simulated Emergency Test
Oct. 17: CP Qualifying Run — W1AW
Oct. 18–19: CD QSO Party (c.w.)
Oct. 25–26: CD QSO Party (phone)
Nov. 6: CP Qualifying Run — W6OWP
Nov. 8–9, 15–16: Sweepstakes Contest
Nov. 17: CP Qualifying Run — W1AW
Dec. 3: CP Qualifying Run — W6OWP
Dec. 23: CP Qualifying Run — W1AW
Jan. 8: CP Qualifying Run — W6OWP
Jan. 10–11: V.H.F. Sweepstakes
Jan. 17–18: CD QSO Party (c.w.)
Jan. 21: CP Qualifying Run — W1AW
Jan. 24–25: CD QSO Party (phone)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Sept. 26–28, Oct. 3–5: Cleveland SS, Cleveland Convention (p. 108, last month).

Sept. 27–28: VE/W Contest, Montreal Amateur Radio Club (p. 48, last month).

Oct. 4–5: VK/ZL DX Contest (phone), NZART (p. 75, last month).

Oct. 4–5: Connecticut QSO Party, Connecticut Wireless Assn. (p. 136, this issue).

Oct. 11–12: VK/ZL DX Contest (c.w.), NZART (p. 75, last month).

Oct. 11–12: Pan American Contest (phone), Radio Club Peruano (p. 65, this issue).

Oct. 18–19: Pan American Contest (c.w.), Radio Club Peruano (p. 65, this issue).

Nov. 12–13: YLRL Anniversary Party (phone), YLRL (next month).

Nov. 19–20: YLRL Anniversary Party (c.w.), YLRL (next month).

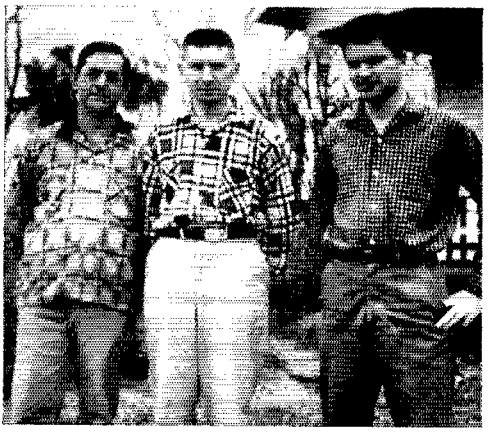
CODE PROFICIENCY PROGRAM

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 Oct. 17 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,010, 28,060, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on Oct. 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 for 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 (until October 26 with the return to EST). Approximately 10 minutes' practice is given at each speed. Reference 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* test 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 August *QST*
Oct. 3:	*A New . . . Transmission System*, p. 11
Oct. 6:	*Mobile Converter — No B Plus*, p. 16
Oct. 9:	*Keeping Equipment Cool*, p. 18
Oct. 14:	*80-Meter Loading Without Harmonics*, p. 24
Oct. 15:	*Filtering . . . the Station Receiver*, p. 27
Oct. 21:	*Safe Tower for a City Lot*, p. 30
Oct. 27:	*Another Peek at PRP*, p. 42
Oct. 30:	*Hams Across the Sea*, p. 57



These three members of the NTS Fifth Regional Net live within 25 miles of each other, but in three different states. Left is W5RCF, present RN5 manager (Miss.); center is W4OGG, past RN5 manager (Tenn.); and right is W5BYJ (Ark.).

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for July traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W2KEB	230	1699	1057	178	3164
W3CUL	217	896	689	193	1995
W7BA	16	944	918	23	1901
WØSCA	56	919	909	1	1885
WØBDR	20	732	600	11	1363
W9NZZ	309	350	1	349	1009
WØCPI	3	472	447	25	947
W9DO	21	452	406	67	946
K6HLR	17	454	406	31	908
WØPZO	17	449	418	14	898
WØIA	28	435	432	2	897
W8UPH	13	433	390	42	878
W6GYH	379	212	191	13	795
W7PGY	29	363	335	21	748
WØLGG	46	352	320	27	745
K6GK	20	359	205	154	738
W9CXY	7	357	344	13	721
W3UE	18	332	351	8	709
WØLCX	34	332	317	15	698
W5RCF	24	336	309	27	696
W1UEQ	217	186	150	40	593
K6YBV	88	253	237	11	589
K4DAS	110	227	186	33	556
K5FJA	16	253	249	4	522
K6GZ	325	90	30	60	505
K6CPT	21	243	198	40	502
W1EFW	24	237	239	1	501

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
K6MCA	20	523	508	0	1051
Late Report:					
KR6USA (June)	59	401	345	56	861

BPL for 100 or more *originations-plus-deliveries*

W4SHJ	195	WØCQU	126	K2QBW	102
W5SMK	194	KØLJW	121	KØJCF	102
K9GDF	164	W1EUT	116	Late Reports:	
K5WSP	158	W9PCQ/9	114	W6ZJB (June)	137
W3WHK	136	W2BVE	112	KØLNQ (May)	104
W9ETM	135	K4DRO	105	W3CMN (Apr.)	103

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1EFW, K2UTV, K4ELG, W5ACK, W8FNI, K9ELT, KØJCF.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. possessions who report to their SCM a message total of 500 or more, or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

Section Emergency Coordinators of the Amateur Radio Emergency Corps

The Section Emergency Coordinator is appointed by the SCM to take charge of the promotion of the Amateur Radio Emergency Corps organization throughout the Section. He acts as the SCM's executive in the furthering of provisions for emergency amateur radio communications in every community likely to suffer in case of a communications emergency. One of the duties of the SEC is to recommend the appointment of Emergency Coordinators for the various communities in his Section. Does *your* town have an EC? If not, recommend the name of a likely prospect to the SEC. The SEC invites your questions concerning the status of the AREC in your Section.

ATLANTIC DIVISION				
Eastern Pennsylvania	W3DVB	Louis Tonik	1204 Passmore St.	Philadelphia 11
Maryland-Delaware-D. C.	W3CXG	Fred W. Snow	3007 Acton Rd.	Baltimore 14, Md.
Southern New Jersey	W2YRW	John Wesley Sammis	120 Rhoads Ave.	Haddonfield
Western New York	W2PPY	C. Edward Johnson	179 Grayton Rd.	Tonawanda
Western Pennsylvania	W3OMA	Walter P. Remele	20 N. Howard Ave.	Bellevue 2
CENTRAL DIVISION				
Illinois	W9HOA	A. B. Brand	1211 Harlem Blvd.	Rockford
Indiana	W9CMT	S. L. Dixon	465 E. 5th St.	Peru
Wisconsin	W9YQH	Chet T. Horton	128 West 15th Ave.	Oshkosh
DAKOTA DIVISION				
North Dakota	WØCAQ	Douglas H. Classon	449-16th Ave., So.	Fargo
South Dakota	WØYOB	Wallace Koppman	725 St. Charles St.	Rapid City
Minnesota	WØTUS	Robert R. Power	Bob's Radio TV, Box 2	Backus
DELTA DIVISION				
Arkansas	K5CIR	Odia L. Musgrove	1321 W. Baraque Ave.	Pine Bluff
Louisiana				
Mississippi	K5HYO	Thomas C. Pate	N-Bayou Rd.	Cleveland
Tennessee	W4RRV	S. B. DeHart	227 S. Purdue	Oak Ridge
GREAT LAKES DIVISION				
Kentucky	W4JSH	Meek W. Brazelton	222 State St.	Lexington
Michigan	W8YAN	Donald E. Blashfield	RFD 3 ,Box 561-A	Battle Creek
Ohio	W8UPB	Dana E. Cartwright, sr.	2979 Observatory Rd.	Cincinnati 8
HUDSON DIVISION				
Eastern New York	W2KGC	William L. Stahl	Box 543	Fishkill
N. Y. C. & Long Island	W2ADO	Maurice Mulligan	Box 134	Westbury
Northern New Jersey	W2IIN	John J. Vitale	57 Sayre St.	Elisabeth 3
MIDWEST DIVISION				
Iowa	WØMG	Russell R. Rosenkrans	2121 Byron Ave.	Waterloo
Kansas	WØPAH	W. G. Schrenk	444 Westview Drive	Manhattan
Missouri	WØBUL	Charles O. Gosch	711 S. Oakland St.	Webb City
Nebraska	WØJDJ	Francis B. Johnson	820 S. 44th St.	Lincoln 10
NEW ENGLAND DIVISION				
Connecticut	W1EOR	John L. Henley	RFD 1	Andover
Maine	W1QJA	Charles F. Lander	89 Crestmont Rd.	Bangor
Eastern Massachusetts				
Western Massachusetts				
New Hampshire	W1BXU	William E. Goldthwaite	24 Franklin St.	Concord
Rhode Island	W1PAZ	Thomas C. McCormick	1934 Smith St.	North Providence
Vermont	W1EIB	Harriet Proctor		East Middlebury
NORTHWESTERN DIVISION				
Alaska				
Idaho	W7OCR	Paul Hacker	3803 Rose Hill	Boise
Montana	W7KUH	Walter R. Marten	3021 6th Ave., So.	Great Falls
Oregon	W7QYS	Jim A. McCurdy	Fairview Rt.	Coquille
Washington	W7PQT	Vern C. Shafer	319 Talcott	Sedro Woolley
PACIFIC DIVISION				
Hawaii				
Nevada	W7JU	Ray T. Warner	539 Birch St.	Boulder City
Santa Clara Valley	W6NVO	Edward T. Turner	2837 Fernwood	San Mateo
East Bay	W6CAN	J. Wayne Clark	70 Hoffman Ave.	Napa
San Francisco				
Sacramento Valley				
San Joaquin Valley	W6EBL	F. E. Robinson	Sonora Motor Hotel	Sonora
ROANOKE DIVISION				
North Carolina	W4HUL	Elbert H. Petree ,jr.	328 Gloria Ave.	Winston-Salem
South Carolina	K4PJE	Woody Brooks	Box 455	Andrews
Virginia	W4PAK	Frederick D. Hackworth	Route 1 ,Box 7-H	Fentress
West Virginia	W8KXD	Alvin Huntsman	524 Ninth St.	Moundsville
ROCKY MOUNTAIN DIVISION				
Colorado	WØNIT	Donald Middleton	920 West Adams	Pueblo
Utah	W7FSC	Douglas E. Butler	4851 West 4805 So.	Kearns
New Mexico	W5CIN	Leonard M. Norman	903 North Butler Ave.	Farmington
Wyoming	W7MNW	Gilbert A. Dugger	120 No. Ave., C4	Cheyenne
SOUTHEASTERN DIVISION				
Alabama	W4EBD	S. D. Christian	8436-7th Ave., No.	Birmingham
Eastern Florida	W4IYT	Andrew C. Clark	41 Lenape Drive	Miami Springs
Western Florida				
Georgia	K4AUM	Elron N. Allred, jr.	Box 24	Hephzibah
West Indies (Cuba-P.R.-V.I.)	KP4AAA	Ernesto Viera	170 Arizmendi St.	Rio Piedras, P. R.
Canal Zone	KZ5RV	Ralph E. Harvey	Box 15	Balboa Heights
SOUTHWESTERN DIVISION				
Los Angeles	W6LIP	Bruce T. Huntley	4570 San Blas	Woodland Hills
Arizona	W7YWF	Howard Hampton	2812 W. Campbell Ave.	Phoenix
San Diego				
Santa Barbara	K6CVR	Robert Hemke	728 W. Mission St.	Santa Barbara
WEST GULF DIVISION				
Northern Texas	W5BNG	L. L. Les Harbin	4515 Calmont	Ft. Worth
Oklahoma	W5LXH	Ray C. King	1404 Sherry Lane	Shawnee
Southern Texas	W5QKF	Dr. R. O. Best	3544 Santa Fe	Corpus Christi
CANADIAN DIVISION				
Maritime	VE1AEB	E. T. Geldhart	Tidehead P. O.	Tidehead, N. B.
Ontario	VE3KM	T. W. Clemence	2278 King St., East	Hamilton
Quebec	VE2QN	Felix Edge	Box 335	Uppertown, Quebec
Alberta	VE6MJ	Sydney T. Jones	10706-57th Ave.	Edmonton
British Columbia	VE7KX	J. T. Hepburn	864 General Currie Rd.	Vancouver 14
Yukon				
Manitoba				
Saskatchewan	VE5IG	Harold Gronsdahl		Congress

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Louisiana	Thomas J. Morgavi, W5FMQ	June 10, 1958
North Dakota	Harold A. Wengel, WØHVA	Aug. 11, 1958
Montana	Vernon L. Phillips, W7NPV/WXI	Sept. 1, 1958
Canal Zone	Ralph E. Harvey, KZ5RV	Oct. 1, 1958
Nevada	Charles A. Rhines, W7VIU	Oct. 10, 1958

In the Western Pennsylvania Section of the Atlantic Division, Mr. Anthony J. Mroczka, W3UHN, and Mr. Erwin Lange, W3MWV, were nominated. Mr. Mroczka received 251 votes and Mr. Lange received 226 votes. Mr. Mroczka's term of office began August 7, 1958.

In the Kentucky Section of the Great Lakes Division, Mr. Robert A. Thomason, W4SUD, and Mr. Albert M. Barnes, W4KKW, were nominated. Mr. Thomason received 121 votes and Mr. Barnes received 119 votes. Mr. Thomason's term of office began August 16, 1958.

In the Wyoming Section of the Rocky Mountain Division, Mr. L. D. Branson, W7AMU, and Mr. Wayne M. Moore, W7CQL, were nominated. Mr. Branson received 31 votes and Mr. Moore received 29 votes. Mr Branson's term of office began August 22, 1958.

Registered Your Net?

To make sure your net appears in the net listings scheduled for upcoming *QSTs* and for the printed, cross-indexed available later this year, be sure to furnish the Communications Dept. with all necessary information as shown in the sample form on page 82 of last month's *QST*. If you do not have this issue, write ARRL for form CD-85 which contains spaces for all data needed to assure registration of your net.

WØPME sent us this shot of some Missouri "brass" taken at a club picnic in Springfield last fall. Seated at the table are WØOUD (RM and former SCM), WØGBJ (another former SCM) and WØHUI (EC and former SEC). Standing behind them is WØEBE.

MEET THE SCMs

The Reverend Francis A. Peterson, W7RKI, SCM of Idaho, was licensed in 1951 after an interest of several years in the art.

While busy week ends do not permit Father Peterson to indulge in contests, he occasionally manages to get on for a League Officials (LO) Party. In addition to the SCM post he holds appointments as Official Phone Station, Official Observer and Official Bulletin Station. He is interested in rag-chewing and experimenting with transistors and different circuits and equipment designs. SCM Peterson formerly was NCS and published the newspaper *Hambone* for the FARM Net.

W7RKI's transmitting equipment includes a Viking I, a linear (616 and 811) and an s.s.b. filter exciter as well as several low-power transmitters. All rigs but the Viking are

completely homemade. Bands covered are 160 to 6 meters but 75 is most used. Receiving equipment consists of an NC-173 plus a Q5-er and a Q multiplier. The antenna is an all-band doublet 120 feet long.

His hobbies are photography, classical music, writing (he writes practical radio articles for magazines) and organ-playing. His favorite sports are football and basketball.

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

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

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

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

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

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

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

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

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

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

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon*	Oct. 10, 1958	W. R. Williamson	Mar. 17, 1949
West Indies	Oct. 10, 1958	William Werner	Aug. 10, 1958
Northern New Jersey	Oct. 10, 1958	Lloyd H. Manamon	Sept. 25, 1958
Idaho	Oct. 10, 1958	Rev. F. A. Peterson	Oct. 10, 1958
Vermont	Oct. 10, 1958	Mrs. Ann L. Chandler	Oct. 10, 1958
Rhode Island	Oct. 10, 1958	Mrs. June R. Burkett	Oct. 15, 1958

Southern Texas	Oct. 10, 1958	Roy K. Eggleston	Dec. 10, 1958
Colorado	Dec. 10, 1958	B. E. Spoonemore	Feb. 11, 1959
Minnesota	Dec. 10, 1958	Robert M. Nelson	Feb. 17, 1959
Michigan	Dec. 10, 1958	Thomas G. Mitchell	Feb. 17, 1959
Eastern Florida	Dec. 10, 1958	John F. Porter	Feb. 21, 1959
Sacramento Valley	Dec. 10, 1958	LeVaughn Shipley	Feb. 25, 1959
Missouri	Dec. 10, 1958	James W. Hoover	Mar. 1, 1959
British Columbia*	Jan. 9, 1959	Peter M. McIntyre	Mar. 13, 1959
Maryland-Delaware-Dist. of Columbia	Jan. 9, 1959	Louis T. Croneberger	Mar. 21, 1959

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

DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Trindade & Vaz Islands. These islands are located in the Atlantic Ocean approximately 675 miles east of Brazil.

Announcement is also made of the addition to the ARRL Countries List of Juan Fernandez Archipelago. These islands are located in the Pacific Ocean approximately 420 miles west of Valparaiso, Chile. Both of these additions are made by virtue of point 2 as explained in the May 1955 *QST*, page 68.

DXCC credit will be given starting December 1, 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 December 1, 1958, for these countries will be returned without credit.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

These frequencies are employed throughout the United States by amateurs using radioteletype.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM.....280
W1FH.....279
W8HGW....278
ZL2GX.....277
KV4AA.....276
W9NDA....276
W3GHD....276
W8NBK....276
PY2CK.....275
W8BRA.....275
W6SYG.....274
W6ENV.....273
W6MX.....273
W6DZZ.....273
W2AGW....273
W5ASG.....273
G2PL.....273
W3JNN.....273
W2HUQ.....272
W8JIN.....272
G3AAM.....272
ZL1HY.....271

Radiotelephone

PY2CK.....274
W8OZ.....268
VQ4ERR....265
ZS6BW.....265
W1FH.....264
W8HGW....264
W3JNN.....260
W8BF.....258
CN8MM....257
W9NDA....257
W9RB1.....256
CX2CO.....255
W6AM.....253

From July 1, to August 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

W1CWX....242
W3LMA....242
W1MV.....223
W2BBS.....219
W4CFD.....214
KH6AYG...182
KP4WN.....152
W4IKM.....131
W3BCY.....130
W9JDE/9...126
W4SIB.....125
W3QMG.....122
G3JAF.....117
W9QWW.....116
VQ2RG.....115
K2DSV.....114
K2HVN.....114
W3PBD.....112
ZE6JY.....112
W9IDV.....111
W0ZVJ.....111
CR7AD.....111
YV5GY.....111
K6SED.....110
F3GL.....110
VE4DB.....109
W8PYX.....108
W9BGS.....108
W0RKL.....108
W3DJZ.....107
W3KVQ.....107
W3YPI.....107
8M6RS.....107
W3DYL.....106
K5LIA.....106
W5NNY.....106
W3GTL.....105
W5WW.....105
JA2JW.....105
K2YOR.....104
W2ZXL.....104
W4DMB.....104
W4JJL.....104
K4LTA.....104
W8DSZ.....104
KZ5IF.....104
SP2AP.....104
W1HMP/3...103
W3MSR.....103
W6BZ.....103
W9GFF.....103
W9RH.....103
CR7BN.....103
W3GGT.....102
W4JCH.....102
W4SXE.....102
W5FXP.....102
W6ONK.....102
W7UVH.....102
KØGXR.....102
G3LET.....102
W1UCA.....101
K4GXK.....101
W6TBP.....101
W7PB.....101
PAØZE.....101
VKØAB.....101
VP9AK.....101
K1AHS.....100
W1CPJ.....100
W2OQO.....100
K4BFN.....100
K4DAS.....100
K4DRO.....100
K4IEX.....100
W4YMG.....100
K6OXU.....100
W8QQH.....100
W8WOA.....100
G3KGV.....100

Radiotelephone

W4CFD.....160
W4IKM.....130
SV9FR.....130
VE5GF.....121
W1PMZ.....114
W4WM.....113
W0VAF.....113
11PDN.....112
W9HPS.....110
PAØOTC....109
YV5GY.....108
VE1FQ.....105
W2SNI.....104
K8ADY.....104
W8NOH.....103
IT1CDS.....103
K2LGS.....102
K4IOT.....102
YO3VI.....102
K2PIC.....101
W1WTF.....100
K2EFB.....100
W0GPI.....100
8P7HX.....100
VE5MR.....100

ENDORSEMENTS

W6CUQ.....270
W6NNV.....262
W2KUW.....243
W7ENW.....242
W4LYV.....241
W2CNT.....240
W7AH.....240
W8WZ.....240
W3CGS.....237
W2BRV.....233
W6QNA.....231
G4ZU.....231
W3VKD.....230
W5UX.....230
W8EV.....230
II8M.....230
W1IAS.....222
W6CHV.....222
K4AIM.....221
W5EFC.....221
K6EVR.....220
W6ID.....220
W8CED.....218
W2OKM....217
CM9AA.....217
GM3EST....214
W2HQL.....211
OZ7BG.....211
W2EMW....210
OK1HI.....210
W6KBC.....204
W6NJU.....204
W6GMF.....203
IT1TAI.....203
W5TIZ.....202
DL1QT.....201
PY4AO.....210
W3FYS.....200
W3MDE.....200
W6UQQ.....200
W7MGT.....200
W9ABB.....200
W0SYK.....200
11NK.....200
W1BFT.....199
VE1EP.....198
DL1KB.....195
W1LHZ.....194
W1OJR.....192
W1QNC.....190
W2CWK.....190
W6LTX.....190
W7BGH.....190
G6XL.....190
JA6AO.....190
W3ZAO.....187
KR6AC.....187
VE7JB.....187
K4BVQ.....186
ON4DM.....185
W9SFR.....183
DL9PX.....183
W2DOD.....182
DL1DX.....181
W3AS.....180
W3LEZ.....180
W4WM.....180
CR7BC.....180
VE3JZ.....180
W4GJW.....179
W5GNG.....179
W2RDK.....177
W1BGW.....175
W2MZB.....173
W9TKV.....173
W9ROU.....171
K2LWR.....170
W6TKX.....170
W7DJY.....166
CE3HL.....165
W1ORP.....163
W3RPG.....163
W6FUF.....161
W9WIO.....161
11CJW.....160
K4LNM.....157
W1GDY.....153
W3RSR.....153
W6WTH.....153
WØNGF.....153
WØVBK.....153
W1APA.....152
K6EDE.....152
W9EHW.....152
WØMLY.....152
G4FN.....152
PAØLOU....152
OH2LA.....151
YV5FK.....151
W2BUY.....150
W3EEB.....150
W4PVD.....150
G6VC.....150
G8PL.....150
VE3IR.....150
W6KG.....145
W7AQB.....145
W1OTX.....144
W8JSU.....144
W9PQA.....143
W1VAN.....140
W2JVZ.....140
W3EQK.....140
K4JOU.....140
W6FZL.....140
W6GSL.....140
W9BYN.....140
W9OAN.....140
W9PNE.....140
WØB8K.....140
WØOAQ.....140
ZL1QW.....140
SP7HX.....139
W8AYS.....137
W1FTR.....135
W1YPK.....134
KØDMY.....134
K6QXF.....133
W3BQA.....131
VE2YU.....131
W1CTW.....130
K4AL.....130
W7RFE.....130
W9WHY.....130
VE3BHS....130
K4JVE.....128
W5AUJ.....128
W8LOF.....128
W1AZW.....126
K2PKT.....123
VE3KP.....123
W7JYZ.....122
DJ1TA.....122
HK3PC.....121
W3NIG.....120
W6GEB.....120
K9CTY.....120
W1QQV.....115
W6WPI.....113
W8UUS.....111
W1WKW.....110
W5FDL.....110
KØDQI.....110

Radiotelephone

II8M.....230
W3GHD....221
G4ZU.....220
K4AIM.....215
CM9AA.....215
W3DHM.....210
W6SYG.....210
W9Y8X.....195
W5TIZ.....187
W5VU.....180
ON4DH.....180
ON4DM.....178
V82DQ.....171
K4BVQ.....163
CE3HL.....163
ZP5EC.....163
W2HTI.....162
W8BGU.....160
W5GNG.....158
W3CGS.....152
W5ERY.....152
W6OBH.....150
W8WZ.....150
W3BVL.....147
WØFUH.....147
W2BRV.....140
W3EQK.....140
EA4EP.....140
W2LV.....138
K6EVR.....134
WØYVV.....134
W1YPK.....133
OK1MB.....132
W6NOT.....130
EA7RM.....130
W7KT.....122
W3QMG.....120
CX2CN.....120
OZ7BG.....120
W6WTH.....117
W1LHZ.....114
W1KRS.....111
EI6X.....110

W/VE/VO Call Area and Continental Leaders

W4TM.....261
W4TO.....261
W7AMX....269
WØELA....256
VE1PQ.....200
VE2WW....220
VE3QD.....210
VE4XO.....118
VE5RU.....163
VE6NX.....214
VE7ZM.....245
VE8AW.....195
VO1DX.....191
ZS6BW.....267
4X4DK.....255

Radiotelephone

W2BXA.....215
W4HA.....220
W5BGP.....234
W7HIA.....204
WØAIW....233
VE1CR.....120
VE2WW....146
VE3QA.....200
VE4RP.....102
VE5RU.....156
VE6NX.....165
VE7ZM.....210
G2PL.....249
ZL1HY.....252
4X4DK.....245

Station Activities

• 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 B. Mesirov, W3JNQ—SEC: DVB, EM: PDJ, PAM: TEJ. The E. Pa. Net meets Mon. through Fri. at 1830 on 3610 kc. PFN meets Mon. through Fri. at 1800 on 3850 kc. New appointments: UIU and K3ALD as ORSs; DVB, KFQ and KJJ (who is an ex-FCC monitoring official!) as OOs. RCV is building a DX-40 and a 4-65A final, and added a QF-1 to his SX-28. GH is now on with a Gonset. EU cuts grass, 6 hours at a clip. ID has a DX-100 nearing completion. The Lancaster RTS has a 6-meter net with 25 members reporting every Mon. night. BNR received a phone WAC and need one more for an s.s.b. WAC. BBS moved to the country to escape TVI. K3ABK is building a linear final with two 4-65As. KJ earned 7-Mc. certificates on phone from Delaware, Connecticut and New England. NWJ has a new jr. operator. K3ACO is going mobile. ZSX has been QRL because of the baseball season. GXP joined the Army. GYP sent his receiver out for repairs and plans to have a 150-watt final for the SS. CUL's new s.s.b. rig nears completion. K3ALD made WAS. WHK made the BPL on deliveries. AXA made WAC after 26 years, and now aims for DXCC. FYR has a three-element beam working again. TEJ has a new vertical polarized 2-meter beam. KN3EGP worked all call areas in two months. IVS has a new vertical 40-meter trap antenna. ELI batted zero in the phone CD Party, but had good luck in the c.w. section. BUR set up a Bandmaster for the Quakertown Boro C.D. and Club. New Asst. ECs for Juniata Co. are K3AKN and K3CSX. PDJ starts work with his father and brother and now lives in Glenside. EAN is QRL pulling weeds, cutting grass and building an Apache. FEY applied for OES appointment. ADE was in the Phone and C.W. CD Parties. UIU was QRL gold and fishing. DUI leads the Luzerne Co. RACES net drill on 50.64 Mc. Thurs. at 2000 from the Wilkes Barre Courthouse. The York ARC bought a new HT-32 which is on the air from club headquarters at the York YMCA. DJW is struggling to put up an eight-element 2-meter beam. We need ECs for Bradford, Lebanon, Lycoming, Montour, Northumberland, Perry, Pike, Snyder, Sullivan, Susquehanna, Tioga, Union, Wayne, Wyoming and York Counties. If interested, please contact the SEC or SCM. CMN and JNQ played chess on 7120 kc. Any challengers? Traffic: (July) W3CUL 1995, WHK 406, TEJ 172, IVS 107, K3ANS 52, W3NF 49, FYR 34, K3ALD 28, W3BFF 25, AXA 23, ZSX 23, BNR 17, K3AFP 11, W3WQL 9, CMN 6, NQB 6, YVX 5, PVY 4, EAN 3, GYP 2, IMN 2, K3AUT 2. (June) W3WQL 18. (Apr.) W3CMN 232.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM for Delaware: Ray deCourcelle, 3DQZ. Section nets: MDD, 3650 kc. M-S 1915 EST; MEPN, 3820 kc. MWF 1830 EDST, SS 1300 EDST: DELEN, 3905 kc. 1830 EDST. The MEPN Picnic was a success as usual, with ECP doing the MCing. UAC won the first prize in the mobile contest and NFS won a G66-B mobile/fixed/portable receiver. The convention is history as this is written. I had the pleasure of meeting many of the gang but missed many others. Sorry more of the MDD gang did not make the 10th National ARRL Convention. It was a real show from the starting gun. I would like to thank personally the many who aided me in the communications committee by operating at K3CHS and the conventions as well as the long hours put in getting the station on the air. Would particularly like to mention KOA, NNM, AHQ, PIH, NXO, WZN and BFW. Thanks to the secretary of the BARCS, I'm now receiving their newsy club bulletin *The Modulator*. However, there is no note as to the editor's identity. New BARCS officers are MAZ, pres.; BKT, vice-pres.; ROS, secy.; and JCL, treas. The BARCS had its annual dinner get-together on July 21 but no report on the attendance has been received. FRV is the new MEPN director. Congratulations, Pat. The RCARA had Capt. Richard R. Hay, USN, 4LW at the July 25 meeting and he spoke on The Care and Feeding of Antennas. The Mountain Amateur Radio Club elected FXL, pres.; JIW vice-pres.; K3CJR, secy.; and K3AME, treas. Omitted unintentionally last month was the Field Day message of VPR, the AAARC. Sorry, gang. UE made BPL again, this time in July. LGS is primary NCS for the MEPN on Mon. and Don also is active in the VFN and Grave Yard Nets. TMZ reports he has an XYL as of June 14 and is moving to Clarksville, Md. KA has received his DXCC and is starting on the second hundred. CQS won the GPR-90 with s.s.b. adapter at the convention and he reports it is his first major prize in over 25 years. Traffic: (July) W3UE 709, K3BUV 142, WBJ 118, W3NNM 102, QCW 93, TN 91, CN 82, COK 76, LGS 28, CQX 27, TMZ 14, BUD 9, FNM 6. (June) W3TN 79, TMZ 16, KA 4.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. PAM: W2ZI. RMs: W2YRW, W2HDW and W2ZI. K2OOK, pinch-hitting for his dad, W2RG, is top traffic-handler this month. NJN attendance for July was 416 and traffic 293. K2JGU, Glassboro, has a new 400-watt rig. K2SOW also is increasing power. K2EWR, Haddonfield, expects to join the Air Force. K2PPT, Burlington, participated in the July CD Party. K2SOL, Gloucester Co. EC, expects to be mobile on 75 meters soon. K2CPR's DX total worked is now 233. K2JKA, Gloucester Co. Asst. EC, is organizing a 75-meter AREC net. K2HHJ is putting up new 20-10-and 2-meter beams at his new QTH. W2YRW is now co-editor of SJRA's monthly paper, *Harmonics*. The Delaware Twp. High School Radio Club completed in the 3 transmitter class on Field Day. Look for the Delaware Valley Teenage Net on 28.7 Mc. Sat. at 2000 EDT. W2PAU and W2BCV were roommates in a Camden hospital. We wish them speedy recovery. W2REB, SJRA's Field Day chairman, reports a total of 1482 contacts and excellent club participation. The Burlington County Radio Club also reports FB Field Day results. The DVRA, operating at Mercer Co. Airport, had twenty operators taking part in FD activities. W2UAE was chairman. Net managers are urged to report their activities for the section file. Traffic: (July) K2OOK 372, W2BZJ 168, W2HDW 93, K2JGU 84, K2SOW 51, K2EWR 36, K2PPT 22, K2SOL 9, K2SOX 7, K2CPR 6, K2JKA 6. (June) K2HHJ/2 34, K2PPT 23.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2PPY. PAMs: W2PVI and W2LXE (v.h.f.). RMs: W2RCF and W2ZRC. NYS CW meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000. LSN on 3970 at 1600. I am pleased to announce the appointment of W2PVI as PAM. Endorsements: ORS W2FEB, OES K2QPC, OO W2ZC'Z, RM W2RUF. Appointments: ORS W2ATC, K2C'ED. W2ZRC got married Aug. 30. W2ICE, W2GB and W2QY, members of The Antique Wireless Assn., presented several shows at The National Convention. K2QNM is on the air with an HQ-140A and a Globe Scout. K2QPC is building an 829B rig for v.h.f. Be sure to attend the Syracuse V.H.F. Roundup on Oct. 11 at Three Rivers Inn. The Syracuse V.H.F. Club operates on four bands in QSO parties at a portable location in Pompey. The Tioga County C.D. Net (RACES) is on 10 and 6 meters 2100 Mon. W2VDX made WAC. W2SSB uses a DX-35 and an SX-100 in his extensive net participation. W2ATC has put a model 26 on the air and is FSK on 80, 40 and 20 meters. W2ZCZ, ex-DL4PI, is back chasing DX on 20-meter c.w. K2RWV is on 75 meters using a DX-100 and an HQ-110C. RAGS had a dandy exhibit at the New York State Fair and operated all bands using vertical antennas, a Pacemaker, a DX-100, an SX-71, an HQ-160 and a 300-watt 2-meter rig. W2ZRC has resigned as net mgr. of 2RN and W2ZVW takes over. K2KIR goes to college and K2QJL takes over as mgr. of ESS with K2JBX as assistant. The ESS or Empire Slow Speed Net is for newcomers who want to learn efficient traffic-handling. I am very sorry to announce that W2SJV joined Silent Keys on Aug. 2. Ed was loved and respected by all who came in contact with him. His main interest in life was amateur radio and helping his fellow hams. He was our former SCM, State Mars Coordinator (AF), Assistant

(Continued on page 118)

IDENTIFICATION— LOGS AND SSB

FOR THE PAST two or three years there have been various conflicting views among the SSB contingent on station identification and log keeping as they apply to SSB roundtables.

IN REGARD to identification in roundtables, the ideas on what it takes to satisfy F.C.C. requirements range from "This is W9XXX transmitting", or "W9ZZZ and the group, this is W9XXX", to the cumbersome listing of every station in the roundtable, followed by "This is W9XXX."

KEEPING THE station log in large roundtables is another long standing problem. In an attempt to find solutions, these points were discussed with a member of the F.C.C.'s Washington staff during the recent 1958 National ARRL Convention. The following is understood to be correct:

1. Station identification, which must be made at least once every ten minutes in an established roundtable, need *not* list every station in the group, but "This is W9XXX" is *not* sufficient. "W9ZZZ and the group, this is W9XXX" was indicated as a short identification procedure which completely satisfies the legal requirements.

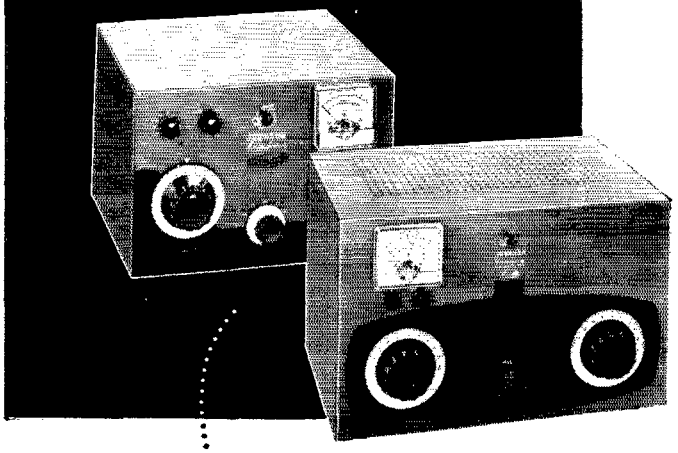
2. The station log must include the time the station enters the roundtable, the time of leaving the roundtable, and the calls of stations *actually called or contacted*. Therefore, in a roundtable of seven stations, if W9XXX calls or contacts a total of only five of these stations, it is necessary that only these five be listed. In addition, if various stations sign in and out of the roundtable while W9XXX is operating; it is not required that W9XXX list the *times* of their entry and departure. The only times which *must* be listed are the times of entry and departure of the station keeping the log.

IT IS HOPED that the issuance of this information will help a little toward clearing up the uncertainty which presently exists on these questions.

— TOM STUART WØREP

Bud Hallgren Jr. W. J. Hallgren W9AC for hallicrafters

Match transmission line impedance-reduce SWR!



they're new!

Viking "MATCHBOXES"

- *Provides more than 20 db of additional TVI harmonic suppression!*
- *Self-contained—complete with built-in directional coupler and indicator!*
- *Bandswitching—no plug-in coils!*

put more useful RF into your antenna

These new Viking "Matchboxes" provide completely integrated antenna matching and switching systems for kilowatt or 275-watt transmitters. Units are complete with built-in directional coupler and indicator providing continuous monitoring of either incident or reflected transmission line power. Bandswitching 80, 40, 20, 15, and 11-10 meters and completely front panel controlled, these versatile "Matchboxes" quickly and easily match the transmitter to balanced or unbalanced lines over a wide range of antenna impedances. In addition, units are capable of tuning out large amounts of capacitive or inductive reactance. Revolutionary circuit design does away with the annoying use of "plug-in" coils and completely eliminates "load-tapping" necessary in other antenna couplers.

"Matchboxes" are also designed to provide separate matching of the antenna system to receiver. Self-contained, heavy duty change-over relay switches antenna from receiver to transmitter, grounding the receiver antenna terminal and muting the receiver while transmitting. Units are supplied wired and pre-tested only—complete instructions included.

CAT. NO.	POWER RATING IN WATTS	TRANSMISSION LINE IMPEDANCE IN OHMS	
		Balanced Line	Unbalanced Line
250-23 250-23-3	275	25 to 1500	25 to 3000
250-30 250-30-3	1000	50 to 1500	50 to 2000

275 WATT "MATCHBOX"—For transmitters with a maximum power input of 275 watts.

Cat. No.		Amateur Net
250-23-3	With built-in Directional Coupler & Indicator	$86.50
250-23	Less built-in Directional Coupler & Indicator	$54.95

KILOWATT "MATCHBOX"—For transmitters with a maximum power input of 1000 watts. Antenna change-over system includes time delay circuit for relay, providing "fast make—slow break" action.

Cat. No.		Amateur Net
250-30-3	With built-in Directional Coupler & Indicator	$149.50
250-30	Less built-in Directional Coupler & Indicator	$124.50

Write for your free copy of our big amateur catalog

E. F. Johnson Company

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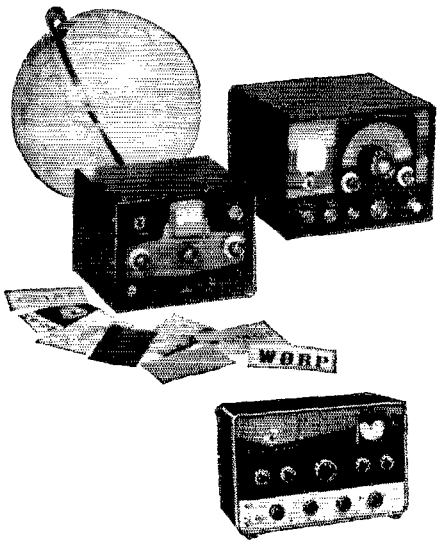


VIKING "NAVIGATOR" TRANSMITTER/EXCITER

More than a novice transmitter—also serves as a flexible VFO-Exciter delivering enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input—6146 final amplifier tube—wide range pi-network output. Built-in VFO or crystal control—bandswitching 160 through 10 meters. Timed sequence keying. TVI suppressed and filtered. Complete with tubes, less crystals.

Cat. No. 240-126-1..Kit.....**Amateur Net $149.50**
Cat. No. 240-126-2..Wired and tested....**Amateur Net $199.50**

VIKING "ADVENTURER" TRANSMITTER

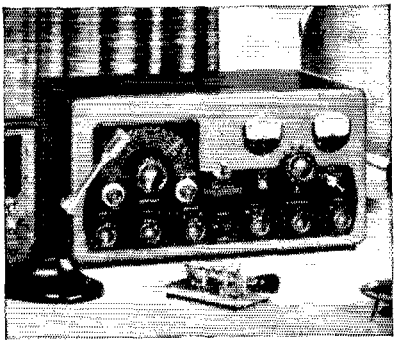
Perfect for the novice or experienced amateur! 50 watts CW input—instant bandswitching 80 through 10 meters. Crystal or external VFO control. Rugged 807 final amplifier tube—wide range pi-network output. Clean, crisp keying. TVI suppressed. Complete with tubes, less crystals.

Cat. No. 240-181-1..Kit.....**Amateur Net $54.95**

VIKING "6N2" TRANSMITTER

This compact VHF transmitter punches your signal out with 150 watts CW and 100 watts phone input. Instant bandswitching 6 and 2 meters. Completely shielded and TVI suppressed, the "6N2" may be used with the Viking "Ranger," Valiant, Viking II, or similar power supply/modulator combinations. Operates by crystal control or external VFO with 8-9 output. With tubes, less crystals, key, and microphone.

Cat. No. 240-201-1 Kit.....**Amateur Net $129.50**
Cat. No. 240-201-2 Wired.....**Amateur Net $169.50**



Viking TRANSMITTERS

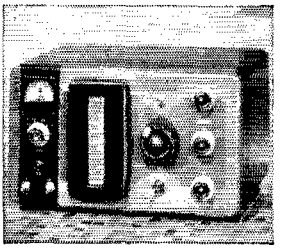
More features—more effective watts per dollar!

More than one-half kilowatt of power and operating convenience!

VIKING "FIVE HUNDRED" TRANSMITTER

Rated 600 watts CW input . . . 500 watts phone and SSB (P.E.P. with auxiliary SSB exciter)—instant bandswitching 80 through 10 meters! Compact RF unit designed for desk-top operation—power supply/modulator unit may be placed in any convenient location. All exciter stages ganged to VFO tuning. High gain push-to-talk audio system. Operates by crystal control or highly stable, built-in VFO. Class C 4-400A final amplifier provides plate circuit efficiencies in excess of 70% with unequalled broadcast-type high level amplitude modulation. Wide range pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. Low level audio clipping—effectively TVI suppressed and filtered. Complete with tubes, less crystals.

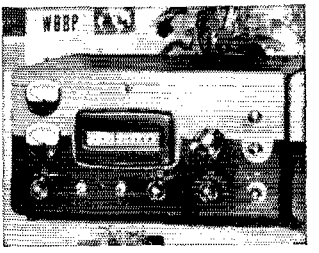
Cat. No.	Amateur Net
240-500-1..Kit.....	$749.50
240-500-2..Wired.....	$949.50



VIKING "COURIER" AMPLIFIER

This power-packed Class B linear amplifier is rated 500 watts P.E.P. input with aux. SSB exciter—500 watts CW and 200 watts AM! Continuous coverage 3.5 to 30 mcs. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: 5 to 35 watts. Employs two 811A triodes in parallel—wide range pi-network output. Fully TVI suppressed. Complete with tubes.

Cat. No.	Amateur Net
240-352-1..Kit.....	$244.50
240-352-2..Wired.....	$289.50



VIKING "THUNDERBOLT" AMPLIFIER

Rated at 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts Class AB_2 linear, 20 watts Class C continuous wave. Employs two 4-400A tetrodes in parallel, bridge neutralized—wide range pi-network output. With tubes.

Cat. No.	Amateur Net
240-353-1..Kit.....	$524.50
240-353-2..Wired.....	$589.50

For full information see your Johnson Distributor

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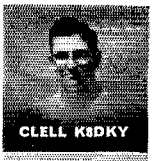


All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur 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!

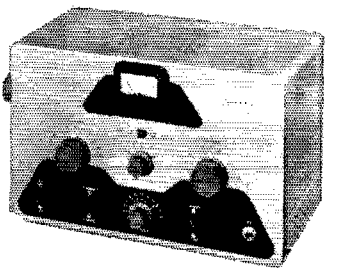
HEATH *hams work to bring you*

ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95



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 50 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. 19 lbs.

HEATHKIT "APACHE" HAM TRANSMITTER KIT

- Newly Designed VFO—Provision For S.S.B. Adapter
- Modern Styling—Rotating Slide Rule Dial

MODEL TX-1 **$229.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Fresh out of the Heath Company laboratories, the brand-new "Apache" model TX-1 Ham Transmitter features modern styling and is designed as a handsome companion to the also-new Heathkit "Mohawk" receiver. The "Apache" is a high quality transmitter operating with 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, the "Apache" features built-in switch selected circuitry providing for single-sideband transmission through the use of a plug-in external single-sideband adapter. These Heathkit adapters will be available in the near future. A compact, stable and completely redesigned VFO provides low drift frequency control necessary for single-sideband transmission. An easy-to-read slide rule type illuminated rotating VFO dial with vernier tuning provides ample bandspread and precise frequency setting. Simple band-switching control allows flip-of-the-wrist selection of the amateur bands on 80, 40, 20, 15 and 10 meters (11 M with crystal control). The "Apache" features adjustable low level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL-34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely enclosed in a perforated aluminum shielding for greater TVI protection and transmitter stability. Cabinet comes completely preassembled with top hatch for convenient access without taking chassis out of cabinet. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. Incorporates all the refinements necessary with many "plus" features for effective and dependable communications. Shpg. Wt. 115 lbs.

...top quality at lowest prices!

