October 1957
50 Cents
55c in Canada

QST

devoted entirely to

amateur radio

IN THIS ISSUE — FIELD DAY RESULTS

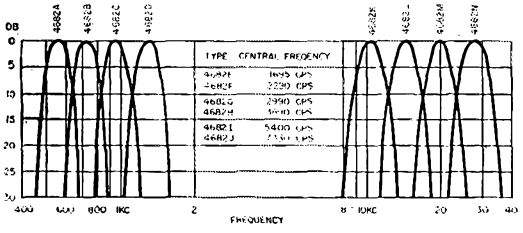
OUR MILLIONTH FILTER SHIPPED THIS YEAR...

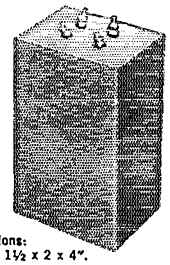
FILTERS

FOR EVERY APPLICATION

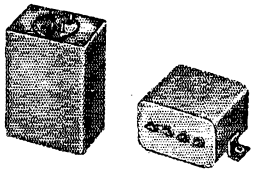
TELEMETERING FILTERS

UTC manufactures a wide variety of band pass filters for multi-channel telemetering. Illustrated are a group of filters supplied for 400 cycle to 40 KC service. Miniature units have been made for many applications. For example a group of 4 cubic inch units which provide 20 channels between 3 KC and 100 KC.

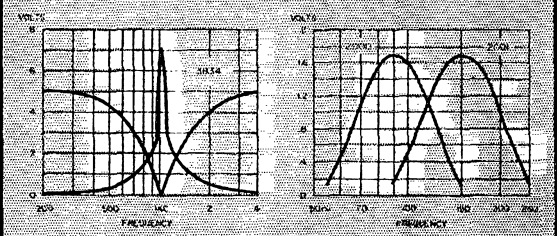




Dimensions:
(4682A) 1½ x 2 x 4".



Dimensions:
(3834) 1¼ x 1¾ x 2-3/16".
(2000, 1) 1¼ x 1¾ x 1⅛".



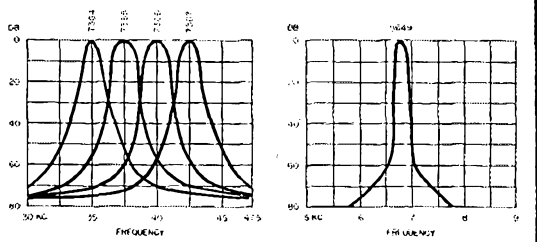
AIRCRAFT FILTERS

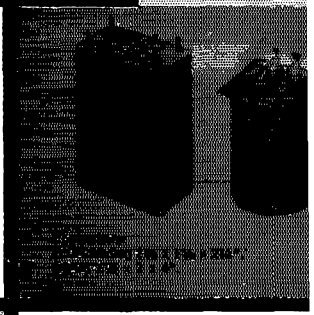
UTC has produced the bulk of filters used in aircraft equipment for over a decade. The curve at the left is that of a miniaturized (1020 cycles) range filter providing high attenuation between voice and range frequencies.

Curves at the right are that of our miniaturized 90 and 150 cycle filters for glide path systems.

CARRIER FILTERS

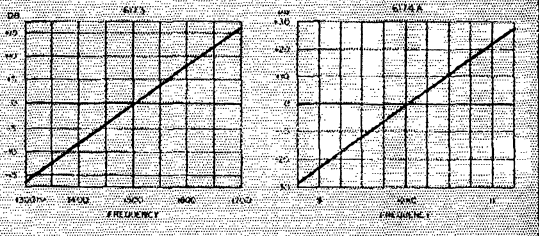
A wide variety of carrier filters are available for specific applications. This type of tone channel filter can be supplied in a varied range of band widths and attenuations. The curves shown are typical units.

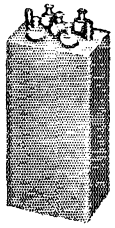




DISCRIMINATORS

These high Q discriminators provide exceptional amplification and linearity. Typical characteristics available are illustrated by the low and higher frequency curves shown.



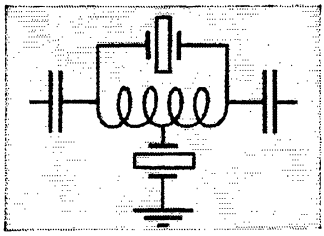


Dimensions:
(6173) 1-1/16 x 1⅜ x 3".
(6174A) 1 x 1¼ x 2¼".