HEATHKIT "MOHAWK" HAM RECEIVER KIT

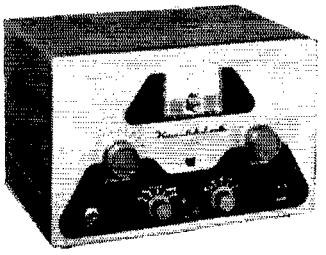
- All Critical Circuits Prewired and Aligned
- Crystal Controlled Oscillators for Drift-Free Reception

MODEL RX-1 **$274.95** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Outstanding results can be expected with the new "Mohawk" receiver which is designed to combine all the necessary functions required in a high quality communications receiver. A perfect companion for the Heathkit "Apache" transmitter, the "Mohawk" features the same wide-band slide rule type vernier tuning and covers all of the amateur bands from 160 through 10 meters on seven bands with an extra band calibrated to cover 6 and 2 meters using a converter. External receiver powered, accommodations are available for these converters which will be available in Heathkits soon. The "Mohawk" is specially designed for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end assures ease of assembly. All critical wiring is done for you insuring top performance. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc. Five selectivity positions from 5 kc to 500 CPS. A bridged T-notch filter is employed for maximum heterodyne rejection. Complete accuracy is obtained with the use of a built-in 100 kc crystal calibrator and the set features 10 db signal-to-noise ratio at less than 1 microvolt input. S-meter and many other fine features built-in for top-notch signal reception. Shpg. Wt. 90 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICH.

HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL DX-40 $64.95

The 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, control-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 that the buffer stage can be pretuned before the final is switched on. A switch selects any of three crystals, or a jack for external VFO. High quality D'Arsonval meter for tuning. Shpg. Wt. 26 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL DX-100 $189.50

Shipped motor freight unless otherwise specified. $50.00 deposit 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. Copper plated 16-gauge steel chassis, ceramic switch contacts, etc., are typical of the kind of parts you get, in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11 and 10 meters with a single bandswitch, 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. 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. Designed exclusively for easy step-by-step assembly. No other transmitter in this power class combines high quality and real economy so effectively. Here is a transmitter that you will be proud to own. Time payments are available! Shpg. Wt. 107 lbs.

more fine ham gear from the pioneer

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 pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designing new coils, 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-1B $21.95

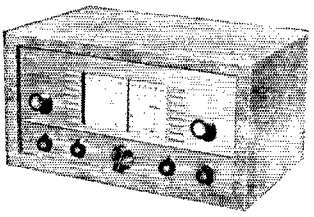
Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC.
Shpg. Wt. 1 lb. No. 341-A **$3.00**

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICHIGAN

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 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**

MODEL AR-3
$29.95

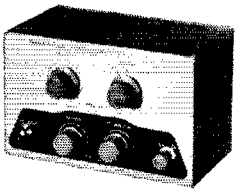


ALL-BAND RECEIVER

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. Shpg. Wt. 5 lbs.

MODEL VX-1
$23.95

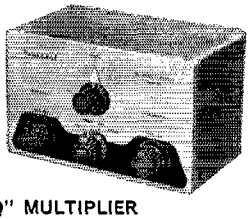


ELECTRONIC VOICE CONTROL

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 hetrodyne. 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. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1
$9.95



"Q" MULTIPLIER

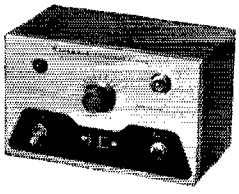
NOTE: $10.65 WHEN ORDERED WITH AR-3 BECAUSE OF EXCISE TAX.

...in do-it-yourself electronics!

HEATHKIT "AUTOMATIC" CONELRAD ALARM KIT

Designed to give instant warning whenever a monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter, and lights a red indicator. Works with any radio receiver; AC-DC—transformer operated—battery powered, so long as the receiver has AVC. A manual "reset" button is provided to reactivate the transmitter. Incorporates a heavy-duty 6-ampere relay, a thyratron tube, and its own built-in power supply. A neon lamp shows that the alarm is working. Simple to install and connect with complete instructions provided for assembly and operation. Shpg. Wt. 4 lbs.

MODEL CA-1
$13.95



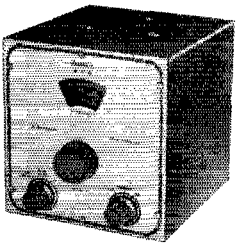
"AUTOMATIC" CONELRAD ALARM

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

$19.50



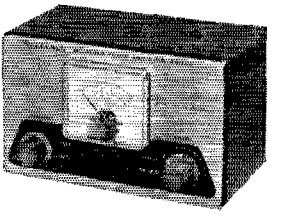
VARIABLE FREQUENCY OSCILLATOR

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

$15.95



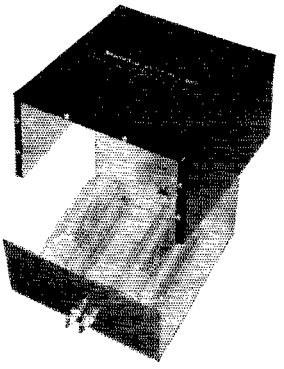
REFLECTED POWER METER

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

$8.95



BALUN COIL

save ½ or more . . . with HEATHKITS

FREE 1958 Catalog

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ Rush Free 1958 catalog.

HEATH COMPANY

BENTON HARBOR 9, MICH. a subsidiary of Daystrom, Inc.

name _____

address _____

city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

$_____enclosed. Parcel post, include postage—express orders are sent shipping charges collect. All prices quoted are Net F.O.B. Benton Harbor, Mich. and apply to Continental U.S. and Possessions only. All prices and specifications subject to change without notice.

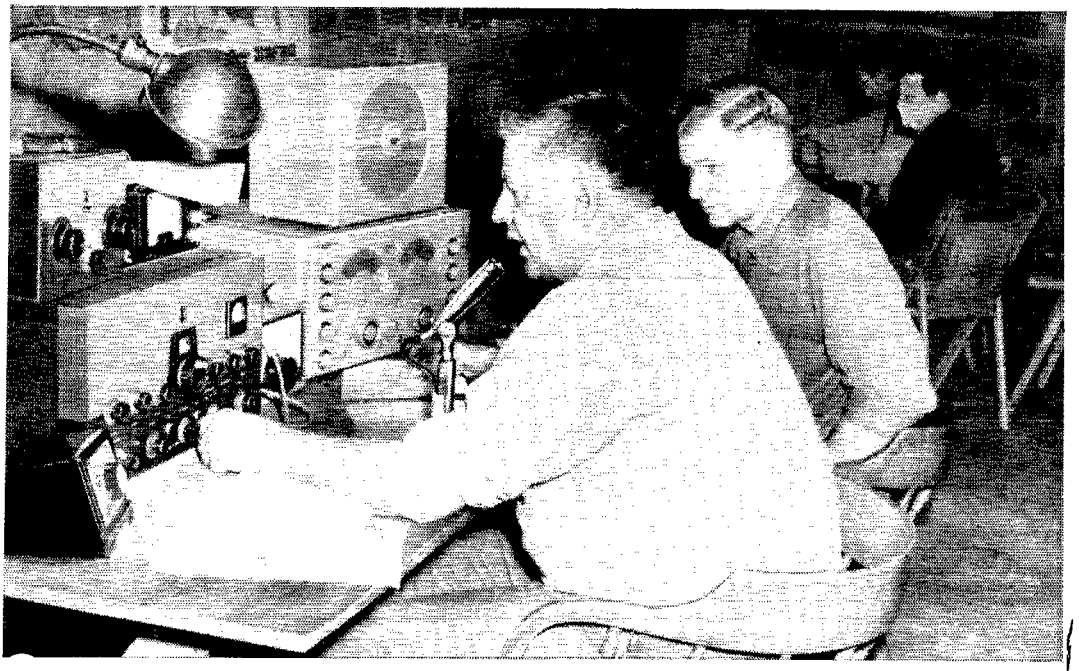


Photo courtesy of Red Cedar ARC, Menomonie, Wisc.

No Time For Repairs *During* an Emergency!

For test . . . or for real—it's a secure feeling to know you'll be on the air when an emergency arises. Preventive maintenance with Mallory components is one of the very best forms of insurance you can get. Once an emergency has arisen, it's too late to do those "put-off" repair jobs.

For example, there is no finer filter capacitor than a Mallory FP. Etched cathodes, high temperature ratings, stable capacities, and dependable voltage ratings all contribute toward reliable operation under the toughest conditions.

If you need tubular capacitors, look to Mallory "Gems"—the complete line of moisture-proof, performance-proven replacements. Or for ceramic disc capacitors, the famous line of Mallory-RMC "Discaps"® are now available to the Ham.

Mallory also offers a broad line of carbon controls—conventional or printed circuit types . . . with rotary switches, or new style push-pull switches. The Mallory "Sta-Loc"*line enables your distributor to custom-assemble virtually any combination of dual concentric controls you need from stock components—*in just 30 seconds.*

Be ready for work or play. See your Mallory Distributor for your replacement and new equipment needs. Ask him for a Mallory Catalog on the components in which you are interested—or write the Mallory Ham Shack, P. R. Mallory & Co. Inc., P.O. Box 1558, Indianapolis 6, Ind.

*Trade Mark

P. R. MALLORY & CO. INC.
P. O. BOX 1558
INDIANAPOLIS 6, INDIANA

P. R. MALLORY & CO. Inc.
MALLORY

Hallicrafters' SSB-VHF Contest offers you another great opportunity to share in *more than $14,000 worth of prizes!*

To enter this tremendous contest, simply visit one of the participating distributors and see a demonstration of Hallicrafters' latest SSB-VHF equipment.

Enter today! You may win a gift certificate *worth $100.00* as a local winner . . . plus a chance to win one of the five *grand prizes* illustrated above!

HERE'S HOW YOU ENTER—

1. Go to one of the distributors listed here—any time during the month of October. See a demonstration of Hallicrafters' latest equipment.

2. Fill out the entry card which your distributor will supply you, including call letters and completion of, in 50 words or less, *either* of these two statements:

(a) "*I prefer Hallicrafters single sideband equipment because . . .*".

(b) "*I prefer Hallicrafters V.H.F. equipment because . . .*".

3. Turn in card to distributor—do not mail to Hallicrafters. Each distributor will judge his entries and select his local winner. More than 100 such local awards will be made to entrants submitting the best, most sincere and original statements in the opinion of the distributor or other individual(s) he may designate.

4. Each local winner will receive from this distributor a *Gift Certificate worth $100.00* toward the purchase of any model of Hallicrafters communications equipment. Decision of the distributors' judges shall be final.

5. Local winners' names and entry statements will be forwarded to the Hallicrafters Company, where a panel of judges will select 1st, 2nd, 3rd, 4th and 5th place Grand Winners. Prizes to be awarded

contest month!

You may win!

5th PRIZE SX-101

Rev. Peter A. Ricke, K8HHY
Grand Winner,
1957 Hallicrafters
SSB Contest

are illustrated above. Judges decisions shall be final.

6. Entries become the property of the Hallicrafters Company, and will not be returned. Winning statements may be published by the Hallicrafters Company and winners identified.

The Hallicrafters Co.
Chicago 24, Illinois

ENTER HERE!

Visit one of these distributors in October!

ARIZONA
Phoenix: Southwest Wholesale Radio, Inc.

CALIFORNIA
Berkeley: Electronics Suppliers
Burbank: Valley Electronic Supply Co.
Culver City: Bill Thompson's Radio Supply
El Monte: Kimball & Stark, Inc.
Inglewood: Universal Distributors, Inc.
Long Beach: Larry Lynde Electronics
Scott Radio Supply Co.
Los Angeles: Henry Radio
Radio Products Sales Co.
Oakland: Elmar Electronics Inc.
Palo Alto: Zack Radio Supply Co.
Pasadena: Dow Radio Supply Co.
Riverside: Mission Radio Ham Supplies
San Diego:
Electronic Equipment Distributors
Western Radio & Television Supply Co.
San Francisco:
Northern California Amateur Supply
San Francisco Radio & Supply Co.
Television Radio Supply Co.
Zack Radio Supply Co.
San Jose: Frank Quement
Santa Barbara: Channel Radio Supply Co.
Van Nuys: Valley Electronic Supply Co.

COLORADO
Denver: Radio Products Sales Co.
Rogers Radio Co.

CONNECTICUT.
Hartford: Hatry of Hartford, Inc.
New Haven: Radio Shack

DISTRICT OF COLUMBIA
Washington: Electronic Wholesalers, Inc.

FLORIDA
Miami: Electronic Supply Co.
Tampa: Kinkade Radio Supply

ILLINOIS
Chicago: Allied Radio Corp.
Green Mill Radio Supply Co.
Newark Electric Co.
Genoa: Crawford Electronics
Moline: Lofgren Distributing Co.
Peoria: Klaus Radio & Electric Co.
Selectronic Supplies, Inc.

INDIANA
Fort Wayne: Warren Radio
Frankfort: M. H. Dossett Co.
Indianapolis: Graham Electronics Sup. Inc.
South Bend: Radio Distributing Co., Inc.

IOWA
Council Bluffs:
World Radio Laboratories, Inc.
Des Moines: Bob & Jack's Store for Hams
Fort Dodge: Ken-Els Radio Supply Co.

KANSAS
Wichita: Molers Camera Clinic

LOUISIANA
New Orleans: Radio Parts, Inc.

MARYLAND
Baltimore: Amateur Radio Center
Silver Springs:
Uncle George's Radio Ham Shack

MASSACHUSETTS
Boston: DeMambro Radio Supply Co.,
Radio Shack—Washington St.
Radio Shack—Commonwealth Ave.
Lawrence:
Young & Young of Lawrence, Inc.
Reading: Graham Co.
Springfield:
Young & Young of Springfield, Inc.
Soundco Electronic Supply Co.

MICHIGAN
Detroit: M. N. Duffy & Co.
Reno Radio
Grand Rapids: Radio Parts Co.

MINNESOTA
Minneapolis: Electronic Center, Inc.

MISSISSIPPI
Jackson: Swan Distributing Co., Inc.

MISSOURI
Kansas City:
Associated Electronic Supply Co.
Radiolab
St. Louis: Walter Ashe Radio Co.

NORTH CAROLINA
Asheville: Freck Radio & Supply

NEW HAMPSHIRE
Concord: Evans Radio

NEW JERSEY
Bloomfield: Variety Electronics Corp.
Newark: Hudson Radio & T.V. Corp.
Trenton: Almo Radio Co.

NEW YORK
Albany:
Fort Orange Radio Distributing Co., Inc.
Bluepoint, L.I.: Standard Parts Corp.
Hempstead: Standard Parts Corp.
Jamaica: Harrison Radio Corp.
Mineola: Arrow Electronics, Inc.
New York: Harrison Radio Corp.
Harvey Radio Co.
Hudson Radio & Television Corp.
Terminal Radio Corp.
White Plains: Melville Radio Corp.

OHIO
Canton: Burroughs Radio, Inc.
Cincinnati: Steinbergs, Inc.
Cleveland:
Pioneer Electronic Supply Corp.
Columbus: Universal Service
Dayton: Custom Electronics, Inc.
Marietta: Marietta Radio & Electric Co.
Toledo: Selectronic Supplies, Inc.

OKLAHOMA
Tulsa: Radio, Inc.

OREGON
Portland: United Radio Supply, Inc.

PENNSYLVANIA
Allentown: A. A. Peters, Inc.
Elkins Park: A. G. Radio Parts Co.
McKeesport: Barno Radio Co.
Philadelphia: Almo Radio—Arch St.
Almo Radio—Frankford Ave.
Ham Buerger
Pittsburgh: Radio Parts Co., Inc.

RHODE ISLAND
Providence: DeMambro Radio Supply
W. H. Edwards Co.

SOUTH DAKOTA
Watertown: Burghardt Radio Supply

TEXAS
Amarillo: R & R Electronic Co.
Dallas: Central Electronics
Crabtree Wholesale Radio Co.
Fort Worth:
Electronic Equipment Co., Inc.
Bill Sutton's Wholesale Electronics
Houston:
Busacker Electronic Equipment Co., Inc.
R. C. & L. F. Hall, Inc.
Lubbock: R & R Electronic Co.
San Antonio: Modern Electronics Co.
Texarkana: Lavender Radio Supply Co.
Wichita Falls: R & R Electronic Co.

VIRGINIA
Arlington: Key Electronics

WASHINGTON
Seattle: Amateur Radio Supply Co.
Pacific Electronics Sales Co.
Seattle Radio Supply
Tacoma: C & G Radio Supply

WISCONSIN
Fond du Lac: Harris Radio Corp.
Madison: Satterfield Electronics, Inc.
Milwaukee: Amateur Electronic Supply

HAWAII
Honolulu: Kaimuki Radio Co., Ltd.
Precision Radio Limited

10% PRICE SLASH!

"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 V40 multi-band verticals. No guy wires needed: rugged, occupies little space, proven and tested.

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.

10% PRICE SLASH!

TAKE 10% WHEN ORDERING

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
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 Aluminite 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

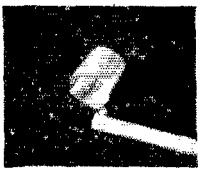
Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

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.



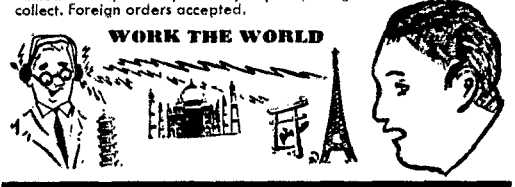
PROVEN DESIGN

Over a thousand Gotham verticals are on the air — working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

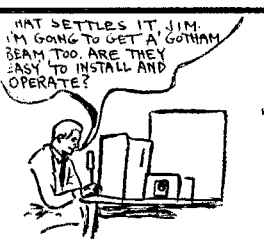
"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI

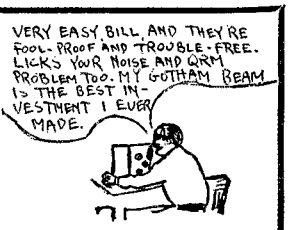
HOW TO ORDER. Send check or money order directly to *Gotham* or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.



GOTHAM 1805 PURDY AVENUE MIAMI BEACH 39, FLA.

10% PRICE SLASH!





YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are of the best!

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 ¾" and 1⅝".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" 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 midgets. 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. ⅞" and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

PUT AMERICA BACK TO WORK!

10% PRICE SLASH!

TAKE 10% OFF WHEN ORDERING

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
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

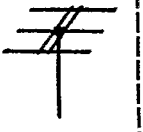
15 METER BEAMS
- ☐ Std. 2-El Gamma match 19.95
- ☐ T match 22.95
- ☐ Deluxe 2-El Gamma match 29.95
- ☐ T match 32.95
- ☐ Std. 3-El Gamma match 26.95
- ☐ T match 29.95
- ☐ Deluxe 3-El Gamma match 36.95
- ☐ T match 39.95

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.



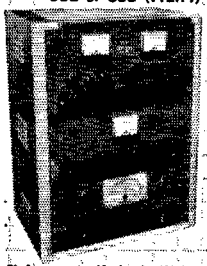
- ☐ Beam #R6 (6 Meters, 4-El).....$38.95
- ☐ Beam #R10 (10 Meters, 4-El)..... 40.95
- ☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....
Address.....
City.....Zone....State.....

Harvey Has It! We Announce With Pride, the GLOBE electronics

540w AM & CW; 700w max. on DSB or SSB (P.E.P.) input

Globe King 500C



Completely Bandswitching 10-160M

W/T: $795.00

Relay-controlled; built-in antenna relay, VFO, commercial type compression circuit. Separate power supply for modulator. Time sequence keying.

350w CW, 275 AM, 450w SSB (P.E.P.) input

Globe Champion 300A

W/T: $495.00

Kit: $399.00

Bandswitching 10-160. Built-in VFO, Pi-Net output, 48-700 ohms, push-to-talk, antenna changeover relay, time sequence keying, compression circuit. Kit with preassembled VFO.

Plate Modulated . . .

Globe Scout 680A

W/T: $119.95

Kit: $99.95

65w CW
50w AM

Self-contained, bandswitching, 6-80M, with built-in power supply. Pi-Net 10-80M, link-coupled on 6M. High level modulation. Forward Look.

90w CW for 10-160M

Globe Chief 90A

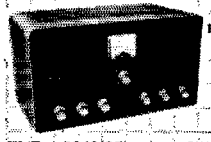
W/T: $74.50

Kit: $59.95

Forward Look cabinet, bandswitching Xmttr. Built-in power supply. Pi-Net. Provisions for external VFO.

Bandswitching 6 & 2M Xmttr.

Globe Hi-Bander



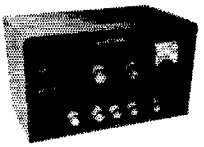
Power Input: 60w CW; 55w AM on Both 6 & 2M

W/T: $149.95 Kit: $129.95

Regulated screen supply. 4-stage RF section allowing straight through operation. Good harmonic and TVI suppression. RF Stages metered. Provisions for mobile use. 52-72 ohm coax output. New duo-band final tank circuit eliminates switching.

100w PEP DSB Input, Suppressed Carrier 40w AM, 50w CW

Sidebander DSB-100



W/T: $139.95

Kit: $119.95

Complete transmitter, bandswitching 80-10M. Min. 45db carrier suppression. 3-stage RF section, pi-net; speech clipping. Inverse neg. feedback. Ceramic band and function switches. Narrow bandwidth. Forward Look.

Globe's VOX Model 10

For voice operated control, with extra contacts for auxiliary circuits. Plug in socket at rear of DSB Xmttr. Adaptable for other Xmttrs.

W/T: $24.95 Kit: $19.95

QT-10: Accessory for VOX, W/T: $9.95

VFO 755A

160-10 Meters

W/T: $59.95
Kit: $49.95

For 10-160M; output on 40 & 160M. Vernier drive with shock absorbing features. Self-contained, well-filtered power supply with voltage regulation.

VFO 6-2

W/T: $59.95
Kit: $49.95

Perfect zero beat. Built-in power supply with voltage regulation. Drives 6 & 2M Xmttrs. Temp. compensated. Ideal for Hi-Bander. Sideband stability.

Model 666 for 6M, w/t only, $49.95

Power Attenuator PA-1

Use with Xmttrs. up to 70w input; for swamping drive to linear amplifiers. Three power reduction positions. Coax input and output. W/T: $10.95

Antenna Tuner with VSWR Bridge

Globe Matcher Sr.

W/T: $79.50

Kit: $69.50

Shielded Cabinet

For Xmttr. with final RF input up to 600w, 80-10M. Fixed link coupling in output. Coax input, 2-wire balanced output. Monitor SWR between Tuner and Xmttr.

Globe Matcher Jr., AT-3

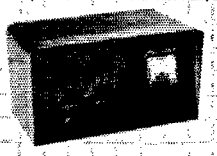
For input to Xmttr. of 100w CW, 75w fone or less. Substantial harmonic attenuation. Unbalanced output. Self contained.

W/T: $15.95 Kit: $11.95

Grounded Grid, Class B or C

Globe Linear LA-1

W/T: $124.50 Kit: $99.50



Complete with well-filtered power supply. 200w input AM Class B, 300w DC or 420 PEP input Class B linear SSB or DSB. 300w Class C for CW. Pi-Net 80-10M. 52 ohm Pi-Link coupled on 6M. Extensively TVI-protected.

Versatile Modulator

Plate Modulator UM-1

Modulates RF inputs up to 100w.

W/T: $49.95

Kit (less tubes): $32.50

Class A or AB_2 modulator, driver for higher power modulator, PA Amplifier. Matches output impedances 500-20,000 ohms. Carbon or crystal mike usable. Perforated steel cover, $3.00 extra. Supplies 10-45w audio output. Ideal for use with Chief.

Controlled Carrier Type

Screen Modulator Kit

Ideal for use with Globe Chief. Permits radio-telephone operation at small cost. Self-contained. Connections, instructions, printed circuits, etc. supplied.

Kit: $11.95

6 Meter Converter

Compact, stable, crystal converter for receivers tuning output frequencies 10-14mc. Cascode RF stage; bandpass coupling, shielded input and output, high sensitivity. Crystal for 10-14mc ouput supplied.

W/T: $27.50 Kit: $19.95

Code Oscillator Kit

Transistor and printed circuit assembly. Code Practice Oscillator. Screw terminal input for Key; standard phone tip output jack. Complete with batteries. Kit: $4.95

Peak Limiting Pre-Amplifier

Speech Booster FCL-1

W/T: $24.95 Kit: $15.95

Perfect for Scout, Hi-Bander & other Xmttrs. Clips and filters speech frequencies at pre-set amplitude. Response: 300-3500 cycles. Increases modulation intensity.

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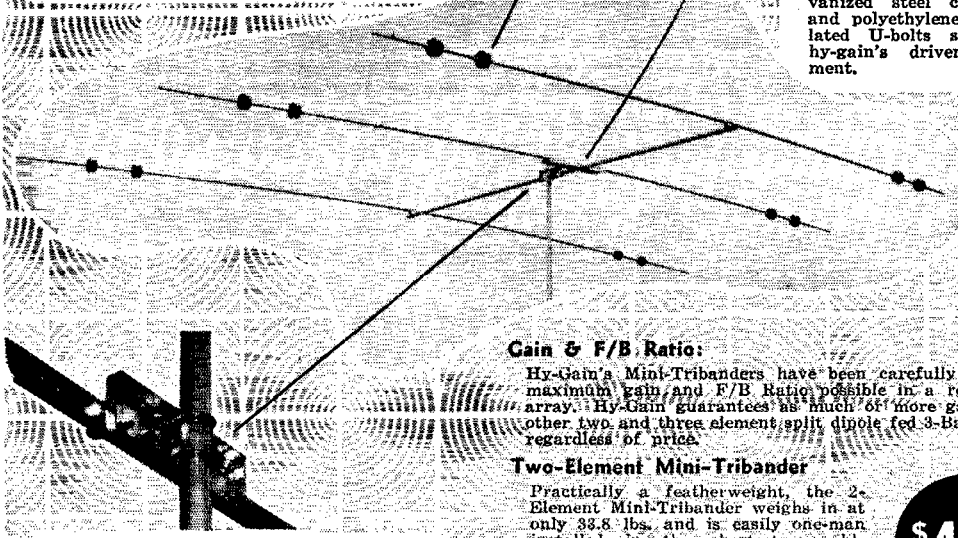
THE hy-gain SMALL SIZE, 3-BAND BEAM (10, 15 & 20) WITH SINGLE FEED LINE FOR MAXIMUM LEGAL POWER!

Insutraps

These streamline hy-gain traps are small (3" diameter) and light weight. Capacitor dielectric and coil form molded high impact styron. Each designed to take 1 KW AM, 2000 watts P.E.P. (as much as higher priced tribanders; more than 3-times the power handling capabilities of others. No need to limit your present or future power to 300 watts!) Individually factory resonated for maximum frequency accuracy. Completely weather sealed, water proof and airtight (do not breathe) for years of stable operation. Carbon activated polyethylene covers. Guaranteed for the life of the beam. Hi-Q coils well-removed from any metal mean highest efficiency of isolation action.

Split Insulated Dipole

Split Insulated Dipole Feed with coaxial choke results in SWR of less than 1½:1 on all bands with exceptional bandwidth. 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.



Construction

Boom is 1½" dia. by .065" wall thickness, hot dipped galvanized steel. Elements are 6061T6 high strength aluminum alloy. Telescoping sections of 1", ⅞", ¾" sizes are used. Heavily plated 10 Ga. steel channels attach all elements to boom and boom/mast with positive grip. High quality, galvanized and iridite treated hardware used throughout.

Gain & F/B Ratio:

Hy-Gain's Mini-Tribanders have been carefully tuned for maximum gain and F/B Ratio possible in a reduced size array. Hy-Gain guarantees as much or more gain as any other two and three element split dipole fed 3-Band Beams, regardless of price.

Two-Element Mini-Tribander

Practically a featherweight, the 2-Element Mini-Tribander weighs in at only 33.8 lbs. and is easily one-man installed in the shortest possible time . . . and nearly anywhere, with its turning radius of only 12', 11". Boom length 6'. Longest element 27'.

$49.95

Three-Element Mini-Tribander

The 3-Element Mini-Tribander is extremely lightweight, only 39.3 lbs. With a turning radius of 13', 10", this space-saving beam may be installed almost anywhere, yet boasts most of the features of the hy-gain full-sized trap tribanders. Boom length 12'. Longest element 28'.

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STATION ACTIVITIES

(Continued from page 102)

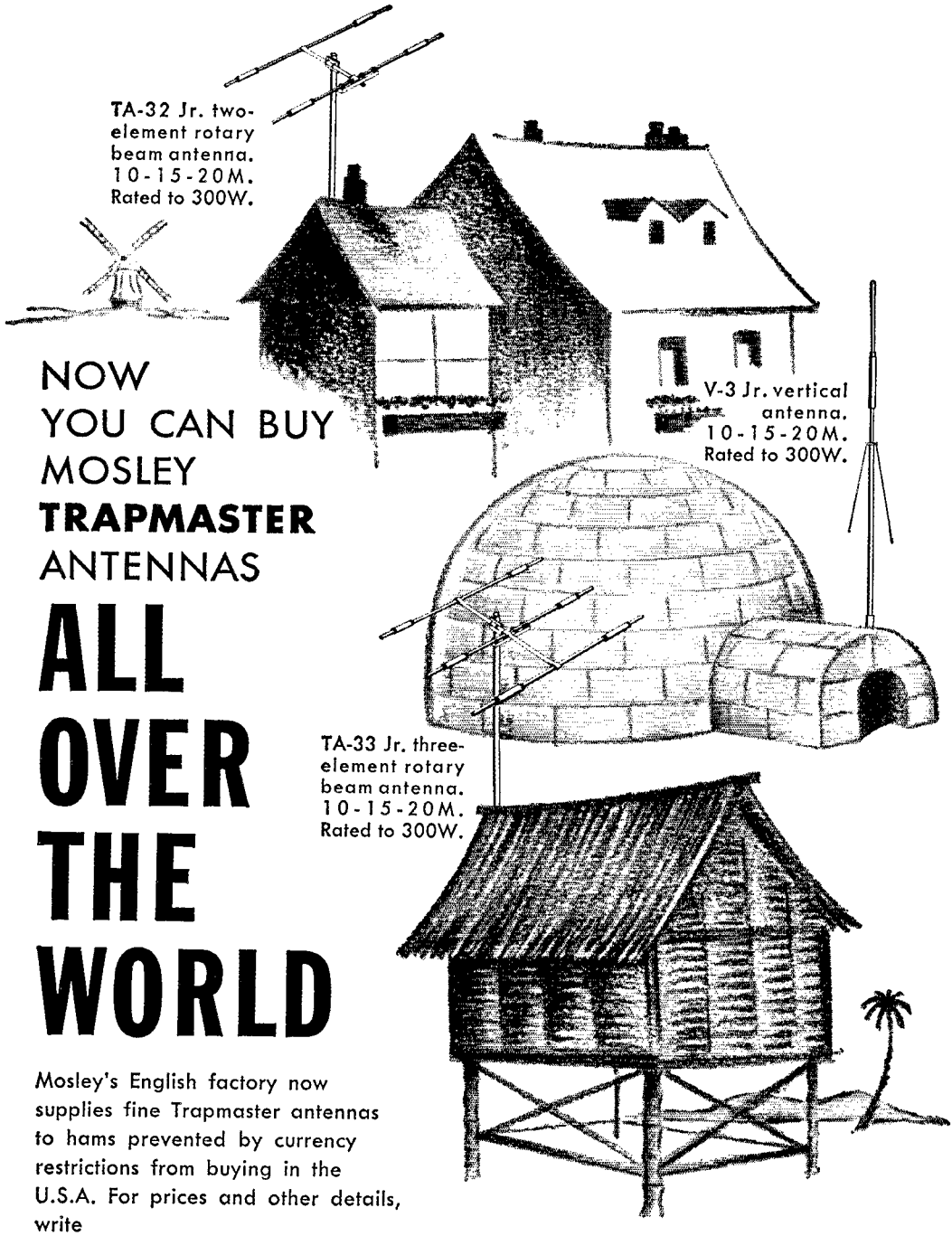
State C.D Radio Officer and was instrumental in organizing the AREC organization and RACES. The ARATS, Ed's home club, turned out en masse to honor him. Traffic: (July) K2SIL 272, K2GWN 210, K2RYH 209, K2MES 198, W2RUF 195, K2KIR 169, K2IYP 125, K2JBX 96, W2ZRC 75, W2ATC 58, W2BKC 52, K2JDD 43, K2RTN 32, W3COB 30, K2YJN 30, W2ABL 28, W2PVI 28, K2UNZ 24, W2RQF 23, W2SSB 22, K2HUK 16, W2TPV 16, K2QNM 12, K2GQU 11, K2OBU 10, W2PGA 9, W2VWR 9, K2KTK 8, K2TPB 8, K2BCL 7, K2RWV 7, K2MWS 6, K2UOA 6, W2ZHU 6, W2GBX 2, W2EWO 1.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA, RMs: GJY, GEG and NUG, PAMs: AER and TOC. I want to thank all who supported me in the recent SCM election and I will continue to do my best in this capacity. I invite inquiries of all kinds and especially wish to hear from W. Pa. hams in regard to items to print in this column. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. KBZ has a new Viking Valiant and made WAS. NSQ has been on the sick list. The Pittsburgh Six-Meter Net meets at 1900 every Mon. on 50.400 Mc. WRE is hunting for old or odd wireless keys. RSB is operating mobile from a Triumph-3-Sports Roadster. TOC is working on the rig. KUN had difficulties in the CD Party; the sky wire came down. LSS is the new Asst. Radio Officer for Erie County. NUG vacationed by taking a cruise on the Great Lakes. 5P! EF, ex-LFK, visited Pittsburg recently. KBZ received the Flamingo Award. JWZ is operating in New Hampshire on 6 meters. ZEG built a new v.f.o. CA moved to a new QTH. The Kilo Watt Harmonics of Steel City ARC reports as follows: GEN has made DXCC phone, NKM had made WAZ, BEX has a new 15-meter beam, UHM is getting on 6 meters, ANX is getting on 2 meters, the KWH gang held Field Day at the club house. The Etna Radio Club reports that K3BZP and K3BTC passed the General Class exam. VEK will vacation in Europe, new officers of the Breeze Shooters are SHT, pres.; FSF, secy.; SIR, checker; VEK, IMB and PII, windgaugers. Up Erie way the Boy Scouts at Camp Sequoyah have formed a radio club with the call K3ERP. KKJ is a patient at Vets Hospital, NXK is vacationing in Texas. WJA's daughter is on the slow road to recovery. The South Hills Brass Pounders and Modulators Hamfest was a huge success in spite of all the rain. We enjoyed meeting many of the hams there. Traffic: (July) W3LSS 55, YA 13, WRE 9, KBZ 6, BWU 2. (June) W3WIQ 126, CA 116.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: MAK. PAM: RYU. EC Cook County: HPG. Section Net: ILN, 3515 kc., Mon. through Sat. at 1900 CDST. CSW, manager of the North Central Phone Net, is convalescing and UQT, who was substituting as NCS, reports that the net cleared 93 messages during the month. League Officials TZN, 9GPI and 9PRN attended the SARA Picnic at West Frankfort and enjoyed meeting the gang. Reports from those attending the ARRL National Convention in Washington, D. C., are that it was one of the finest and they were glad to have an eyeball QSOs with the Headquarters gang. A new Novice call is KN9LON. K9AMD's new article on ham radio activity appeared in the August copy of *Popular Electronics*. LZE has been receiving envelopes of rare DX cards, which proves the merit of his quad. K9MSX and K9MSY are new Down-State licensees. LNQ got his annual dose of poison ivy at the Field Day outing. K9BLY finally made DXCC with 110 confirmed countries. BON now is using a new precision frequency standard. TZN, HPG, FKC, FDL and ADN scored high in the latest Frequency Measuring Test. The Prairie Amateur Radio Club (Galesburg) has resumed its fox hunt (hidden transmitter) exercises. Deepest sympathies are extended to YJF's XYL on the loss of her father. The Chicago Area gang also will miss one of commercial radio's earliest pioneers, Art Linick, FXB. He was owner and artist on early Chicago programs. Who will forget his inimitable German dialect stories. The Chicago Zoning Board is playing havoc with transmitter antennas, subjecting the offender to a stiff per-day fine for an antiquated ordinance. SKR and K9ISP chalked up their WAS certificates. Reports heard on K9ERH's new rig should put him in the DX class. FBI is converting his mobile to a new station wagon. K9AAM is back at his job after recuperating from an accident which cracked five ribs. BVB has decided to go mobile. UBI is working all the DX that comes his way, with 23 new countries confirmed to his list this month. KN9KWB is sweating out his General Class license. New officers of the Radio Amateur Society of Dupage County are NWK, pres.; K9AVQ, vice-pres.; MDR, secy.; and

(Continued on page 122)



TA-32 Jr. two-element rotary beam antenna. 10-15-20M. Rated to 300W.

V-3 Jr. vertical antenna. 10-15-20M. Rated to 300W.

TA-33 Jr. three-element rotary beam antenna. 10-15-20M. Rated to 300W.

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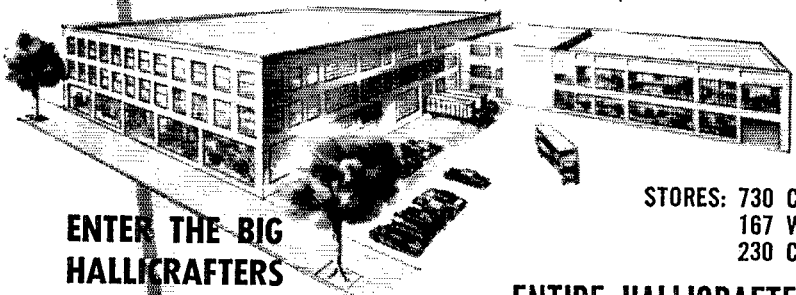

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3rd Prize — HT-32 5th Prize — SX-101

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S-95	45DX308Y	59.95	6	6
SX-104	45DX309Y	89.95	9	8
SX-105	45DX310Y	89.95	9	8
S-53A	45DX315Y	89.95	9	8
S-85	45DX304Y	119.95	12	10
S-86	45DX305Y	119.95	12	10
SX-100	45DX300Y	295.00	30	17
SX-99	45DX306Y	149.95	15	11
SX-62A	45DX301Y	375.00	35	21
SX-101	45DX303Y	395.00	40	24
HT-32	45DX317Y	675.00	68	39
HT-33	45DX318Y	775.00	78	45
SR-34	45DX320Y	495.00	50	30

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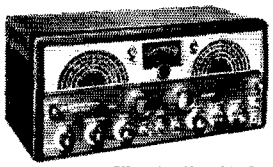
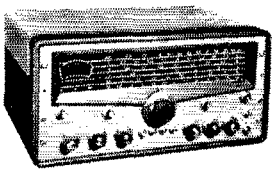


SX-100 Net $295



SX-101 Net $395

HT-32 Net $675

HT-33A Net $775

SR-34 Net $495

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National Co. NC-183D	$200	$ 9	$225	$13	$295	$24	$310	$30	$250	$16
NC-125	125	13	135	17	140	33	140	39	135	24
NC-98	85	15	90	21	95	36	100	42	90	27
Hammarlund HQ-100	130	13	140	17	165	33	175	36	150	21
HQ-140X	125	13	130	17	165	33	180	36	130	24
129-X	100	14	105	19	125	33	144	39	110	24
100	70	15	70	21	75	36	80	42	70	27
Pro 400-X w/PS & Spkr.	145	12	175	10	175	30	200	34	150	21
Collins 75A-2	195	10	200	14	230	27	250	31	215	19
75A-3	200	9	250	12	350	21	360	27	300	14
32V-3	—	—	—	—	500	13	530	16	400	9
Johnson Pacemaker	—	—	—	—	250	27	280	30	250	16
Viking II	170	10	170	15	200	30	223	33	190	21
Viking I	125	13	130	17	145	32	160	36	130	24
Ranger	145	12	160	16	175	30	180	36	170	21
Central Elect 20-A	95	15	95	19	115	33	120	39	100	24
10-A	50	16	60	21	85	36	100	42	65	27
Hallicrafters SX-28A	90	15	105	19	95	36	107	39	90	27
S40-B	45	16	50	21	50	37	64	42	50	27
SX-42	95	15	107	19	122	33	125	39	100	24
S-76	80	15	95	19	100	34	120	39	95	27
SX-62	145	12	150	16	130	33	150	37	125	24
SX-71	95	15	105	19	120	36	128	36	100	24
HT-9	70	16	80	21	95	33	100	42	85	27

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BVB, editor of the society's official organ. KBP says the Rockford 6-Meter Emergency Net is progressing rapidly. The ILN held 18 sessions with a traffic count of 98 messages. NZ writes to tell that the Swani Club's new bulletin is called *Swani Flash*. The Rockford Club put on a demonstration of ham radio at its 4-H Fair. EDA has completed his 50-foot tower for his new beam, while CTG erected 60 feet of aluminum pipe that was lying in his yard. It is rumored that it is to be used for an antenna. K9GUA has been neglecting his operating time to finish wiring his new Heath Apache. Traffic: (July) W9DO 946, K9ERH 258, W9PCQ/9 190, K9GDQ 131, W9-FAW 125, MAK 114, K9GVD 66, W9TZN 39, SKR 3, K9BIV 2, W9BLY 2, BOI 2, GDI 2, K9ISP 2, KN9KWB 2. (June) K9ISP 10.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: CMT. PAMs: BKJ, KOY, SWD and UXK. RMs: DGA, JOZ and TT. IFN meets daily at 0800 and Mon. through Fri. at 1800 on 3910 kc. QIN meets daily at 1930 on 3656 kc. The Indian Radio Clubs Council's Annual Picnic was held July 20 at Lafayette. The Michiana ARC won the IRCC Field Day Plaque again this year. They did it with a very carefully planned 40-meter c.w. station. SWD was named Indiana's Outstanding Amateur for the year. Cliff certainly deserves this honor in recognition of his many services to ham radio. K9GFQ has been appointed as OES. The new call of the Seymour ARC is K9ONB. DZC has moved into his new house and is back on IFN reading the Bulletins. JWI reports that K9JWH is a new Gen. Cl. licensee at Culver. Mike is 12 years old. The Columbus ARC has been reorganized and the officers are K9DPN, pres.; Joe Harris, vice-pres.; Max Wilson, secy.; and Scott Henkle, treas. The club project is building 6-meter rigs for the AREC. NH made WAS with contacts on 160 meters only. PPS was graduated from Purdue with a BSEE and has been sworn into the Signal Corps as 2nd Lt. EJC is reported heard on 6 meters HXR is moving to W6-Land. The new s.s.b. converts down Connersville way are OZJ and JWH. KOY reports that he hopes to organize an s.s.b. traffic net in Indiana this fall. Check with Ken for time and frequency. K9-DWK has worked 82 countries on 15 meters with a Ranger and a three-element beam. K9COK and ORW furnished communications for the Soap Box Derby as representatives of the Porter County AREC. The new call of the Duneland ARA is K9MVV. SWD reports IFN traffic as 246. QIN traffic, as reported by JOZ, was 158. TT reports RFN traffic to be 59. Those making BPL this month were ETM and NZZ. Traffic: (July) W9NZZ 1009, ETM 204, ZYK 189, VAY 180, TQC 123, JOZ 94, TT 79, FJR 57, SWD 50, EJW 45, RTH 40, EHZ 32, BUQ 28, K9GBB 26, NBK 25, W9QR 21, GJS 20, DOK 17, ENU 16, K9BSU 15, W9UQP 15, YYX 15, BDP 13, MHP 13, WHL 13, WRK 13, K9JRI 12, W9QYQ 12, NTA 11, K9-IHG 9, W9MMY 9, BDG 7, CC 7, K9GSY 6, IXD 5, KN9LJO 5, W9PPS 5, K9AOM 4, W9WAU 4, K9DWK 3, W9HUF 3, PQZ 3, WTY 3, SNQ 2, K9GLU 1. (June) K9DGO 18, W9WAU 9, SNQ 6.

WISCONSIN—SCM, George Woida, W9KQB—SEC, YQH. PAM: NRP. RMs: SAA, K9AEQ and K9ELT. QNO received WAZ No. 674, the 35th in W9-Land. Our Director, GPI, has made DXCC. LVR is back in Milwaukee and gives the MRAC 14 DXCC members. ROM has a tri-bander on a 110-ft. tower. ONY worked FL8AC with mobile 30 watts. DYG, up to 200 countries, made WPX and is NCS for the 9th Regional Net. VHP and VIK are active on the WIN and WSSN from N. Fond du Lac. CBE's XYL has him collecting stamps for her via the ham bands. PJT is using a folded dipole for his OB skeds. NLJ is DXing with a new beam on a 60-ft. tower and needs 4 for DXCC. There is a 75-meter vertical at DTV. 160-meter activity is running high at Oshkosh. New appointees: K9ELT as RM; K9CJL and K9ALP as OPSs; K9LQF and K9CJL as ORSs; CXK and DCK as ECs; K9GBK as OES; K9EVB as OO Class IV. K9-LMX is running 90 watts to his DX-35. K9IAE is Conditional Class and is on 7 Mc. with a DX-40. K9GAJ had a 40-mile contact on 6 meters with a hand-held 1-watt rig. WSSN certificates went to VIK, WMA, K9GSC, K9CJL and SAA; BEN certificates to VAJ, DYJ, K9-EQW and K9MGY in June. K9DTK and SCM received theirs in July. A new Wisconsin Club roster is now available from the SCM. LYC has a new 50-ft. Yagi on 2 meters. JFP made WAS with a Nevada contact. There are new trap and end-fed antennas at SAA. YTF is working ZLs with a new vertical. KN9OSH is new in Reedsburg. KN9MMB is up to 17 states on 80 meters with a 35 watter. K9GDF now is keeping 14 daily skeds. QFC is back on after a long layoff and chasing 15-meter DX and has WAC and 40 countries with a new Valiant. K9ELT spent his vacation visiting ham shacks in Northern Wisconsin. OT is using an NC-100 salvaged from a Japanese outpost in a rice paddy. Congrats to the BEN for fine work during the Dunn Cty. disaster. Traffic: (July) W9CXY 721, K9ELT 334, GDF 307, W9SAA 119, DYG 100, KQB 45, K9CJL 43, AEQ 33, DTK 23, W9-

(Continued on page 124)

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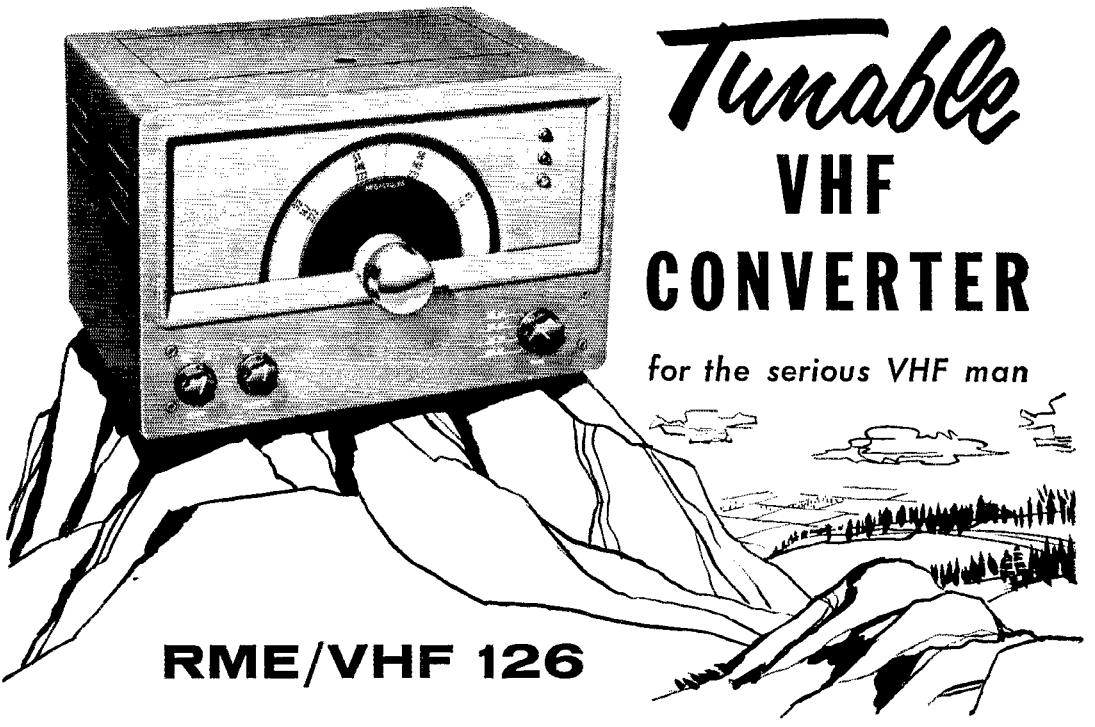

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WMA 19, VIK 12, CBE 10, GFL 10, VHP 9, K9GSC 7, W9OVO 7, PJT 6, W8RMF/9 5, K9ALP 4, CEF 4, IQO 4, W9NLJ 4, K9LMX 3, W9MUM 1. (June) W9NLJ 11, OVO 11, WMA 2.

DAKOTA DIVISION

NORTH DAKOTA—Acting SCM, Arnold L. Oehlsen, WØYCL—7HTV, formerly ØSWB, reports that he has worked 115 North Dakota stations on 10-meter phone from his Tucson, Ariz., QTH. Percentage-wise this is interesting since there were approximately 570 North Dakota amateurs listed in the Spring 1958 *Call Book*. KØ JLW and KØAZX are new net controls on the North Dakota 75-Meter Phone Net. Come on, fellows, get those news items in. Traffic: KØCNC 38, GRM 35, WØJBM 25, KØJLW 11, KJR 8, HLT 3, WØYCL 2.

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: NEO and FKE. SECs: YOB and GDE. PAM: SCT. RM: GWS. In June the 40-Meter Phone Net reported 24 sessions, QNI 361, high 26, low 4, average 15.04; QTC 59, high 9, low 0, average 2.5; informals 31, high 5, low 0, average 1.3. The 75-Meter Phone Net reported 35 sessions, QNI 796, high 32, low 7, average 22.7; QTC 72, high 7, low 0, average 2; informals 76, high 7, low 0, average 2. For July the 75-Meter Phone Net reports 32 sessions, QNI 688, high 27, low 9, average 21.5; QTC 52, high 8, low 0, average 1.6; informals 93, high 8, low 0, average 2.9. The 40-Meter Phone Net reports 26 sessions, QNI 309, high 18, low 5, average 11.5; QTC 33, high 9, low 0, average 3.2; informals 15, high 3, low 0, average .6. The 80-Meter C.W. Net reports 11 sessions, QNI 48, high 7, low 1, average 4.4; QTC 3; informals 5. NNX has a 3rd son licensed, KNØQVI. SMV made DXCC. OXC reported satellite signals again. KØMMZ/Ø moved back to Iowa. SCT received a BPL medallion, the second in South Dakota. Traffic: (July) WØSCT 328, DVB 97, KØMMZ/Ø 81, BMQ 22, DUR 10, WØFJZ 10, MNX 8, KØOMP 2, OXU 2, KLR 1. (June) WØSCT 313, FJZ 60, KØMMZ/Ø 44, WØZLB 9, KØDUR 8, WØNNX 5, KØAIE 4, DYR 4, WØFLP 3, KØINZ 3, IAW 2, KLR 2, LXH 2, WØOFP 2, OFS 2.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Asst. SCM: Bob Schoening, ØTKX. SEC: TUS. RMs: KØDIA and KØGCN. PAMs: QVR and TCK. The Albert Lea Area Radio Club participated in a Red Cross mock disaster exercise. Communications were not as successful as hoped because of interference on the chosen crystal frequency. Other clubs and AREC groups are urged to schedule similar tests and work out problems that show up only in an actual test. In making plans for it, your SCM suggests that you be prepared to use c.w., in the event that conditions do not permit phone operation. WMA took over voice schedules to Antarctic and Greenland for CO while he was in the hospital. K9-ODI is back in Minnesota again, now located in New Brighton on a 67-acre antenna farm. He is hoping to get back his old call, KØHKK. KØORK now has his General Class license. KØIDV has a new NC-300 and a Viking Valiant. He has been appointed ORS. Other appointments include KØHNL as OES, and KØMNY and NVW as OPSs. KØERO and KØDUQ are on a summer tour of Israel. PBI vacationed in W2-Land, and DQL toured the mountain beauty spots in W4-Land. WMA has a new Drake 1A receiver and a Drake Hybrid Patch. New EC appointees are KØDID for Cook County; NVW for Red Lake, Pennington, Polk and Marshall Counties; VPO for Cass and Crow Wing Counties; VTZ for Lincoln and Lyon Counties; KØAUH for Roseau, Lake of the Woods and Kittson Counties; and KØCRB for Wright, McLeod and Carver Counties. If you are not an AREC member, see your nearest EC. If he is unknown to you, contact TUS, our SEC. Traffic: (July) KØGCN 279, IDV 214, JCF 200, WØKLG 153, KØKYK 64, WØRQJ 63, KNØORK 56, WØOPX 44, FGP 34, KØKIF/Ø 33, EPT 32, WØALW 31, WMA 28, KØMIJ 26, OBP 22, WØOJG 22, QVR 22, OJK 21, LST 20, QVQ 17, BUO 16, KØIZD 16, WØUMX 16, KØKCY 15, GUJ 12, MPG 11, WØLIG 10, DQL 8, KØHJC 8, GVX 4, LBC 4. (June) WØTCK 7.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. RM: SZJ. We congratulate K5FJA on traffic-handling and having made BPL again this month. He has a new tri-band antenna up 90 ft. in the air. K5HSO has a new mobile on 6 meters and is running 12 watts. HFQ is now being heard often on 75 meters after being on 20 for the past 9 years. We are glad to welcome the following new amateurs: K5QVD at Truman, K5PYD at Portia and K5PYI at Rector. KAN is now mobile on 75 meters. We wish to make special mention of one of our old-timers, EC, for his loyalty to ham radio and to those he helps daily in handling emergency messages, running down hospital reports, etc. Thanks for

(Continued on page 126)

from CARTON to CONTACT in 47 minutes!

WITH THESE POWERFUL hy-gain TRAP VERTICALS

MODEL 14-AV The Model 14-AV is only 21 feet high and weighs just 13 pounds. It incorporates the exclusive Hy-Gain capacity hat assembly which increases the electrical length of the maintaining high efficiency on 40 meters.

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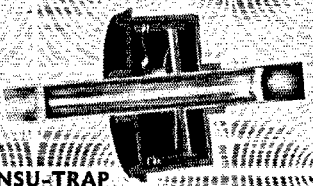

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NYLON BASE MOUNT

Fiber Glass impregnated nylon base assembly makes possible self support. Heavy cast aluminum mounting bracket is adjustable for various sizes of mast. Weatherproof internal coaxial fitting supplied.

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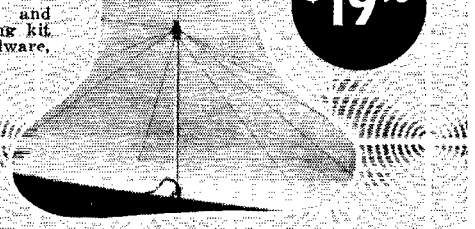

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the fine work you are doing, Earl. We would like a lot more hams in this section to send in activity reports for this column. Traffic: K5FJA 522, W5DAG 94, SZJ 72, K5LPS 16, W5ZZY 10, K5HSO 9.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO. At a recent combination steak dinner and election meeting, the Westside ARC installed YVI pres.; VUH, vice-pres.; BUK, secy.; K5KEF, treas.; and INL, act. mgr. For the fourth year the club awarded a plaque to JCC as the most valuable member and a certificate to K5IZO as the member who made the most progress from Novice to General Class in one year. DXer CEW, who has 244 countries worked and 230 confirmed, has been reappointed PAM. K5DMA had eyeball QSOs all the way to Florida and back. MXQ blames rig trouble and a new car for the low traffic count. CEZ installed an air conditioner in the shack to help increase the life of power transformers. K5KLA is bucking for an OO appointment. K5DDH installed a new ground-plane antenna for 20 meters. K5DAV reports activity in Field Day. K5MMP reports that the Shreveport Hamfest had an attendance of over 150. K5GDI, running 300 watts, has 151 countries worked and 142 confirmed. BV operates all bands with a B&W and sideband adapter and an HQ-140 receiver. USN's OBS certificate has been endorsed. All transmissions are on tape, Mon. and Fri. on 7100 and 3750 kc. at 1225 and 1925 CST; Tue., Wed. and Thurs. on 7100 kc. at 1225 CST; Sat. and Sun. on 3750 and 7100 kc. at 1925 CST. The hurricane season is here. Check into one of the phone or c.w. nets and get lined up to help in case of emergency. Check your mobile and emergency gear. Check on your ARRL official appointments, too, and send certificates to the SCM for endorsement. Please send reports early. Traffic: W5CEZ 356, MXQ 9, K5DMA 8.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: RRV, RM: NHT, PAMs: VQE, ZZ, UOT and PAH. The Oak Ridge Club reports 104 hams (including 4 YL hams) registered at the very FB Crossville Picnic. The Chattanooga Choo Choo Hamfest was a big success with approximately 350 present including many celebrities. Congratulations to SGI, OO, on his Frequency Measuring Test report of 4.9 parts per million. The Johnson City Radio Association is a new ARRL affiliated club. The Cookeville Club announces reorganization with PVD as president. K4RXQ is working 15-meter DX with a new DX-100. TDZ reports that he is looking for 6-meter skeds in Kentucky, Mississippi and Louisiana. The summer slump must have hit our traffic totals but we still find 5RCF on the BPL list. Traffic: (July) W5RCF 696, W4CXY 48, K4LLB 46, W4VJ 40, NHT 29, K4MYI 19, W4VQE 19, UIO 18, PFP 14, PAH 13, K4LPW 11, KYL 10, LTA 10, W4JVM 4. (June) K4ONQ 81.

GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH, RM: K4AIS. PAMs: W4SUD, OGY, K4ECJ and LOA. I am glad to be the first to congratulate our new SCM, SUD, and wish Bob the greatest success in his new responsibilities. I hope every ham in Kentucky will cooperate to make this possible. K4KIO is top traffic man with 190 but still is having electronic bug trouble. K4JOP wants to dispose of a Viking Adventurer. K4LHQ is a new ORS. W4BAZ was appointed a committee of one to organize the Kentucky Council of Clubs. (All club secretaries please note.) K4SBZ and GTC are new OPs. RHZ is now EC for Northern Kentucky. CDA is building a v.f.o. exciter. K4PNA is moving to a new QTH. K4KIS is having transmitter trouble. K4LHQ vacationed at Miami Beach. JUI put up a new antenna and can now catch channel 27 in Lexington. K4SBP is active on KPN from Louisville. SUD reports KPN cleared 128 in 30 sessions with OGY, NUQ, K4MMW, K4WBG, K4GAG, K4ICN and HNI as NCSs. K4AIS reports KYN cleared 197 in 31 sessions with K4KIO, K4JOP, K4LHQ, K4CSH and BAZ as NCSs. OES K4SPJ made 67 contacts while portable 8 in Dayton, Ohio, and has 15 states confirmed on 6 meters. K4QHZ is QRL work. NRH sends ARRL Official Bulletins as scheduled on 75 meters. K4HTO says 6 meters opens every Sun. at 2100. KZF is working on an s.s.b. exciter. K4DLI is QRL work. K4OCN has offered to help in the Weather Net. Don't forget the Kentucky 6 Net meets Sun. at 2000 CST. The newly-organized North-

(Continued on page 128)

100% SATISFACTION

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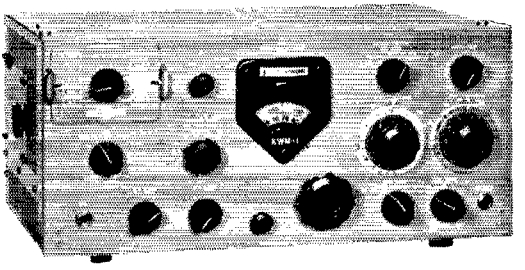
NOW, HENRY DARES TO GIVE YOU THE ABOVE GUARANTEE . . . Try any receiver or transmitter for 10 days. If you are not perfectly satisfied, return it and all you pay are shipping costs.

Collins KWM-1 Mobile Transceiver



First SSB Mobile Transceiver ever offered. 14-30 mc. 175 watt PEP input. Use for mobile or fixed station without modification. Frequency stability comparable to KWS-1 and 75A-4. Break-in- CW using VOX circuits — side tone CW monitor. Self adjusting ALC. Mechanical Filter sideband generation. Complete TVI filtering. Pi-L output network. 6¼" H x 14" W x 10" D. Available in limited quantity.

KWM-1 Net Price $820.00

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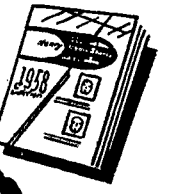

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ern Kentucky Radio Club has elected VLC, pres.; and AHL, rec. secy. Traffic: (July) K4KIO 190, W4ZDB 128, K4AIS 108, W4SUD 98, K4JOP 90, W4KKW 79, GTC 66, OGY 53, K4MMW 48, CSH 35, W4BAZ 34, CDA 20, K4PNA 14, SBZ 12, W4JSH 11, K4KIS 10, LHQ 7, W4SZB 5, JUI 4, K4SBP 3, OAH 2. (June) W4BAZ 44, K4PNA 9, W4MKJ 8.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC: YAN. RMs: DAP, FWQ and OCC. Thanks to YAN for filling in here last month. The vacation was fine as usual. According to the SEC report, we still are lacking in AREC activities in most areas and now is the time to take action. The Simulated Emergency Test of Oct. 11-12 ought to be a good time to enlist and become active. "Your EC needs YOU." Contact the SEC if your local EC is not known to you. Many mentions have been made of the success of the various net picnics this summer. The Upper Peninsula Hamfest was aided in its endeavor with CAM and NBJ as hosts to the gang aboard their M.S. *Tahquamenon*. This "free ride" during the peak of their tourist season was most appreciated. The BR/MEN Picnic at Ludington was attended by 89 registered hams and families. New BR/MEN officers are DCN, pres.; CKD, vice-pres.; and AQA, secy.-treas. The VFH Picnic is a growing event, as evidenced by the 133 licensed hams in attendance this year from Ohio, Indiana, Illinois and Wisconsin in addition to a good representation from our section. The West Michigan V.H.F. Assn. officers are CVQ, hon. chmn.; PX, act. mgr.; PQO, hamfest chmn.; and JUU, secy-treas. NOH reported a quantity of "halos" at the picnic—antennas, I presume. Section Net certificates were issued to the following stations for the 1957/58 season: AUD, ADD, DAP, DJN, ELW, FX, FWQ, FDO, GKT.HKT, HZU, ILP, IZS, JKX, NOH, NUL, OGY, OCC, OCU, PXA, QQO, QIX, RVZ, JRC, RAE, RTN, TBP, WXO, WGU, WVL, YAN and VE3DPO. Field Day reports indicate the usual fine time except for the aurora activity that favored the v.h.f. installations. By the time this is published, the SS Contest will be close at hand. The October CD Parties will be good practice. Good luck to all. Traffic: (July) W8DJN 126, FWQ 97, OCC 96, QQO 84, FX 80, YAN 52, NOH 46, FDO 36, IZS 23, K8CKD 17, W8WXO 16, DSE 12, MAI 9, AUD 8, EGI 8, CWE 7, TBP 5, MSK 4. (June) W8OCC 104, K8NAW 101, W8ILP 83, QQO 79, FWQ 61, FDO 43, FX 43, YAN 40, CWE 35, NOH 31, WXO 30, QIX 23, DJN 21, TBP 20, K8CKD 14, W8HKT 14, WVL 12, VYG 11, SWN 8, IZS 4, AUD 2, EGI 1. (May) W8ILP 154, QQO 108, OCC 31, YAN 31, K8CKD 27, W8JKX 17, TIN 2.

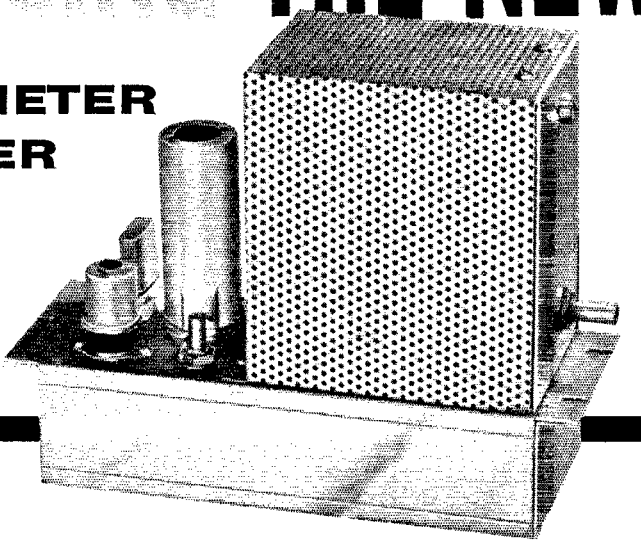
OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RM: DAE. PAMs: HPP, HUX and HZJ. K8HTI has a new Ranger. The Seneca RC held a 2-meter hunt with IJL, RBT, VKB, K8s BCX, BIL and KN8KAT taking part. The club has KN8s KAB and KRK as new hams and the club 2-meter net meets Thurs. on 145.44 Mc. at 2030 EST. Columbus ARA's *Carascope* tells us a club picnic was held, 22 from the club code and theory class took their examinations, 60 members heard IJV's talk on Scope and Its Uses and DWP made WBE. *Carascope* also had a good story on the Ohio Council of Amateur Radio Clubs, listing its awards on Field Day, Sweepstakes and Ohio Intrastate Contests. Greater Cincinnati ARA's *The Mike and Key* informs us that FGX showed films and gave details of the DXpedition to Navassa I., KC4AF. HXB vacationed in Minnesota. K8CZJ took a trip along the East Coast. MJC has a new baby boy. The Springfield ARC's *Q-5* states that GHX worked 18 stations in 4 states on 220 Mc. Ohio Valley ARA's *Ether Waves* tells us that the club had its largest attendance at the meeting and showed movies of KC4AF. YGR has 120 countries confirmed. UPH made BPL in July. A simulated disaster was held at N. Ridgeville with ELC, FEZ, GDQ, QYG, UQY, VMD, K8s, DXW, GIL and KN8IPK participating. K8COI received Pittsburgh Six Meter Net Award No. 175. K8s AWS, AXK and EVT are on 75 meters mobile. PAP is back on the air. K8AXK is going to O. S. U. taking electrical engineering. New appointments are K8s EGX and EUC as OOs, LG and FDM as ECs. Toledo's *Ham Shack Gossip* names EPO as its Ham of the Month and he, his XYL, IAA, and their three sons are moving to Arizona. IAA was one of its editors. VLO has been in the hospital. The Cleveland Area Council of Amateur Radio Clubs will sponsor the Cleveland Amateuradio Convention which will be held Oct. 18 from 0800 to 2400. WRO is on 432 Mc. The daughter of EYX and VZR is marrying K8HCG. The Lucas County AREC held a hidden bomb hunt with INR, MNR, OFG, TTM, UKX, VJO, VKR, K8s BAT, DPE, EXC, IXL and families. OFG is in the hospital and LAH joined Silent Keys. Tusco RC's *News Bulletin* states that GAC is mobile and STR has a new Apache. New hams are KN8s LFA, LFH, LRG and JXF. K8AQU has a new HQ-100. GFE vacationed in Florida. IBX received DXCC and WTO. QIE has a new SX-101. Your SCM

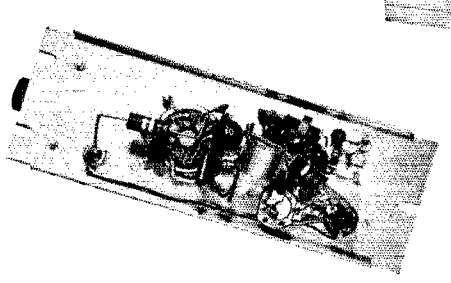
(Continued on page 130)

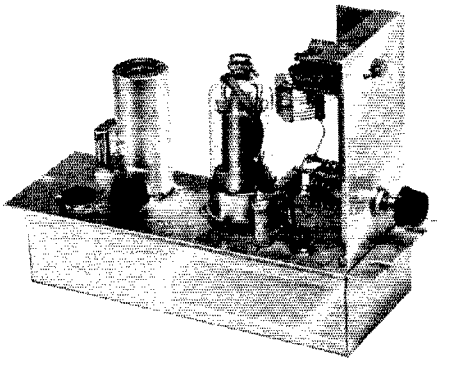
ANNOUNCING THE NEW

STP-50, 6 METER TRANSMITTER

THIS TRANSMITTER IS THE FIRST OF SEVERAL STRIP TYPE UNITS TO BE MANUFACTURED BY INTERNATIONAL







SPECIFICATIONS

Power Input:	Maximum 30 watts
Tube Line-Up:	Oscillator-Buffer 12BY7
Final:	2E26
Heater Power:	6 Volts
Plate Power:	300 to 500 Volts
Crystal:	12MC Fundamental (8MC Fundamental Crystal may be used)
Size:	3" x 6" x 6"

PRICES

Kit, less tubes and crystal	**$21.50**
Kit, with tubes less crystal	**26.50**
Wired, with tubes but less crystal	**32.50**
Crystal, FA-5 12MC	**4.00**

The STP-50 transmitter doubles in the first stage and doubles in the final. By doubling in the final we will eliminate neutralization problems and we gain the ease of alignment.

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went to the Hocking Valley RC's picnic at Glouster attended by between 75 and 100 amateurs and their families. PIJ, who has been invalided more than six years from an airplane crash, came as he did two years ago, in an invalid car. A doctor in Kansas City believes he can help Lawrence, all such medical treatments at minimum cost but with unavoidable hospitalization expense. The Rev. F. M. Wentz, W8EEQ, 51 Columbus, Nelsonville, Ohio, or Edward G. Bryan, W8LGR, RFD 3, Glouster, Ohio, are assisting in accepting contributions for the necessary heavy expenses. The SCM suggests that you contact them for details and help if you can. Traffic: (July) W8UPH 878, VTP 294, QLJ 176, VDA 136, IBX 84, DAE 80, OPU 75, K8BPX 70. W8HXB 66, AL 64, K8DDG 50, DHL 38, ETK 27, W8YGR 20, SYD 16, DDW 12, K8EJL 11, W8-HPP/8 11, LT 10, RO 10, K8CZJ 9, W8BEW 8, K8IJW 8, W8UHW 6, AAU 5, K8HEJ 5, W8HZJ 5, CSK 4, GQD 4, QIE 4, LMB 3, WQS 3, K8BJL 2. (June) K8DDG 51, W8RO 10, MXO 7, ZAU 7, STR 5, FFK 4, LZE 1.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, IPN on 3970 kc. at 1530, ESS on 3590 kc. at 1800, ENY (emerg.) on 29.490 and 145.35 Mc. Fri. at 2100, MHT (Novice) on 3716 kc. Sat. at 1300. The IPN Picnic was held at Warners Lake July 19. Congrats to two Novice traffic-handlers in Peekskill, WV2AKK and WV2ATC. Endorsements: K2TAX and K2UYK as ORS, K2PRB as OES. A Viking I gives K2YZI a good signal on the nets. Mobiles from the Ulster C'o. Mike and Key club handled communications for the parade in Saugerties on July 4. KN2JYG and KN2LZW passed the General Class exam. Public Service awards were issued to K2EJV, K2FOO and K2HLI. Reports were received at ARRL from W2AZO, W2DGW and W2DIN for the May F.M.T. How accurately can you measure frequency? A burned-out car generator spoiled the v.h.f. emergency test from K2PRB. Summer campers using battery-powered c.w. rigs were W2AWF and W2GTC. A total of 199 countries confirmed out of 213 is reported by W2FBS. The Albany Club had a picnic at Thatcher Park in the Helderbergs in July. Novices interested in traffic-handling are urged to report into MHT, listed at the beginning of this column. The New York State RACES Command Nets were on stand-by alert during the month of July in addition to their weekly drills. Traffic: (July) K2YTD 171, K2UTV 161, K2UYK 153, K2YZI 130, W2PHX 99, K2VTW 99, W2SZ 71, W2EFC 59, W2ATA 50, K2ZAU 35, K2VCZ 34, K2QJL 33, WV2ATC 21, W2FVP 17, K2YFA 11, K2TAX 4, WV2AKK 3, K2YFI 1. (June) W2ATA 50, K2YJL 8.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2-WFL. PAM: W2OBW. V.H.F. PAM: K2EQH. Section Nets: NLI, 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. NYC-LI AREC, 3908 kc. Sun. at 1730 EST. V.H.F. Traffic Net, 145.8 Mc. M-W-F at 2000 EST. BPL cards were earned in July by W2KEB and K2QBW, the latter now qualifying for the BPL medallion. With fall quickly coming upon us our nets move into a full schedule. All stations are invited to participate—traffic-handling is fun! Besides the medallion earned by K2QBW, Ray received his C'P-35 certificate and is on s.s.b. with 425 watts. WV2AZU is on the air from Center Moriches with an Adventurer. Our section loses another fine young traffic man with K2SSE moving to Western Pennsylvania. W2VDT reported into NLI and 2RN via mobile from his vacation spot in New Jersey. A new three-element tri-band beam is now in use at K2SFS. The formation of the Long Island Microwave Society is reported by K2RKL, with W2NLI, W2-OKX, W2OTA, K2DNL and K2RKL as members. A new 75A-4 is in use at K2RKL. It is our unpleasant job to announce W2DIK as a member of Silent Keys. The FLIRC is planning a hamfest for November. W5ZRA/2, your SCM's brother, keeps skeds with OM W2GG/4 in Florida via 14-Mc-s.s.b. with an HT-32/SX-101 station. W2MES worked into the Queens AREC on 28-Mc. mobile from High Point, N. Y. — a distance of 75 miles! W2IHE made WAC, WAS and OTC. He and his son, K2ABW, are enjoying a new Thunderbolt amplifier, while another son, K2PHT, is on 50 Mc. K2TSE has now worked all 48 states and is awaiting the last two QSLs to confirm his WAS. K2EAF is heard regularly from his mobile travelling miles and miles as a sales representative. W2-LCF keeps skeds with his dad, W9DK, on 14 Mc. The Hunter College ARS, with K2LTI, pres., and WV2AAB, vice-pres., soon will be on the air. K2YGM with his Globe Scout 680 and NC-88 has earned WAS and 57 countries. A new quad is planned to increase the latter total. W2TOX reports his first traffic work with his 50-watter. W2BXS and his XYL, K2ESO, moved to Bayport. W2STM put up a new 10/15 quad and long-wire antenna.

(Continued on page 132)

Available Soon . . .
New TAPETONE
6 Meter Receiver

Single Conversion | High Frequency IF. | Crystal Lattice Filter | No Secondary Image

Tapetone, specialist in frequency conversions, now brings to the air waves an amazing, new six-meter receiver that will give you consistant top performance.

- **RECEIVER FEATURES:**
  - ★ Noise figure less than 3.6 db (0.5MV signal produces 10 db signal to noise).
  - ★ Long linear slide rule dial with smooth inertia tuning.
  - ★ Dial calibrated for 6, 2, 1¼ and ¾ meter bands.
  - ★ Power available from receiver for future companion 2, 1¼ and ¾ meter converters.
  - ★ Cascode RF amplifier.
  - ★ Linear detector for SSB and CW with AVC on or off.
  - ★ Coverage — 49.0 — 54.0 mc.

- **CRYSTAL LATTICE FILTER ACHIEVES THESE FEATURES:**
  - ★ Band width at 6 db: 3.5 KC.
  - ★ Band width at 60 db: 12.5 KC.
  - ★ Band pass flat to ±½ db for 3.0 KC. band width.
  - ★ Image rejection 60 db down.
  - ★ Rejection of all other spurious and unwanted signals 70 db down.

TAPETONE ALSO OFFERS YOU THESE OTHER QUALITY PRODUCTS:

6 METER SERIES
with RF Gain Control to Reduce Mixer Overloading

Model XC-50	I.F. Tuning Range 14 to 18 mc
Model XC-51	I.F. " " 10 to 14 mc
Model XC-50-C	I.F. " " 26 to 30 mc
Model XC-50-N	I.F. " " 30.5 to 34.5 mc
Model XC-50-C4	(with Dual Crystal Oscillator) I.F. Tuning Range 28 to 30 mc
Model XC-40	(Russian Satellite Converter) RF Input: 40 mc I.F. Output: 14.4 mc

NEW 1¼ METER SERIES
with Low Noise High Gain 417A Tube
Covering input frequency of 220 to 225 mc

Model TC-220-6	I.F. Tuning Range 49 to 54 mc
Model TC-220-N	I.F. " " 30 to 35 mc
Model TC-220-G	I.F. " " 20 to 25 mc

2 METER SERIES
with Low Noise High Gain 417A Tube

Model XC-144	I.F. Tuning Range 14 to 18 mc
Model XC-144-C	I.F. " " 26 to 30 mc
Model XC-144-N	I.F. " " 30.5 to 34.5 mc
Model XC-144-CE	(Special European Converter) RF Input Range: 144-146 mc I.F. Tuning Range 28 to 30 mc
Model XC-144-C4	(with Dual Crystal Oscillator) I.F. Tuning Range 28 to 30 mc
Model TC-108 Vanguard	RF Input: 108 mc I.F. Output: 14.4 mc

REGULATED POWER SUPPLY

Model PSR-150	available..... price $49.95
Model PSR-150	Kit Form..... price $39.95

TAPETONE, INC. 10 ARDLOCK PLACE, WEBSTER, MASS.

W2QDM returned home after a 7-month around-the-world maritime-mobile trip on which 10 meters provided his ham activity. Officers of the V.H.F. Institute are W2SJX, pres.; W2JCI, vice-pres.; W2AUF, treas.; K2UHF, rec. secy.; and W2KQL, corr. secy. The Linorad RC, K2YRM, is only a few states away from WAS. W2RQG is on 40 meters with a vertical antenna. The Central Queens RC, WA2AHY, is starting a 6-meter walkie-talkie project. W2UNS received the W-Conn. Award for phone. W2HQD and his XYL, KN2AIU, welcomed the arrival of their first harmonic, a YL. K2HZC joined the group of flying hams by earning his private pilot's license. W2KTF joined the married group. New stations reported by K2AZT as active on 6 meters are K2DTJ, K2GXC, K2OOM, K2PKC, K2QYD and K2YMV. Remember the Hudson Division Convention at Albany. Hope to see you there. Traffic: (July) W2KEB 3164, K2QBW 373, K2SSE 187, W2DSC 119, W2VDT 95, W2TOX 43, W2DUS 38, K2MYS 37, K2SFS 37, K2RKL 28, WA2AHM 25, W2IVS 21, W2JBQ 17, K2LVS 17, K2DDC 13, W2LGK 12, K2ABW 10, W2PF 10, W2EW 9, K2TSE 8, W2EC 7, K2GB 5, W2HC 5, W2JCA 5, K2MEM 5, K2EQH 3, W2TUK 3, K2DEM/3 1, W2HNG 1, K2IFZ 1, K2OMU 1, K2RDP 1. (June) K2YGM 8, W2IVS 7.

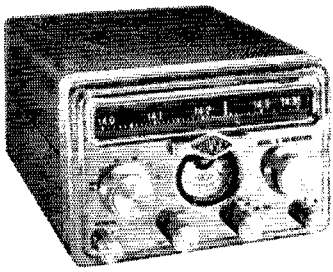
NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: W2HN. PAM: W2VDE. V.H.F. PAM: K2KVR. RMs: W2BRC, W2CGG and W2NKD. K2VAB made a fine showing in his first CD Party. Tex made over 38,000 points on c.w. W2BVE made BPL for the third time running. W2RON has added a Viking II to his list of equipment. W2CQF is a new member of the GSARA. W2FWZ visited with W1DIY while on active duty at Ft. Redman. K2PSX has a new rig with a pair of 809s in the final. W2GRD is back from a summer at camp. The New Jersey Phone Net held its annual picnic at the estate of K2GTX. K2QZR passed the Extra Class exam. W2RZO is a regular in NJN and 2RN. W2VMX is operating on six meters. NJN activity for July shows 29 sessions held with an attendance of 416 and a traffic total of 293. W2RXL was the QNI champ with 27 out of a possible 29. K2ZHK has been issued a Section Net certificate. K2GIF is working on an all-band exciter. The N. J. Six-Meter Traffic Net logged 165 stations during the July sessions. W2VDE is expected back on 75 meters soon. The Jersey City ARC will hold a hamfest in the fall. W2ZEP has built a new electronic key. W2GVU went back to the 30-year-old Vibroplex after a try at a new electronic key. W2ZVW is the new manager of 2RN. W2HDW, mgr. of NJN, has issued a real fine directory of NJN stations. K2OQG gave an interesting talk on transistors at a recent TCARA meeting. W2FWP followed at a later meeting with a talk on sweep generators. The Net of Central N. J. held its semi-annual emergency drill in Sept. K2ZHK is the net manager. K2VAV has just received his new HT-32 and SX-101. W2KTX has a new crank-up tower. K5GWI, ex-W2KTX, is on 20-meter c.w. looking for Middlesex County contacts. The new QTH is Angelton, Tex. K2CZT has departed for Arkansas, where he will operate as a W5 while at school. K2UKQ is on the injured list with a broken rib or two after a bad fall. Her daughter, Nora, has just received her Novice call and is now known as KN2OJO. Look for them on 40-meter c.w. K2SYB has left our State for a permanent home in Seattle, Wash. W2QFV is on 6 meters with a net Gonset III. K2ZSP is a new Technician Class licensee. He is the dad of K2ZSQ. K2DQU is on 15 meters. K2QNI is on 2 meters with a new Gonset. KN2REH is burning up 40-meter c.w. with a new antenna. KN2KSL is going for the Technician Class license. K2MVZ is on 10-15 meters with a DX-40. WV2-AUV is active on 40 meters with a homebrew 6 watter. K2MMM is active on 6 meters. K2ZSQ and K2ZSP have a new five-element beam on 6 meters. K2ZSQ and K2-DQU are campaigning for the office of president of the RHSARC. W2MIE now is General Class. K2KPE is mobile on all bands 80 through 10 meters. K2DDM put on a demonstration of RACES operation at the dedication of the new municipal building in Sayerville. W2MXU assisted with the arrangements. W2JKK is mobile on 2 meters. K2DHE has asked to be relieved of his duties as Monmouth County RACES RO. K2IPR will take over. W2GUM and W2PWX attended the National Convention in Washington. K2POO was a summer resident at

(Continued on page 134)

TAKE THE LEAD... SET THE PACE...

Gonset mobile receivers and transmitters give you full value. Every advanced feature .... every operating convenience for more enjoyment, more .... and better contacts. For the finest, G-66B RECEIVER, G-77A TRANSMITTER. Modern, compact, beautifully crafted. Truly, "twin sparklers."

G-66B RECEIVER,



6-BANDS: 540-2000 kcs. 3500-4000 kcs. 7000-7300 kcs. 14,000-14,350 kcs. 21,000-21,450 kcs. 28,000-29,700 kcs.

AM, CW, SSB RECEPTION: Highly stabilized HF and BF oscillators and crystal controlled second conversion oscillator.

DOUBLE CONVERSION ALL BANDS: 2050 kc 1st I-F. Double input tuning, (3 tuned circuits) on high bands for high image rejection.

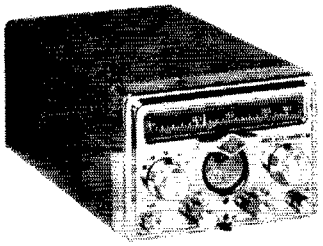
STEEP SKIRT SELECTIVITY: 265 kc 2nd I-F. 8-high Q tuned circuits, 3.5 kc I-F bandwidth at 6 db down.

AVC—Noise limiter—Panel S meter—antenna trimmer—BFO Pitch—Audio/RF gain control—slide rule dial—3 watts audio.

G-66B, less power supply...#3046.....209.50

Universal "three-way" power supply/speaker unit. (6V-12V DC, 115V AC.) Factory wired 6V DC, 115V AC. With patch cable.....#3098.....49.50

G-77A TRANSMITTER.



FREQUENCY RANGE: 80-40-20-15-10 meters. VFO or xtal, switchable. Highly stable VFO, each band spread over most of slide rule dial.

FULL BANDSWITCHING: Exciter ganged with VFO. Pi network output.

POWER INPUT: 50-60 watts, modulated. CW provisions. 6146 tube in output. New modulator has integral speech clipping. High gain speech permits PA-type dynamic, reluctance or crystal mikes.

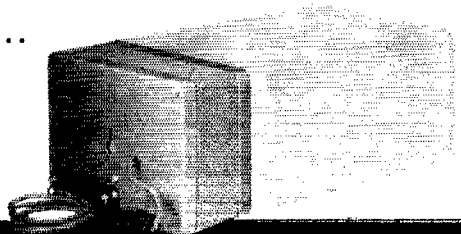
POWER SUPPLY: Heavy-duty vibrator, 6V/12V DC. Also 115V AC. Output voltage 500-600V full load. Selenium rectifier. Low drain on standby and transmit. Power supply/modulator is separate unit.

G-77A, Transmitter with universal power supply, (6V-12V DC or 115 V AC) and installation kit... (Factory wired for 12V DC) 299.00

IF YOUR CAR HAS A 12 VOLT BATTERY SYSTEM ....

"Thin pack" power supplies for G-66A receivers offer considerable monetary savings over the standard 3-way supply. Saves space too. Plugs into rear of G-66B and when so arranged, extends the overall case length by only 2¾". Speaker is not included. 12V DC only.

"Thin pack" power supply. (12 volt DC only) less patch cable...#3098...29.50



GONSET

GONSET DIVISION OF YOUNG SPRING & WIRE CORPORATION
BURBANK, CALIFORNIA

the Jersey Shore. Traffic: W2BVE 248, W2RXL 149, W2-MLW 82, K2QYI 79, W2ZVW 60, K2GIF 53, K2VAC 37, W2BRC 33, K2MFF 30, W2RZO 24, K2VAB 23, W2DRV 22, W2KFR 21, W2RON 14, W2EWZ 9, W2EBG 7, K2YBC 7, W2CJX 6, W2CVW 4, K2JTU 2, W2VMX 2, W2ZEP 2, K2YWG 1.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR. The Burlington Club has received its RACES license. The TLCN is going back on winter schedule Oct. 6. NGS, 75-Meter Phone Net manager, spent a cool week in Wisconsin fishing. SCA, LGG and BDR received a visit from 4RCM, who was en route to Alaska. The Sioux City Club is developing portable 6-meter gear for c.d. work. KØHTF received an OES appointment. AUU is the newest TLCN member. CQU rates BPL for his traffic work in the flood area near Audubon. YI finally got WAC. Doc and his XYL, operators of KØOAH, were hosts at a picnic at Baird, attended by 41 persons. K5-KUC/Ø, formerly of Texas, received an SX-101 as a gift from her father-in-law. Ann is quite active on the Iowa 75-Meter Phone Net. SLC has a new 40-through 10-meter vertical and is now using a 32V-3. The Pella amateurs have organized a club and are holding code and theory classes. KØAPL is president. The Central Iowa V.H.F. and U.H.F. Amateur Radio Club of Des Moines is now affiliated with ARRL. Traffic: (July) WØSCA 1885, BDR 1363, PZO 898, LGG 745, LCX 698, CQU 182, GXQ 164, KØCLS 131, WØQVA 97, BLH 88, K5KUC/Ø 70, WØLJW 58, VWF 58, NTB 52, KØDPT 44, WØSLC 44, KJN 41, NGS 37, UTD 28, KØMIB 25, WØJDV 23, UIZ 22, KØBLJ 19, WØMEL 19, CYF 17, WØNYX 15, KØAPS 14, BRE 12, EXN 11, WØJPJ 11, BTR 9, YDV 8, FMZ 7, HNE 7, KØIHC 6, APL 5, GOQ 5, WØREM 4, UHO 4, KØHBD 3, WØCGL 2, EEG 2, YI 2, KNØPTO 1, QKF 1. (June) KØCYF 12, APL 8.

MISSOURI—SCM, James W. Hoover, WØGEP. Net reports: MEN, 12 sessions; QNI 372, QTC 115; NCS, VPQ 4, DWX 5, OHC 3, MON, 53 sessions; QNI 210, QTC 122; NCS, OUD 34, RTW 4, GBJ 4, VJD 1. Two new stations in West Plains are KNØQGI and KNØQDJ. QXO is active again and can be found on 7150 kc. from 0630 to 1730 CST. New officers of the Daniel Boone Radio Club, Columbia, are YOR, pres.; KØKXC, vice-pres.; KØLUA, secy. Columbia mobiles were called out several times during May and June to relay weather conditions to the Weather Bureau. KØIIK works 80, 75 and 40 meters. He needs Arizona and Montana for WAS. Just to prove that anything *can* happen—XYLs of the St. Louis Amateur Radio Club membership gave the OMs a 24-hour clock and matching speaker for the club HQ-110. New officers of the Bandhoppers Radio Club are NUE, pres.; JHH, vice-pres.; TPB, secy.; EXN, treas. Harryette, 6QGX (ex-9KSA), who was well known by the prewar 160-meter gang in Kansas City, visited OMM in Independence. KØLRG is NCS for the Sundown Novice Net (SNN) which operates on 7185 kc. at 1700 CST. Anyone with traffic is invited to check in. KNØQJK is a new call in Ozark. KNØPFF has a new HY-Gain vertical on 15 meters. KØJPJ has a new Viking II. KØDEX has a new bandswitching kw. with a 4-1000A final on all bands, 80 through 2 meters. KØIHY mobiled to New Mexico for a vacation. Traffic: (July) WØCPI 947, VPQ 110, KIK 89, OUD 88, GBJ 71, VJD 69, OMM 48, OVV 37, RTW 34, KØHBC 18, WØARO 16, BUL 12, QXO 12, GEP 9, BVL 8, KØLRG 8, ONK 7. KNØPFF 2. KØJPJ 1. (June) KØHHQ 99, WØOMM 66, KØLNQ 45, IHY 2, KA 1. (May) KØLNQ 375, WØKA 14.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Nebraska 75-Meter Emergency Phone Net had QNI 433 and QTC 46 with 31 stations on roll call during July, as reported by MAO. KØDGW reports the Morning Phone Net on 3980 kc. daily, had QNI 567 and QTC 231. KØDGW has been appointed net manager for another year for the Morning Net. NIK reports the Western Nebraska Net on 3850 kc. daily, had QNI 555 and QTC 82. We received a nice letter from K7BAK (ex-WØKJP) of Tucson, Ariz., formerly of Omaha. Guy, at one time net control station for the Nebraska Phone Net is doing fine in Arizona. He will be on 75 meters this fall and would like to contact some of the Nebraska boys. ZWG reports a fine picnic was held at Seward with about 70 in attendance and all had a fine time. MAO has completed a new v.f.o. with the dial calibrated in Braille for KØONK. Traffic: KØDGW 178, IJW 154, WØNIK 75, KØBDF 68, WØMAO 66, ZJF 61, ZWG 58, KØBRS 33, BRQ 29, WØVEA 22, SPK 21, KØKUA 19, WØEGQ 16, ZOU 15, UOV 12, KØELU 10, WØPDJ 10, KØLXS 9, LXK 8, WØQHE 7, KLB 6, OCU 6, AFG 5, KØCYN 4, WØKDW 4, OKO 4, VGH 4, VZJ 4, ZWF 4, KØKJP 1, WØMTI 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ —SEC: EOR. RM: KYQ. H.F. PAM: YBH. V.H.F.

(Continued on page 136)

Quality...

UNSURPASSED — ANYWHERE NEAR THE PRICE!

HQ-170

For the amateur who wants the very finest in SSB receivers. Contains all the functions necessary for solid contact in today's crowded bands. 17-Tube superheterodyne. Dual and triple conversion. Separate vernier tuning. Adjustable 60 db notch filter. 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

$359.00 *

HQ-160

You could pay twice as much, and get no more than the general-coverage HQ-160 quality. Dual conversion. 540 KCS to 31 MCS. SSB. Q-Multiplier. Electrical bandspread. Separate stabilized BFO. Crystal calibrator. Adjustable 60 db notch filter. 13-Tube superheterodyne. Crystal-controlled 2nd IF.

$379.00

Here's the pair that's making history in amateur radio. Never before has so much genuine quality and performance been offered at such low prices. Now the amateur can choose the one he wants and be sure that he's getting the very best buy in either a straight ham band or general coverage receiver.

*Telechron clock-timer, $10 extra.

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460 West 34th Street, New York 1, N. Y.

PAM: FHP. Traffic Nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon., Sat. 1800 and 2130 on 3640 kc.; CVN, Mon., Wed. and Fri. 2030 on 145.98 Mc.; CTN, Sun. 0900 on 3640 kc. EFW made BPL. FHP reports CVN handled 19 messages during 13 sessions with a total of 87 stations checking in. QNI honors go to FHP, K1BMM, K1BML and K1DDY. YOL operated portable from Cape Cod while on active duty. MDB spent three weeks in the hospital. MBX won the W-Connecticut Award. TD enjoyed his vacation. YBH reports CPN handled 189 messages during 29 sessions with an average daily attendance of 26. High QNI goes to DAV 28, TVU 27, FHP and VIY 25, OQC 22, VQH and ZPO 21. BDI made 120 QSOs in 50 sections during nine hours of operation in the CD Party. DXer APA had a 3-way s.s.b. QSO with VS4JT and KC4USH. Eight members of the CQRC now have 2-meter walkie-talkies. The CQRC also provided communications for a golf tournament and held two transmitter hunts with the Bristol Radio Club participating in the July 24 gathering. KYQ advises the CN handled 295 messages during 27 sessions, including 82 messages on the second session. Average attendance was 9 stations per session. High QNI were GVK and AW. K1BEN is active on CPN and the New England Weather Net despite poor conditions. GFM, HNA, TVU, CQO, NLC and FDO have appeared on HHR's "Ham Shack" over W1LI. John received an award from the Jaycees for his work on the W-Connecticut project. ODW is QRL with work. DHP is trying to finish his new construction and antenna work before school starts. FVV has 25 states on 50 Mc. K1DLM is building a 200-watt linear amplifier. K1CKZ is building a hi-fi to take to college. PTG is back on 2 meters. KN1DME enjoyed many QSOs with his DX-35 while in Florida. K1GUD, of New Britain, passed the General Class exam. AVS has a new Ranger. New appointments: K1AAE and MBX as OOs. Appointments renewed: CUH and UED as ORSs, DHP as OPS, RFC as OO. Reports received: OES from K1-CKZ, FOM, FVV, KLK and MWB; OO from DHP. Traffic: (July) W1EFW 501, K1AQB 481, W1KYQ 346, K1BEN 298, W1YBH 265, AW 242, TYQ 104, FHP 61, APA 33, KLK 33, LV 31, OQC 29, VIY 29, QJM 26, MWB 20, BDI 19, ECH 19, CUH 15, ZUQ 14, OBR 12, AMY 11, K1BFJ 11, W1DHP 11, K1ACC 9, AQE 8, W1KAM 8, EJH 7, RFJ 7, GIX 5, HHR 4, MDB 4, AVS 3, K1BMM 3, BML 2, DLM 1. (June) W1DHP 12.

C.W.A. ELEVENTH ANNUAL CONNECTICUT QSO PARTY OCTOBER 4-5, 1958

All Connecticut amateurs are cordially invited to take part in the 11th Annual Connecticut QSO Party sponsored by the Connecticut Wireless Assn., Inc.

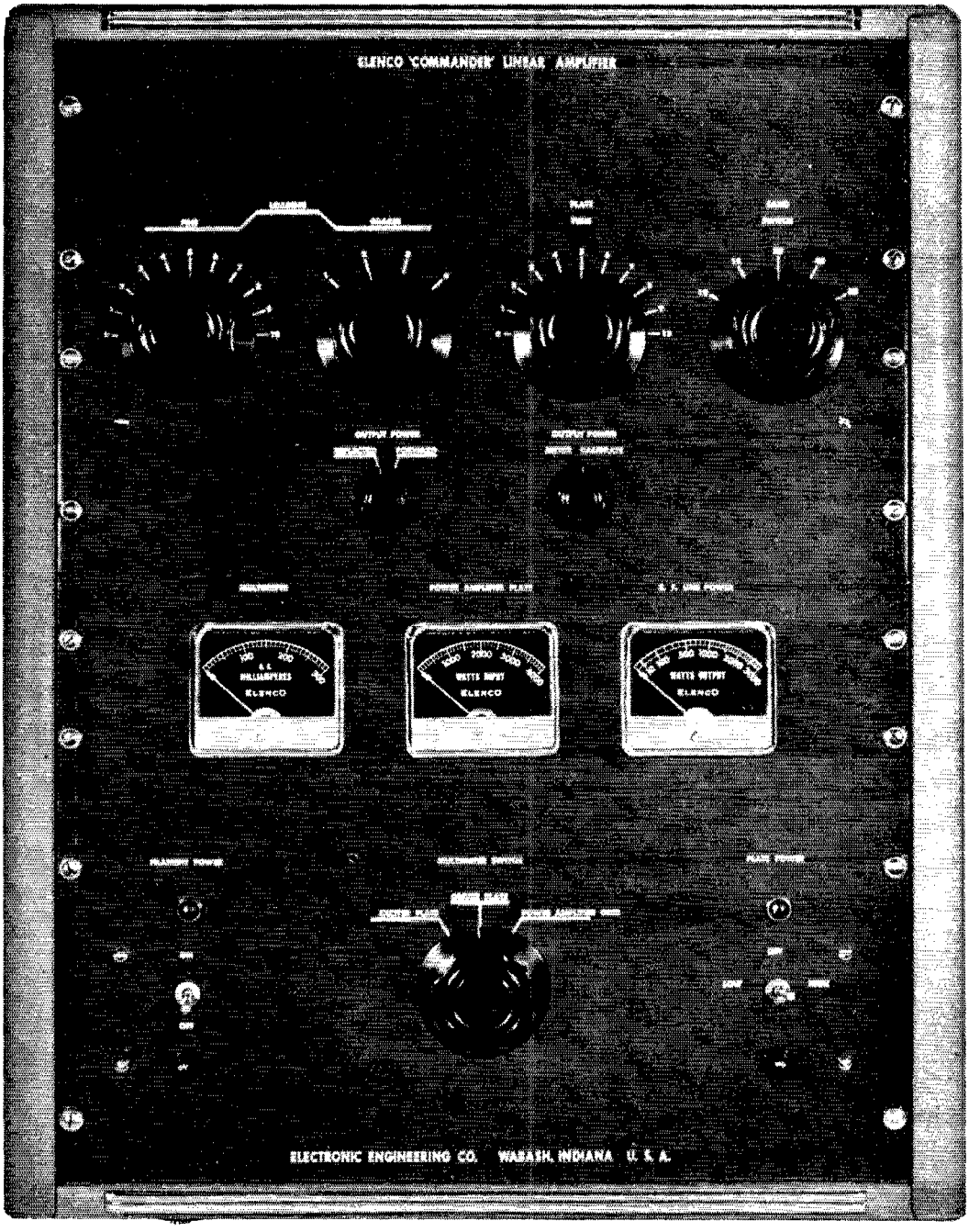
Rules (1) The party will begin at 5:00 P.M. EDST October 4 and end at 11:00 P.M. EDST October 5. (2) Any and all amateur bands may be used, and either phone, c.w., or both. C.W.-to-phone and cross-band contacts are permitted, but no extra credit is allowed for such QSOs. (3) The general call will be "CQ CN" on c.w. and "CQ Connecticut" on phone. (4) The same station may be counted but once regardless of band. Mobile, portable and home stations covered by the same station license all constitute the same station. (5) Exchange names of town areas. (6) Score one point per contact; multiply contact points by number of town areas worked for final score. (7) Reports must show band, times of QSO, call of stations worked, town area of station worked. All reports must be postmarked no later than November 15 and should be sent to John H. Thompson, W1BIH, P.O. Box 1, Torrington, Conn. (8) Special recognition to the high scorers, the v.h.f. leader, and the top-scoring Novice. All decisions of the C.W.A. Contest Committee will be final.

Here is an opportunity to see how many Connecticut stations you can work in a 30-hour period. Get on the air this October week end and meet the gang in your section!

MAINE—SCM, John Fearon, W1LKP—SEC: QJA. PAM: VYA, V.H.F, PAM: JMN. RM: EFR. New appointee: FNI as OPS. Sea Gull Net certificates were awarded to BRU, FNI, FQM and K1BQT. KN1HUB is a new Novice in Belfast. ZBN has a pair of 811s linear final working FB. AUR is on s.s.b. with an excellent signal. 3QKW/1 is working portable at the Maine Music Camp at Oakland. FBJ is active on 15-meter

(Continued on page 138)

A DESK TOP POWER HOUSE



A Card to Address on Lower Panel Will Bring All The Dope

phone. TWR is back on the air using a 32V-3. K1AKO is working mobile. K1DZP is a new ham in Brewer. K2LXL/1 is operating portable at Greenville. LXA has a new Ranger and is now Radio Officer for Lewiston. KVA has a new DX-100. WRZ has a new 6-meter converter. K1BAZ has worked 38 states on 15-meter phone. 1HN is trying to improve the keying of his rig. K1AET has a new vertical antenna. K1GNB is a new ham in Presque Isle. EOX is using an inverted "V" antenna on 75 meters with excellent results. YYW reports that the c.d. in Livermore Falls was active in the search for a lost man July 20. K4BL is operating portable at 700 Acre Island near Dark Harbor. New Novices in Presque Isle are KN1GUB, HWA, GWB, GWY, HEP, HEL, HEM, HAY, HLH and HGE. Code and theory classes are conducted every Mon. evening at the Presque Isle AFB, MARS Station. MGP is operating portable at North Haven Island and relayed traffic from the Yacht *Northwind*. The Aroostook Radio Club's Annual Hamfest held in Presque Isle was a grand success. The "McIntosh" Gold Cup Award went to EPN, for the most deserving ham of the year. WST won the D-104 mike and stand for the mobile hunt at Casco Day. BRU attended the ARRL National Convention. Traffic: (July) W1LKP 258, GPY 109, 1HN 62, UDD 46, EFR 45, FV/1 34, UOT 12, IZK 11, LWO 11, LXA 11, K1BQT 9, W1-BX 9, RJE 9, RQR 9, FNI 8, FNU 8, YYW 7, K1AOQ 6, DVN 6, W1HYD 6, K1BAY 5, W1OTQ 5. (June) K1BYE 14.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: KZW Westwood as EC, NJL as ORS/OPS. Nets: Mass. Phone Net meets on 3870 kc. each night at 1800, Eastern Mass. Net on 3660 kc. at 1900, TCPN on 3970 kc. at 1700. Sorry to have to announce the death of LFD, OLU and SXD. AJ is moving to Florida. PAW is moving to Rome, N. Y. K1-GYM is on 75 meters. K1CJM is on 10, 80 and 2 meters. 1QS is mobile on 2 meters. OFK and K1GAD are on 2 meters. GDJ and BGW took part in the May F.M.T. New officers of the Chelmsford ARA are MQV, pres.; UJA, vice-pres.; UBC, secy.-treas. KN1HYF is new in Milton. NF worked his 100th USSR ham. IUU has his 3rd baby YL. UBC has a 75A-2 and a two-element Minibeam. YOL/1 is at Wellfleet but does not have much luck on the air. Quite a group of hams took part in Operation Road Watch over the July 4 week end. NJX and KN1HHN are trying to start a club in Dorchester. IUU and YZL visited AW. MIX is on the Cape for the summer. YPH and ZEN have new Worked All Mass. Counties Certificates. KN1HXP is a new 12-year-old ham. KCR and IKG were on Field Day from Blue Hills. JMS is quite active in Hyannis on many bands. EAE visited UE. LGO/1 is in New Hampshire. EUT is NC of the Barnyard Net on Tue. ETW is mobile on 10 meters. JFS has a new transmitter. BIO and FVD visited AKN. FJJ has CP-30 endorsement. AUQ has ITV. WU is busy in the garden. ETH is working at Harvard for the summer. ATI has a DX-100. The 6-meter gang of the New Bedford Area is holding a mystery ride. The So. Eastern Mass. Club now is incorporated and has a new 50-ft. tower. The Braintree Club held a meeting. MPT gave a talk on "Transistors." New officers of the Yankee Radio Club are K1DYC, pres.; SAK, treas.; TTQ, vice-pres.; LQQ, secy. LQQ is building a new rig. K1COV went out for Field Day. KN1GRP, new in Dennisport, has a Globe Chief on 80 meters. KLG and PH are new in Cambridge. K2VNT is at M.I.T. K1DJG/1 has a DX-35 and a TBS 50-D and is working DX. RK, our EC and RO for Reading, reports things are coming along fine. K1HOA is the call of the high school club and is an auxiliary c.d. communications center. HBB is Acting RO and his son, HBY and K1GHD handle drills. FEC, our Middleboro EC, says they are on 6 and 10 meters with their net. The Nemasket, also on 2 meters. ZBT, Sudbury, has B&W 5100 rigs and is going to put up a 100-ft. tower. He now is RO for c.d. work. AEQ/1 spoke at the Barnstable Radio Club. BCN put out another issue of *Barnstable Oscillator*. BCN, NPR, FZH, MQG, JMS, K1BEY, BID and GBO got together and built a shelter to be used on Field Day. Appointments endorsed: RK Reading, TRC Maynard, JSM Waltham, DVS Falmouth, MOJ Medway, LQQ Hamilton, ISU Holbrook, FEC Middleboro, as ECs; EAE and DIY as ORSs; DIY and LQQ as OPSs; DIY and LQQ as OBSs; LQQ as OO. JSM as OES. IPA as OPS and EC. New OOs: KICFT, DJG, AFA and DEY. K1CEH, W. Yarmouth, is on several bands and doing some building. OIR has a Gonset on 6 meters. Traffic: (July) W1AWA 475, EMG 249, FJJ 236, EUT 189, K1BYL 162, EAE 104, QPU 89, UKO 88, K1DGI 66, CZW 52, K1CMS 32, AUQ 29, EPE 28, K1DGG 24, ATX/1 17, LGO/1 14, TY 11, BUF 10, JBD 10, UE 10, WU 8, KXT 7, SMO 7, AHP 6, BB 4, JMS 3, AKY 2, DTH 2. (June) W1AUQ 28, LMZ 19, AOG 13, LGO/1 6, NTK 6, ETH 5. (May) W1JMS 14.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—RM: BVR, PAM: MNG. The West Mass. C.W. Net meets on 3560 kc. Mon. through

(Continued on page 140)

In Any Language . . . hy-gain OFFERS THE MOST!

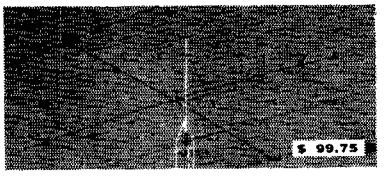
En Cualquier Idioma . . . hy-gain OFRECE EL MÁXIMO!

Las Antenas hy-gain de banda multiple, con trampa

Antenas de Tres Elementos, de Tamaño Entero

Se han vendido mas antenas Hy-Gain de tres elementos que todos las demás antenas direccionales juntas. Incorpore el asombroso Insu-Trap (trampa aisladora) que, con su acción de interrupción automática, aisla efectivamente las distintas secciones de la antena direccional. El nuevo sistema de acoplo Triaxial Gamma Match permite una relación de ondas estacionarias de 1:1 Construcción sólida en todas sus partes.

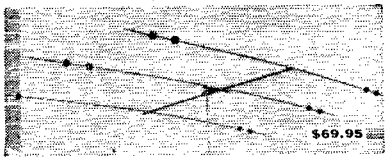
Tribander de dos elementos .....$ 69.50
Tribander de tres elementos 99.75
Champion de cinco elementos 495.00



Antenas Miniatura de Tres Elementos

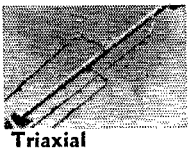
El tamaño mínimo practico al cual los Tribanders pueden reducirse para un funcionamiento eficiente.
Peso liviano; de fácil rotación; pre-sintonizados en fábrica, con dimensiones para armar rápidamente. Radio de giración aproximadamente 13'. Insu-Traps especiales y alimentación de dipolo.

Mini-Tribander de dos elementos $49.95
Mini-Tribander de tres elementos 69.95



La Insu-Trap

De estabilidad mecánica y electrica, la Insu-Trap está encerrada en una caja de polietilina completamente impermeable. Bobinas Hi-Q. No hay dieléctrico de aire.



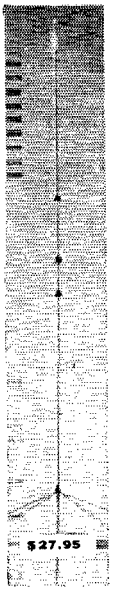
Triaxial Gamma Match

El sistema de acoplo Triaxial Gamma Match, con capacidad coaxial incorporada para cancelar la reactancia, permite una relacion de ondas estacionarias de 1:1. Pre-calibrado.

Antenas Verticales con Trampa

Utilizando las Insu-Traps (trampas aisladoras) estos verticales vienen también con el base de nylon para su propio soporte. Emplea el principio de "Capacity Hat" (Sombrero Condensador) para aumentar la eficiencia de irradiación. Relación de ondas estacionarias menor de 2:1 en todas las bandas. Para cable coaxial de 52 ohms.

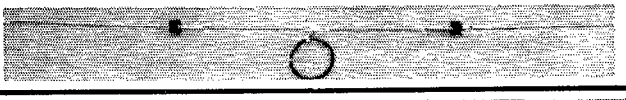
26-AV (para 2 y 6 metros ..$16.95
12-AV (para 10, 15 y 20 metros) 19.95
14-AV (para 10-40 metros) .. 27.95
18-AV (para 10-80 metros) .. 69.50
12-AV Juego de materiales de montaje 8.95
14-AV Juego de materiales de montaje 9.95

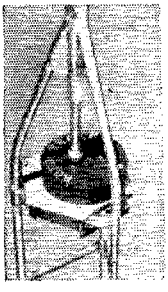


Antenas Doublet para Cuatro y Cinco Bandas

Emplean circuitos Hi-Q, con Insu-Trap y extremos de sujeción de presión.

Insu-Trap para 10-80 metros, trampas sueltas .....par, $12.50
Insu-Trap para 10-40 metros, trampas sueltas .....par, 12.50
Kit para Doublet de 4 bandas, sin trampas 14.00
Kit para Doublet de 5 bandas, sin trampas 15.00





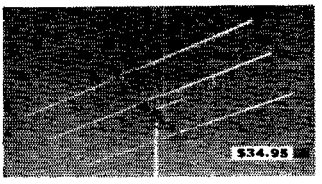
El Roto-Brake

Por fin, un conjunto rotativo completo, que gira, sujeta e indica . . . y del que uno se puede fiar. Incluye poderoso motor de arranque, de alto momento torsional, que desarrolla 750 in lbs. de poder rotativo, 10,000 in. lbs. de poder de fremar. Gran Mapa Circular de Pared con indicator, cuna luminosa movible de 10° de ancho en el perimetro, indica el angulo y la dirección de la antena direccional.

Rotor con Freno y Indicador de Mapa **$149.95**

ROTOR CON FRENO

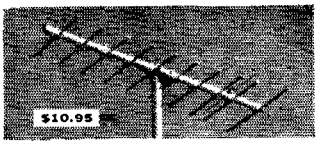
INDICADOR DE MAPA



Antenas Monobanders

Relación de ondas estacionarias 1:1 con el nuevo sistema Gammaxial, pre-calibrado. Todas las antenas pre-sintonizadas y equilibradas, completas con sus instrucciones fáciles de entender. Elementos de diametro grande, con grampas asta/palo de construcción resistente.

Modelo 10M de 3 Elementos $24.95
Modelo 15M de 3 Elementos 34.95
Modelo 20M de 3 Elementos 59.95



Antenas Direccionales VHF

He aqui antenas para las bandas VHF de 1¼, 2 y 6 metros. Construcción sólida en todas sus partes. Utilidad adicional puede conseguirse apilandolos uno por encima de otro. El nuevo sistema Gammaxial permite relación de ondas estacionarias de 1:1.

Modelo 6M de 5 Elementos $15.95
Modelo 6M de 8 Elementos 26.95
Modelo 2M de 5 Elementos 6.95
Modelo 1¼M de 10 Elementos 9.95
Modelo 2M de 10 Elementos 10.95

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Sat. at 1900. The Mass. Phone Net meets on 3870 kc. at 1800. Our PAM, MNG, put out a nice bulletin on the phone net which lists the calls and QTHs of the regular members from the West. Mass. Area and also includes information on net procedure. DPY has been endorsed as OPS. EKO reports that the Podunk Radio Club had a successful Field Day. The Podunk Club is located in the Brookfields and at its last meeting had visitors from the Springfield and Worcester Areas. Three of our C.W. Net regulars, KGJ, DGL and DZV, were very active in the July CD Party. DGL has acquired a Viking II and is doing a lot of operating with it. The Central Mass. Assn. held its annual outing in Millbury on July 27. TVJ reports he has a new tri-band antenna up and ready to go. K1CBL, while operating mobile on Mt. Wachusett, worked a CE in Chile on 10 meters. DGA reports reaching a total of 36 states on 6 meters toward WAS. Shutesbury has received RACES authorization in Sector 4D of Area 4, according to news from the EC, AGM. UEQ makes BPL again and has a new Valiant with TR switch which, along with a G4ZU beam, surely gives him a nice set-up. A 50-mile relay race will be held from Greenfield to Springfield on Oct. 18. The chairman of the race has invited amateur mobiles to cover the event. Any interested mobiles, please get in touch with the SCM. Traffic: (July) W1UEQ 593, BVR 55, DGL 36, DGA 29, DZV 25, OSK 17, KGJ 11, AGM 4, EKO 3. (June) W1TAY 34, DZV 14, EKO 4.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ—SEC: BXU. RMs: COC and K1BCS. PAM: CDX. V.H.F. PAM: TA. The GSPN meets at 1900 Mon. through Fri. and at 0900 Sun., on 3842 kc.; the NHN's (traffic net) new time is 1845 nightly on 3685 kc. The Central High RC, Manchester, CAL, now has 5 new Novices, 1 Technician, and 2 Generals. The Twin State RC, K1HGS, W. Lebanon, has added 3 new members and is growing steadily. FUA has a new tri-band vertical for 40, 20 and 15 meters. IIQ is on 6 meters with 75 watts. BYS holds appointment as NCS of the Army MARS net. GSC reports FB DX with confirmation from 4X4-, YU- and OD5-Land. ARR is on detached service with the USAF at Monterey, Calif. He is in the Army language school learning Russian. K1BCS is a new Route Manager. BYS is mobiling to Santa Barbara. K1CIF has added a new Heathkit v.f.o. to his AT-1. Welcome to K1HXC. It is with deep regret that I report the passing of CRW, Salem Depot, PXJ, Ossipee and AVG, Henniker. These well known amateurs will be sorely missed in the amateur ranks. Traffic: (July) K1BCS 120, W1QGU 82, K1CIF 76, BOO 70, W1AIJ 18, EVN 14, CDX 9, ENM 6, BYS 4. (June) W1MOI 15, BYS 5.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMs: KCS and YRC. RMs: BBN and BTV. GR has been endorsed as Class I OO and FVZ has been endorsed as an OES. YAP has been awarded a Section Net certificate for his work with the Rhode Island State Phone Net. NCRC held its Annual Dinner at the Stone Bridge Inn in Tiverton on July 19. TXL was installed as president and KGR was guest speaker. CMH is building an electronic key. ZXA gave an interesting talk on RTTY to the BVARC members on July 25. The NCRC is running a First Aid Course for its local amateurs. UHE is building a new rig for 432 Mc. and K1ABR is building a 220-Mc. converter and transmitter. SVQ has been awarded RIYL certificate No. 26. YRC has transferred all mobile equipment to a new car. A new trap dipole is in use at DDD. LSP has a new tower and beam. It has been good to receive several new applications for ARRL appointments this month. Remember, anyone interested in one of these appointments may apply. It is not necessary for you to be a member of a net, club or association. Traffic: W1CMH 121, YRC 79, YAP 72, TXL 53, LSP 18, WED 11, DDD 4.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK SEC: EIB. PAM: ZYZ. The Annual Section Picnic was held July 27 at Groton State Park. Several of the larger towns are not represented in the local emergency and traffic nets. Let's support our section in all activities this Fall. WVV, in West Dover, originated church centennial traffic on VTN and took NCS on Mon. We are glad to welcome ZFA back to this section. MH participated in the May F.M.T. The Wind Hams Radio Club's newly-elected officers are 1MK, pres.; ZJL, vice-pres.; K1EIO, treas.; TXY, secy.; DZQ, act. mgr. ZEW is the new NCS Sun. at 10 A.M. for the RACES Net on 3501.5 kc. BXT is making fine contacts on 50 mc. using a Viking 6N2. Tecraft converter and five-element beam. Congrats to DAP and VSA on their new harmonic. FTF attended a 4-day APCO meeting in Washington. AD handled many messages to and from Camp Drum. New Novices in Montpelier are HYJ and HYK. Visitors at OAK were TQZ, W8ROV, VE2s APC and ATL. Traffic: W1OAK 153, AD 29, K1CYY 21, W1LMI 3, ZJL 2.

NORTHWESTERN DIVISION

ALASKA—SCM, Eugene N. Berato, KL7DZ—ALA is

(Continued on page 142)

HERE'S YOUR CHANCE

to get a B&W transmitter that:

- Covers All Bands from 80-10 Meters
- Permits VFO or Crystal Control on All Frequencies
- Provides Versatility for AM, CW and SSB with the 51SB-B
- Features Built-in TVI Suppression
- Has Components Conservatively Rated for Maximum Output
- And . . . All at the Lowest Cost for Comparative Value

B&W 5100-B TRANSMITTER
CERTIFIED BY FCDA
ITEM NO. T-32

5100-B $525.00

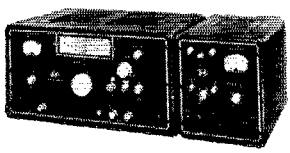
There isn't a transmitter on the market that gives you more versatility than the B&W 5100-B . . . regardless of price. In spite of superb performance, the 5100-B is as competitive in cost and often under many comparable units.

Designed for discriminating hams, the 5100-B is engineered to the highest degree by professionals. Layout and circuitry are skillfully designed to assure a minimum of harmonics and distortion.

As a basic for novice or oldtimer the 5100-B is perfect for future addition of SSB by plugging in a B&W 51SB-B. If you're ready for maximum power you can add the B&W L-1000-A Grounded Grid Linear Amplifier. This addition will give you 1000 watts peak envelope SSB-875 watts CW and 375 watts linear AM phone.

Here's your chance to get on the air with a top-quality signal. Buy a B&W Model 5100-B transmitter today. If you want additional information, before you buy, see your favorite "ham" dealer or write the factory direct.

Complete assembly 5100-B, 51SB-B



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OTHER B&W AMATEUR EQUIPMENT: Transmitters AM - CW - SSB • Single Sideband Generators • Single Sideband Receiving Adapters • Dip Meters • Match Masters • Frequency Multipliers • Low-Pass Filters • T-R Switches • R.F. Filament Chokes • Transmitting R.F. Plate Chokes • Audio Phase Shift Networks • Band Switching Pi-Networks • Cyclometer-type Counters • Antenna Co-axial Connectors • Baluns • Variable Capacitors • Fixed and Rotary Type Coils • Band Switching Turrets • Standard Inductor Materials • Miniductors • Complete line of Amateur Air-wound Plug-in Coils • Variable Plug-in Links • Faraday Shielded Links • Misc. Coil Mounting Assemblies • Misc. Frequency Marked Dial Plates • Misc. Knobs • Ceramic Jack and Plug Bars

sporting a new SX-101 and AMS a new Ranger resulting from the All-Alaska Hamfest. The Alaska Ham-of-the-Year award went to PC posthumously for his work during a flood. W3WDF, MARS chief, came up from Washington, D. C., for the hamfest. CDF reports from the Arctic Coast: CMI is back at Pt. Lay and is on 20 and 15 meters with a kw. CQL and CDF are handling traffic in the A.M. on 20 meters. K6JXO/KL7 has a KWM-1 and soon will have a 4-4000 on the end of it. CHM is on at Barter Island with a KW-1. CDF added 2 more countries for a total of 171. WØBOT/KL7 is now inactive. BEC, of Nome, reports on the new Bering Sea Net, which meets on 3860 kc. at 9:30 P.M. BST. A 10-lb. 11-oz. male harmonic arrived for CAK. AN got his home-brew mobile rig going. CDQ assisted CAH in installing a new 70-ft. tower and Mosley Trap-master. Visitors to Alaska were W2VQ, W5ZU, W6ELW and W7BN. W4RCM/KL7, our newest traffic-handler, is busy in Fairbanks. CBD reports a new ham, CTV, at Farewell. DE, CAH and BJD have been busy with the Mt. McKinley Eldridge Glacier Expedition, W1ICB/KL7, running the rig at the Glacier. Traffic: KL7BJD 148, W4RCM/KL7 44, KL7CDF 23.

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—About 50 new appointments are being made, including 40 ECs. Perhaps that will start more interest and activity in ARRL matters. We still need OOs and also OBSs. Does YOUR club have one? K7AWB reports hearing quite a few wrong harmonics in Shoshone County. The Big Springs Hamfest was well attended and gave the fellows a chance to meet each other, too. Boise also is holding successful outings. The FARM Net still is faithful with traffic lower in the summer. VQC reports Moscow very quiet with school out. WHZ reports the Shoshone County Club is very active and still getting 2-meter gear. Pocatello also has some signals on 6 and 2 meters. Any more around the State? AOR has a new Valiant. Your ARRL membership is important to you and others. Be sure Novices understand that. Traffic: W7-WHZ 18, VQC 6.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: EOI. RM: KGJ. The Montana Phone Net meets Mon.-Wed.-Fri. at 1800 MST on 3910 kc. AQN joined Silent Keys. The 24th Annual Glacier-Waterton International Peace Park Hamfest had an all-time-high attendance of 314. An SX-101 was won by the XYL of BNU. JFR won the mobile field-strength contest. VLZ was elected pres., for next year with K7AXD as vice-pres., and YLC as secy.-treas. The 26th Annual W.I.M.U. Hamfest had a registration of 178. OGT won the mobile field-strength contest. KN7ELW is a new call at Laurel. K7BND and K7CZQ graduated from Novice to Conditional Class. VHK was transferred to England from Great Falls. VLY moved from Missoula to Dillon. ZOH moved from Scobey to Livingston. OOY and NPV vacationed in Canada. ZUQ was appointed Emergency Coordinator for Cascade County. LBK was appointed Class I Official Observer. Traffic: W7DWJ 52, SFK 16, K7BVO 8, W7TGM 7, NPV 6, IVD 4, OOG 4.

OREGON—SCM, Hubert R. McNally, W7JDX—Oregon experienced an unusual run of hot weather in July and the result was a bad curtailing of amateur activity on all bands. It is expected that activity will be resumed with the coming of fall and cooler weather. 6JGD was a recent visitor. K7AUV is a new OO in Oregon. GLZ is busy on the RACES 6-meter net. LT likewise on MARS. CUW is too busy at present. SPB has given up his OPS appointment. K7EAW is a new AREC member at Medford. FTA is on duty with the Forest Service and ULR is handling his night on OEN. We hear that QYS is the new net manager of OEN. DEM has given up on salmon fishing. AJN has been reappointed RM and will try to keep OSN on its toes for another year. The Tillamook Club also had fun on Field Day at Mt. Hebo but reported too late for last month's news. The OARS again is meeting at the old stamping grounds in Portland and the PARC now meets at OMSI headquarters in Portland. A nice OO report was received from PQJ. The following assisted the SCM during the rescue operations of unlucky climbers on Mt. Jefferson in July: VWG/M, FUZ/M, RCL/M, DUX/M, DPV/M and fixed stations RVN, BLN, TAZ, TBT, WFP, GNJ, FSU, ZHX, WKP, ULR, CPV, LZS and VLE. All are part of

(Continued on page 144)

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 ½ 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: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

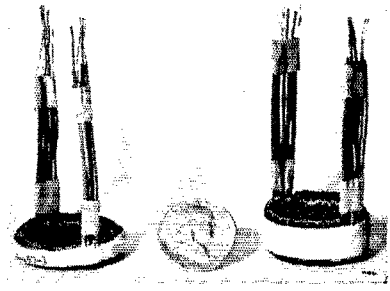
DA SERIES

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: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 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-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 (3½ ozs.). 1-10 units: **$18.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$21.50** ea.

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$24.50** ea.

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **$76.00.**

Matched Pair HD Transistors:
12/14-V *operation*—**$11.00** *per pr.*
24/28-V operation—**$21.00** per pr.

OEM *Prices on Request*

All fully performance tested, 100% guaranteed. Manufactured by makers of world-famous SUNAIR H.F. Aviation Transceivers.

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the Mountain Rescue and Safety Council of Oregon. Traffic: W7LT 93, ZFH 79, SPB 7, JDX 5, DEM 3.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: PQT. RM: AIB. PAMs: BBT and PGY. Washington traffic nets: WSN, 3575 kc. 1900 PST Mon. through Fri., WARTS, 3970 kc. 1830 PST Mon. through Sat. New officers of the Washington Amateur Radio Traffic System (WARTS) are JWJ, mgr.; K7AJT, asst. mgr.; QGP, secy.-treas.; PGY Northwest, EHH Northeast, DZX Central, EKQ Southwest, YLW Southeast, chairman of the board DZX. FIX is experimenting with antenna tuners for better output on MARS frequencies. AIB is shopping for a new beam. EVW has a TCS mobile rig. LFA has a new harmonic and a new QTH. The Walla Walla Valley Radio Club held its 12th Annual Family Picnic and Hamfest Sept. 14 at Wildwood Park. BA has seven years of consecutive BPL but is going to slack off as the doctor says no more 13-hour days for him. TMO is moving to a new QTH. New appointments are WVU and YFO as ECs. EKQ and LFA as OPSs, BBT as PAM, LFA as OO. ETD is experimenting with a new super loop antenna on 15 meters with good reports being received. PXA received his Flamingo Net certificates for working 10 net members on 10 meters from Miami and vicinity. AIB is encouraging all qualified c.w. operators to apply for ORS appointment. AMC is QRL painting. The following renewed their appointments: PGY and UQY as OOs, APS and CWN as ORSs, BBK as OES, PGY as PAM and OPS. WAH is going in for DX. The Walla Walla Valley Radio Club officers are NSU, pres.; YBF, vice-pres.; CHI, secy.-treas.; FMJ, trustee. Your SCM mails his report on the morning of the seventh of each month, so get your reports in by the sixth, please. EHH schedules VE6TT on 40 meters. HUT is off the air while moving the shack. VKZ now is in the Navy. BDK is building a 1296-Mc. transmitter and parabolic antenna. The SCM received only two club reports this month. There still is a lot of territory in the section not covered by an EC. ARRL appointments are available to those desiring same. EBQ still is looking for the power-line leak. KHL is moving to W3-Land. JJK is going to Everett Junior College. OEB made the DXCC. SGJ moved to a new QTH. MPH, JJK, OEB, BJV, TYI and FDQ all work for Boeing Airplane Co. Traffic: (July) W7BA 1901, PGY 748, QHI 215, APS 118, WAH 77, DZX 74, HUT 70, AMC 62, AIB 42, LFA 30, LVB 27, EHH 24, BBT 18, JC 17, EKQ 14, FZB 5, CZY 4. (June) W7EKQ 20, BXH 5, FZB 5, GJS 4.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—OOs: KS and ARL. OBS: AAJ. ARL is now qualified as a Class I OO. He was presented his new certificate at the Territorial Amateur Radio Convention on Kauai. Ex-W2EYQ/ex-K4HAA now is KH6HAA on 20-meter c.w. from Waianae. KR6AF reports KR6s AF, JL, AK and KS active on 2 and 6 meters with a 2-meter island-wide typhoon net. AEI is leaving Hilo for the Far East on an international assignment. GG built a 40-meter cubicle quad on his front lawn. BG, who writes the new ham column in the *Sunday Advertiser*, is now on the air from Waipahu with a new tri-band beam. IJ spent half the summer on Oahu operating mobile. Prewar K6ESU is now back on the air as KH6CUP. BA's antenna may be down but his QSL Bureau is still busy. Is your envelope on file? Traffic: (June) KR6USA 861. (Mar.) KR6AF 418.

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU. Here I am reporting from the APCO Conference at Baltimore, Md. Sorry to have missed my last report because of travels. New officers of the NARA are MAH, pres.; PC, vice-pres.; K7DEF, secy.-treas.; K7ANK, sgt.-at-arms; CX, trustee; TQE, BYR and JLV, directors. The Reno Area 2-Meter Net is active every Mon. at 8 P.M. on 147.24 Mc. A new YL jr. operator arrived for the K7DEGs. The annual NARA dinner meeting was held at the Supper Club, Reno, July 12. TVF is working at Mercury operating on 20-meter c.w. and reports such choice DX contacts as VS6DV, VS1HJ, HDFC, VK9VM, VS2CP, HS1C, KC4AF and many others. He is now building a kw. linear. JDI is back on the air in Reno after a tour of duty at Scott A.F.B. Hidden transmitter hunts still are going strong in Reno at 8 P.M. every Fri.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—SEC: W6NVO. RM: W6QMO. PAM: W6ZLO. New appointments: W6RFF as ORS, K6JRZ as EC for Pacificia. Endorsements: K6DYX as ORS, K6DHO as OBS, K6HGV as OPS, W6DEF, EC, K6BHR, OES. Cancellations: K6BAM as OO, W6YHM as RM. K6VJI holds daily skeds with KG6AAY for traffic. W6RFF now is acting as NCS on NCN Tue. W6YHM has added RTTY to his station equipment. K6TWH has been appointed Asst. EC, replacing W6TYC, in charge of the Red Cross station in Menlo Park. W6RSY has built two

(Continued on page 146)

New MORADCO

SINGLE SIDEBAND MINIATURIZED 50 WATT TRANSMITTER

4⅛" x 11-⅞" x 7¼"

Model SBT for Fixed or Mobile Use

Coverage: 3.8-4.0, 7.1-7.3, 14.1-14.3, 21.200-21.400, 28.5-28.7 MC.

Calibration: VFO Calibrated, 0-200 Kc (add to frequency shown on band switch).

Filter: Uses a Mechanical Filter for Long Term Maximum Suppression of Unwanted Sideband.

Emission: Upper or Lower Sideband. CW-AM (SSB with Carrier Added).

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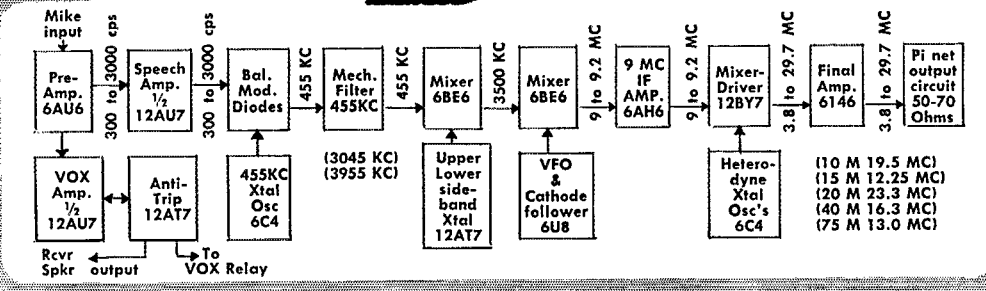

- Change bands, set drive and peak final, null carrier in about 30 seconds.
- Excellent voice-operated control system (VOX). Anti-trip of new, improved design, plus push-to-talk.
- Semi-automatic loading when changing bands —designed for 50-70 ohms.
- Antenna (VOX) relay built in.
- By changing plugs in the universal power supply unit, the SBT operates as an exciter at about 10 watts output, or as a barefoot transmitter at about 50 watts output.
- Controls grouped for ease of operation.
- Same cabinet dimensions as MB6 and MB565: 4⅛" x 11⅞" x 7¼".
- Plug-in connections for easy removal from car.

NEW

Power Supply Unit designed especially for the SBT Transmitter; regulates all the important voltages. Also supplies voltages for the receiver. This unit operates from 6 or 12 volts DC, or from 117 volts, 60 cycles. One cable and plug makes all the connections and changes from 6 to 12 volts.

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transistor transmitters and has been in QSO with KN6-RHA using 60 milliwatts. W6JGD operated a portable 6-meter station near Hood River, Ore. W6LFF won first prize at the SCCARA BAR-B-Q in San Jose. W6ZTJ took home the pre-registration prize. W6WNI has a new kw. rig in operation. W6ATO, the guiding light of the TVI committee in San Francisco, now is residing in the Santa Clara Valley section. K6HGV was reelected secretary of MTN in June. KJ6GXH, K6HIJ and W6TJJ are new members of the SCARS, of Redwood City. On Field Day the SCARS made 617 contacts for a score of 4500 points. W6AKF, formerly of Chico, now is in Redwood City. K6JJU is owner of a new HQ-110. W2-NYY now is working for Eimac in San Bruno. The San Mateo Radio Club reports 551 contacts for a score of 4208 in Field Day. Traffic: K6GZ 505, W6QMO 143, W6-HC 127, W6RFF 120, W6VZT 120, W6BPT 105, W6AIT 98, W6FON 72, W6RSY 66, W6OII 60, K6DHO 56, W6YHM 48, K6HGV 32, W6YBV 26, W6DEF 9.

EAST BAY—SCM, B. W. Southwell, W6OJW—SEC: W6CAN. ECs: W6LGW, W6ZZF, W6IUZ, K6EDN, K6-JNW and K6QZG. W6TI, W6-K6 QSL Manager, asks those expecting QSLs to send a new envelope with 4¢ on it and to wait one month after receiving same before sending another. K6JNW, Hayward/San Lorenzo Area EC, has moved to a new QTH, 2124 Via Rancho, San Lorenzo. K6QHC has 800 watts to a pair of 813s. W6-NDR is going to 432 Mc. and wants dope from anyone on using 15Es as p.p. tripler on this band. The MDARC, using W6CX/6 in Field Day, made 5769 points. The MDARC held an FB picnic on July 19. W6WFR sold his rig to K6SCF. W6WFR is Volkswagen mobile with a KWS-1. W6RVC and family went on a trailer trip to Canada. HARC made 1840 points in Field Day. W6OAX is vacationing in Reno, Nev. K6SWY and his XYL, KN6-SCS, have a new YL harmonic. Congrats. The HARC has 13 new members. W6HBF is back in California on vacation from M.I.T. and is installing a 100-watt all-band mobile. New officers of the MTN are W6WWT, pres.; K6BRG, vice-pres.; K6HGV, secy.; K6KRH, treas.; W6KZF, EC Mill Valley. The EBRC saw a color movie on "Cosmic Rays." The NCDXC heard W6KYT speak on his experiences as HL1XX, JA1IM, KR6FF, KH6FAA, ON4WB, VP7NZ, CN8GK, DL4XB and LJ2Z. The NCN held a picnic on Aug. 10 at Junipero Serra Park, San Bruno. NCN is looking for a new manager. The HARC held a ham auction-test on Aug. 23 at Hidden Valley Ranch. W6LGS is at San Diego Naval Boot Camp. The QRMERS Radio Club meets on Sun. afternoon at members' houses. K6DMW is heard plugging along on NCN and RN6 nightly. K6GK made BPL again. K6JPR is on RTTY with 50 watts and a dipole. W6CBF is working on a RDO v.h.f. receiver. K6QHC made 181,440 points in the CD Party and is building some 50-Mc. gear. That about winds it up for this month. Keep those reports coming in the last day of each month, gang. Traffic: (July) K6GK 738, K6DMW 119, W6JOH 37, K6QHC 34, K6OSO 15, K6TPO 3, (June) K6KRH 22, K6QHC 8.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF. K6SXA now has 73 countries confirmed. K6GYB has completed building a Heath Mohawk receiver. Congratulations to K6ZBV. Dave won the Novice Roundup for 1958 with a total of 22,995 points. K6YET, newly married, spent part of his honeymoon with the North Hills gang on Field Day. The North Hills Club conducts a 6-meter net on 51.3 Mc. each Wed. at 9 P.M. Because of the recent changes ordered by the FCC, listen for the Chico gang on 1980 kc. rather than 1920 kc. Let's increase Sacramento Valley activity during the forthcoming CD and LO Parties. If you have never participated in an ARRL Frequency Measuring Test you are missing a lot of fun. Why not try your skill? Watch *QST* for details. Imagine a fellow sending his XYL to Austria so he could sneak in a new SX-101 and tri-band antenna? The next time you see W6IEV ask him how they work. Hi! All traffic reports should list the number of messages originated, received, relayed and delivered; also the number of operators. Special forms are available for this purpose. Ask the SCM for a supply of Form I. Congratulations to K6YBV, who recently received a BPL medallion. Incidentally, Bob made BPL again this month. The assistance of all clubs in securing AREC members will be appreciated. The SCM will furnish forms and information on request. Traffic: K6YBV 589, K6SXX 31.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—The Tulare County Radio Club holds c.d. drills every Sun. at 10 A.M. on 3900 kc. New officers of the Tulare County Radio Club are W6ZKH, pres.; W6IRV, vice-pres.; W6IEM, secy.; K6VWV, act. chairman. New officers of the Turlock Radio Club are K6SWW, pres.; W6HAB, vice-pres.; K6SNA, secy.-treas.; K6DMH, sgt. at arms. W6QON, K6OGX, K6PPI, K6PEH, W6PXP, K6EJT and K6EDX attended the San Jose Hamfest and reported a good time. W6YJQ is a new call heard around town. K6LRQ is building a new 6-meter mobile rig with a 6146 in the final. W6NKZ has a new 75A-4 receiver and likes it very much. K6LKJ has a new

(Continued on page 148)

KWM-1. K6USV is heard on 2 meters with a 522. W6QFR has a new HT-32. W6PCC has a pair of 304TLs in his car on 75 meters. What kind of an antenna holds up under these conditions? K6GSJ is working for the Forestry Service during the summer. K6QOK is working lots of DX on 40-meter c.w. W6EUH is having some v.f.o. problems. W6ARC is on 75-meter mobile. K6VWF is a new mobile heard around Fresno on 75 meters. K6LRW has a knack for finding hidden mobile stations on 75 meters. K6BKZ claims his S20R can separate the stations but can't find them. W6JUK had some gremlins in his 32V-3 and after a treatment he reports everything is OK. Don't forget to support your local c.d. nets. Traffic: W6ADB 89, W6USV 14, K6SNA 9, W6ARE 4, K6RLX 2.

ROANOKE DIVISION

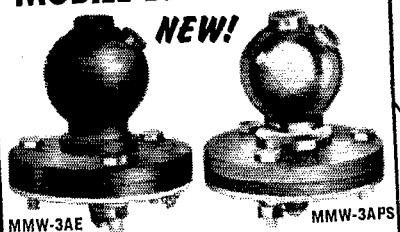
NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC. V.H.F. PAM: ACY. Fellows, the Amateur Radio Club in Asheville, N. C., held a very successful two-day hamfest, July 4 and 5. Director Anderson was there, as was Mason Southworth, of ARRL IGY section. The club is at present planning to hold the Division Convention next year. As this develops more will be written here about it so begin making your plans to attend the Roanoke Division Convention in Asheville next year. RTTY activity is picking up in the section with the following on the air: CVU, GHX, K4RRG, RRH, RVH, HKB and TLA. OFV has a machine and soon will be on the air. YQX (rumor has it) has found a supply of machines. If that is so we've got it made. Sorry to hear that the State NCN C.W. Net has folded up. MARS activity in the State is picking up and activity on 2 meters in District One will begin about the middle of August. Listen on the MARS assigned frequency of 148.990 Mc. for the Slave Station. Reports heard on the air indicate that the Winston-Salem Club has about completed its large mobile station, a very nice piece of equipment. Catawba County is adding more 2-meter equipment to its AREC-RACES program according to FUS, EC and Radio Officer. Congratulations to these two Forsythe and Catawba Counties. Watch the leaders, boys, and copy. GXR and DSO were the top traffic-handlers for July.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. PAM: YOS. RM: AKC, K4PIA and BLF have earned certificates on the C.W. Net. BNN, DX, CAL, GQO, HAQ, VEP, OAK, YLT and K4CRF have been endorsed as EC for their respective areas. Congratulations to the Mike and Key Club of Barnwell for its fine club paper, *Cross-Talk*. K4QZA is writing a column of "DX Talk" and K4LEI on the "Secretary's Corner" for *SPARC*. A new Novice at Folly Beach is KN4ZEL, the son of BTP and SOD. JCP, K4JFN and K4DXK are doing fine jobs as NCS on the phone net, along with DX, MPR and BZX, who have been the mainstays on 3930 kc. for many years. The S.S.B. Net, on 3915 kc., "sparkplugged" by K4EGI, VJI and HMG, is developing into the finest such net in the south with 420 stations checking in for July. Congratulations to K4AVU, HQK and PED for all making BPL the same month (May). The OBSs are all doing fine jobs on the three net frequencies of 3795, 3915 and 3930 kc. Remember the Rock Hill Hamfest to be held Oct. 11. Traffic: K4WCZ 324, GAT 144, W4AKC 95, K4AVU 69, W4DAW 45, BHR 36, FFH 35, K4BLF 34, HE 19, W4CHD 18, K6RUO/4 6.

VIRGINIA—SCM, John Carl Morgan, W4KX. K4JKK succeeds APM, who has resigned because of the press of school work, as manager of VN. Ken has extended VN to 7 nights per week, and reports very gratifying response. Drenching, day-long rain failed to dampen the SVARC's 8th Annual Hamfest. A record crowd of hams and families attended the affair, which was moved under shelter in Front Royal. K4MJZ, Arlington County EC, reports the new AREC net "NORVA" growing, and Tex has submitted a RACES plan for the county. JMB says the new amateur station now under construction at the Norfolk Destroyer-Submarine piers, will give hams on ships berthed there an opportunity to operate and train prospective amateurs. BIJ, one of our very active OO appointees, transferred to KH6-Land. K4MBL, who has kept YIA, the Yorktown Clug rig, perking, is U. Va. bound. Perhaps the university club station will be revived. K4SGQ is a newcomer to King George County and a hot VNer. K4PTG is relieving BGP as Mon. VFN NCS while Ira gets unhitched from the Army. K4RBQ received his Conditional Class ticket and says he's the only active ham in Powhatan County. John also reports that K4LVH is in DL-Land and K4MSG moved to Chester. SCM received a picture post card from YVG, mobiling to the Shriners Convention in Chicago. K4AET's big rig was stone cold during the construction of new mobile gear. JUJ was appointed to the State Board of Architect Examiners, cutting into hamming. K4QER says hubby, K4QES, was very generous with the rig. He let

(Continued on page 150)

HEAVY DUTY
MOBILE BASE MOUNTS
NEW!



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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.
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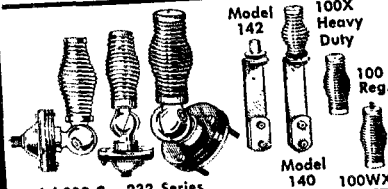

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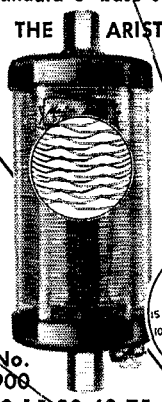
New *Plug-In* type coils for the Ham, designed to operate with a standard 3' base section and standard 5' whip

THE ARISTOCRAT



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10-15-20-40-75 METERS

THE VICTORY

No. 999
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- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
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- Positive contact—noisefree, troublefree operation
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Amateur Net
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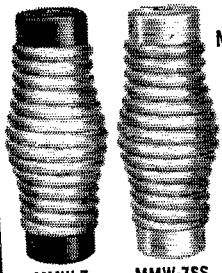

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Heavy duty flexible mounting spring mounts on the base and holds the antenna. Special flexible "give" spring prevents sharp impacts and breakage. Lockwashers included.

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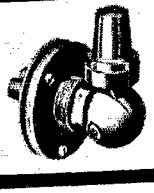

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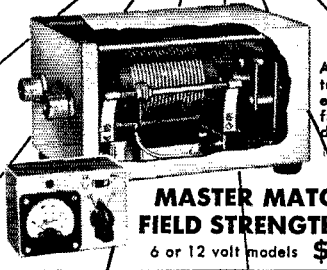
ALL-BAND BASE LOADING ANTENNA COIL

FOR 10 11 12 15 20 40 80 METERS

NO. B-1080

Positive action, just slide whip in or out to loading point and lock nut into position. **$17.95**



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6 or 12 volt models **$24.95**

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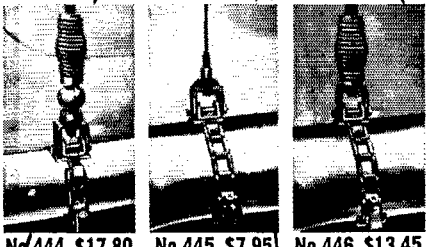
WITH NEW X-HEAVY DUTY CHAINS



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AT LEADING RADIO JOBBERS EVERYWHERE

her use it for almost 4½ hours in the CD Contest—while he slept! Traffic: (July) K4ELG 480, W4SHJ 368, K4QIX 319, JKK 307, QES 290, W4QDY 149, K4PTG 51, W4AAD 30, K4MEV 25, W4IT 23, BZE 22, KX 22, K4-SGQ 19, IIP 14, MJZ 13, W4ZM 10, K4DSD 9, EAS 8, W4JUJ 6, YIA 3, WBC 2. (June) W4BZE 43.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8 PZT. SEC: KXD. PAM: FGL. RMs: GBF, HZA, PBO and VYR. A number of hams in the Kanawha Co. Area did a fine job in providing emergency communications during the recent flood in the area. The Kanawha Radio Club had a nice turnout at the picnic despite the rain. K4CQA/8 is located at Morgantown in the Math Dept. at the University. He is a new OO appointee. DJP is on s.s.b. with a 10-A doing a fine job. YBZ and GCN have new beams on 20 meters. Both have received their 100 country award for s.s.b. operation. IRN received his WAZ certificate. CSG is making big plans for the Sweepstakes. BLR is very active on 6 meters, as is XYL K8HKW. K8WAK, at the W. Va. Air National Guard, will be on soon. GBF did a fine job as usual in the last Frequency Measurement Test. ZOJ is recovering nicely from an auto accident. K8EAB is very active on 40 and 20 meters. K8HTU is on phone. She recently passed her General Class exam. CRM is on 80 and 40 meters. HNK still is having trouble getting back on but expects to return soon. KN8LGV is a new ham at Nitro. HID is back on from a new QTH. Traffic: (July) W8PBO 63, VYR 46, BWK 23, IHY 13, CRM 7. (June) W8PBO 95.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. RMs: KQD and IA. PAMs: IJR and CXW. OBS: KØBTU. OPSs: IJR, IA, NVX, CXW, TII, KØDXF and KØBCQ. ORSs: SGG, IA and KQD. OESs: KØDIQ, KØCLJ and WØFKY. OOs: OTR and RRV. KNØPUP is a new ham in the Greeley Area. KØILX is a new father. Ex-KØKCE now is K7CWT. UPS is the champ pie eater, beating KØDTV. We understand his prize was four dozen cherry pies. ZFM and KØKTX are avid rock-hounds. LEK paid a visit to Greeley. According to the *R-F Carrier* there are two IQV's, KNØ and WØ, in the Western Slope Radio Club. PXZ, QWW, DGA and QEL provided communications for the Soap Box Derby held July 20. Thirty hams in the Broomfield Area were on hand, including two XYLs, to assist in watching the Great Western Reservoir Dam during the near catastrophe. The LCL-YL Net meets Mon. at 0930 MST on 7.235 kc. In one session there were 24 check-ins. There has been a total of 65 different XYLs checking in. KØBCQ has been in St. Joseph's Hospital. We all wish her a speedy recovery. Among those from the Denver Area making the ARRL meeting in Santa Fe were LO, EXR, IC, QCX, GQY, TYB, GAA and ACA. NIT is home from summer school. KØEWW and family visited with friends in Pueblo. KØAPA is a guest of Uncle Sam in the Air Force. Traffic: (July) WØIA 897, KQD 302, KØDCW 148, WØTVI 78, DQN 71, KØDXF 66, EVG 48, WØCBI 44, KØWDZ 26, WØQOT 21, KØCLJ 3. (June) WØWMK 296.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. PAM: BBN. V.H.F. PAM: SP. RM: UTM. CYG is building a new s.s.b. rig with a 20-A and a pair of 811s. The Coffee Net meets each Mon. at 210 MST on 29.2 Mc. and has been quite active lately. JU, in Boulder City, Nev., would like to schedule a Utah station on 2 meters. Anyone interested, please contact him. New General Class licenses are CVE, K7s BDX, BUK and BUL. Two new YLs are KN7s EHD and EHH. QWH received his Master's Degree in mathematics. BLE is back on the air after a stay in the hospital. FSC has been working DX with his new beam. JBV checks in four nets regularly. A Utah c.w. net has been organized. It meets on M-W-F at 2000 MST on 7125 kc. Traffic: W7OCX 35, JBV 31, FSC 7, K2SYB/7 3.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: DWB. The New Mexico Breakfast Club meets Mon. through Sat. on 3838 kc. at 0700 MST. The NMEPN meets Tue. and Thurs., 3838 kc. at 1800 MST and Sun. at 0700 MST. The RMN meets Mon. through Fri. on 3570 kc. at 1900 MST. Please try to check in on these nets. Eighteen members checked in the Albuquerque V.H.F. Net during July, 5 nets. On Aug. 1 RMN began operation as the Twelfth Regional Net (TWN) in the National Traffic System. Included in this are Wyoming, Colorado, Utah, New Mexico, Arizona. This is under the direction of DWB, of Los Alamos. He will need all the cooperation he can get, so please help him out. FPB is trying to unite the State on 2 and 6 meters. K5GLJ is a tremendous help around Albuquerque on v.h.f. work. A new ham in Gallup is K5QZT. KN5RDV/5, a new ham at Roswell, is active on 7170 and 7180 kc. He took his Conditional

(Continued on page 152)

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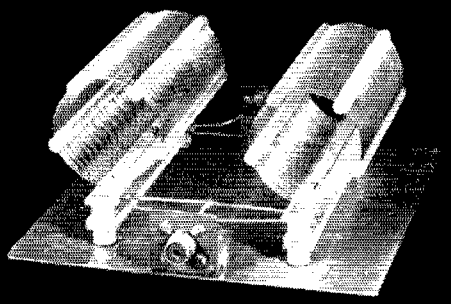

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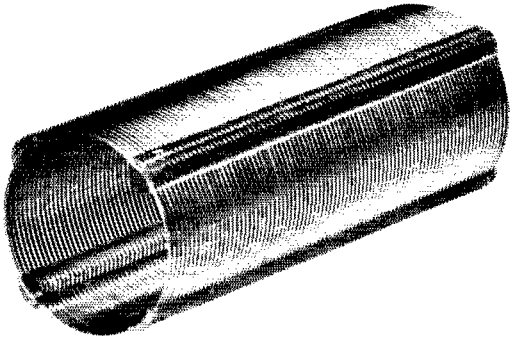

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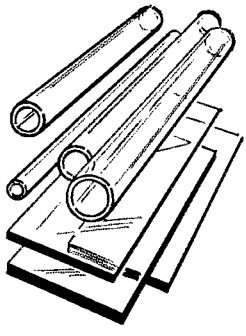

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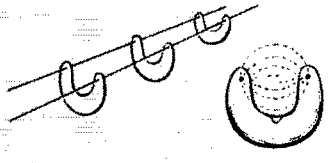

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Class exam from BIH July 24. We are very sorry to hear of the death of K5JMP. He will be missed in Albuquerque as he was active and master of the Caravan Club. Traffic: K5WSP 348, W5DWB 285, K5DAA 18, IQL 8, DAB 4, IPA 4, KBJ/5 4, W5WPA 3, BQC 2, K5LFF 2, LOU 2, ONT 2, LWN 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 YWW alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DXV and NMW alternating as NCS. New calls in Southeastern Wyoming are K7DRN, 7DRM, and Novices DSM, DSO, DSK, DSL and DSJ. As most of you know I have been transferred by my employer to Calgary, Alberta, Canada. This has necessarily forced me to resign as your SCM. In this, my last report, I would like to thank all who have contributed to the overall effort during the past two years and particularly NMW, BHH, AMU, MWS and BZC for their faithful contributions. I deeply appreciate the honor of serving as your SCM and shall always remember the wonderful support given me by the majority of the Wyoming gang. Congratulations and good luck to the new SCM—his success depends upon your participation.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—SEC: EBD. PAMs: DGH and K4BTO. RM: RLG. Birmingham is forming an emergency council consisting of representatives from Red Cross, AREC, civil defense and the Birmingham Radio Club. This plan appears to be worthy of consideration by amateurs in any city that does not have complete emergency plans. Welcome to K4PHN, new in Jasper. K4SSB had a very good score in the Novice Roundup. Where are all the stations holding leadership appointments during LO and CD Parties? Listen for announcements of these activities on AENB and AENP. Don't forget to make plans for the hamfest *to be held at Auburn in October.* K4BTO enjoyed noise-free operation during a week-end test of emergency equipment and made contacts on several bands, including 6 meters. The DX bug has bitten K4IPF. He reports the Pacific Net, which meets nightly at midnight on 14,256 Mc., needs members. K4HJM is very proud of his A-1 Operator certificate. KN4TPD and YTU are new Novices in Walker County. Traffic: W4RLG 248, USM 52, YRO 49, PVG 36, DGH 28, K4BTO 24, W4CEF 15, K4GOW 15, MHQ 13, AOZ 12, W4MI 12, K4JDA 9, PHH 9, W4ZSH 9, K4AAQ 8, W4HKK 7, K4HJM 6, IPF 6, W4WAZ 6, K4ANB 5, W4EBD 5, CIU 4, K4JWB 3, KBT 3, KJD 3.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAM: TAS. FEPN's new time is 1830 EST on 3910 kc. every Thurs. K4IXG has a new kw. on 144 Mc. BWR has a complete new mobile Elmac set-up to go with the new Mercury. K4IWT handled the traffic from the JOCO drill put on at Marathon. DRD, EHW and IYT handled the Marathon end while K4DAS, PAE and ZYK handled the Miami end. K4AKQ now has a 2.5-kw. generator. K4DAS and K4DRO made BPL. FNR reports lots of activity on 6 and 2 meters in Broward County. AB now runs a pair of HK-257Bs on 6 and 2 meters and has over 600 watts on phone with a full gallon on C.W. AB is one of our very few OESs. We would like to receive applications for more. If interested, drop me a line. The Dade Radio Club wins the new *Florida Skip* Field Day trophy with a score of 5904. The South Miami Radio Club was runner-up with 3780 points. The New Smyrna Beach Club is now affiliated with ARRL. Club officers are OY, pres.; K4LCF, vice-pres.; K4ISA, secy.; and PYA, station engineer. The club has a new 7.5-kw. emergency power generator and plans to go into emergency work as a public service. HCQ and K4ANJ finally got the cobwebs out of their 6-meter gear. Two new members of the Floradoras are K4NIX and K4IFF. K4RED has received her Georgia Peach certificate. K4PLU is now a Technician Class licensee. IYT and K4SJH attended the Washington Convention. The new master oscillator of the Knights of Kilocycles is K4DWG and PNS is the new speech amplifier. This net meets every Sun. at 0700 EST on 3910 kc. All are welcome. Traffic: (July) K4DAS 556, KDN 317, DRO 293, RZQ 149, W4DYR 137, K4ILB 124, OIE 86, W4IYT 76, K4EVU 71, AKQ 68, BR 54, BLM 48, SJH 48, BNE 47, W4TAS 44, K4COO 37, K4IWT 34, JCF 31, W4SJZ 29, K4JJZ 28, ODS 28, W4BWR 18, K4ANJ 17, RNS 17, PAE 15, MEU 14, W4BJI 10, EHW 9, K4MTP 7, AHW 2, OYR 1. (June) W4HTH 86, K4ILB 43, RNS 22, W4BWR 15, K4TFS 12, W4EHW 10.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. New or renewed CD appointments went to JIW, OPS, and HBK, OO, Panama City: The PCARC made 368 contacts and 2133 points in FD, with 10 operators on 3 bands. K4OID is mobile on 10 meters and is Alt. NCS for the new

(Continued on page 154)

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Conservative, highly efficient design plus stability, safety, and excellent parts quality. Covers 80 thru 40, 20, 15, 11, 10 meters (popular operating bands) with one knob band-switching. 6146 final amplifier for full "clean" 90 W input, protected by clamper tube circuit. 6CL6 Colpitts oscillator, 6AQ5 clamper, 6AQ5 buffer-multiplier, GZ34 rectifier. "Novice limit" calibration on meter keeps novice inside the FCC-required 75W limit. No shock hazard at key. Wide range, hi-efficiency pi-network matches antennas 50 to 1000 ohms, minimizes harmonics. EXT plate modulation terminals for AM phone modulation with 65W input. Excellent as basic exciter to drive a power amplifier stage to maximum allowable input of 1KW. Very effective TVI suppression. Ingenious new "low silhouette" design for complete shielding and "living room" attractiveness. Finest quality, conservatively rated parts, copper-plated chassis, ceramic switch insulation. 5" H, 15" W, 9½" D.

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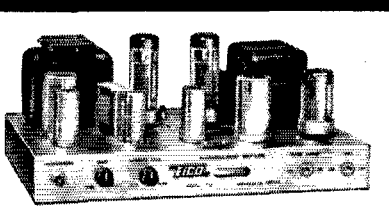
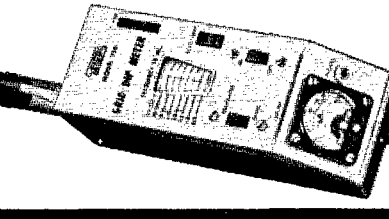
Superb, truly versatile modulator at low cost. Can deliver 50 watts of undistorted audio signal for phone operation, more than sufficient to modulate 100% the EICO #720 CW Transmitter or any xmitter whose RF amplifier has a plate input power of up to 100W. Multi-match output xfmr matches most loads between 500-10,000 ohms. Unique over-modulation indicator permits easy monitoring, precludes need for plate meter. Low level speech clipping and filtering with peak speech frequency range circuitry. Low distortion feedback circuit, premium quality audio power pentodes, indirectly heated rectifier filament. Balance & bias adjust controls. Inputs for crystal or dynamic mikes, phone patch, etc. Excellent deluxe driver for high-power class B modulation. ECC83/12AX7 speech amplifier, 6AL5 speech clipper, 6AN8 amplifier driver, 2-EL34/6CA7 power output, EM84 over-modulation indicator, GZ34 rectifier. Finest quality, conservatively rated parts, copper-plated chassis. 6" H, 14" W, 8" D.



NEW GRID DIP METER . . . . . #710

KIT $29.95 WIRED $49.95 including complete set of coils for full band coverage.

Exceptionally versatile, stable, rugged, compact. Basically a VFO with a microammeter in its grid circuit; determines frequency of other oscillators or tuned circuits; sensitivity control and phone jack facilitate "zero beat" listening. Also excellent absorption wave meter. Ham uses: pretuning and neutralizing xmitters, power indication, locating parasitic oscillations, antenna adj., correcting TVI, general de-bugging with xmitter power off, determining C,L,Q. Electronic servicing uses: alignment of traps, filters, IF's, peaking compensation networks; as signal or marker generator. Easy to hold & thumb-tune with one hand. Continuous coverage of 400 kc-250 mc (broadcast, FM, ham, TV bands) in 7 ranges with pre-wound coils of ±0.5% accuracy. 500 ua meter movement. 6AF4(A) or 6T4 Colpitts oscillator. Xmfr-operated selenium rectifier. 2¼" H, 2¾" W, 6¾" L. Brushed satin deep-etched aluminum panel; grey wrinkle steel case.



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NW Fla. C.W. Net. The net has a monthly bulletin, *Sparks*, edited by K4CEF. Pensacola: HBK needs only 2 more confirmations for DXCC. ZFL also is close to 100. JLW has a new vertical beam, over water, and made 70 USSR contacts in a 24-hour period in the Russian DX Contest. The Pensacola ARC made about 2000 points in FD, working 4 rigs on all bands, 80-6 meters. The PARC now has a 2500-watt portable power plant and has ordered a Heathkit TX-1. It should be easy to get Pensy on 10 meters now; 8 hams have bought monitor receivers, with squelch, for 29.560 kc. K4IVD is looking for more members and an NCS for the 6-meter net. K4KIF has ordered a 6-meter Communicator III. QOJ has a new NC-300. Ft. Walton/Elgin AFB: A new directory of hams in Okaloosa County, with addresses and phone numbers, and including 127 calls, has been compiled by RKH and the Elgin Radio Club. Traffic: W4OID 37.

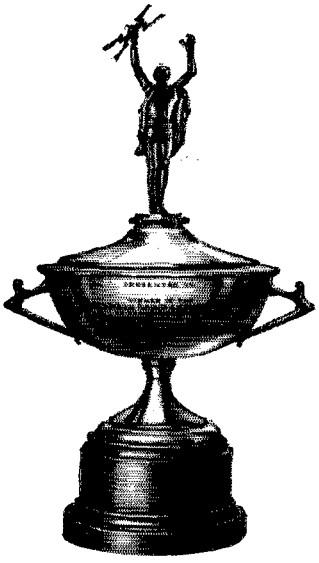
GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 on Sun.; ATLCW on 7150 kc. 2100 EST Sun.; GSN on 3595 kc. Mon. through Sat. 1900 EST with PIM as NC; the 75-Meter Mobile Phone Net on 3995 kc. each Sun. 1330 EST with MV as NC; the Atlanta Ten Meter Phone Net on 29.6 Mc. each Sun. 2200 EST, VHW as NC; the GTAN on 7290 kc. each Sat. 1000 EST, K4ORR as NC; the GPYL Net on 7260 kc. each Thurs. 0900 EST, K4IFF as NC; the Georgia Novice Net on 7157 kc. Tue., Thurs. and Sat. at 1800 EST, K4OZQ NC. The Tifton Amateur Radio Club elected K4LAX, pres.; K4MAT, vice-pres.; K4ENC, secy-treas. A new ham in Tifton is K4VJU. KN4UTI passed his Conditional Class exam. ZKZ now is living in Tifton. The Ga. Cracker Radio Club held its meeting at Macon and elected K4DNH, pres.; K4KAR, vice-pres.; K4MEH, Tue. night NC; K4BAI, Thurs. night NC; MZO, secy.-treas.; LXE, historian. The GPYL held a meeting at Macon at the same time. The Augusta Radio Club went all out to have a wonderful hamfest, with approximately 350 in attendance. K4TDX has a DX-100 now and is moving to a new QTH. K4DKM is in another Navy school in Norfork. BQF is out of school in Memphis. K4OCI works for WSFB in Quitman, Ga. K4HBI now is mobile. K4LEM has organized a traffic program for AQL, the Ga. Tech station. K4HOU has put up a new dipole to replace the Windom. K4DWF is on 80 meters checking in on GSN. I visited with the Chattonaga Radio Club at its hamfest. BSR, Delta Division, and ZD, Southeastern Division Director, as well as the vice-directors of both divisions, were present. Mike Ericolino, of Telrex, gave a fine talk, as did 9FQY. ZD and your SCM went to Dalton, Ga., and presented the Cherokee Amateur Radio Club with its ARRL affiliation charter. Traffic: K4TDX 143, KZP 127, LVE 91, LBC 75, W4BXV 56, DDY 53, K4HBI 43, OQY 41, CZQ 35, W4AQL 29, K4BAI 16, HOU 10, FCI 8, W4FTB 4.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. WT renewed OPS appointment. WR has been cancelled as Aguadilla EC. KV4BA received an ARRL Public Service Award for his work during Hurricane Betsy in 1956. New officers of the PRARC are CL, pres.; DV, vice-pres.; DJ, secy.; ABN, treas.; CK, JM, ACH, JZ and AMQ (the XYL of JZ), directors. WP4AOD and AOF worked 27 states on 15 meters in July. ALY is busy aligning receivers. PW's picture appeared in *El Mundo* with a write-up about ham station KP4WAC at N.G. camp at Salinas. AAA, ABW, ACQ, AEF, AET, AIG, AMG, AMU, DJ, FJ, GP, QM, QR, RE, WT and ZC report to the AREC Net Wed. at 8 P.M. on 3925 kc. AEF is going to Richmond Military Inst. to study electrical engineering. ACQ has a new DX-100. WL is active again using a new DX-40. RE uses a 136-ft. long wire on 75, a doublet on 40 and a single element beam on 15 meters as per *QST* with his DX-40. AAM is Stateside for special AF ROTC training. JM built a 500-watt Class B linear and is waiting for an s.s.b. generator. WT's ARC-5 receiver on 75 meters finally burned out the power transformer after being turned on continuously for 14 years! AMG had loading troubles because of a bad antenna relay. AET is a new station on 75 meters from Arecibo using a Viking Ranger and a multiband antenna. W2JXH was guest of honor at KP4BI's Villa CQ oldtimers get-together at Ponce. QR is doing commercial design and research on audio filters. AIG is a new station on 75 meters from Ponce. ADR sticks to 15 meters with a Globe Champion and three-element beam. DJ replaced the feedline on the 80-meter dipole with 75-ohm kw. Twinlead. AP bought a H.W. TBS-50 and will be back on after years of inactivity. RD has returned from New York. BJ skeds his father KD at brother K4PUJ's QTH in Washington, D. C. on 15 meters from the home QTH of KD.

CANAL ZONE—SCM, P. A. White, KZ5WA—W2XM/MM, on the SS *Flying Enterprise II*, and W5-AX1/MM, on the SS *Fullerton Hills*, passed through the Canal eastbound in July. WA went alongside the *Fullerton Hills* with his fishing cruiser, the *Marie Louise*, at

(Continued on page 156)

1957 AWARD WINNER James E. Harrington, K5BQT, holds some of the 1,500 messages he handled at devastated Cameron, La., during Hurricane Audrey. With Capt. Neal Mabrey, W5VTU, and Sgt. Michael J. McDermott, K5CTQ, both of Lake Charles Air Force Base, Harrington transported radio and emergency power equipment by boat to Cameron, and operated there around the clock for three days.



1958 Edison Award Nominations Invited!

For the seventh consecutive year, the Edison Award for 1958 will acclaim an amateur who has distinguished himself and all radio amateurs by rendering noteworthy public service.

Letters from you and others will be the only source for Award nominations. These nominations will be reviewed by a committee of impartial judges, who then will select the Award winner.

So that no worthy candidate may fail to receive the judges' consideration, your help by choosing and naming a suitable amateur is essential. The rules at right will assist you with your nominating letter. Mail it to *Edison Award Committee, General Electric Company, Electronic Components Div., Owensboro, Ky.*

RULES OF THE AWARD

WHO IS ELIGIBLE. Any man or woman holding a radio amateur's license issued by the F.C.C., Washington, D. C., who in 1958 performed a meritorious public service in behalf of an individual or group. The service must have been performed while the candidate was pursuing his hobby as an amateur within the continental limits of the U. S.

WINNER OF THE AWARD will receive the Edison trophy in a public ceremony in Washington, D. C. Expenses of his trip to that city will be paid.

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

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

HOW TO NOMINATE. Include in a letter a full description of the service performed, as well as the candidate's name, address, and call letters. Your letter of nomination must be postmarked not later than January 5, 1959.

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

E. ROLAND HARRIMAN, Chairman, The American National Red Cross.

ROSEL H. HYDE, Commissioner, Federal Communications Commission.

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

Winner of the Award will be announced on or before Thomas A. Edison's birthday, February 11, 1959.

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

GENERAL ELECTRIC

11-19-101

the Pacific Sea Anchorage, for a visit with Hutch. HG hauled Hutch out of bed at 2 A.M. that morning when he came out to meet the ship as Boarding Officer. K4-KRJ, Fort Lauderdale, Fla., was here in July visiting RJ, WZ and his XYL attended the National Convention. We are all pleased with the new Canal Zone call book issued in July by the Office of the Coordinator of Amateur Activities, and we thank BB. WZ left these parts for Long Island in August and promises to look for a new spot for his powerful "V" beam antenna headed, of course, to the Canal Zone. New hams: RT, CM, CXN and Matt Nostich (operator's license only). Traffic: KZ5HO 51, VR 49, WA 45, RM 19.

SOUTHWESTERN DIVISION

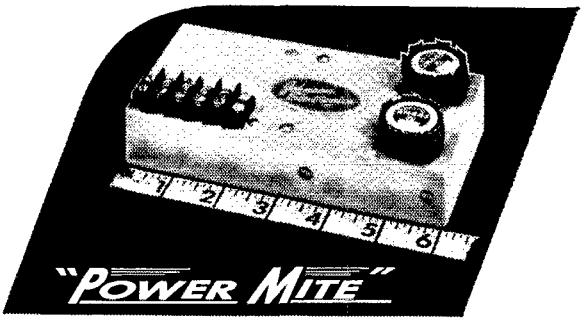
LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG and K6HLR. PAMs: W6ORS and K6BWD. The following stations made BPL in July: K6MCA, K6CPT, K6HLR and W6GYH. Congrats, fellows! Vacations have cut into activities. A new ham reporting regularly is W6ARR. W6GYH still is handling Japan schedules. K6OZJ is trying to get on 220 Mc. K6MCA is getting started on a new building for the station. The ALN2 Net is moving to 1900 PDT and W6SYQ is the new Chief NCS. A new ORS is K6OJV. Congrats, John! The SoCal 6 Net is doing a big job on 50.4 Mc. W6BES had a nice vacation on the East Coast visiting W1AW and has a new 3-band quad up. W6TCQ is back from a nice trip to Minnesota. New officers of the Beachwood Amateur Radio Club of Hollywood are K6DDO, pres.; K6CEO, secy.; K6HKG, treas.; K6HBA, QSL Mgr. K6BYB is moving to W6-Land. K6ELX and K6ELL attended the National Convention. Net certificates were issued to K6TPL, K6TRL, K6OJV and W6ORZ. Congrats on a wonderful job! New NCSs for SCN are K6TPL, W6INH, K6GUZ and W6HJY. Blind operator W6BVG made BPL at K6CPT. Congrats on a great achievement, Jerry! K6KZY is moving to Dearborn, Mich. We will really miss you, George. New officers of the Riverside County Amateur Radio Assn. are K6GUK, pres.; K6THG, vice-pres.; K6UJZ, secy.; W6QXX, treas. Support your section nets, e.w., SCN at 1930 PDT on 3600 kc., and SoCal 6 Net on 50.4 Mc. at 1930 PDT and on phone. Traffic: (July) K6MCA 1051, K6HLR 908, W6GYH 795, K6CPT 502, K6OZJ 333, W6BHG 171, K6OJV 162, W6USY 147, K6OQD 129, K6TPL 109, K6JQB 108, W6HJY 67, K6EA 60, W6SYQ 56, K6KUU 25, K6GCC 18, W6ORS 9, W6VSH 9, W6INH 4, W6AM 2, WV6ARR 2, W6BUK 2, K6COP 2, K6DDO 1. (June) W6ZJB 442, W6HJY 115, K6OJV 63, K6QMK 56, W6USY 36, K6RFW 11, K6PLW 8, K6HSQ 1.

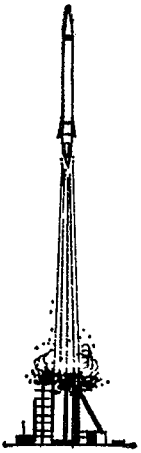
SAN DIEGO—SCM, Don Stansifer, W6LRU. With the Southwestern Division Convention being held in San Diego the 10th through the 12th of October, this column takes this last opportunity to invite all amateurs to attend. Advance ticket sales indicate a large gathering, with many excellent prizes and planned meetings to satisfy all. K6EC is the vice-chairman of the San Diego Council. The Annual 10-Meter County Hidden Transmitter Hunt was held in late July. Winners, in order, were K6TXR, W6WYA and K6JPC. The hidden station was manned by W6LYF and K6HQJ in the Laguna Mountains at an elevation of 6000 feet. W6WYA has resigned as EC for the 10-meter group. Our thanks to Roy for the fine job he has done for many years. W6LYF has accepted the job as Section Emergency Coordinator. Harold is well known in the entire section and will do an excellent job. The Mt. Soledad Amateur Radio Club has in operation a van with emergency power and equipment covering all amateur bands from 160 through 2 meters. The purpose of this vehicle is for use in the area in the event of any emergency requiring communications. The call is W6VMS/portable at Red Cross Headquarters, W6VMS/mobile for the van and W6VMS at the fixed station on Mt. Soledad. All members of the club are members of both RACES and the AREC. K6HQJ is the president. Because your SCM's vacation came before the usual first-of-the-month cards arrived there is no traffic count this month. See you all at the convention.

SANTA BARBARA—SCM, Robert A. Henke, K6CVR—The Poinsetta Club has changed its meeting night to the last Tue. of each month. They also report a code theory class doing big business. The Santa Barbara Radio Club had an old-timers' revue at its last meeting. W6GH brought many early radio exhibits to the meeting and had all of the old-timers get up and give an account of their experiences back in the days of spark. Coffee and doughnuts were served after the meeting. W6OUL dropped the "N" from his call in July. W6QHC has a new 10-15-20-meter beam on test and reports FB results. The Paso Robles Radio Club reports its newest member is WV6BGL. W6FYW solved the problem of a separate 80-meter antenna by loading up his 2-meter mast. Traffic: W6YCF 18, K6CVR 8.

(Continued on page 158)

65 WATT TRANSISTOR POWER PACK FOR *MOBILE UNITS*





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HEART OF THE MISSILE COUNTRY

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM: E. C. Pool, NFO. SEC: BNG. PAMs: K5AEX and IWQ. RM: ACK. Once again the West Gulf Convention, this year "hosted" by the Oklahoma City gang, proved to be another wonderful activity, as has been the case for several years now. In view of the fact that Galveston was granted the National Convention for 1959, we here in Dallas decided that we would not bid in order to assure Galveston the West Gulf in conjunction with the National. Hope to see you all here in 1960 as we plan on making the bid next year in Galveston. Since this report is my last as SCM of this section, I want to take the opportunity to thank, for their faithful and devoted effort toward ARRL aims and policies, section-wise, the folks who have held "leadership" appointments—BNG, our SEC (and your new SCM), JQD and NFO, who have acted as Asst. SCMs, YKT, K5AEX and 1WQ as PAMs and AHC, FCX and ACK as our RMs. It has been a real pleasure to have had the opportunity to visit with so many of our club groups during the past two and a half years as SCM and I want to thank all for the many, many courtesies shown me and the real, bona fide Texas-style hospitality is something I shall never forget! Traffic: W5BKH 284, SMK 275, K5JBQ 102, ETX 81, W5AHC 65, K5JZK 39, PXV 35, DNQ 21, ACD 14, W5GHU 12.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC —SEC: K5KFS. PAMs: MFX and K5INC. RM: JXM. The Oklahoma City group is to be congratulated for an FB convention. K5KTW is the new EC for Comanche County. NS has been working DX with an AT-1. K5EJC did well in the Novice Roundup. REC, K6JFX, K5HIV, K5KOJ and ZBQ all qualified for Sooner Traffic Net certificates. My congratulations to you all. K5MIB, although blind, had no difficulty in passing the General Class exam. K5KVA is moving to New York. K5QAK and K5JYB took the General Class exam at the Convention. By the time this report appears the 40-Meter Sooner-Nooner Net will be in full swing. Help K5INC to make it a success by checking in whenever possible. FKL retired from the Army in July as a full colonel and now will have plenty of time to ham. K5LGV now has a Globe Chief and is putting in a much better signal. KN5OPK and KN5BPW now are General Class. Oklahoma Ham of the Month: K5JCB for his FB traffic work and excellent fist. Traffic: K5JCB 328, K5CAY 215, INC 72, W5JXM 50, CCK 44, MGK 41, K5LGV 33, W5FEC 16, MFX 16, PNG 16, K5CBA 15, W5GOL 15, EHC 13, K5EZM 12, W5ERI 10, VLW 5, K5BNQ 4, BPV 4, W5BBA 2, IER 2.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, OC. SEC: AEB. New appointments include W2ZRX/VOI as Official Bulletin Station. ABV has worked into W2 and W3 districts on 50 Mc. from Sable Island. EK has joined the s.s.b. ranks with a 10B exciter. WL has a new KWS/1 transmitter. CL has been working 2-meter mobile with a new Gonset Communicator. Newly-elected officers of the NBARA are ACJ, pres.; ABZ, 1st vice-pres.; UL, 2nd vice-pres.; UT, secy.-treas. AAW reports working G5VB on 80 meters with a new Adventurer. Officers of the Keith Rogers Memorial Radio Club are ACL, pres.; GB, vice-pres.; KZ, secy.-treas. W1QMS/VE1 was on a recent DXpedition to P.E.I. and displayed the original pilot models of the new Heath "Apache" and "Mohawk" at a meeting of the KRMRC. 75-meter mobiles on the Island now include ZM, GR, PE and KZ (who is using a new home-brew all-band transmitter). P.E. Island amateurs challenge the other Provinces to match their ARRL member percentage (unofficial reports indicate approximately 90%!). Traffic: (July) VE1FQ 23, AAW 22, ABJ 18, AEB 4, (June) VE1FQ 24.

ONTARIO— SCM, Richard W. Roberts, VE3NG. A news item from the East Coast advises that Millie, 3EII, and Jim, 3EIT, announce the addition of John Marshall Simson (age one year) to their family. Congratulations to you both, and welcome, Johnny. The Hamilton gang really is in the swing of the Ontario ARRL Convention to be held in Hamilton Oct. 18. Write CEC, secy., for his sage advice. NG and his XYL, DZA, are maritime mobile at Meaford on week ends. Likewise AJA at the same port. Heard in the summer mornings are mobiles ADD, MF, ARF, NG, DSM and ARD and fixed stations BIV/3, DEX, GH, GJ, EAW and EAO. RH has fully recovered from his illness. TL has gone high power on c.w. Unmodulated carriers are prevalant again on the 75-meter band. The D.O.T. is taking action. Be wise, announce your call. DTO is mobile again in the Toronto Area. NF is mobile in the Kingston sector. NW is on 6 meters. CAB sports a 14-element beam on 6 meters. RW made North Bay and back. 2XX visited RW. AUU is transistor mobile. KM was up to Timmins for the

(Continued on page 160)

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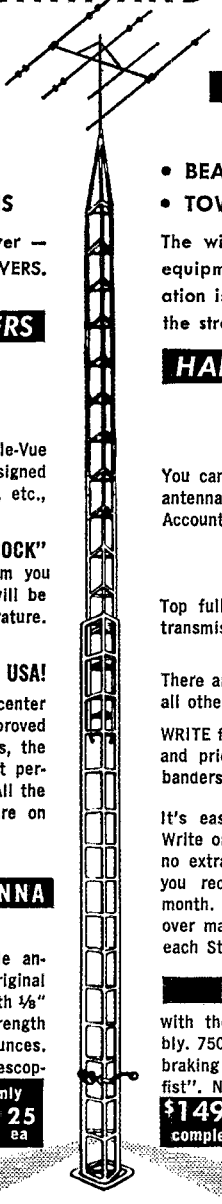

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ham affair there. DTB also was at the North Bay 'Fest. The SCM was happy about the trip to North Bay and return. After last year it was a pleasure with no long detours, no storms, etc. BR still is ill. Traffic: VE3BUR 158, NG 119, NO 86, BZB 47, DEX 45, DTB 44, DPO 29, DZA/3 29, EAM 28, AML 22, KM 21, AES 6, DH 5, AVS 2.

QUEBEC—SCM, C. W. Skarstedt, VE2DR. HR is mobiling in the States. GQ was visited by W4HB, WW still is working on a new seven-element beam. BK is active on s.s.b. using a KWM-1. JR's sailing interferes with his s.s.b. NV keeps DX-plugging; now has 203 worked, 179 confirmed. He, YU and AIO require only Zone 26 for their WAZ. 6NX visited and was entertained by WW, AIO, NV, YU and AYY. AJD is very active on 10 meters. AUH, ANK and UF are working day and night to improve their rigs. AOL keeps Trois-Rivieres in the mobile limelight. APC has a 40-foot tower erected with a rotor and eight-element beam in place. AFI returned from Ile-aux-Coudes, where he worked his new DX-40. ABE nabbed T19 and 4X4 on 20 meters. ATX had an article on ham radio and personal activities in the French newspaper, *Le Petit Journal*. DR received same distinction in an English paper, *The Gazette*. BAA is a newcomer in Montreal. KL also is a newcomer in the Montreal Area. FL has a new DX-40 and an Eddystone receiver. AZT, LS and YA attended the RAQI Annual Picnic at Cap Sante aux Shatillon. AOL won the hidden transmitter hunt. A large crowd was on hand with visitors from Gaspe, Hull and the northern States. Your SCM would like to express sincere thanks to EC and ATL for their faithful support in assisting with regular monthly reports. Traffic: VE2DR 70, EC 52, ATL 1.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—The Nanaimo Club hosted the BCARA Open Forum Aug. 9 and 10. The meeting was well attended by 40 interested amateurs and visitors. Sorry the dates conflicted with the jaunt to W7-Land of the Victoria gang as I was looking forward to renewing acquaintances with some and meeting others whom I knew by voice only. However, they were ably represented at the Open Forum by KA and AD. Much was said about the formation of a Canadian Amateur radio association or strengthening our Canadian ARRL membership. No definite plans were laid for either plan. ZM gave us quite a few facts and figures re various memberships in all types of amateur associations which gave us all some good food for thought. The C.W. Net (BCEN) under TF has kept going through the summer doldrums with the help of a few stalwarts. He would welcome your presence on 3650 kc.; also he is interested in forming an all-Canadian c.w. net similar to the old Trunk Line I. Anyone interested, please contact TF on 3650 kc. Congrats to ALE and AEW for their operating during the B.C. Centennial Mountain Climbing Expedition. Luckily there was no DX to hold them there longer than they stayed. Approximately two hours after they left the location an earth quake and tidal wave hit leaving no sign of what had been their location. Traffic: KG1DT 360.

SASKATCHEWAN—SCM, Lionel O'Byrne, VE5LU —The Saskatoon gang had a bang-up hamfest, with a good crowd and nice weather. No details are available as yet. Those attending from Regina were WG, JK, LU and their XYLs with ES and his XYL from Weyburn. XX attended the IRE meeting and banquet and has a converter in the car. The Regina boys set up club station NN at the Provincial Exhibition. Let's have some news, fellows.

Helical Element Ground Plane

(Continued from page 32)

the four feet of loose coil on each helix. Glue the coils to their dowels.

The driven element is harder to tune. First resonate an eleven- or twelve-turn helix at 28.6 Mc. It was found that the tinned end of this helix can be bent ninety degrees and slipped in and out of the female coax connector, making tuning a simple matter. Solder the 10-meter trap to the 10-meter helix and add five turns for the 15-meter section. In a similar manner cut down the 15-meter section until it resonates at 21.3 Mc. Two dips can now be obtained, one at 15 and the other at 10 meters. Next add the

(Continued on page 162)

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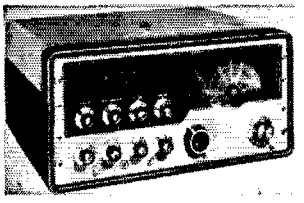

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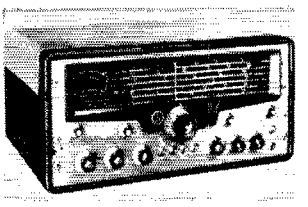

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15-meter trap. Instead of using a helix for the 20-meter section, I suggest that you solder a three-turn coil to this trap and extend the rest of the wire straight up the dowel to increase the radiation resistance.

The parallel traps are very critical since changing the spacing of the turns a quarter inch will mean the difference between a good or poor match. Connect the impedance meter to the antenna and change the turn spacing until a resistive reading (i.e., a sharp null) can be obtained. I found my best resistances on 10 and 15 meters to be 145 and 100 ohms.

Final checks should be made with an s.w.r. bridge in the coaxial line.[3] If the s.w.r. is high on 15 meters, very slight changes in the 15-meter trap will reduce the reflected waves to a minimum.

Finish gluing the sections to the pole and paint all exposed parts with glyptal.

Most important, get that ground plane in the air! Happy hunting!

The author would like to acknowledge the valuable suggestions and assistance of Paul Brace, K5HXT, Burt Bittner, W5AIG, Earl Fletcher, W5WRS, and Loren Watkins, W5JXO.

[3] The bridge should be set up to match the 93-ohm impedance of the RG-62/U.

21-Mc. Converter

(*Continued from page 35*)

points) on each capacitor that will give an increase in noise, one near minimum capacitance (plates unmeshed) and the other with more capacitance. The setting at the greater capacitance point is 21 Mc. while the lesser is 28 Mc. Adjust the converter for maximum noise at 21 Mc. and tune your receiver across the band. If the band is open — and don't forget that sometimes it's as dead as the famous doornail — you should hear signals. Tune in one and peak it up by tuning C_1 and C_2 of the converter. Each control should give a definite peak. Pretty nice to know that your receiving front end is lined up, isn't it? And it is, you know; you align it when you peak the two controls. Your receiver is now working as a tunable i.f. and the only adjustment required is to peak the antenna trimmer (if you have one) for maximum signal.

You'll probably find that if you peak the converter in the center of the Novice band you'll be able to cover all of the band without readjusting.

That's about the story. If you are a Novice who has never listened on 21 Mc. you're in for a real treat. When the band is open — and this is the rule rather than the exception — you'll start drooling over the rare and juicy DX that will be coming in. Anyone for WAC or DXCC?[2]

[2] WAC stands for "Worked All Continents" and is awarded to amateurs submitting QSLs confirming contacts with the six different continents. DXCC is the "DX Century Club" and membership is awarded to any amateur submitting QSLs showing contacts with 100 different countries in the ARRL countries list. For more complete rules write ARRL or see the article on awards in July, 1957, *QST*.

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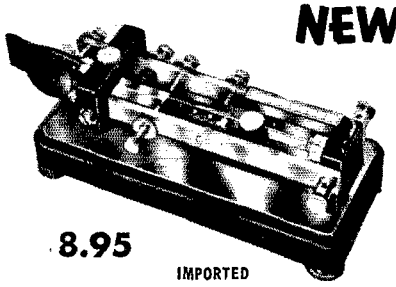

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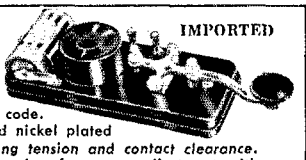
MS-435 Semi-Automatic "Bug" ..... Net **8.95**

NEW! CODE PRACTICE SET



Economical and practical code practice key and buzzer unit for learning code. Telegraph key chrome and nickel plated *with both adjustable spring tension and contact clearance.* The high frequency buzzer has frequency adjustment with locknut to keep tone constant. Screw type pin jack terminals for headphone connection. Works with inexpensive 1½ volt battery. Heavy black molded phenolic base and buzzer housing. Base 3¾" x 2¾" x 1⅜", overall length 8½". Shpg. wt., 2 lbs.

MS-438 Code Practice Set (less battery) . **1.95**

BATTERY Burgess 2 ..... **.13**

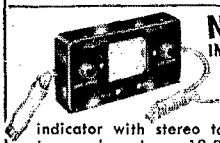
MS-369 Stethoscope Headset **1.69**

AUDIO LEVEL VU INDICATOR

Precision loudness meter. Calibrated in Volume Units and percent, with 20 db variable attenuator. Ideal for setting output level in pdging and music systems; removes guesswork when used as record-level indicator with tape recorders. Highly damped meter; responds to average level of voice and music. Impedance 10,000 ohms; sensitivity 1.4 volts for 0 VU. With capacitor for blocking DC to prevent burnout, 4" w x 2-3/16" h x 1-3/8" d. Shpg. wt., 1 lb. IMPORTED

LAFAYETTE TM-20 Audio Level Meter ..... Net **5.95**

NEW! STEREO BALANCE VU METER



Removes guesswork in providing perfect balance of the 2 amplifier or preamplifier channels in any stereo system. Can be used as record-level indicator with stereo tape recorders, and for balancing stereo tuners. Impedance 10,000 ohms; calibrated 20 db attenuators, capacitors for blocking DC. Calibrated in Volume Units and percent; highly damped, reads average voltage of voice or music signals. Sensitivity 1.4 volts for 0 VU. Shpg. wt., 1 lb.

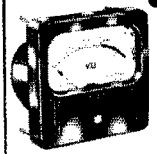
LAFAYETTE TM-40 Stereo Balance Meter ..... Net **8.95**

ILLUMINATED SCALE VU METER

IMPORTED

● JEWELLED BEARINGS ● 2% ACCURACY

● MEETS ACCEPTED VU METER SPECIFICATIONS



A high-quality precision built unit, only 3⅛" square, 2-5/16" x 1⅜" silvered dial face, 1-11/16" overall depth. Black pointer, highly legible black calibrations. Clear optical glass front. "B" scale, has 0-100% on upper scale, −20 to +3 VU on lower scale. Reads 99% of applied VU in 0.3 secs., with overshoot between 1-1 ½%. Calibrated for 0 VU when 1.228 volts sine wave AC applied through external 3600 ohm series resistor from a 600 ohm source with 600 ohm load. 6-8 volt scale illuminating lamp. Shpg. wt., 1 lb.

TM-80 ..... Net **7.50**

NEW! Miniature *Panel Meters*

• D'ARSONVAL MOVEMENTS • JEWELLED BEARINGS
• ONLY 1-9/16" SQUARE FACES • ACCURACY 2% OF FULL SCALE

UNUSUALLY LOW-PRICED FOR SUCH EXCELLENT QUALITY

Ruggedly built *miniature panel meters* having zero adjustment screws, silvered dials, black numerals and clear glass fronts. Shpg. wt., 8 oz.

"S" METER — Standard "ham" signal strength indicator. A 0-1 ma dc meter calibrated in S units from 0-9. Scale terminates in + 10 and + 30 db calibrations and also fully calibrated linearly 0-5 and 0-10.

TM-11 S Meter ..... Net **$3.95**

VU METER — Volume level indicator calibrated in standard — 20 to +3 VU and 0-100% ranges. Indicates output level with complex audio wave-forms. Standard VU meter damping.

TM-10 VU Meter ..... Net **$3.95**

0-1 DC MILLIAMMETER — Calibrated in .05 mg divisions on a linear scale.

TM 400 ..... Net **$3.75**

0-50 DC MICROAMMETER — *Calibrated in 1μa divisions on a* linear scale.

TM-200 ..... Net **$4.95**

0-150 AC VOLTMETER — Rectifier type, 1000 ohms/volt.

TM-300 ..... Net **$3.75**

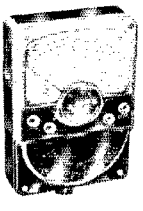
0-15 DC VOLTMETER 1000 ohms/volt

TM-100 ..... Net **$3.75**

0-200 DC VOLTMETER 1000 ohms/volt, linear scale

TM-101 ..... Net **$3.75**

IMPORTED



NEW MINIATURE HIGH SENSITIVITY MULTITESTER

20,000 OHMS PER VOLT DC — 10,000 OHMS PER VOLT AC

A terrific buy in a hand-held, compact, light, accurate, completely wired instrument. Has a 36 μA movement, 1% precision resistors and simple selector switch with calibration markings protected against wear. Scales: Volts DC and AC; 0-5-25, 100, 500, 1000; Ohms: 0-6K-600K-60 Meg; DC Current; 0-50 μA- 5-50-500 MA; Decibels- −20 to +64 in 5 ranges. Size 4⅝" x 2⅞" x 1¼". Shpg. wt., 1 lb. Complete with batteries and test leads. Imported to save you money.

AR-660 Miniature Meter ..... Net **22.50**

Lafayette Radio DEPT VJ

165-08 Liberty Ave. JAMAICA 33, N. Y.

Include postage with order.

100 SIXTH AVE., NEW YORK, N. Y.
BOSTON, MASS., 110 Federal St.
PLAINFIELD, N. J., 139 West 2nd St.
NEWARK, N. J., 24 Central Ave.
BRONX, N. Y., 542 E. Fordham Rd.

50-Mc. Transmitter

(*Continued from page 20*)

with the power level of a 2E26. There is no advantage in going to a 6146 in the final stage unless an input in excess of 25 watts is to be run.

Final operating conditions for the transmitter will depend on the supply voltage and final tube used. With a 300-volt supply the oscillator plate current will run about 10 ma. with the oscillator operating properly, and 17 ma. with the crystal out of oscillation. The doubler plate-screen current is about 12 ma. Amplifier grid current will be at least 3 ma. without plate and screen voltage, and around 2.5 ma. with the amplifier operating under load. These values will be slightly lower with a 250-volt supply. Plate-screen current to the amplifier will depend on the power level and tube. With a 2E26 at 300 volts the current will be about 20 ma. at resonance, with no load, and 95 ma. off resonance. Loaded for maximum efficiency the 2E26 plate and screen current will be about 60 ma. With a 6146 at 450 volts the loaded plate and screen current will be about 120 ma.

Voice Key

(*Continued from page 37*)

cause the relay contacts to close for the period the sound is impressed on the microphone. Thus I had, in theory at least, a design of a workable voice key. My dad, as promised, built this circuit and after a few minor adjustments, much to my delight it produced readable code when actuated by my voice.

With the help of this equipment, and encouragement from an understanding RI, I was able to pass the code test for the long-sought-after amateur radio license. The greatest problems had been solved but there were more to follow. Now that I was licensed, the physical act of operating still confronted me. To control a send-receive switch with my hand, while possible, was very haphazard.

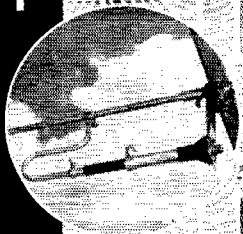
Fortunately, I was able to adapt a foot switch I had used in my s.w.l. days for controlling the receiver B-plus. This is now connected to the push-to-talk circuit of the transmitter, which also controls the receiver. How this is to be done will vary with different installations, but the foot switch idea should be usable with any push-to-talk installation. In fact, it need not be limited to foot operation. The switch could be actuated by pressure exerted by any part of the body, in case the operator lacks use of his feet or legs. As the photograph shows, my foot switch is an ordinary headlight dimmer floor switch.

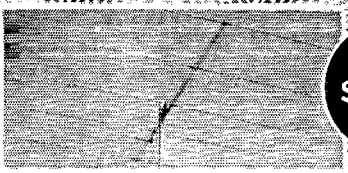
I hope these suggestions will give encouragement to those who are interested in amateur radio, but cannot see their way clear to dig in a little deeper and overcome those seemingly insurmountable obstacles. Believe me, it is most rewarding.

6 M for VHF

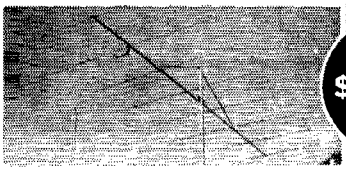
9 db Forward Gain
Net wt. 9 lbs.
Boom length: 8 ft.

12 db Forward Gain
Net wt. 18 lbs.
Boom length: 16 ft.





6M, 5E
$15.95



6M, 8E
$26.95

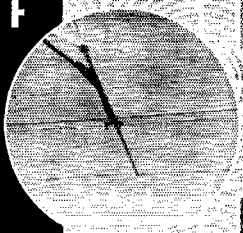
These Hy-Gain VHF Antennas are OPTIMUM SPACED for maximum forward gain. Parasitic elements are constructed from eighth inch 6061T6 alloy aluminum rod for high Q resulting in tremendous efficiency. The booms are ¾" heavy wall aluminum tubing. All hardware is hot dipped galvanized irridite treated for maximum weather ability. Extremely easy to put up and into operation these beams may be stacked for additional gain. Stacking harnesses for all VHF beams (specify model number) $4.95 additional.

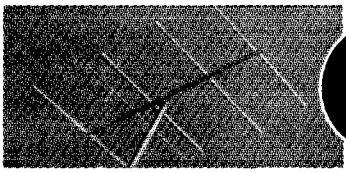
New pre-calibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included.

2 M for VHF

9 db Forward Gain
Net wt. 1¼ lbs.
Boom length: 4 ft.

13.2 db Forward Gain
Net wt. 3¼ lbs.
Boom length: 12 ft.



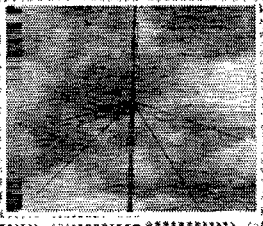


2M, 5E
$6.95

2M, 10E
$12.95

THE Hy-gain VHF Antennas for 6, 2, 1¼ & ¾ Meters

2 and 6 Meters
VHF Vertical

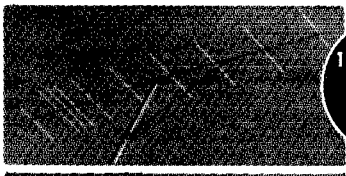


All Hy-Gain ¾, 1¼ & 2M beams incorporate the exclusive adjustable folded ratio dipole for immediate matching. Perfect 208 ohm match for K 200 low loss parallel line or 52 ohm coax thru a half wave balun. Instructions included for matching 72 ohm coax, 300 ohm and 450 ohm balanced lines.

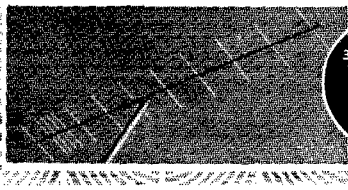
1¼ M ¾ M

11 db Forward Gain
Net wt. 2 lbs.
Boom length: 12 ft.

16.1 db Forward Gain
Net wt. 1¼ lbs.
Boom length: 8 ft.



1¼M, 11E
$9.95



¾M, 13E
$9.95

A new decoupling sleeve principal makes possible low SWR ¼ wave resonance maintaining efficient operation for the 2 and 6 meter bands. Overall height 5'. 52 ohm coax feed. Net weight: 24 oz. Complete with 2 band tubing ground plane and nylon base insulator assembly.

Model 26-AV $16.95

LEO SAYS:

LEO I. MEYERSON, WØGFQ

Your Best Buy Is Always From

WORLD RADIO LABORATORIES

3415 W. BROADWAY • COUNCIL BLUFFS, IOWA

ONLY 10% DOWN • PROMPT SHIPMENT

Easy Monthly Terms • Personalized Service

The World Above 50 Mc.

(*Continued from page 83*)

220 and Up

In August *QST* we asked fellows working on 220 Mc. and higher bands to send in their operating schedules, in order to coordinate activity. Here are two responses: K6GKX, 110 Argonne Ave., Long Beach, Cal. is on 220 nightly, 1900 to 2200 PST. K6OPD, P.O. Box 1152, Lancaster, Cal. is available from 1900 to 2300 Monday through Wednesday nights, and from 1900 to 2100 Thursday and Friday nights. K6GKX says that 220-Mc. activity continues to grow in Southern California, 56 new stations having been worked thus far in 1958, for a total of 136. Ralph would like to see polarization standardization between Northern and Southern California, as an aid to long-distance schedule work.

W1YOB, East Hartford, Conn. has evidence that high power and big antennas are not required when conditions are good on 220. Art is using only 5 watts input, and his antenna is only a 5-element beam, but he worked K2GRI, W2HVL, W2DWJ and W3VIR during a tropospheric opening the night of Aug. 5. W3VIR is about 170 miles away; the others around 100 miles.

As the pictures taken by W8JLQ show, amateur TV reception in Toledo, Ohio, is not confined to local signals. The three patterns shown are all from the Detroit area, 60 to 75 miles away. W8JLQ uses a 417A r.f. amplifier, a 6BC4 amplifier, both trough lines, and an ASB-5 receiver as a converter, working into a TV receiver set on Channel 2. W8RQI and W8VCQ, also of Toledo, have had similar results in reception of W8DX, W8RLT and W8RMH.

DX Contest Results

(*Continued from page 62*)

Ireland

EI5I.....55,440- 40-462- A-22

Italy

I1A1M.....81,576- 44-619- A-16
I1ZFT.....26,358- 23-382- A- -
I1TC.....60- 4- 5- A- 1

Luxembourg

LX1HM.....2268- 14- 54- A- 9

Netherlands

PAØVB.....18,600- 31-200- A-18
PAØXX.....10,914- 17-214- A-13
PAØZJ.....10,035- 15-223- A- -
PAØKN.....4680- 12-131- A- -
PAØKA.....952- 8- 40- A- -
PAØPOM.....777- 7- 37- A- -
PAØLOU.....405- 9- 15- A- 2

Norway

LA9MC.....11,193- 13-287- A- -
LA5HE.....4032- 16- 84- A- -
LA2HC.....210- 7- 10- A- -
LA1K.....12- 2- 2- A- 1
LA4HF (LAs 4HF 7JF)
12,267- 29-141- A-20

Poland

SP8CK.....7098- 26- 91- B-28

Portugal

CT1MB.....6858- 18-127- A- -

Scotland

GM6IZ.....13,770- 15-306- A-22

Spain

EA3JE.....91,434- 49-625- A-74
EA1FD.....17,666- 22-268- A-40
EA1GG.....1476- 12- 41- A-12

Sweden

SM2AKA...21,114- 34-207- A-12
SM3BFR.....1344- 14- 32- A- -
SM4BPM.....1107- 9- 41- A- -
SM6NN (SM6s ANC APH BSK CZE NN).46,096- 32-421- B- -

Yugoslavia

YU2CF.....7460- 20-126- A-29

NORTH AMERICA

Alaska

KL7CDF.....5676- 22- 86- C- 5
KL7CDH.....2928- 16- 61- A-15

Bermuda

VP9L.....212,670- 85-834- A-45

Costa Rica

TI2OE.....107,916- 46-782- A-28
TI2CAH.....4062- 22- 61- A- 3

Cuba

CO2USA8..133,008- 68-659- B-23
CO2HB.....50,028- 44-379- A-19
CO3HD.....22,680- 27-280- B-27
CO2DD.....4056- 13-104- A- -

Mexico

XE1RE.....46,110- 53-290- A-14
XE1SO.....5280- 20- 88- A- 9
XE1UF.....1482- 13- 38- A- -

OCEANIA

Australia

VK5XN.....18,090- 18-225- A- -
VK5WO.....13,962- 28-179- A-10
VK2AKF.....7788- 22-118- A-13
VK3MX.....2233- 11- 68- A- -
VK3ACN.....2016- 16- 42- A- 2

Fiji Islands

VR2BC.....22,275- 25-297- A-21

Hawaii

KH6IJ...535,311- 87-2051- C-71

Marshalls

KX6AF (W3VVE, W6NDP)
117,183- 53-737- B-46

New Caledonia

FK8AS.....54- 3- 6- A- -

New Zealand

ZL1MQ.....79,980- 62-430- A-26

Philippines

DU7SV.....20,355- 23-295- B- -

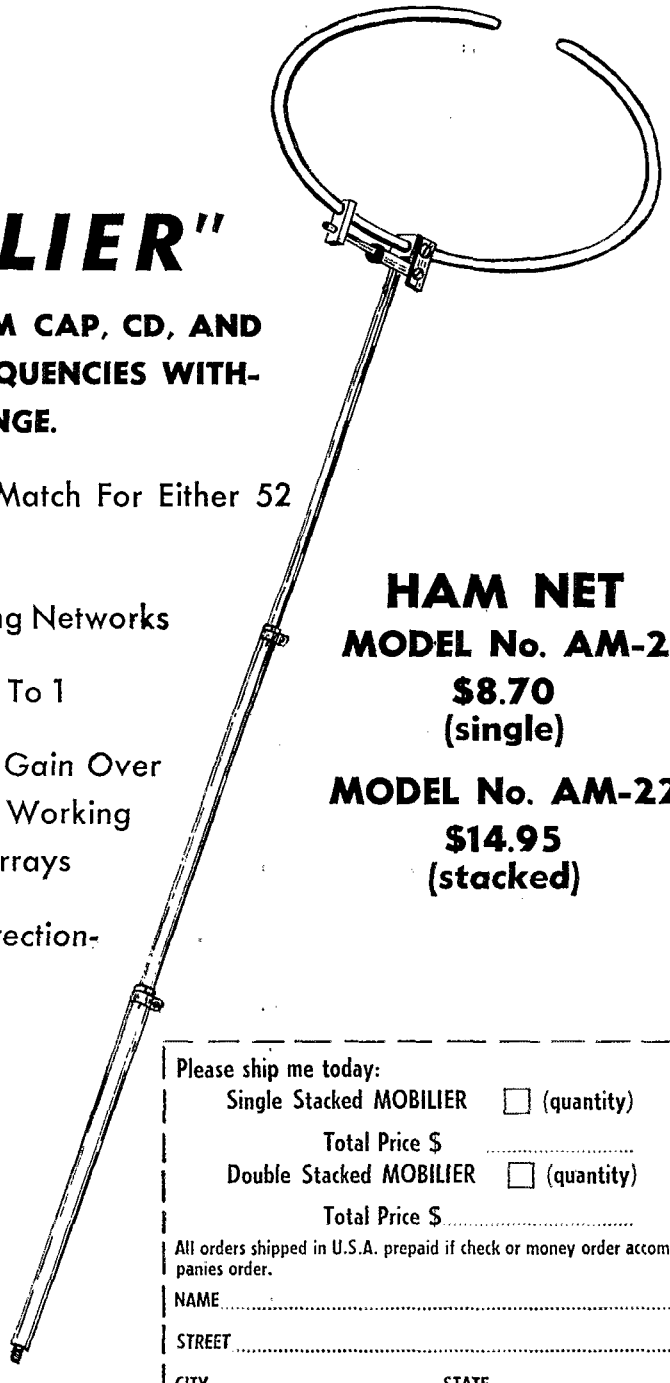
(*Continued on page 168*)

Cush Craft

2 METER
"MOBILIER"

DESIGNED FOR HAM CAP, CD, AND OTHERS USING FREQUENCIES WITHIN 140-160 mc RANGE.

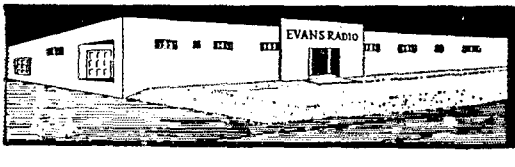
- Concentric Gamma Match For Either 52 or 72 Ohm Cable
- No Baluns Or Matching Networks
- SWR — Less Than 1.2 To 1
- From 5 DB To 15 DB Gain Over Vertical Whip When Working Fixed Stations With Arrays
- Near Perfect Omnidirectional Pattern
- Available Stacked
- 3 Section Telescoping Mast
- All Aluminum Construction



HAM NET
MODEL No. AM-2
$8.70
(single)

MODEL No. AM-22
$14.95
(stacked)

Please ship me today:
Single Stacked MOBILIER ☐ (quantity)
Total Price $.....
Double Stacked MOBILIER ☐ (quantity)
Total Price $.....
All orders shipped in U.S.A. prepaid if check or money order accompanies order.
NAME.....
STREET.....
CITY..... STATE.....



Evans RADIO
P.O. BOX 312 • CONCORD, N. H.

SOUTH AMERICA

Argentina

LU2BN.....9639- 17-189- B- -

Bolivia

CP6FB (W5MCF, CP6FB) 132- 4- 11- B- 1

Brazil

PY7AEX....5814- 19-102- B-17
PY5GA.....3564- 22- 54- A- 9
PY4AUC....2838- 11- 86- C- 6
PY4OD.....675- 9- 25- A- -
PY7AFK.....392- 7- 19- B- 2

British Guiana

VP3HAG..135,040- 64-704- A-71

Chile

CE4BP.....8580- 26-110- A- -

Colombia

HK7LX....60,255- 39-517- B-23

Ecuador

HC1HL....63,455- 37-575- B-36

Netherlands West Indies

PJ2AN.....840- 8- 35- A- 3

Paraguay

ZP9AU.....15,972- 33-163- A- -

Peru

OA4AO.....81,510- 55-494- A-36
OA4V.....22,032- 34-217- A-12
OA4FA.....14,752- 32-156- A-24
OA4DE.....1200- 5- 80- B- 7

Trinidad

VP4LO.....17,010- 21-270- A-30

Uruguay

CX1AK....16,925- 25-227- A- -
CX9AJ.....5424- 16-113- A- -

Venezuela

YV5ED....2886- 13-74-ABC- -

---

[1] W1WPR, opr. [2] Hq. Staff — not eligible for award. [3] W1RUD, opr. [4] K4MBL, opr. [5] VE3CKA, opr. [6] W7YBI, opr. [7] LA6GF, opr. [8] W4UDA, opr.

Check logs: *C.w.* — *W1s* CPS IRW MIJ, K2ZAU, *W3s* BVO MQY, *W4s* CDA YK, W5BVF, K5HOL, *W6s* BZE DIX RLP UJ WSW YIJ, WN6DAX, *W8s* ANO RQ YGR, *W0s* BCI MKF SVE/1, CN8JX, DJ2XE, DL1QS, DL2YU, G2ZR, KL7PI, LA6FA, OK1MB, PAØZL, PY1BDU, SM3AKW, *SM5s* AVV CQE RC, SM6BDS, SM7MS, VE6VO, VP7NM; *Phone* — *W1s* BTU CPS SST, *W2s* FFV LKW, *W3s* ARK NCF, K3CSM/VO1, W4APY, K5HOL, *W6s* BYH ZMX, K6BX, *W7s* BTH HDC, W8ZJA, W9EU, WØMKF, KR6SS, OZ5UF, PA6UC, VE1OM, VE3DYB, VE7AIK, ZS1OU, ZS6AJO.

Correspondence from Members

(Continued from page 90)

test and a not-so-difficult written exam he gets a renewable license giving him all amateur privileges on an increasingly popular band possessing DX capabilities. I am in full agreement with K2DDK (*QST*, August 1958) that Technicians are "eating too high off the hog." I propose *one* of the following three steps to be taken to remedy the situation:

1) The bands to be used by the Technician be restored to what they were several years ago, thus eliminating 6 meters, same privileges, license requirements, and renewable every 5 years.

2) License requirements and privileges as they are now (including six meters) but only good for one year and not renewable.

3) Same privileges as now (including six meters) good for 5 years and renewable, but the requirements be a 5-w.p.m. code test and a written exam comparable to that of the Amateur Extra.

By taking one of the above steps, it would be possible to preserve the experimenter and do away with the six meter division of the "Video Rangers."

— *Charles M. Steinberg, K2RDA*

2023 Baker Avenue
Utica 3, New York

Editor, *QST*:

I've read the *QST* correspondence concerning the advisability of Novice and Technician class licenses. I must, too, add my voice with those who would recommend scrapping of these two classes. One only has to look on page 76 of August *QST* and make note of five license suspensions. I'm very much afraid that this represents only an infinitesimal sampling of the rule breakers. I have observed, myself, many violations of the rules that are inexcusable. It seems to me that the more difficult (within reason) an exam can be, the more cherished will the license be, and the more responsible the operator will be. The minimum knowledge and code speed requirements for the General Class license seem to me a fine licensing basis. No one can deny the utility of code ability in local or national emergency. If I as a boy of 13 could pass this test it cannot be so difficult as to require a learner's license. As for lending encouragement to would-be amateurs, it is in the general interest. Let us be sure not

(Continued on page 170)

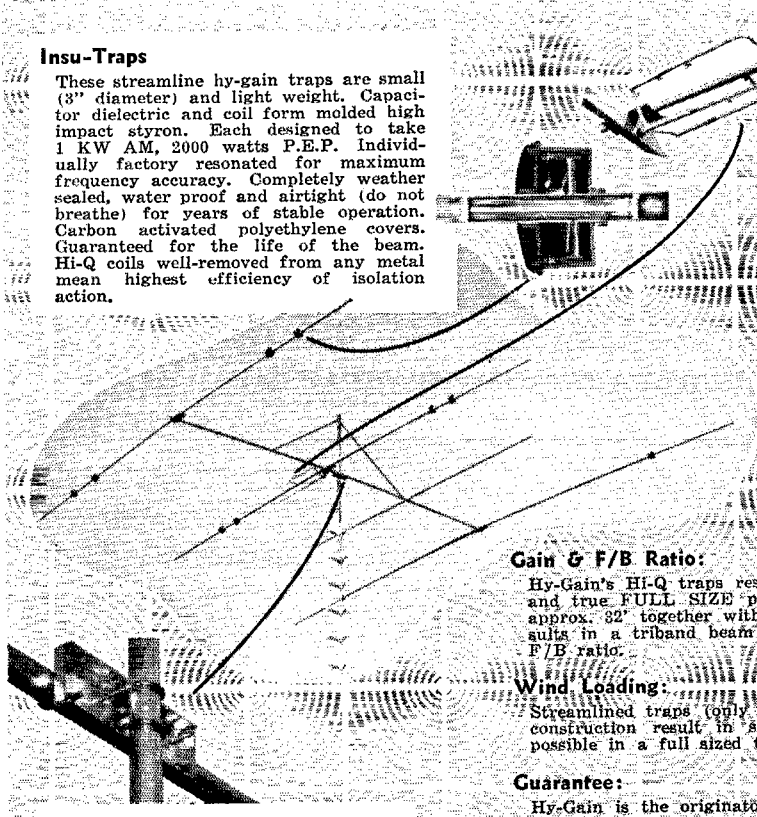
DX Champion of the World

the hy-gain FULL SIZED trap tribanders

WINNER OF THE FIRST AND ONLY WPX (Worked All Prefixes) CERTIFICATE

Insu-Traps

These streamline hy-gain traps are small (3" diameter) and light weight. Capacitor dielectric and coil form molded high impact styron. Each designed to take 1 KW AM, 2000 watts P.E.P. Individually factory resonated for maximum frequency accuracy. Completely weather sealed, water proof and airtight (do not breathe) for years of stable operation. Carbon activated polyethylene covers. Guaranteed for the life of the beam. Hi-Q coils well-removed from any metal mean highest efficiency of isolation action.



Triaxial Gamma Match

Exclusive Triaxial Gamma Match system with coaxially formed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR on a 3-band antenna. Although factory pre-calibrated, it is also adjustable to compensate for variations which may be encountered at each installation site. Exceptional bandwidth maintains low SWR over entire band. Use of this system permits tuning array for maximum gain with no compromise to facilitate matching.

Gain & F/B Ratio:

Hy-Gain's Hi-Q traps result in minimum element loading and true FULL SIZE performance. Longest element of approx. 32' together with full sized 18' boom spacing results in a triband beam with full 8 db gain and 25 db F/B ratio.

Wind Loading:

Streamlined traps (only 3"x2") together with steel boom construction result in smallest total wind loading area possible in a full sized tribander.

Guarantee:

Hy-Gain is the originator of the One Full Year Written Guarantee.

Construction

Hot dipped galvanized steel boom 1½" in dia. for maximum strength with lowest possible wind loading. Boom braces form rigid angular boom/mast assembly. Heavily plated 10 Ga. steel channels attach all elements to boom and boom/mast with positive grip. Elements are 6061T6 high strength aluminum alloy. 1⅛", 1", ⅞" and ¾" sizes are used. All hardware galvanized and iridite treated.

Two-Element, Full Size Trap Tribander

Top full-size performance in limited space with one transmission line on 10, 15 and 20M. Boom length 6'. Longest element 32'.

5.8 db gain 18 db F/B Ratio — **69.50**

Three-Element, Full Size Trap Tribander

There are more 3-Element Trap Tribanders in use than all other 3-Band Beams combined. Boom length 18'. Longest element 32'.

8 db gain 25 db F/B Ratio — **99.75**

GET YOUR BROCHURE ON THE COMPLETE HY-GAIN LINE!

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ADIRONDACK RADIO SUPPLY

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WARD J. HINKLE, Owner

to let our standards down. Consider amateur radio as a part of our national educational system.

— *Charles H. Willard, W2EZB*

1057 El Monte Avenue
Mountain View, California

Editor, *QST:*

C.w. presently has more than its equitable share of spectral allocation in the major amateur bands and its segments are exclusive to boot.

Over the years I've watched with increasing concern this pampering of c.w. by the ARRL. ARRL's latest sly proposal to steal the lower 100 kc. of two and six for exclusive c.w. use is just too much.

C.w. is a primitive and essentially obsolescent mode of communication. If it cannot compete on an equal basis with more modern modes it deserves oblivion along with spark and the dodo. Nostalgia is no reason for the ARRL to continually pamper it. It is high time that the ARRL hierarchy abandon its selfish concern for c.w. Otherwise, hamdom may yet rise up and throw you rascals out.

— *Walter P. Santer, KN6LXA*

A CASH SAVER

Box 485, Linfield College
McMinnville, Oregon

Editor, *QST:*

When the Novice graduates to General and decides to go all out with the hobby, one of the things he will be casting around for is a tower. Many will buy new ones, but many will decide to conserve hard-to-come-by cash and look for a used one.

One such type that is often overlooked is the windmill. In many parts of the country a Sunday afternoon drive on the back roads will uncover a suitable one, owned by an old farmer who would be glad to get rid of the old eyesore for a tenth the price of a new, self-supporting, unguyed windproof commercial job.

— *Ed G. Dolan, K7AAW*

V.H.F. Party Summary

(Continued from page 89)

KN1DDO[3] 588- 84- 7-B
W1AW[4,6] 495- 55- 9-AB
KN1HKY 255- 51- 5-B
W1HDF 200- 23- 8-ABC
KN1DDY 160- 40- 4-B
W1NLM 110- 22- 5-B
K1BCI/1 98- 49- 2-B
K1CAT 88- 44- 2-B
W1YOL 63- 21- 3-A
W1MWB 32- 16- 2-B
W1AMJ 7- 7- 1-B
K1HMU/1[2] (W1ZIG, K1HMU) 1200-100-12-AB
W1DHT (5 oprs.) 450- 75- 6-B

Maine

KN1GRT/1 210 42- 5-B
K1GPJ 105- 21- 5-A
K1DZS 12- 6- 2-A
W1AHR/1 4- 4- 1-B
W1OSD 4- 4- 1-A

E. Massachusetts

W1QXX 5962-264-22-ABC
K1CDN 1250-125-10-AB
W1AQE 1063-107- 9-AB
W1TQZ 522- 58- 9-A
W1LMZ 455- 65- 7-AB
W1JSM 441- 63- 7-B
W1MEG 400- 50- 8-AB
W1GHZ 235- 47- 5-B
W1IQO 184- 46- 4-B
K1COS 175- 35- 5-B
K1AKK 164- 41- 4-B
W1NYL 144- 36- 4-B
KN1GTX[3] 87- 29- 3-B
KN1GHF 78- 26- 3-B
W1SAD 72- 24- 3-B
W1COL 36- 18- 2-B
KN1EKO 30- 15- 2-B
K1GUU/1 28- 14- 2-B
W1FQD 28- 14- 2-A
W1LUG 2- 2- 1-B
W1MHL/1[2] (multiple opr.) 16,065-437-35-ABCD
W1ILW/1 (13 oprs.) 2124-118-18-AB
W1YQF (7 oprs.) 1450-145-10-AB

W. Massachusetts

W1RFU 2912-112-26-AB
W1HDQ/1[4] 253- 23-11-AB
W1UCB 32- 8- 4-A
W1GLA/1 (7 oprs.) 3298-194-17-AB

New Hampshire

W1MAS/1 644- 46-14-AB
W1HGV/1 (11 oprs.) 13,340-455-29-ABC

Rhode Island

W1AJR 3306-112-29-ABC
W1GFH 160- 40- 4-B
KN1DFU 148- 37- 4-B
K1GPE 140- 35- 4-AC
W1UHE 52- 8- 4-AC
K1ABR (K1s ABR AGB) 1080- 72-15-AB
K1CRN (K1CRN, KN1DWI) 567- 63- 9-B

Vermont

W1OAK 462- 33-14-A
W1MEP 408- 34-12-AB
W1MMN 253- 23-11-B
W1CTW/1 50- 10- 5-A
W1EXZ 28- 7- 4-A

NORTHWESTERN DIVISION

Alaska

KL7AUV 9- 3- 3-A
KL7CDG 4- 4- 1-A
KL7BLL 3- 3- 1-A

Montana

W7JRG 1458- 81-18-A

Oregon

W7RGS/7 915- 61-15-A
W7HBH 117- 39- 3-AB
W7GRC 68- 34- 2-A
K7AUO/7[2] (W7UHF, K7AAD) 1111-101-11-AB
W7WTQ (W7s WTN WTQ, KN7CIY) 650- 65-10-AB
W7OTV/7 (W7s AXK DIS ZFW) 264- 66- 4-AB

Washington

W7RT 1224-102-12-A
W7JHX 583- 52-11-ABD
W7VCB 23- 23- 1-A

(Continued on page 172)

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EASIEST TERMS — Our own liberal financing with only 10% down, up to 24 months to pay and easy terms to fit your budget.

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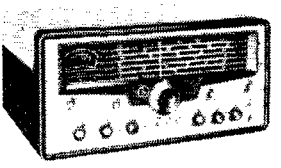
NEWEST CATALOG—
Catalog #758 just released. Loaded with the latest in new and used amateur equipment. It's the most up-to-date catalog available—get your free copy today!

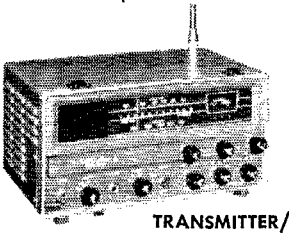
Hallicrafters transmitters and receivers are setting new standards of performance in amateur radio. Quality and dependability can be seen in all Hallicrafters equipment—and you can get the unit of your choice FAST from our large and complete stock. Hams throughout the nation have learned that our easy terms, high trades, and prompt personal service just can't be beat!



SX-101
RECEIVER

SX-101—famous for its absolute reliability. Complete coverage of seven ham bands—160, 80, 40, 20, 15, 11-10 meters. Large slide rule dial, exclusive upper-lower side band selection. Dual-scale, illuminated S-meter. Second conversion oscillators quartz crystal controlled. A leader in overall performance.

SX-101.....$395.00 Net



SR-34
TRANSMITTER/RECEIVER

The sensational SR-34 two and six meter transmitter/receiver for fixed, mobile, or portable communication. SR-34 features transistorized built-in power supply for 6 and 12 volt operation. Unit is designed for either AM or CW. Transmitter crystal-controlled—receiver is a double conversion superheterodyne. One of the world's finest stations.

SR-34 (115 volt a.c. and 6 or 12 volt d.c.) ..$495.00 Net
SR-34 (115 volt a.c.) .....$395.00 Net

HT-32
TRANSMITTER

Proven superior—the HT-32 with exclusive high frequency crystal filter system—rejects unwanted sideband at least 50 db. SSB, AM, or CW transmission—80, 40, 20, 15, 11-10 meter bands. 144 watts peak power input. Bridged-Tee modulator—temperature stabilized and compensated. Complete bandswitching. The cleanest signal on the air.

HT-32.....$675.00 Net

HT-33A
LINEAR
KILOWATT AMPLIFIER

New power-packed HT-33A provides more output to antenna than any other amateur linear amplifier on the market today! Unit input is conservatively rated at the maximum legal limit. Complete coverage of 80 thru 10 meter amateur bands. Pi-network—variable output loading—all important circuits metered. Gives you one of the big signals on the band.

HT-33A.....$795.00 Net

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COMING SOON— *Watch for Burghardt's bargain-loaded January Clearance Sale ad—packed with fabulous equipment buys!*

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W7PUA/7 (8 oprs.) 1071-115- 9- ABCDE
W7UZB/7 (W7s NX SBJ UZB)...900-100- 9-AB

PACIFIC DIVISION

Nevada

W7JU.....29- 9- 3-B

Santa Clara Valley

W6ASH/6...1630-163-10-AB
W6PBC...297- 27-11-ACD
K6PVY/6..96- 24- 4-A
K6HYX....51- 17- 3-B
K6TJL/6 (4 oprs.) 3757-212-17-ABCD
K6SLQ/6 (7 oprs.) 1716-156-11-AB

East Bay

K6RNQ...872-105- 8-AC
W6ORR/6.678-113- 6-A
W6GEB...140- 35- 4-A
K6ITZ (K6s ITZ SYR) 152- 38- 4-A

San Francisco

W6AJF..2860-127-20-ABCD

Sacramento Valley

K6ZVY/6.240- 48- 5-B
K6LEO/6 (6 oprs.) 355- 71- 5-B

San Joaquin Valley

W6GQZ...396- 36-11-AB
K6SNA...170- 34- 5-B
KN6UIT...132- 33- 4-B

ROANOKE DIVISION

North Carolina

W4ACY....60- 15- 4-AB
K4PRG....50- 10- 5-A
W4GNF/4[2] (4 oprs.) 402- 67- 6-AB
W4MOE/4 (K4s KSM ONO PRG)...304- 38- 8-A
W4KGR/4 (6 oprs.) 126- 42- 3-B

South Carolina

W4NWB.1494- 83-18-A
W4TLC...224- 28- 8-A
W2BHS/4.168- 24- 7-B
W4AIB....65- 13- 5-B

Virginia

W4LTU..3425-137-25-AB
W4TVI..1320- 88-15-A
K4RAY..1196- 92-13-A
W4RHD..378- 42- 9-A
W4LLD/4.272- 34- 8-AB
K4SKR...210- 42- 5-A
K4LKN....48- 16- 3-A
W4KMS....15- 5- 3-A
W3PGA/4 (6 oprs.) 10,065-294-33-ABCD

West Virginia

K8AXU/8..75- 15- 5-B
W3MPT/8[2] (9 oprs.) 11,803-309-37-ABC
K8HRO/8 (K's AON HRO) 1800-100-18-A
W3KDZ/8 (W3s DHQ KDZ) 1300- 99-13-ABC
W8KNC/8 (W8s FNI KNC) 480- 48-10-A
K8JTX (5 oprs.) 450- 45-10-A
W8EWT/8 (W8s EWT UBK, K8AGT) 368- 46- 8-A

ROCKY MOUNTAIN DIVISION

Colorado

WØAZT..1660- 83-20-A
KØLSL[1]...450- 50- 9-A
KØMOH....160- 20- 8-A
WØTII....108- 18- 6-A
KØJSD/Ø (WØIJR, KØCLJ, K4RUM) 650- 50-13-A

Utah

W7QDJ/7.161- 23- 7-A

Wyoming

W7UFB..2052-108-19-A

SOUTHEASTERN DIVISION

Alabama

W4AZC...825- 55-15-A
K4GQK...264- 22-12-AB

Eastern Florida

W4GJO..13,176-366-36-AB
W4KKU.7279-251-29-AB
K4VEB..2508-114-22-A
W4RMU.1280- 64-20-AB
W4BKC...570- 57-10-AB
W4FNR...705- 47-15-A
K4HOI....28- 28- 1-B
KN4UIZ...21- 21- 1-B
K4PPX/4 (K4s PPX QQE) 1407- 67-21-A

Western Florida

W4EQR..1440- 60-24-A
K4YIP....462- 33-14-A
W4CSS....406- 29-14-A

Georgia

W4FWH.1102- 58-19-AB
K4DLE...690- 46-15-A
K4GYZ...624- 39-16-A
W4GIS.....76- 19- 4-AB
W4I8S.....40- 8- 5-B
W4VZR....36- 12- 3-AB
K4OLF....26- 13- 2-B
KN4RJS...12- 12- 1-B
KN4RJT...12- 12- 1-B
W4LNG (W4s LNG VVE) 624- 39-16-AB

West Indies

KP4ABN..161- 23- 7-A

SOUTHWESTERN DIVISION

Los Angeles

W6NLZ.3360-130-21-ABCDE
W6BWG...664- 83- 8-AB
WN6REL.424-106- 4-B
K6OHS[4]..420-105- 4-A
K6DDO...210- 70- 3-B
K6ZJO[7]...105- 35- 3-A
W6PDN....90- 30- 3-A
K6ICQ....75- 25- 3-A
K6ICS....62- 31- 2-A
W6EMM/6[3] (23 oprs.) 14,350-511-25-ABCDE
W6QED/6 (6 oprs.) 8416-479-16-ABCD
KN6IHT (K6TVO, KN6IHT) 153- 51- 3-B

Arizona

W7VMP .1515- 99-15-ABD
W7GRA..1254- 66-19-AB
K7BAM...400- 50- 8-A
W7QLZ/7...22- 22- 1-A
W7RUX/7 (W7s AGG RUX VLN)..2751-131-21-AB
W7IHM/7 (W7s DDJ IHM) 2240-112-20-A

WEST GULF DIVISION

Northern Texas

W5SFW..4650-155-30-A
K5OGE..4200-150-28-AB
W5GMA.2875-115-25-A
W5FEG..1782- 81-22-A
K5BLI[1]..1080- 60-18-A
K5BDL..1008- 56-18-A
K5MBZ...784- 49-16-A
K5CDP...468- 39-12-A
K5ICV....306- 34- 9-A
K5GJE....288- 36- 8-A
K5EWQ...272- 34- 8-A
K5KLU...210- 30- 7-A
K5BXK...192- 24- 8-A
K5OCS....180- 20- 9-A
K5JHR...161- 23- 7-A
K5IIA.....84- 12- 7-A
W5K8K....54- 18- 3-A
K5GHR....51- 17- 3-A
W5HXW/5.36- 18- 2-A
W5TYS....28- 14- 2-A
K5AON....28- 7- 4-A
K5EWQ/5...2- 2- 1-A

Oklahoma

K5CAZ..1444- 76-19-A
W5PZ.....76- 19- 4-B

Southern Texas

W5UNH.2231- 97-23-AB
W5ZNP..1911- 91-21-A
W5KRH[1].1764- 84-21-A
K5OQN..1512- 84-18-A
W5LFM...975- 65-15-A
K5LEP...855- 57-15-A
W5FFS...210- 21-10-A
K5BXM...147- 21- 7-A

CANADIAN DIVISION

Ontario

VE3BQN.1905-120-15-ABC
VE3AIB.1166-102-11-ABC
VE3DIR..935- 85-11-B
VE3AQG..636-106- 6-B
VE3AIU...240- 24-10-A
VE3DUU..213- 71- 3-B
VE3AGB..156- 52- 3-B
VE3CTT....96- 48- 2-B
VE3CWN...92- 46- 2-B
VE3MR....86- 43- 2-B
VE3VHF. (multtop) 300- 78- 5-AB
VE3BAF/VE3 (VE3s BAF BNZ)....120- 24- 5-A

B. C.

VE7ASM/VE7 (VE7s AFB ASM)....56- 16- 4-AB

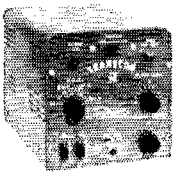
[1] Technician Award Winner; [2] Multiple Operator Award Winner; [3] Novice Award Winner; [4] Hq. Staff, not eligible for award; [5] W1RFJ, opr.; [6] W1WPR, opr.; [7] K6ICS, opr.

ARROW . . . First With All Amateur Equipment

Hallicrafters Model HT-32

Cleanest signal on the air! Hallicrafters new HT-32 transmitter brings a new standard of clarity with two exclusive features: (1) 5.0 mc. quartz crystal filter—cuts unwanted sideband 50 db or more; (2) new bridged-tee modulator, temperature-stabilized and compensated network provides carrier suppression in excess of 50 db. SSB, AM or CW output on 80, 40, 20, 15, 11 & 10 meter bands. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying and break-in operation

Amateur Net $675.00



TRANSCON

6 or 10 Meter VFO or Xtal Xmitter and Broad Band Converter

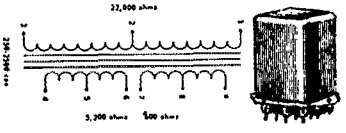
VFO or xtal — phone or CW; push-to-talk operation; carbon or xtal mic.; rapid zero beating; excellent modulation; constant modulation indicator; TVI suppressed; rapid tuning; built-in transmit-receive relay; quick switch to B.C.; up to 4 watts using auto radio for power supply—12 watts with external supply. Compact 5" x 5" x 7". 6V. or 12V. types. 6 or 10 meter models.

Amateur Net $99.50

"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B&W 3013 Miniductor. Only 8 ft. long for 10 meters.

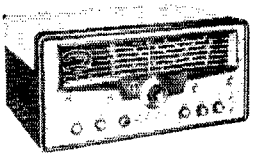
Amateur Net $7.85



Versatile Miniature Transformer

Same as used in W2EWL SSB Rig — March '56 QST. 3 sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the centertaps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x ¾" w. x ¾" d. Brand new. Fully shielded.

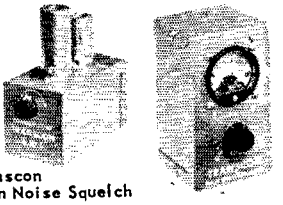
Amateur Net, each $1.39
3 for $3.49 **10 for $10.75**



Hallicrafters Model SX-101

New heavyweight champion! Rugged is the word for the SX-101 receiver — and it's all amateur. Heaviest chassis in the industry. Full gear drive. Complete coverage of 7 bands: 160, 80, 40, 20, 15, 11 & 10 meters. Special 10 mc. pos. for WWV. Tee-notch filter. S-meter functions with AVC off. Selectable sideband.

Amateur Net $395.00

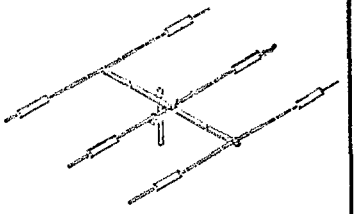


Transcon Twin Noise Squelch

Can be installed in any car radio rapidly. Tubes: 6AK5 & 12AX7. DC power input: 150 V. DC to 225 V. DC. Filament: 6 or 12 V. Noise Level Attenuator: 52. Size: 2¼" x 2½" x 4".

Amateur Net $12.95

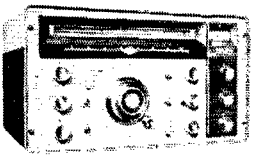
Field Strength Meter. For both mobile or fixed station use **$11.95**



MOSLEY Model TA-33

3 element, 3 band beam for 10, 15 and 20 meters. Forward gain, 8 db., front-to-back, 25 db., SWR 1.5/1. Maximum element length, 28 ft. Boom length, 14 ft. Weight 47 lbs.

Amateur Net $99.75



New National NC-303 Receiver

New front panel SSB selector provides instant sideband choice. New "Q" multiplier provides sharp rejection notch (more than 60db deep). New dual noise limiters for AM and double-action, manually adjusted limiter for CW and SSB. New 5-position IF selector (.5 kc, SSB-1, SSB-2, 4 kc, 8 kc). New tone switch for attenuation of highs, lows or both. New WWV converter provision for precise frequency calibration. Dual conversion on all bands. Crystal controlled 2nd converter oscillator. Separate linear detector for SSB—decreases distortion by allowing AVC "on" with SSB. 15 tubes.

Amateur Net $449.95

Sylvania 807W/5933

Heavy duty, ruggedized version of the popular 807.

Brand New $1.95

Sub-Miniature 0-200 Microampere Meter

A high quality instrument made to rigid U.S. Govt. Specs. by International Inst. Co. (Model 100). Only 1" in diameter. Ideal for limited space applications & transistorized circuits. A natural for the transistorized grid dip oscillator as described in June '58 QST.

Amateur Net $3.95 ea. **2 for $7.50**

2" round 0-500 microamperes. Bakelite case. Made by G. E. and Dejur.

Amateur Net $2.95 ea. **2 for $5.50**

Weston 2" 0-4 amp RF meter Model 507. A giveaway at **$2.95 ea.** **2 for $5.50**

Weston 1½" sq. (ruggedized) 0-100 μa. **$4.50 ea.** **2 for $8.75**

866 filament transformer 110V. primary 2.5V. 10 amp. 10 KV. insulation shielded, compact. Shpg. wt. 7 lbs. **$2.95**

MAIL ORDERS PROMPTLY PROCESSED SAME DAY SHIPMENT FROM STOCK

TO SAVE C.O.D. CHARGES, PLEASE INCLUDE SUFFICIENT POSTAGE WITH YOUR ORDER. ANY EXTRA MONEY WILL BE RETURNED.

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NEW BOOKS

Electronic Technology Series, edited by Alexander Schure. Published by John F. Rider, Publisher, Inc., 480 Canal St., New York 13, N. Y. 5½ by 8½ inches, paper covers. No. 11, *Wave Propagation*, 64 pages, $1.25; No. 14, *Antennas*, 88 pages, $1.50; No. 17, *Electrostatics*, 72 pages, $1.35; No. 21, *Vacuum Tube Rectifiers*, 72 pages, $1.50; No. 23, *Impedance Matching*, 128 pages, $2.90.

Earlier volumes in this series were discussed in the October, 1956, November 1956 and April 1957 issues of *QST*.

In the present group, No. 11 covers basic principles of electromagnetic wave propagation, the effect of the atmosphere and ionosphere on regular modes, atmospheric and ionospheric scatter, and miscellaneous phenomena such as sporadic-*E* and meteor propagation. The treatment is for the most part descriptive and simple to follow, but there are a few sections that might be difficult for a reader who has no previous knowledge of the subject and lacks background in physics.

In No. 14 the reader will find himself being conducted on the "standard" tour of antennas, most of it already familiar to him through our own *Handbook* and *Antenna Book*, but with a bit more on the mechanism of radiation from a dipole and considerably less over-all design data.

No. 17 takes up electrostatics — the nature of electricity, laws of attraction and repulsion, the electric field, potential and the like — in a way that should make this subject interesting to the reader who wants to start at the beginning in learning about electricity. Mathematics is confined to simple algebraic formulas.

No. 21 describes the operation of tube rectifiers in power-supply applications, and discusses various rectifier connections from the simple half-wave type through voltage doublers, full-wave center-tap and bridge, and various three-phase arrangements. Information on filters and typical power supply design problems are included.

No. 23, in implied scope, could include practically the whole of circuit theory since impedance matching, in one guide or another, is the basic end sought in nearly all circuit design. A book of this size could not encompass the entire field, naturally. It is concerned principally with the methods for maximum power transfer and impedance transformation, such as the transformer, cathode follower, resistive pads of various types, and (in the r.f. field) transmission-line sections. In the treatment of transformers the authors chose to use the self-and-mutual-impedances approach which, while quite general, seems unnecessarily complex and on a more difficult technical level than the applications appear to warrant. Emphasis is chiefly on the audio range; useful design equations and charts are given that are principally of value at such frequencies. R.f. circuits are treated more on a descriptive basis, with little quantitative data; the reader will look in vain for anything on pi, L, and T networks, for example, or on filters. A concluding chapter on transistor coupling circuits summarizes the essentials of this subject in a way that should be useful to the newcomer to the field.

Practical Radio and Electronics Course, by M. N. Beitman. Published by Supreme Publications, 1760 Balsam Road, Highland Park, Ill. 268 pages, 8¼ by 10½ inches, paper cover. Price, $3.95.

The course consists of 35 lessons divided into three sections or volumes (in one binding), the first section covering fundamental ideas and components, the second complete radio equipment such as receivers transmitters and test gear, and the third otherwise unclassified equipment such as various kinds of industrial electronic equipment. Each lesson is followed by a series of test questions and problems. A novel feature is a "comment" column — a column, running along each text page, in which are jotted various side notes

(Continued on page 176)

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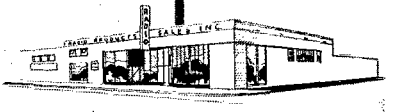

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and additional explanation such as an instructor might make in class. A separate answer book is available. The course level is designed to give background for service work.

Selection and Application of Metallic Rectifiers, by S. P. Jackson. Published by McGraw-Hill Book Company, Inc., 330 West 42nd St., New York 36, N. Y. 326 pages, including index, 6½ by 9 inches, cloth cover. Price, $8.00.

Metallic rectifiers include selenium, copper-oxide, magnesium-copper-sulfide, titanium-dioxide, germanium and silicon types. This book deals principally with what could be called power applications — in contrast to low-current uses as in detectors for r.f., measuring instruments, etc. — and contains a great deal of practical design information covering such diversified equipment as radio receiver power supplies, battery chargers, electroplating apparatus, industrial supplies of various types, and magnetic amplifiers. The theory, so far as it is known, of the various types of metallic rectifiers is also covered, and there is a chapter on some interesting special-purpose circuits such as clamping, gating, reference, and damping circuits, including balanced modulators.

Basic Electricity, by Rufus P. Turner, published by Rinehart & Company, Inc., 232 Madison Ave., New York 16, N. Y. 396 pages, including index, 6½ by 9 inches, cloth cover. Price, $6.50.

Written for the beginner, this book treats the fundamentals of electricity in descriptive fashion with a minimum of mathematics. The eighteen chapters cover a wide range of subjects in the electrical field, some directly related to radio and some not. Possibly because some of the subjects treated *are* a bit off the well-worn track followed by most beginning texts that aim ultimately toward radio, the user is likely to come out with a broader understanding than he might otherwise get. There are, for example, chapters on generators and motors, electrical wiring, and illumination, all of which should provide useful reference information for those of us who think of electricity mostly in connection with our ham equipment.

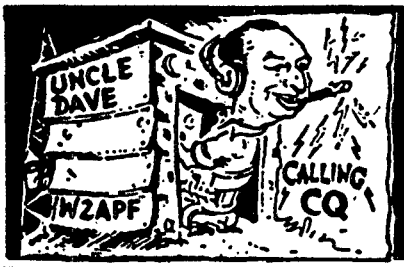
How to Read Schematic Diagrams, by David Mark. Published by John F. Rider Publisher, Inc., 116 West 14th St., New York 11, N. Y. 208 pages, 5½ by 8½ inches, paper cover. Price, $3.50.

One might wonder how it could be possible to use over 200 pages to discuss the meaning and use of circuit symbols; the schematic diagram is after all just a short-hand way of expressing a series of connections. The answer is to be found in the interpretation of the word "read". In this book it means "read and understand the functioning". Elementary electrical and radio circuit ideas, and the actions of components, are introduced along with the symbols so the schematic will become something more than a mere road map; the reader who absorbs the ideas will recognize circuit sections such as power supplies, r.f. and a.f. amplifiers and the like, and thus appreciate some of the basic design points in circuits he may be inspecting. Good for beginners, especially as supplementary material to go with other radio studies.

Electricity and Electronics-Basic, by William B. Steinberg and Walter B. Ford, Published by American Technical Society, 848 East 58th St., Chicago 37, Illinois. 245 pages, including index, 6¼ by 9½ inches, cloth cover. Price, $4.50.

Very elementary, sugar-coated, "popular-science" treatment of electricity and some of its familiar applications, including communications. There are 28 subjects or "units" each followed by a set of review questions. An attractive feature of the book is a collection of "Interesting Things to

(Continued on page 178)



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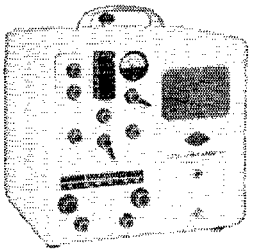

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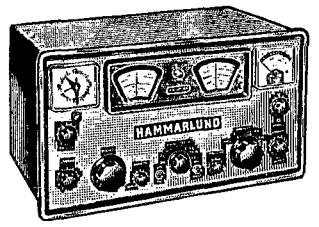

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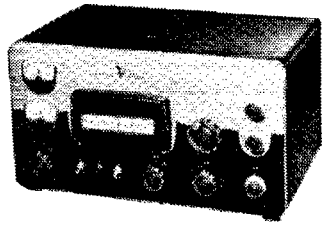

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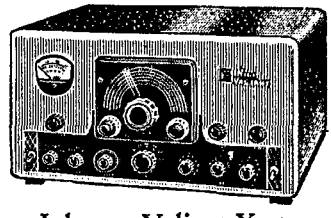

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Television Interference Handbook, by Philip S. Rand, published by The Nelson Publishing Co., P. O. Box 36, Redding Ridge, Conn. 56 pages, 8½ by 11, paper cover. Price, $1.75 (foreign, $2.00).

While it is possible to consider Phil Rand's new book on TVI to be a successor to the Remington-Rand book of similar title which he fathered quite a few years ago, it is definitely not just a revision of the earlier volume. Possessors of the earlier book will remember it as essentially a collection of previously-published articles dealing with various aspects of TVI. The new *Television Interference Handbook* was written especially for the purpose; it has a connected story to tell and presents in compact form the information and techniques that have filtered down to being currently of most value.

The book is not confined solely to amateur TVI problems but covers the field generally. A list of the chapter headings will give an idea of its scope: 1, Sources and Types of TVI; 2, Locating TVI; 3, The TV Receiver; 4, The Radio Transmitter; 5, Shielding and Filtering; 6, Special V.H.F. Problems; 7, Design and Use of High-Pass Filters; 8, Design and Use of Low-Pass Filters; 9, External Harmonic Generation; 10, Industrial, Medical and Public Utility TVI. These are followed by an Appendix containing an extensive bibliography of *QST* references on TVI, a list of TVI Committees, tables showing harmonic relationships and TV channels, information on TV standards and channels in foreign countries, and some excerpts from the FCC rules.

The value of a book of this type to the amateur, particularly the newcomer who has not been exposed to the large accumulation of TVI reduction data that was published during the early years of the problem, is of course obvious. The material on TV receivers, and on nonamateur types of interference and methods for identifying the causes and tracking them down, likewise will be highly useful to TV servicemen and to TVI committees. Phil Rand's experience in the field makes it an authoritative presentation.

October, 1933

• . . . Much discussion about the Madrid radio conference, with a special letter to Col. Foster by KBW.

. . . A universal five-band transmitter exciter unit, by James Lamb, using Tritet multiband crystal control.

. . . Automatic temperature compensation for the frequency meter, by G. F. Lampkin, using a compensating capacitor.

. . . Some inexpensive individual-band transmitters, by W6FFP, providing convenient four-band operation.

. . . Reports on 56-Mc. activity.

. . . A report on the amateur radio convention held at the World's Fair.

. . . "Midget" transmitters using a pair of type 10s and running 75 watts input, described by VK6FT.

. . . Results of the Fifth International Relay Competition, with the highest U. S. score being turned in by W3ZD and the highest foreign score by EAR185 (Yes, young squirts, that was a legitimate Spanish call sign 25 years ago).

. . . Hints and Kinks, station descriptions (W3ZD, OK1AW, K7BAQ), international news and DX notes, operating notes, advertisements and Strays rounded out the 96-page issue 25 years ago.

Strays

Sack dresses and good receivers have one thing in common — straight skirt selectivity.

— *K4OWN*

• *Technical Topics*—

Do You Want an A.M. Linear?

FROM the mail that passes through our Technical Information Service, it seems obvious that there is a widespread misunderstanding about the capabilities of a.m. linear amplifiers. The most probable reason for this is that the manufacturers of linear amplifiers advertise figures for power input, rather than power output. This practice of rating a transmitter (or amplifier) in terms of power input has been followed since the early days of ham radio, and FCC defines maximum legal amateur power in these terms.

Up until recent years, this method has been reasonably satisfactory, since the final amplifiers in a.m. rigs have nearly always been operated Class C and plate modulated. They all, therefore, worked at essentially the same tube plate efficiency — and about 75 per cent. You could figure that a final tube running at 60 watts input would deliver an output of about 75 per cent of this figure, or about 45 watts, to its tank circuit. You also knew that if you wanted to boost your carrier power 3 times, to 135 watts, you could get it by increasing power input 3 times, to 180 watts, and supplying 3 times the audio power that the old modulator delivered.

However, many of those who have been accustomed to thinking in terms of power input may be misled when it comes to a.m. amplifiers. From the figures of rated input, a linear amplifier may appear to be something that will give a sizable boost in power without the need for supplying a high-power modulator. The trouble is that the linear a.m. amplifier runs at something less than half the efficiency of a Class C final, and this makes a big difference. Instead of getting a power output equal to 75 per cent of the power input as in the Class C final, the power output of the a.m. linear is only about 33 per cent of the input. In the case of an a.m. linear rated at 180 watts input, only one third of this, or about 60 watts, appears as output! This is a far cry from the anticipated 3-times boost in power. Furthermore, the power that doesn't appear in the output is used in heating the tube. This means that the tube in the linear must be about three times as big (in terms of plate dissipation) as required for a 180-watt Class C final.

Now, let's see what an a.m. linear that actually gives a 3-times boost in power output would look like. At a plate efficiency of 33 per cent a power input of 400 watts, instead of 180 watts, would be required. That means a considerable increase in the size and cost of the power supply. The tube in the linear would have to be rated at 270 watts plate dissipation instead of 45 watts; it would take something bigger than a 4-250A, instead of a 4-65A.

(Continued on page 182)

These facts are aside from the problem of getting stability and distortion-free output from a linear, which is vastly more difficult for the average amateur to solve than with a Class C job.

For the same carrier output, the over-all cost of an a.m. linear with its larger power supply and tube complement will run essentially the same as the cost of a Class C amplifier with its high-level modulator and a power supply for the modulator. But if you are now operating one of the manufactured phone rigs in the popular 50–75-watt (input) class, an a.m. linear rated at a power input of less than *500 watts* (and make sure that this power rating is for *a.m.* linear service and *not* s.s.b. operation) is hardly worth while. This will give you an output of about 165 watts. If you want to go whole-hog, the maximum 1-kw. legal input limit will give you a carrier of about 330 watts. When you look at figures for power input to an a.m. linear, remember that the power *output* will be something less than half of the output that could be obtained from a Class C amplifier running at the same input and using a smaller tube. — *D. M.*

YL News and Views

(Continued from page 86)

the XYL of W4DRV, walked out of the convention hall richer by one mink scarf and several other YLs and XYLs were lucky enough to have their ticket numbers called for various reasons. Eleanor Hammond, W3BIW, was chosen to be the guest of an all-expense-paid Harrison Electronics Tour of New York City.

Catherine Seeds, W4BAV, Phyllis Kaufman, K2AUE, and Naomi Spence, W4TDK, renew a friendship established at the last national convention in Chicago. Catherine and Naomi brought greetings from the St. Petersburg YLRC to YLRLers at the convention.

Monday morning it was all over, and a few thousand weary but happy conventionnaires flew, rode, or walked home from another national ARRL convention, which would long be remembered by those who were there.

The following is a list of YLs who signed the register at the YLRL registration desk:
W1s CEW, HMW, HOY, QON, YYM; KN1GXY; K2s AUE, HWM, LUR, MGE, RUF, UKQ; W2s EEO, OWL; WA2AJU; W3s AKB, BIW, BLG, CAI, CDQ, CUL, CZT, DHL,

(Continued on page 184)

GTC, PVH, RXJ, SLS, TSC, URU, UTR, UXU, WML, WRE, ZUF; K4s CZP, ETC/3, GKO, GUD, LMB, QIR, RBU; W4s BAV, BLR, HLF, SGD, TDK, TVT, VCB/3; K6KUP; W6BIS; K8ARA; W8s SSF, UFZ; K9DCC; W9s GME, OMZ, RTQ, RUJ; KØs BFS, LYV; WØs CMV, ZTH; KV4BU; CO2WI.

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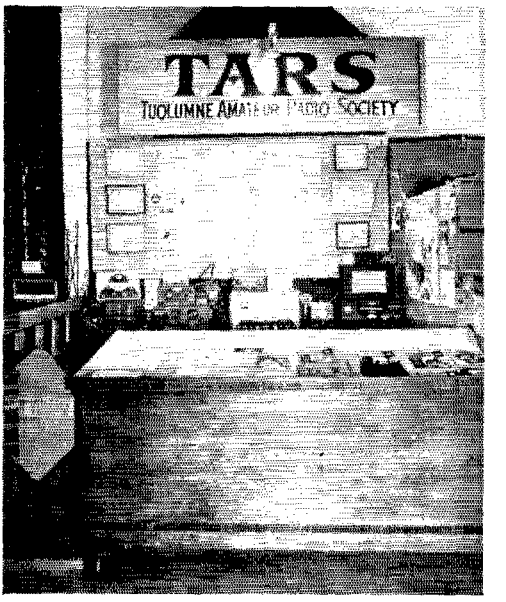
Strays



Here's the neat display that the Tuolumne Amateur Radio Society had at the Mother Lode Fair in Sonora this summer. Space for the booth was donated by the Tuolumne County Chamber of Commerce and the materials by a local lumber yard. TV sets operating in adjoining booths demonstrated that amateur transmitters can be clean.

—···—

The Voice of America amateur program is currently being broadcast to Europe on 21.5, 21.485, 17.785 and 15.25 Mc. between 2100 and 2130 GMT each Tuesday. The show is rebroadcast from Germany at 2200 GMT on 15.34 and 7.25 Mc. The show is beamed to the Far East between 1330 and 1400 GMT on 15.29, 11.9, 11.83, 9.6, 9.59, 9.515 and 6.02 Mc. It is repeated from Okinawa at 1430 GMT on 15.38, 11.92, 9.63 and 7.16 Mc., and from Manila at 1530 GMT on 11.96 Mc.

Strays

Some of the many readers who've been intrigued by Dave Geiser's article on receiver shielding ("Filtering and Shielding the Station Receiver," *QST*, August, 1958) seem to misunderstand the function of a t.r. switch. These devices are intended to prevent *damage* to the receiver, not to prevent all transmitter signal from *reaching* the receiver. A t.r. switch can be designed to mute the receiver (by developing a high negative d.c. voltage that can be used for fast a.g.c.) but cutting off the audio output does not mean that some signal will not reach the first stage in the receiver. A duplexing bridge is the only way of theoretically reducing the transmitter signal to zero at the receiver input terminals. Geiser has a paper on such a bridge in the *Proceedings of the 10th Southwestern I.R.E. Conference.*

—•••—

Merrill L. Swan, W6AEE, announces that the RTTY Society of Southern California will hold another RTTY Sweepstakes from 6:00 P.M. EST October 31 to 12:00 midnight EST November 1. Stations will exchange messages consisting of message number, origination station's call, check or RST report of two or three numbers, ARRL section of originator, local time (0000–2400 preferred), date, and band used. Score one point for a message received and acknowledged by RTTY. For score, multiply total message points by the number of different ARRL sections (see p. 6) worked. Two stations may exchange messages again on a different band for added points, but the section multiplier does not increase when the same section is worked on another band. Each foreign country counted by ARRL for DXCC credit is treated as a new section for RTTY multiplier credit. Suggested congregating frequencies include 3620, 7140, 14,090, 21,090 kc. Logs should be mailed to W6AEE, 372 West Warren Way, Arcadia, California.

—•••—

We have had a number of letters concerning the Kee clamps mentioned on page 62 of August *QST*. Everyone agrees that the clamps are dandy for quads but that the prices mentioned in the article apply only in Canada. In the States the list prices run about 25% higher.

Hamfest Calendar

New York — All amateurs are invited to attend the 5th Western New York Old Timer's Nite, Sunday, October 26, at the Sheraton Hotel, East Ave., Rochester, N. Y. Sponsored by the Rochester radio clubs, the event will precede the fall meeting of the Institute of Radio Engineers and the Electronic Industry Association. The program will begin at 4:30 P.M. with demonstrations and exhibits and will end at 9:00 P.M. with a beer-and-pretzel party. Master of ceremonies will be David Hull, ex-W1CBU and president of EIA. No reservations needed. Everyone welcome. For further info contact Bruce Kelley, W2ICE, Main St., Holcomb, N. Y.

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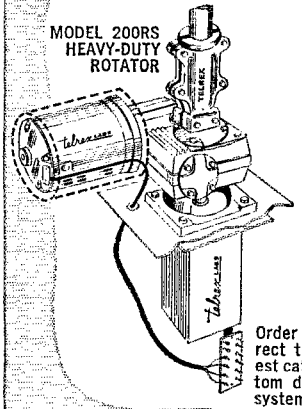

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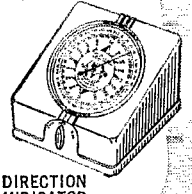

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"It Seems to Us . . ."

(Continued from page 9)

decades appreciated the potential worth and ever-increasing value of radio 'hams' both young and old, available to our country's requirements. . . . Although amateur operations are carried on as a hobby, the result is the creation of a large reservoir of personnel skilled in the art of radio communication. This has proved of value both to the nation in time of war and to industry in time of peace. . . . In addition to the military applications, I can think of no other hobby that contributes so much to technical advancements, to the welfare of others, to world brotherhood. Amateur radio — truly — exists for the service it renders."

Also at the military session, Rear Admiral Frank Virden, Director of Naval Communications, said, "We look upon you as a group that not only understands military problems from your past and present associations with them, but as a highly dedicated company who will know what to do, how to do it, and will have the stern will to do it when the country has need of you, either in or out of uniform. Your influence is greater than your numbers to the extent that you communicate to your non-ham associates the high principles and patriotic alertness that are essential to preserve the strength of this country in these complicated and often difficult times. . . .

"From the spark days to satellites the amateurs have kept pace with the progress of communications and contributed greatly to this rapid advancement. They have even kept ahead of it and led the way quite often to new developments. Those of you that are interested in the technical advancements of communications are entering an era of monumental challenge, a challenge far greater than that which confronted those that are now known as old timers. The inspiration and opportunities for new ideas are greater than ever before and the expanding ranks of the radio amateurs . . . are keeping pace with the new look.

"Going forward is the business of the civilian and military experts in the highly complicated fields of communications and electronics. For them the best is never quite good enough. To me, it is gratifying to know that we have so many experienced people and enthusiastic youngsters still probing for better and more efficient ways of improving our way of life and providing greater capabilities for our military equipment. In conclusion: The Navy and amateur radio have had a long and rewarding partnership. You may all rest assured that the Navy will always strongly support your efforts and continued progress."

Brigadier General John B. Bestic, USAF Deputy Director of Communications-Electronics, made it unanimous for the three military branches when he said, "Your Air Force has a many fold interest in the amateur com-

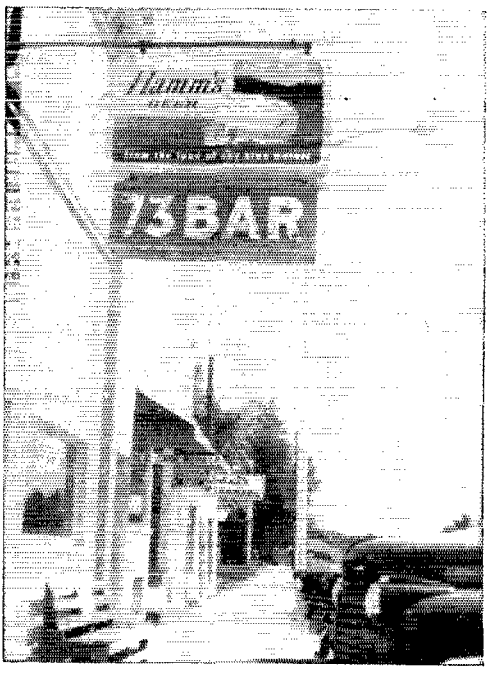
(Continued on page 190)

munications art. It would be hard to single out any one phase of the amateur service particularly deserving of recognition, but I would be remiss in my duties as an Air Force communicator without a word on the services to the military establishment in general and the Air Force in particular rendered by our nation's hams. . . .

"Hams are among the most pleasant people in the world. 'Sincere, well spoken, knowledgeable, companionable and likeable' are some of the adjectives that can be applied to them — but on the other hand hams are the most opinionated, biased and stubborn people all with one track minds. They can always make a military transmitter work better than the manufacturer. I've threatened many times to put a mouse trap inside the transmitter lid to keep you characters out but then the same transmitter would develop troubles defying any normal technician and, alas, with my hat in my hand and the mouse trap removed, once more I'd look for Mr. Ham and offer to hold his flashlight. . . .

"You have all evidenced interest in military or naval communications and share with me my feelings of pride in this partnership. We in the Air Force feel that organized participation by radio amateurs is a high point in patriotic endeavor and a significant contribution to the national defense effort."

Strays



W9PIO spotted this one.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) **A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously noncommercial in nature.** Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP. Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT/ARC1, R5/ARN7, BC610E, ARN6, BC7883, ARC3, BC342. Highest prices possible paid. FOR Action we will buy immediately for cash all types amateur equipment or trade against new amateur gear. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Uister 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 70 East 45th St., New York City. Tel. LExington 2-6254.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problem, invited, any equipment. Associated Electronics, 58 South P St. Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters. $2.50. ID-60/APA-10 Panadaptor maintenance manuals, $2.75. Both postpaid in U. S. A. Electronicraft, Bronxville, N. Y.

"PIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and pick your choice from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. Greater values, because tremendous turnover means lower overhead! Terms, Trades. Send us postcard for mouth-watering photograph and price-list. For the best in new and used equipment it pays to come to Ham Headquarters, USA! BCNU. Bil Harrison, W2AVA, 225 Greenwich St., New York City.

"THE Saga of Telegraphy". LP recording & brochure. Historical. $3.75. Ralph Graham, W4RJX, Box 3556, Arlington 3, Va.

TRADE KWS-1 for late model Volkswagen or Simca. Herb Hollister, Box 17, Boulder, Colo.

QRR please write, wire, fone collect. Information present QTH VR5GC or PK6CS. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

QSLS? SWLS? Finest and largest variety samples 35¢ (refunded). Callbooks (Fall) $5.00 postpaid. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Michigan. (Religious QSLS, samples 10¢).

QSLS. Reasonable. 3 Week Delivery. Catalog dime (coin). Dick K6CJM, Box 294, Temple City, Calif.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS, SWL's VHF's, XYL-OM's. (Sample assortment approximately 9¼¢). Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fatabulous, DX-attracting, prototypal, snazzy, unparagoned, cards. Rogers, KØAAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!).

QSLS, Taprint, Union, Miss.

QSLS. Plain and fancy samples 10¢. Fred Leyden, WINZJ, 454 Proctor Ave., Revere 51, Mass.

QSL-SWL samples free. Bartinoski W2CVE Press, Williamstown, New Jersey.

QSLS of Distinction! Three colors and up: 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Penna.

QSLS-SWLS. Samples free. Spicer, 4615 Rosedale, Austin, Texas.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢ with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo 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, 4422 Marquette Dr., Ft. Wayne, Ind.

PHOTOGRAPHIC QSLS — Picture post-card type, your shack, home, mobile, etc. You send photo. 1000, $12.00. Raum's, 4154 Fifth St., Phila., Penna.

QSLS. Twenty exclusive designs in 3 colors. Ruth $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSLS. High gloss, 3 colors, samples 10¢ (refunded). K2VOB Press, 62 Midland Boulevard, Maplewood, N. J.

QSLS: 4 colors, 100, $3.00. Samples 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

QSL Special. See page 144 this issue. Nat Stinnette, W4AYV, Umatilla, Fla.

QSLS Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo.

DIFFERENT QSLS. 100 Kromekote, $2.50, plain, $2.00. Sample free. Grossenbacher, K5OFS, Box 340, Eagle Pass, Texas.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS for economy-minded hams: $4.65 for 500. Free brochure. Charley Vorderberg, K9EUF, 1839 46th St., Rock Island, Ill.

QSLS, SWLS, Tackards, glossy, colors, 100, $2.75 up. Samples 10¢ refunded. W1GHK Press, 27 Liberty St., Danbury, Conn.

YOUR QSL made into a laminated plywood plaque, $3.00. Satisfaction guaranteed. Solomson, 46 Cornhill, Boston 8, Mass.

QSLS Neat, Attractive. Samples 10¢. Woody's. Box 164, Asher Sta., Little Rock, Ark.

QSLS. Samples 10¢. SPA Print, Box 181, Hot Springs, Ark.

FREE! 100 "Thingloss" Anglecall QSLS. Order 100 "Hevigloss" red, blue, green (black back). Radoprint, Ojai, Calif.

ANY Photo on stamps, 100 for $2.00, 200 for $3.00. Ideal for QSLS. Send photo (returned): K9BDR Enterprises, Mark, Ill.

QSLS. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

QSLS. We've printed a million! Samples 10¢. Larger quantity, 25¢. (refunded). VYS QSLS, 1704 Hale, Ft. Wayne, Ind.

QSLS Highest quality, quick delivery. Samples 10¢. Dortch, W4DDF, 6108 Jocelyn Hollow Road, Nashville, Tenn.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 542 North 93, Milwaukee, Wis.

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., KN6ZMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

QUALITY Color glamour girl QSLs. Samples 25¢ (refunded). Art Kunkel, Box 68, Route 1, Summerfield, Fla.

QSLS-SWLS that are different! Colored embossed card stock, an "Kromekote". Samples 10¢. Turner, K8AIA, Box 953, Hamilton, Ohio.

FREE Samples. QSLS-SWLS. Backus, 703 Cumberland St., Richmond, Va.

QSLS-SWLS. 100, $2.50. Samples 10¢. QSO file cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS, samples dime. Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS: Cartoons, colors, something different. Samples 25¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS-SWLS. Printing for 3rd generation YL ham. Samples 25¢ deductible. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS. Rocky Mountain brewed. Samples 20¢. John Cox, Box 8217, Denver 19, Colorado. Phone WEst 4-4739.

QSLS. Send something different. High quality cards. Samples 10¢. Russell Summerville, Route 3, Niles, Mich.

QSLS. Plain or fancy, samples dime. QSL printing, Box 1235, Houston 17, Texas.

QSLS. $4.65 for 500. Send 4¢ stamp for free brochure. K9EUF Print, 1839 46th St., Rock Island, Ill.

SELL Collins KWS-1, slightly used in excellent condition, $1450. *George Homan, K6GS, 418 D St., Niles, Calif. Tel. SYcamore 3-4624.*

HRO 50T1, spkr, A, B, C, D coils, $250, calibrator 50XCU, $15; E, F, coils, $14 ea. Consider late NC-183 as part trade. Telrad freq. standard 1 Mc., 100-10 Kc, $18. Complete list of parts and tubes available. M. Marshall, 455 Washington Ave., Dumont, N. J.

SELL: Dyna Labs Gaussmeter Model D-79 with instruction book, carrying case, two probes. New condition, not adaptable our special research problem: $225 prepaid for cash. Lampkin Laboratories, Inc., RFD #1, Bradenton, Fla.

WØGVU Gold Cup given for 100th Country verified two way SSB. Airmail your QSL. Don't delay.

WORKED All States? Mount your QSLs neatly in first QSL Album designed especially to hold your WAS cards. Heavy leather-textured covers, sturdy wire binding, individual spaces for all 48 states. Cards can be inspected, removed, replaced. $3.50 postpaid. Call letters in gold for affixing to cover, $1.00 extra. Hanover Electronics, 126 East 37th St., N. Y. C. or your dealer.

S.S.B. Transformers identical and exact as used in W2EWL exciter (see *QST* March 1956). Brand new 3 for $4. No C.o.d.s please. S. Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

SAVE $150 on new 75A4 #4626. Complete with all packing and manuals. Disposing because of illness. Robert A. Smith, W1LLF 320 Bushy Hill Road, Simsbury, Conn.

BARGAINS: Send for list of reconditioned receivers and transmitters with new guarantee. 10% down with up to 24 months to pay. In stock, new Collins, Johnson, Hallicrafters, WRL, National, Hammarlund, Gonset, Elmac, Drake, Central Electronics, B&W, Hy-Gain, Mosley and Gotham beams. Shipped on approval. Write Ken, WØZCN or Glen, WØZKD, for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

NEW Mercury outboards and boats. Will take ham gear on trade. Write: Boyd Reter, KØIMO, Boyd's Marine Shop, Clinton, Iowa.

WANTED: Aircraft, Airline, Military, Electronics gear and test equipment. Collins, Bendix, ARC, Airforce, Narco, BC348, BC61-OE, ARN6, ARN14, ART13, 51R3, MN62A, others. We pay C.o.d. advise price condition. Ritco, Box 156, Annandale, Va., Phone Jefferson 2-5805.

KIT wiring. Rates reasonable. Write: John Hjelm, WØDBT, 1782 Portland Ave., St. Paul 4W, Minn.

DX Radio Coop forwards outgoing QSLS, 2¢ each. Callbook, $5.00. Schematics, 59¢. Sam's Information Free with schematic, 500 QSO File Cards, $4.00. Free Flyer. "DX Radio Coop", Box 5938, Kansas City 11, Mo.

CODE Practice tapes, name your speed. $3.75 each. Bob, W4BJN, 931 Maple Ave., Dayton, Ky.

VAN Sickle will trade photographic, boat or radio on new KWS-1 Collins. Gene, W9KJF, 4131 N. Keystone, Indianapolis, Ind.

SMALLEST "Shielded" D'Arsonval meters available. 1" round or rectangular. Standard Ranges available, $4.95 postpaid. Alco Electronics, Lawrence, Mass.

WANTED: Unused electronics tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write for Barry's "Green Sheet", chock full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 512 Broadway, New York 12, N. Y

COAXIAL-CABLE — 53 ohms — 100 ft., $3.95, postpaid. Satisfaction guaranteed. Van Dick, Riverlawn Drive, Wayne, N. J.

ANTENNA 80-40-20-15-10, $21.95. Patented. W4JRW, Box 44, Owensboro, Ky.

STILL waiting for WAS, DXCC confirmations? Send Reply-Paid QSLS! 5, 25¢, 25, $1.00. Hart, 467 Parke, Birmingham, Mich.

GONSET Communicator II, 6 meters, excellent condition. Complete with 2 crystals. First check for $150 takes it. W2KVM, 218 D Street, S.W., Glen Burnie, Md.

TRANSFORMERS (3) W2EWL Special, $3.00 postpaid. SSB, latest diagram, template, 3xfrmrs. disc ceramic Emica condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 *QST*), $10.95 postpaid. Vitale, W2EWL, Denville, N. J.

WANTED: A sked with Nevada on 20 CW for WAS. Please write VE3EGG, 64 Barrie, Galt, Ont., Canada.

HQ-129X for sale, $125, plus transportation. P. F. Williams, 25 Denison St., Hartford 5, Conn.

144 Mc. SSB transmitter. Send for specification sheet. Tele-Products Co., 26184 Springland, Farmington, Mich.

VHF Round-up. Don't forget October 11. That's the date of the Syracuse VHF Round-up. All the big DX men will be there so don't stay home and listen to a dead band. Contact W2EMW, 18 Homeland Dr., North Syracuse, N. Y.

WANTED: Receivers, Transmitters and accessories. Nehf Enterprises, 118 S. Clinton, Chicago 6, Ill.

HQ-129X $99. HRO-60 $298. BC-794 1.2-40 mc. $119. Communicator 6m 179. Communicator 2m 159., 75A-4 $495. 32V-1 $289. Gonset G77 $210., 5100-B $325. Teletype machines, Converters. Trade your used ham or surplus gear (BC-221, BC-348, BC-610, R-388/URR, URA-8, etc.) for new Johnson Thunderbolt, Valiant, Hallicrafters, Hammarlund, Central Electronics, National, Fisher Hi-Fi, Bell etc. Write or phone Tom, W1AFN Alltronics-Howard Co. Box 19, Boston, 1, Mass. (Richmond 2-0048). Stores: 278 Friend, Boston; 60 Spring, Newport, R. I.

CALL plates. Deluxe 8" x 1¾" black phenolic laminate with engraved white letters. Only $1.00 p.p. Polished plexiglass base, $1.00 extra. L. & J. Products Co., P.O. Box 122, Downers Grove, Ill.

SELL: Gyro Electronics radio control xmttr and revr, excellent, both $30.00; 2 Simpson 0 to 1 Ma. 4½ in. square meters, $5.00 each; 2 Simpson 0 to 10 volt DC 4½ in. square meters, $5.00 each. Sell or trade: Friez wind direction and speed recorder, new. Friez microbarograph. N. K. Thompson, 99 Water, Millinocket, Me.

SELL; Need the mony: Johnson Adventurer transmitter 3 months old, with new Adventurer modulator, plus crystals and brand new semi-automatic key, $60 takes everything. Lewis Malgieri, 1613 W. Colvin St., Syracuse, N.Y.

COLLINS 75A3, with 800, 3 Kc. filters; calibrator modified to date with Hallicrafters R-42 coax speaker and enclosure, guaranteed, best offer over 325. Also full size 3-element 20 meter Telrex beam, $50. WIJDE/2, 43 Davenport Ave., New Rochelle, N. Y.

WANTED: 3000 v. full wave 500 Ma. or 1.A plate transformer, 10V 10A. filament transformer. 3000V filter condensers, good $13s. K2JDW, 62 Gaston St., West Orange, N. J.

SELL: 10 meter Black Widow with AC power supply. Also RME speech clipper. W9MRZ.

FOR Sale: B&W 5100 transmitter and spare final tubes. One owner with less than 150 hours operation. First $200 takes all, contact K6PGE, 330-31st St. Hermosa Beach, Calif.

DUMONT 'scope model 241, $70; Gonset 3-30 shortwave converter, $20; Precision E-200 signal generator, $20; RBM-4 Navy receiver 200 Kc-2 Mc., $40, Heath VFO $16. W3IHD, 4905 Roanne Drive, Washington 21, D. C.

WANTED: 500 cycle mechanical filter for Collins 75A4 receiver. W5DA, 4425 Bordeaux, Dallas 5, Texas.

SAVE $75 on a Ham station. RME 4300 with speaker, DX-35 and WRL VFO in perfect operating condx with clean panels. An excellent combination of equipment absolutely without defects. First, $255 takes it or write for individual prices. Dave Ranney, Box 587, Yankton, So. Dakota.

COLLINS 30K, excellent condx, complete with 310B exciter and spare tubes. $625. Gilbert Cardwell, 714 First Ave., Parkesburg, Penna.

HALLICRAFTERS HT-9 transmitter, good condx with coils for 80, 20 and 10 meters. Spare 814 and instrux manual, $70. W2EWS, 723 Puritan Ave., Trenton, N. J.

SELL: S-85 perfect condx, $90. Dan Handelsman, WA2BCG, 811 Walton Ave., Bronx 51, N. Y.

SELL or trade: Heath DX-100 and Hallicrafters SX-96. Off to college. Want Gonset Communicator III 6-meter. K4HJQ, 1207 Cornwallis Dr., Greensboro, N. C.

HQ129X with Heathkit mult., xtal calibrator; condition perfect, $130. Unused 304TH, $10. Sorry, no shipping. W2SWA, Libby, 16 Dorchester Ave., Hastings-on-Hudson, N. Y.

COLLINS 75A4, 3 kc., mech. filter, brand new condition. Will ship C.o.d. collect in original packing. $475 flat. No haggling! Frank Fairchild, 23 Wood Ridge Lane, Sea Cliff, N. Y.

WANTED SSB exciter and amplifier W2EWL or similar type OK. Must be small maritime mobile use. Charles Bennett, USN8. Alatna Fleet Post Office, N. Y., N. Y.

SELL, Trade: Following equipment in new or in like-new condition: power supplies: 1000/500v./250 Ma., $20; 780/375v./250 Ma., $15; 400v/100 Ma., $7; 550/300v./275 Ma., $10. Plate modulators: 20 watt, $15; 30 watt, $17; 40 watt $20; 125 watt, $25. World Radio Laboratories VFO, $35; 15 watt P.A. system $12; metered 4 amp. Variac in carrying case, $15; Heathkit AT-1 modulator, $8; dynamotor, 6v-475v./375 Ma., $8. Dual Vibrapack, 6v.-400v./120 Ma., $10. Stanley Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

DX-100 with keying modification, $190; F.o.b. No defects and generates FB signals. Harry Mason, K6MOO, 525 North Gerona Ave., San Gabriel, California, ATlantic 6-0611.

PARTNERS, retired hams, electronics investment. R & D Co., W3IVZ.

SALE: DX-35, recent model and in gud condx; $45. K2ZAJ, River Road, Jordan, N. Y.

GOING to college! NC-183D, like new, Viking II, Millen 90711 VFO, J-38, JT-30 relays and connecting wires for one switch operation; package deal: $520 f.o.b. Braall, Ind. Bob Walker, 105 N. Washington St.

ALTIMETER $9 locate the highest spot for your Field Day site. Stancor 203A 10 meter rig, new, $33. J. Miller, 19946 Southland, South Bend 14, Ind.

HQ129X factory aligned, all new pastcap condx., speaker, tip top shape, $130; also Viking II with VFO, relay, low-pass filter, Monimatch SWR-pwr indctr, CW monitor, $255. Revr and xmttr, $365. W2MSK, 62-07 Alderton St., Rego Park, N. Y.

ALL Band Taylor transmitter, 275 watts input, gud condx, in 6 ft. cabinet. Best offer. All replies answered. Charlie Hooker, W2SXV, Springcrest Drive, Hightstown, N. J.

SELL: HQ-100, $160; Globe Chief, Mod. 90A, $45; both $195 cash or best offer. F.o.b. Craig Wilson, 239 West Morgan, Dixon, Ill.

SELL DX100, antenna relay, XV1 voice control, $215; 6v. G-E dyn. at 450v./225 Ma. output, $10. W8JSF, 1234 Thurnridge Dr., Cincinnati, Ohio.

CRYSTALS Guaranteed 20 to 80 meters FT-243 holders 3 for $1.00; SSB crystals FT-241A, 10¢ ea. Lists available. Quaker Electronics, 1040 West Main St., Plymouth, Penna.

QRM got you? Relax on a sailing vacation with MM — W4DN. $300.00 weekly per couple all expense. Airmail Yacht "Aloha," Hopetown, Abaco, Bahamas. Captain Jack Bane.

SACRIFICE: Gonset 12 volt 6 meter Communicator II-B, excellent condx, $150, including transportation. W1LFQ, 322 Winnacunnet Road, Hampton, N. H.

DRAKE 1-A SSB receiver, brand new in original carton with guarantee, $250. Never used: Reason: mobile only. Sprowls, 723 Maple Court, Moorestown, N. J.

JOHNSON 500 transmitter, $800; Collins 75A-4 receiver, vernier tuning knob, .8Kc., 3.1 Kc and 6 kc mechanical filters, speaker, $600; Hart 75 watt Novice transmitter, key, five crystals for 15, 40 and 80 meters, complete, $75; converted two-meter 522 transmitter, black aluminum panel with decals, new 115 volt power supply, carbon microphone, 5 crystals, complete, $65; new Hallicrafters S-106 six-meter receiver, $30; Mosley VPA 1015-3 3-element beam, $30. All in A-1 condition with manuals. Jim Munroe, W1MSA, 74 High St., North Attleboro, Mass.

GONSET Communicator III, new condition. First offer over $189. You pay shipping. Larry Bailey, 184 Mayville Ave., Kenmore 17, N. Y.

WANTED: 6 to 12, 304TL tubes; also 25 μfd vacuum capacitors. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

WILL do first class printing in exchange for used radios, recorder, mikes, phonos, guns, cameras or what. E. G. Bartlett, Atlanta, Mo.

FOR Sale: Cesco, S.W. reflectometer, new condition, $18 postpaid. Wanted: Harvey-Wells R-9A receiver and 11V AC power supply and cable. Albert J. Bertolisi, 6 E. Smith St., Amityille, L. I.

MUST sell Globe King 500A, $400; HQ140X, $110; WRL 755 VFO, $35 or all for $500. W8WIK, Joseph Sheck, 99 Franklin Blvd., Pontiac, Mich.

FOR Sale: Hallicrafters S53A 3 months old. Price $65. C. Ehlers, 319 Union St., Jersey City 4, N. J.

FOR Sale: *6 meter mobile 13 watt* HB with Gonset converter, $50; Webcor #V10 tape recorder, best offer over $80. Contact K2RYE 175-11 74th Ave., Flushing 66, L. I., N. Y. H. Kaplan.

FOR Sale: NC98, $100; Eico 6-12 volt battery eliminator, $35; Heath SG8 signal generator, $15. Dan Parks, W8CUT, 902 Highland Blvd., Coshocton, Ohio.

SELL Globe Chief, purchased originally as spare rig. Never used, neatly wired and perfect throughout, $50. Johnson Matchbox, exc. conex, $34. Dan Francomano, K4TMK, 99 W. 49th St., Hialeah, Fla.

CANADIANS: NC-300 late model, with matching speaker, perf. condx, unmarked, as new, $395; also Johnson Viking Valiant, one year old, factory-wired, unmarked condition as new, $450.00, Matchbox for above, $45.00; Mosley 10-15 VP beam, $45.00; three 4-150A unboxed but new with base, $30.00; two new boxed 813, $10.00 each (gone SSB with Collins equipment). VE3BRG, RR #3, Parkhill Road West, Peterboro, Ontario, Telephone Riverside 2-8011.

TRADE SX-28 cabinet model for late 357 Magum Smith & Wesson. Needs a little alignment and one dial cord or as is for $100 plus, T.C.G. 10 keyer. No tapes. Walter A. Travis, W8VXV, Box 183, Lodi, Ohio.

PERMNAIZE your ticket. Sealed in clear plastic, protected from wear, moisture *and soiling. Send ticket and 50¢ to Warner Permanize,* P.O. Box 947, Manchester, Conn. 24 hour service. This service is done by ham, W1GZV, for Hams. K. A. Warner, 38 Joseph St., Manchester, Conn.

SALE: Viking I, Hammarlund, HQ129X, Vibroplex, Viking VFO. Write P.O. Box 151, Wollaston, Mass.

SELL: 600 volt 200 watt power supply, $15, 14 in. panel rack, $12.00, 17½ in., $13, both in excellent condx. RDZ radio manual, $5.00. W1EBZ, 1070 Parker St., Springfield, Mass.

FOR Sale: 32V2 converted to 32V3. Used factory shielding for final. Built-in coax relay. Extra 4032, $395. T/Sgt. C. E. Willey, 1943-1 AACS Dept., Seymour Johnson AFB, Goldsboro, N. C.

KITS Wired: 20% of kit price. Work guaranteed. Have kits sent directly to us. For sale, brand new DX-40 and VF-1. Hardly even used. Both in perfect A-1 shape. Tom McFarland, KØOMP, Armour, S. D.

WANTED: Collins 75A3 revr in A-1 operating condx and gud appearance. Give detailed description of set and operating use, age and state your price. KN2TPX, 207 Motley, Valley Stream, N. Y.

FOR Sale: 75A1, $195 late Ranger, $175. No modifications, manuals, immaculate. K2LUE, phone FW 7-1292, 85-04 63rd Dr., Rego Park 74, L. I., N. Y.

RME 4300 with QF-1. Very stable selective. No shipping, sorry. $140. K2VVP, West Hempstead, N. Y. Tel. IV 3-7209

FOR Sale: Complete Collins rig, 32V3, low pass filter, antenna relay, Electro-Voice mike, 75A4 and speaker with built-in extras, $1000; RCA 'scope $40; RCA wire recorder, $40; Jones MicroMatch, $35; Panadapter model PR-1, $140; B&W grid dip meter, $30; Weston tube tester and volt ohm meter, $30; 54 ft. crank-up tower, with heavy duty guys, 3-element 20-meter Shortbeam, CDR rotator, compass control box, coax line, $150. All in perfect condition. E. C. Manning, Jr., W5GFO, 2302 No. Main, Ft. Worth Texas.

JOHNSON Pacemaker, new model, in warranty, $375; Eldico electronic keyer, Model EE-2, $30. Write to W2HC, 129 Harvard St., Westbury, N. Y.

CLEANING Shop. For sale or swap: 2-way FM gear, S-95, SW-54, industrial radio, Pack-fone, mikes, meters, pocket radio, rigs on 147.3 and 52.525 Mc. Need electro battery eliminator, etc. Send for big list free. W9RBX, 5416 Eastridge Dr., Indianpolis 19, Ind.

TRADE B & H Regent projector & B & H 252 movie camera for Viking Ranger late model. Albert C. Roat, 5 Broadway, Jim Thorpe, Penna.

TRADE: Valuable Israel stamp collection for 32V1 or Ranger. Write WV6AGP, 472 Hilligreen Dr., Beverly Hills, Calif.

FOR Sale: DX-20, SCR-522 with crystals and control box, FCV-1 two meter converter, new factory wired and tested. Best offer. K5JQG, 205B Prather Hall, Austin, Texas.

SELL: Heathkit AR-2 es Q-Multiplier, $15; Novice code and theory course, 5 LP records es book, $7.00. K8IBF, Rte. #1, Conneaut, Ohio.

KWM-1, AC and DC power supplies, Bassett 10-15-20 whip, Electro-Voice noise cancelling Mer, all in new condition, installed in a 58 Edsel Citation hardtop, air-conditioned, all power, heater, etc. 5000 miles, like new. All for $4300 or KWM-1, $1150.00 cash. W4ERK, F.o.b. Miami, Fla. Tel. PL 4-9416.

EXCELLENT HRO-60T, spkr, coils, wud consider a trade-in; $400 plus shipping. K8GPI, Irving Craiger, RFD #1, Box 302, Ironton, Ohio.

SW-54 for sale. Best offer, vy gud condx. Bob Spargo, 424 Trout Brook Dr. West Hfd. Conn.

SIX Meters — final amplifier with power supply 500 watts, $200; 1000 watts, $350. Uncle Charlie How Model: W4UCH.

RBI Hy-Gain roto-brake brand new (original carton), $59.95; Carter Gen-E-Motor, Code No. 520B82B, inpt. 12 volts, 14 amps., output 500 volts, 200 mils, brand new (original carton), $29.95; New Thordarson "CHT" Series, 1000 watt plate transformer, type T-15P21, input 115 or 230 volts, 60 cycles, output 1500-2000-2500-3000 volts center-tapped, $79.95. Twenty percent deposit, balance C.o.d., f.o.b. 841 Elmwood Drive, Abilene, Texas. Richard Henley, W5HWL.

BARGAIN: SX100 used under 20 hours, speaker, plus 0-250 watt Varlac controlled c.w., NBFM rig in 3 ft. enclosed cabinet; Sonar VFX680 driving 4-125A final; many extras. Cash and carry price $300. W. Garfinkle, W2HYF. 141-16 28th Ave., Flushing, L. I., N. Y. Tel. LE 9-3079.

RECONDITIONED and guaranteed. Satisfaction guaranteed. Terms financed by us. Hallicrafters S38 $29.00; S85 $89.00; SX99 $119.00; SX96; SX100; SX101; HQ100 $139.00; HQ110 $189.00; HQ140; HQ150; National NC98 $99.00; NC125 $129.00; NC300 $279.00; HRO50T; HRO60; NC183D; Central B slicer $39.00; *Globe Scout* $69.00; Viking II; Ranger; Valiant; Pacemaker; Thunderbolt; Heath DX35; DX100; Collins 32V; 75A2; 75A3; 75A4; etc. Many other items. Write for free list. Henry Radio, Butler, Mo.

COLLINS 32V1, HRO5 revr all coils and power supplies, Elma, AF67 Triband Gonset converter dynamotor, all in perfect working order. Best offer. Bert Shapiro, 4 Elizabeth St., Glen Cove, L. I. N. Y. W2CSZ.

FOR SALE: Complete station, NC-109, VF-1, Globe Chief ext. mod. (p. 254 1956 ARRL Handbook). All in A-1 shape. Make an offer. J. B. Damerell, K9GCD, 567 Dover St., Joliet, Ill.

COMMUNICATOR II deluxe, $160; 6N2 new, factory guarantee. $130; NC-300 new, factory guarantee, $295; C-2 converter, $25; National HFS w/pwr sup., $80; Dumond 5-in. modulation monitor 'scope, $40; Cushcroft twin 11-el. 144 Mc. beam, $25; two new 4X150s w/SK 600 sockets, BC-610 modulation transformer, best offer. S. D. Scott, 907 Maple, Ogden, Utah.

FOR Sale! January 1954 *QST*, 813 rig 811As, Pl. mod., p/s in cabinet, $150; TCS, xmttr, revr, all accessories, 115 AC, 12V DC, spkr, micr., connecting cables, $90; extra TCS dyamotor, 12V, $25. Gary, W1FEU, 109 Mohegan Ave., New London, Conn.

BARGAINS: With New Guarantee: Collins 32V-2 $349.00; Collins, 30K-1 $550.00; S-72 $49.50; Hallicrafters HT-30 $349.00; HT-31 $299.00; HT-4 with speech Amplifier & Antenna Tuner $695.00; SX-88 $449.00; NC-98 $119.00; NC183D $319.00; NC-300 $319.00; HQ129X $159.00; DX35 $55.00; Eldico SSB-100 $395.00; 51-SB $185.00; 51-SB-B $185.00; Phasemaster II $239.00; Lysco 600 $69.00; Lysco 600S $89.00; Gonset Linears (2M) $99.00; (6M) $99.00; Globe King 500 $425.00; Globe King 500A $455.00; TBS-50 (Hi or Low Z Mike) $69.50; APS-50 Pow. Supply $29.50; audio and test equipment, inquire. Trial, terms, write Leo, WØGFQ for best deals. World Radio *Laboratories, 3415 West Broadway,* Council Bluffs, Iowa.

FOR Sale: New Johnson mobile loading coil, $10; new Master Mobile Mounts Matcher 12V, $15; pair 250THs w/sockets, new, $35; RCA kilowatt modulation transformer, new, $15; B&W butterfly condenser with neutralizing condensers and HDL coil-holder, $30. G. M. Snyder W3LSS, RD 4, North East, Penna.

FOR Sale: Tecraft 2-meter converter, factory-wired, 14-18 Mc output. Used very little, $20; Dow-Key DKC-TR antenna switch, brand new, $8.00; RME DB23 Preselector, bought new this May, hardly used, $37.50; Navy RDZ 200-400 Mc receiver, gud condx and wkg fb, no shipping, sry, u pick up: $35; B&W "CC-50" coaxial antenna connector, $3.00; two antenna co-axial "Impedacoupler" connectors, $2.00 each. "Doc" Lawrence M. Hagerthy, W1RYM, Scarboro, Maine.

SELL: Supreme Mod. 589 tube-tester, $35; Gonset two meter mobile converter, $25, both postpaid. Robert Cobaugh, W2UTE, 29-29 213th St., Bayside, L. I., N. Y.

OPPORTUNITY knocks but once — Read carefully and compare: Gonsets Mobile Twins, five months old, like nu and in perf. condx. Immediate band switching 75/40/20/15/10 meters: Gonsets G66B receiver, new Universal 3-way power supply, Gonsets G-77 transmitter, matching power supply and modulator, $350 buys all. In addition, including Electro-Voice Mod. #600D mobile mike, all cables, plugs, wiring, and manuals, as a complete package. Go mobile, but go first class — hurry — first come, first served. All communications answered. You can pay more but you can't buy better . . . or more, at this price. R. R. Andrews, K4KBT, 316 Pine St., (Roebuck), Birmingham 6, Ala.

SUPER PRO SP400X, with speaker, $225. James Buck, *W9ZDS, 4601* Lower Hungtington Road, Ft. Wayne, Ind.

NEW Repair parts for BC-348 receiver models H, K, L, R. 1F transformers. $2.00; CW oscillator assembly, $2.00; dual volume control, $2.75; set of four coils, any band, $2.00; front panels, $4.50; main tuning condenser, $3.75; crystal filter assembly $6.50; crystal and holder only, $3.75; diagram, 50¢; spinner knob, 50¢; add postage. Electronicraft, Inc., Box 269, Bronxville 8, N. Y.

DX-40! Works very well. $65. Bernstein, 248 Ridge St., New Milford, N. J.

MILLEN 500 watt final: use as linear, complete with tubes, coils, all bands. Ship c.o.d. $65. W9QHW, RR 1, Valparaiso, Ind.

DO You like certificates? Sweepstakes? Contests? Then you've gotta have the Directory of Certificates. See page 172.

SELL Collins 75A-4 serial No. 4746 with speaker, $575.00. Also Hallicrafters HT-32, $550.00. All new and in perfect condx. Packed in original cartons, F.o.b. Plainfield, New Jersey. Larry Pyle, Bell Telephone Labs, Murray Hill, New Jersey.

MUST Sell: HRO50T1, A, B, C, D coils, $235. Bob Matos, K2DQL, 871 East 219th St., Bronx, N. Y. Tel. KI 7-5059.

FOR Sale: Hammarlund Super Pro revr w/ps, $130. National NC-88 revr, with Heath Q-multiplier, $85. Also complete pr 813's, xmttr and parts for pwr supp. Lee Owen, R.D. #5, Ravenna, Ohio.

ELECTRIC Instructograph, complete with tapes and instructions. Also Bud code oscillator. Very low price, only $30. Mark Cohn, 574 West End Ave., New York City 24, N. Y.

60 FOOT Tower, Donner 3-section crank-up, brand new, never used: $115.00. Thomas R. McCullough, W1HRO, 27 Birchwood Road, Springdale, Conn.

COLLINS 32V2 and 75A2 for sale. Like new condx. Complete station with Shure microphone and key, low pass TVI filter, coax relay and selector switch, speaker, instrux manuals. Can ship. Best offer over $550.00. W1PLW, 1337 Whitehill Dr., La Habra, Calif.

COMPLETE Station in operation, Viking I TVI-suppressed, HQ129, Jensen 12" speaker, Johnson VFO, Johnson Matchbox, Johnson L.P. filter, Johnson SWR bridge, 20-M Telrex beam, 40 ft. steel tower TR-4 rotor & 'scope. Miscellaneous. K2YEJ, 889 Grand Terrace, Baldwin, N. Y. Tel. BA 3-9162.

FOR Sale: Collins 32V3 transmitter, in excellent condition. Prefer *local sale and pick-up. Price $475. KH6AH, 37 Kaapuai Drive,* Kailua Oahu, T.H.

ELMAC PMR6 and pwr supp. 12V, $75; S38D, $32.50; HRO-60, spkr, xtal calibr., NBFM and coil sets A, B, C, D, E, F and AC, $425.00; Hickok 3" 'scope, $25; Novice 80 and 2 meter xtals, 75¢ ea. Dick Hill, W9TGN, 2116 Ewing Ave., Evanston, Ill.

WANT: 80-40 trap doublet. Trade 4-65A or 160 meter Command xttr. Harmon, 5019 Gramar, Wichita, Kansas.

VIKING II, Matchbox and VFO, $250; 75A2 with speaker, $300; Heath AR-3 with Q Multiplier, $35; Morrow 3BR-1 converter, $25. W9ZQC, 321 E. Elm, Villa Park, Ill. Tel. TE 4-3134.

SX-99 wanted. Also Globe Chief or DX-40. Steve Rabinowitz, 12 Somerset Dr., N., Great Neck, L. I., N. Y.

WANTED: Used Millen No. 90281 power supply. W4HKM, Cayer, 5722 Silver Plaza, Jacksonville, Fla.

ALUMINUM from Dick's, plus your ingenuity, will make you the best beam for less. Write today for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits. Dick's, W8IJL, Cherry Ave., Route 1, Tiffin, Ohio.

GLOBE Scout 680, factory wired, 8 months old, in excellent condition, $75. R. Bunnell, K2CBG, 678 Turnpike, Pompton Plains, N. J.

FOR Sale: Beautiful HQ-150 receiver, guaranteed like new, with spkr. and manual: $249.50. Vibroplex Original, $15. Write Ex-K2VZN/Ø, Tighe, 2909 W. Oak, Sioux Falls, South Dakota.

HRO-5-TA1 for sale, with coils A, B, C, D. In excellent condition. Ferd C. W. Thiede, W2EC, 169 Buckingham Rd., West Hempstead, L. I., N. Y.

SELL: Heathkit VFO, $17; DX-20 with built-in ant. relay, $29. Both, $44. Also QF-1 Q-Multiplier, $7.50. Randolph, K1ATS, 92 Savage Hill Rd., Berlin, Conn.

SALE: Collins 75A-3, like new, factory overhaul January 1958 with xtal calibrator, spkr, $375; Viking II Heathkit VFO, Johnson low-pass filter, co-ax relay spare tubes, $225. W2IDW, 68 Greenwood Drive, Babylon, L. I., N. Y.

TRADE KW Transmitter 75 and 20 meters, rack and panel complete for B&W 5100 or Johnson Valiant or Hammarlund HQ-160 in new condition. Prefer local deal as transmitter KW is heavy. See W1AAH, Clifford A. Kunz, 22 Kingman Ave., Weymouth 88, Mass.

FOR Sale: Hammarlund receiver HQ-140X in gud condx with speaker, $160. David Whitaker, 211A Jackson Circle, Chapel Hill, N. C.

FOR Sale: HQ-110 new, with warranty card, $200; prop pitch motor, $25; cased ½ KW mod. trans., $25; Telrex 20-meter 2-element Super-Mini beam, $35; 50 ft. TV tower, $50. W1ERX, 919 High Ridge Road, Stamford, Conn. DA 2-0703.

FOR Sale: Viking Valiant transmitter, like new, in exc. condx, $300. By Bill Flapan, 6036 No. Francisco Ave., Chicago 45, Ill.

FOR Sale: Collins 75A2A receiver (factory converted to 75A3). Best offer over $250. L. J. Higgins, W9OWZ/5, 3900 Hayes, Apt. D, El Paso, Texas.

FOR Sale: Deluxe code instruction equipment especially suitable for a club. Only one set of items available. New TG34A keyer, 11 rolls of army tape, slightly used BC791 McElroy code tape inker and MC310 tape puller, also 60 rolls blank tape. Records CW signals from key or receiver. $75. Ben Woodruff, W9UE, 6140 N. Harding Ave., Chicago 45, Ill.

SELL: 80-40 xtal ECO 813 amp., two pwr supplies, $60; 5-band ECO, 1807 output, $25; BC459 with plate meter, $12. George Rehl, W8DQY, 324 Orange St., Galion, Ohio.

FOR Sale: HQ100 with separate HQ455 xtal, BFO built in and speaker. New condition, $150. Want clean 75A2 and 20A. W2GKP, Dr. Skraly, 485 Madison Ave., New York 22, N. Y.

LM Frequency meter, with 110V/AC power supply, original calib. book, crystal, perfect working condx, $49.50. K6EYB, Danville, Calif.

MEISSNER 150-B transmitter, 250 watts input phone or cw. Operates from 110 volts 60 cycles. Continuous coverage 1.5 to 12.5 mc. Factory exciter coils for 14 Mc. No changes. Little use by single owner, in vy gud condx. Complete with tubes, pwr cables, major spare parts, manual, $225. W1AJZ, 38 Ayer Lane, Harwichport, Mass.

FOR Sale: SX-88 and Viking II. All accessories. A. J. Latimer, Jr., Viroqua, Wis.

SELL: 700 watt transmitter enclosed in cabinet. Price $135. W1ORG, 35 Wayne Driv, Plainville, Conn.

SELL: KWM-1, $600; 2 meter 15 element beam, 2 meter converter, Millen SWR bridge, 6 volt mobile power supply, field phones, low voltage power supply, Mosley 4-band vertical antenna. Deal on Argus C-3 camera, field glasses? Lamb, 1219 Yardley Road, Morrisville, Penna.

ELDICO Linear amplifier, 1 Kw surplus my needs, looks and performs like new. Cost $745. Will sell for $450 F.o.b. Tampa. W4WOS, Hawley Butler, R. 1, Box 297E, Tampa 4, Fla.

SELL: HT32 wonderful condition, $500; Hallicrafters SX73 General Coverage receiver, sold originally for $1000. Sell for $250. Sell Combo W2EWL Exciter 80 and 20 plus Vantron Linear for $125. W2ADD.

SELL KW81, 75A4, model 15 teletype and Alltronics-Howard terminal unit. Equipment like new and guaranteed. Cost over $3400. Sacrifice for $2260. Write or call Ralph Barnett, 755 St. Francois St., Florissant, Mo.

SSB For sale. Central Electronics 10A SSB exciter in perfect condx. $90; RME DB23 Preselector, $30; BC-348R revr, $60; Heath Q-Multiplier modified for use with BC-348 or any receivr with 900 Kc I.F. Gordon Kittel, K3AIG, 2930 Tilghman St., Allentown, Pa.

GONE SSB. Have 32V3 for $475 also Viking II and VFO for $195. Both in excellent condition. Need model B Slicer. Lewis West, WØAIO, Wichita, 12, Kansas.

75A3 in beautiful condx, xtal calibrator, reduction knob, mechanical filter 31, 6 meter converter (see Aug. 1957 *QST*) with power supply, $400. W2FFP, Box 281, Montvale, N. J.

SELL Locally: Good NC-88, cheap. Want: NC-183, HQ140XA, RME 4300, etc. Davidoff, K2UBC, 2045 Rockaway Parkway, Brooklyn 36, N. Y.

DX-100 Perfect, used only 10 hours, $175, or trade for HQ-150. Viking Ranger or DX-40 plus $125. Heath 0-11 oscilloscope, perfect, never used, $55 or trade for DX-40. Amphenol 139-040 antenna, new, $5. New RCA 5HP4 CRT, $3. Edward Gamret, 28-D Longfellow Drive, Homestead, Penna.

FOR Sale: DX100, neat wiring job, $169; Super Pro SP400X modified for miniatures in RF and IF's, $150; Morrow 3BR5 mobile converter for 6 or 12 volt systems, $25. W2AWS, Bob Bartel, 198 O'Neil Street, Kingston, N. Y. Tel. FEderal 1-1321.

FOR Sale: Factory-wired Valiant used 10 hrs.; Johnson Matchbox, like new, D-104 with speaker. Highest offer takes any piece. No trades! W2EUX, Neumann, 225 Broad St., Staten Island 4, N. Y.

SELL: Collins 32V2 transmitter, spares, including two 4D32, $345; Pierson KE-93 receiver with 6/12 power supply, spares, $225; B&W TVI filter, $12; Master Mobile No. 666 coil, No. 444 bumper mount, two whip sections, $29; Measurement 78B, 15-25 Mc., 190-230 Mc., signal generator, $29; BC-645, 13/26V dynamotor, antennas, LU-1 signal generator, spares, $35; 200-400 Mc, RDZ receiver, spares, $40; two 6V, 200-300V, adjustable Vibrapacks, both for $11; 440V, 200 Ma., 12V dynamotor, $12; 425V, 163 Ma., 12V dynamotor with base, $9; all items in new or in excellent condition. Shipped F.o.b. Ogden, Utah. Lowell S. Maw, W7NHQ, 1419 Swan St., Ogden, Utah.

BARGAIN DX-100 expertly assembled and on the air: $150. Robert E. Cooper, W8AQA, 132 Guild St., Grand Rapids, Michigan.

TUBES: Brand new Amperex 5894, $10; 4D32, $22.50; 4-65A, $9.50; 4-125A, $12.50; 250TH, $17.50; 3E29 (829B), $6; 832A, $4.75. 811A, $3.50; Collins ART-13 xmttr, perf. condx, unmodified, $95; RA-62 power supply original 110V supply for SCR-522, $75; BC-312 12V revr, unmodified $48; I-177 mutual conductance tube tester, $30; RCA 3" oscilloscope, $30; RCA 500 W modulation xfrmr, primary 5500, secondary 5500 ohms $38; ART-13 mod. xfrmr, $8.50 PH-522/AXT-2 conversions unit for CRV TV; I-222 signal generator, $30. All guaranteed. C.o.d's OK. Bill Slep, W4FHY, Box 178, Ellenton, Fla.

SELL: New tubes, pair 4X250OBs, $20 each; pair 813s, $7 each; pair 4-65As, $8 each; pair 6146s, $3.00 each. W7AVS, 5318 E. 28th St., Tucson, Arizona.

CRYSTALS Airmailed. Novice, net, general. FT-243, any specified kilocycle, .01%, 3500 to 8650, $1.00; 1700 to 3499, $1.75; 8651 to 21,500 $1.95; new crystals. Guaranteed. Marine, CAP, MARS, etc. Write for frequency listings and brochure. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

WANT 150 watt modulator with power supply, less modulation xfrmr. W3LRE, 114 Parker, Warren, Penna.

KW Phone and CW rig partially wired, complete with 7620 CT power supply rack mounted. Heaviest components with pair 4-125 final and 810 modulators. Sell for $250 or trade for 2-meter gear or 6 and 2. William Baxter, Box 291, Bunker Hill, Ill.

FOR Sale: Collins KWM-1, $675; Collins 32V2, $250; Lampkin 105B frequency Meter, $125; General Electric YRS-1; $25; Central Electronics MM-1 analyzer 'scope, $65. All in good condx. K2BN, H. M. Warner, 110 Long Hill Road, Great Notch, New Jersey.

SELL: Hallicrafters SX-100 revr, w/spkr; RME DB-23A Preselector; both in excellent condx. Early model Johnson Viking Ranger, vy gud condx. Best offer takes one or all. Mark Michel, 303 S. Wayne Ave., Wayne, Penna., MU 8-0916.

KWM-1 original packing used one month, $625. Brand new Drake 1-A, sealed in carton with calibrator, $255. George Barnes, 3451 Ridge Ave., Dayton 14, O.

2 Meter station, Eldico xmttr, revr, complete, $60; Tecraft conv., 144 Mc., 26-30 Mc IF, $23; Vacuum variable 20-700 $\mu\mu$fd, $33; Heath 0-7 'scope $25; Panadaptor SP44, $65; F.o.b. Roslyn Heights, L. I., N. Y. C. Jaray, 36 Flower Lane, MA 1-5167.

HQ-129X, fine shape, Hallicrafters speaker, extra filter condenser, other extras, $115. W2GTY, 208 East 58th St., Brooklyn, N. Y.

NC173, $129; S76, $119; WRL 40A, 49; Viking I, $119; guaranteed like new condition f.o.b. Chicago 35, Treger W9IVJ, 2023 N. Harlem Ave

SELL: B&W Model 600 GDM, mint condx, $25; I need two each 417A and 416B tubes, state condition and price. Joel Balogh, K3CFA, Box 423, R.D. 1, State College, Penna.

DX-HOUND, 20 meter Minibeam, two 16 ft. elements, 10 ft. boom. $25. W2LWK, 5 Pocono, Yonkers, N. Y.

SELL: *QST* bound volumes 1926 through 1945; unbound 1936 through 1944. Tennalab five-element 10-meter beam. Collins Vernier dial, R9'er. Make offer. Write W2AEB, Grabo, 90 Lakewood Ave., Cedar Grove, N. J.

FOR SALE: Hewlett-Packard VTVM 400 D. $135; audio oscillator, 200 CD, $90, in exc. condx. A. C. Smrha, 12 Mountainview Dr., Westfield, N. J.

FOR Sale: 34V2 modified from Collins spec. to 32V3, L.P.F., Monimatch, matching antenna tuner, spare 4D32, $395; 75A1 with speaker, W6SAI modifications. $235; BC-221AK, complete in case with calibration charts, TM, AC power supply, in exc. condx. Best offer. W2WSN, Woolfe, 1900 Logan Rd., Asbury Park, N. J.

I Am a member. Are you? KICVM.

MOVING: For sale: Valiant & Ranger xmttrs. SX-100 revr, 2 & 6 meter, Communicators with VFO, linear amplifier, all like new. Matchbox, Mosley VP 10-20 beam, both crank-up tip-tower, 50 ft. Johnson mobile xmtrr, VFO. Frances R. Vaughn, W1DBL, 187 Orange St., Roslindale 31, Mass.

WANTED: One SR-75 and manual for same. No reasonable price refused. Robert E. Morden, VE3EIM, 275 Metcalfe St., North, Simcoe, Ont., Canada.

SWAP Your used cameras, guns, electronic equipment for cash or new ham equipment. Write for offer. Mount View Distributors, Franklin, Mass.

GLOBE CHAMPION 300A Brand new, see it, operate it. 275 watts phone, 300 watts c.w. Built-in VFO, 160-10 meters, $375 cash & carry. Don Kilgus, 3 High St., Valhalla, N. Y. Tel. W.H. 6-8764.

SELL: New DX-100, used less than eight hours, in excellent condition. First offer over $200 takes it. Inquiries invited. David Stahl, W8UDX, 110 Yale Ave., Dayton 6, Ohio.

TUBES: Eimac and Los Gatos 4D21's, and 4E27A/5-125B's. Will trade for ham equipment. Write E. H. Cubb, KN4YFR, Como, N. C.

115 VOLT 3 5 KVA gasoline generator, used only 4 hours, $250; Stancor plate transformer 2500 volt 600 mills with matching choke and 3 μfd 4000 volt condenser, $35. Sam Brodsky, W4JZQ, 717 E. Broad St., Richmond 19, Va.

SELL: Eimac AF-67, $125; mounting rack, $3; Gonset Super Six, $35; mount, $3, Gonset Supercelver, $60; mount, $3; 10M whip, $5; antenna mount, $6.00; 12V dynamotor, $12; 12V co-ax relay, $8. All equipment is gud condx and w/instruction books. Sell as a unit for $225. K4DUZ, 433 Farragut Circle, Virginia Beach, Va.

FOR Sale: NC-300 in exc. condx.: $280. K2LUU, 8 Third St., Freehold, N. J.

SX-101: Must sell, money needed for college. Brand new, never used SX-101, $330 (guarantee card included); New: M-500 diodes, $1.60, potted transformers 200 Ω, 500 Ω to 30,000 Ω, $1.50; mobile generator noise filters, attenuation guaranteed 80 db. or better, ½ to 1000 Mc., $3.50; hermetically sealed, plug-in type. D.P.D.T. 12 V DC relays, $2.00; 1 μfd 1500 V.D.C. capacitors, $1.75. F.o.b. Chicago, Bob Marks, 1107 W. Albion Ave., Chicago 26, Ill.

FOR Sale: HQ100, perf. condx, w/BFO kit. Best offer over $130. A. J. Waldchen, 414 Grove St., Westfield, N. J.

FINEST Kilowatt available: Collins KW-1 for Am, CW and SSB. Bill Martinek, 221 Boardman, Traverse City, Mich.

SELL: Portable radio, $5; two-station intercom, $10; Astatic AT-1 TV booster, $10; 6-volt battery charger, $10; Willard 6-volt 20 ampere hour battery, new condx, $10; VM 3-speed record-changer, base, GE cartridge, $15; Dazor fluorescent desk lamp, $15, hearing aid, $15; Shure 737A mike, $15; Pilot FM tuner, $25; Wagner-Nichols disc recorder, $50; 1BM electric mill, $100. Transportation charges are additional. V. R. Hein, 418 Gregory, Rockford, Ill.

COMPLETE Station: sell for mobile, excellent Viking II w/VFO, $200; HQ100, $135 or both plus mike, relays, connectors, cables, balan, new extra 6146, 2–807, everything L.T. used and still is. For only $350. K4KSO, Box 556, Sanford, North Carolina.

JOHNSON Valiant, factory wired, on the air less than 10 hours, original carton. Going SSB. Best offer over $300. K7EPD, 3850 E. Elm, Phoenix, Arizona. Tel. CR 9-2824.

SELL: Johnson Ranger sequence keying, push-talk relay, $175: new 4CX1000A linear amplifier, $500. BC-348P converted AC operation, $50. W6HHN.

SWAP: 500 watt phone transmitter ready to use for boat. 6 ft. relay rack 8005 PP final and separate power supply in A-1 condx and TVI suppressed. W8VMJ, Ditmer, 5846 Philadelphia Dr., Dayton 15, Ohio.

ATTENTION Toledo Area Hams! Sell 32VI, $295; HQ-129X, $145; Tele-Vue 50 ft. crank-up tower, $65. W8OBI, 26 Lansdowne, Toledo 13, Ohio.

FOR Sale: 75A3, late Serial, immaculate, $395. Murrill Burton, 1031 Mendenhall, Thomasville, N. C.

75A-4 for sale. Perf. condx: #30–51. 3.1 Kc filter. Make an offer. Robert Norian, K2TMO, Route 9, Staatsburg, N. Y.

TEST Tone record. Your call announced at end. $2.00. Expert kit wiring. 20%. Robert E. Brown, 1133 Summit Place, Utica, N. Y.

SALE: National NC-300 LN $249; Spkr, $15; crystal calibrator, $16; 6M converter $21; all for $298; BW-5100B LN, $338; BW-51SB, has own power, perfect, $193; BW-L1000A, perfect, $385; electronic antenna switch, $9; A,-SSB microphone box, $5, all for $910; Tecraft 6M transmitter, 6 xtrals, Saturn, $52, with National converter and dynamic microphone $75; 2M Gonset Communicator II LN, ten xtals, 5-el. Telrex, microphone all $145; Mosley vertical trap antenna V-4-6 $20; 10–15M Wonderbar antenna complete, $7; new Johnson SWR bridge, $8; 2M groundplane, $5; new Vibroplex $14, guaranteed your satisfaction, will ship. K2HA, 39–39 223 St., Bayside, L. I., N. Y.

FOR Sale: 90-watt homebuilt xmitter, 6146 final, 5 position xtal switch, Triplett meter, 120 watt power supply, bandswitching 80 thru 15 meters, $45. For more info write: Mike Wallace, 5615 Knox, Merriam, Kansas.

SELL Hammarlund Pro 310 receiver 4 months old, $325. Nick Konos, W1LMP, 8½ Summit Ave., Salem, Mass.

VIKING KW with or without desk, in perf. condx and shape, $850. Also Johnson Ranger grid block keying, push-to-talk, $200. Call VI 3-8572 or write to W1EVX, J. Christiano, 16 Birch St., Braintree, Mass.

TRADE: Alliance tenna rotor with 150 ft. of 4-conductor Rover cable and 2-meter twin G beam with 200 ft. RG-58A/U co-ax cable, all in gud condx. For SX-28A or SX-42 or SX-71, in gud condx. KN6RMM. Sheldon Kurtzman, 5363 Geyser Ave., Tarzana, Calif.

FIRST $1200 takes complete homebrew 833A KW 805 mod. Enough extra parts here for several complete xmtrs. List on request. Will be willing to ship. Roy Schmidt, W7IJW, 538 West 13th, Casper, Wyoming.

61-Foot Vesto, heavy-duty, self-supporting tower, with safety platform, never erected, for sale at $450. W2DDB, Tel. COlfax 1-8090.

HEATH AC-1 wanted. Will pay $5.00. Dave DuPuy, K4MQZ, Box 413, Black Mountain, N. C.

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TOWER: 54-foot Tri-Ex Series "H" crank-up. Excellent condition, $125.00 f.o.b. Write W1HUR, RFD #2, Concord, N. H.

FOR Sale: DX100 and HRO60 complete with speaker, xtal calib. and A, B, C, D coils, both in gud condx: $475. Alex Jung, 439 48th St., Brooklyn 20, N. Y.

SWAP: Keystone 8 mm movie projector, Model R-8 and Keystone 8 mm camera model K-8, in gud condx. with carrying cases for gud communications receiver. W. Bollman, 684 So. Washington Ave., New Market, N. J.

FOR Sale: Viking Ranger, $195. W1AAV, 544 Main St., Medford, Mass.

SELL: Factory-wired Viking II. $180; 75A-3 8 Kc mechanical filter crystal calibrator speaker, $400; signal sentry $10; Vibroplex bug, $8; Viking mobile Super Six whips mount coils, cables, 6 volt power (dynamotor) $90 All equipment in A-1 condx with manuals. K2JOM.

CANADIANS: NC-109, like new, with spkr, S-53A with Q-Multiplier only 3 months old, 40 ft. tower. Write or call. J. T. Ouellet, St. Pacome, P. Q., Canada.

SELL: Good Hallicrafters SX-96 just realigned, $155; also R-46B matching speaker, $14, in Hallicrafters boxes, f.o.b. Temple, Texas. W5AMK.

GLOBE-CHIEF for sale, gud condx, $40; *Knight VFO,* almost new, $23; both for $60. Jim boardman, 710 Euclid Ave., Glen Ellyn, Ill.

NATIONAL NC-300 with matching speaker, $300; Johnson Ranger *from kit, performs perfectly,* $200; *f.o.b. New Orleans,* in original cartons, with all manuals. No time to operate no mo'. Clint Hitchey, W5OWS, 1817 David Drive, Metairie, La.

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CENTRAL Electronics 600-L, $325; 20-A with QT-1 and Deluxe 458 VFO, $220; Central Electronics MM-1 RF analyzer, $78; Central Electronics gated compression amplifier, $40. Sorry, can't ship. K9AQV, 125 N. Passford, La Grange, Ill. Tel. FL 2-0669.

FOR Sale: 1-41D32, $20; 2-2E25As, $2.00 each. Bugs, W7JBV, 2045 Stratford Drive, Salt Lake City, Utah.

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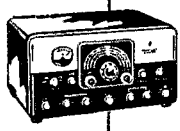

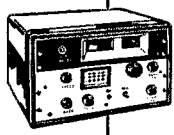

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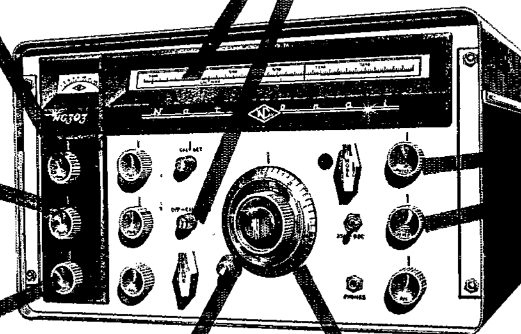

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