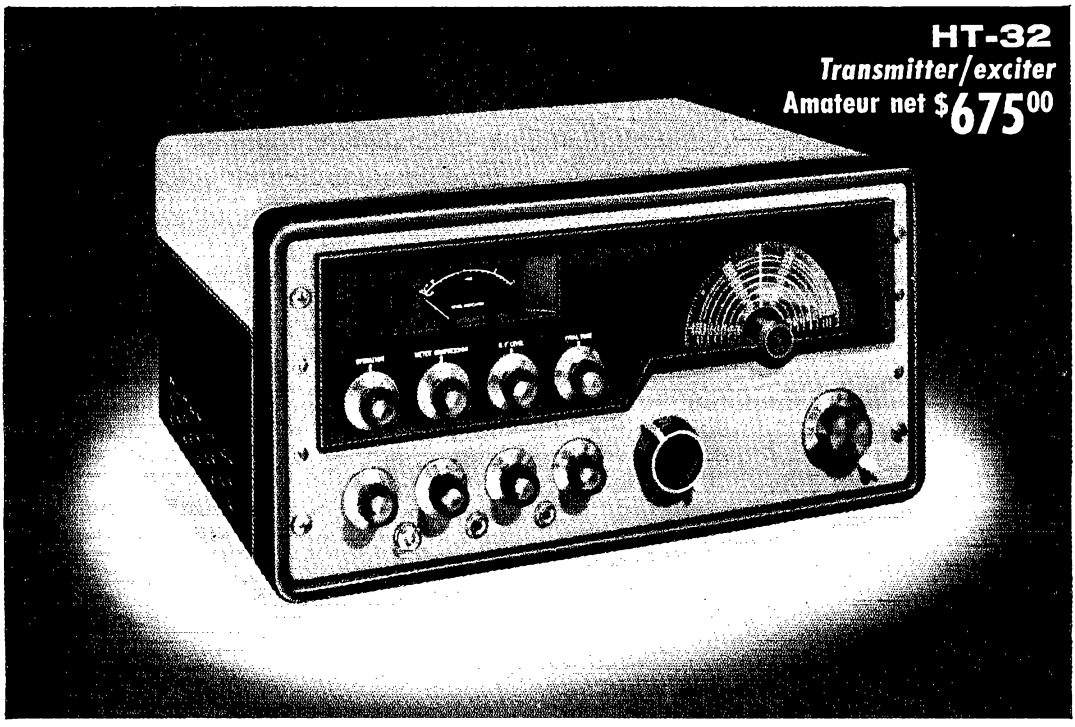
For full data on stock UTC transformers, reactors, filters, and high Q coils, write for Catalog A.

UNITED TRANSFORMER CORP.

150 VARICK STREET, NEW YORK 13, N. Y.
EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK, 16, N. Y. CABLES "ARLAB"
PACIFIC MFG. DIVISION: 4008 W. JEFFERSON BLVD., LOS ANGELES 16, CALIF



From this exclusive HIGH FREQUENCY filter originates the cleanest signal on the air!



Hallicrafters new HT-32 transmitter features 5.0 mc. quartz crystal filter... new bridged-tee modulator...high stability...gear-driven V.F.O.

• Forget your old ideas about SSB signal clarity! The HT-32 establishes *entirely new standards* with two major achievements of the world famous Hallicrafters laboratories—yours exclusively in the HT-32:

1. **5.0 mc. quartz crystal filter.** Result of a 3-year research program, the crystal filter system now is commercially practical at *high frequencies*. System 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. Patented diode application develops sideband energy from audio voltage. World's most stable modulator.

These and many other features make your decision *clear*—compare the HT-32 with any other transmitter available. Your supplier has all the details. Stop by and see him today.

ADDITIONAL FACTS ABOUT THE HT-32

- 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.
- C.T.O. direct reading in kilocycles.
- T.V.I. suppressed.

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Available with convenient terms from your Radio Parts Distributor.

FIXED STATION PERFORMANCE

IN A MOBILE

The features of Collins KWM-1 Transceiver make it the finest mobile rig available. The permeability-tuned precision VFO and mixer crystal oscillators provide the stability; the Mechanical Filter and high Q permeability-tuned circuits provide the selectivity; 175 watts PEP input provides the talk power. It occupies very little space — only 6¼" high, 14" wide and 10" deep. Mounting tray folds out of the way when not in use. VOX circuits permit operation without holding mike button. Only $770 net. Power supplies and other accessories extra. See your Collins distributor for full details about the KWM-1 and its accessories.

Collins CREATIVE LEADER IN COMMUNICATION

QST

OCTOBER 1957

VOLUME XLI • NUMBER 10

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

OFFICES

38 La Salle Road
West Hartford 7, Connecticut
TEL.: ADams 6-2535 TWX: HF 88

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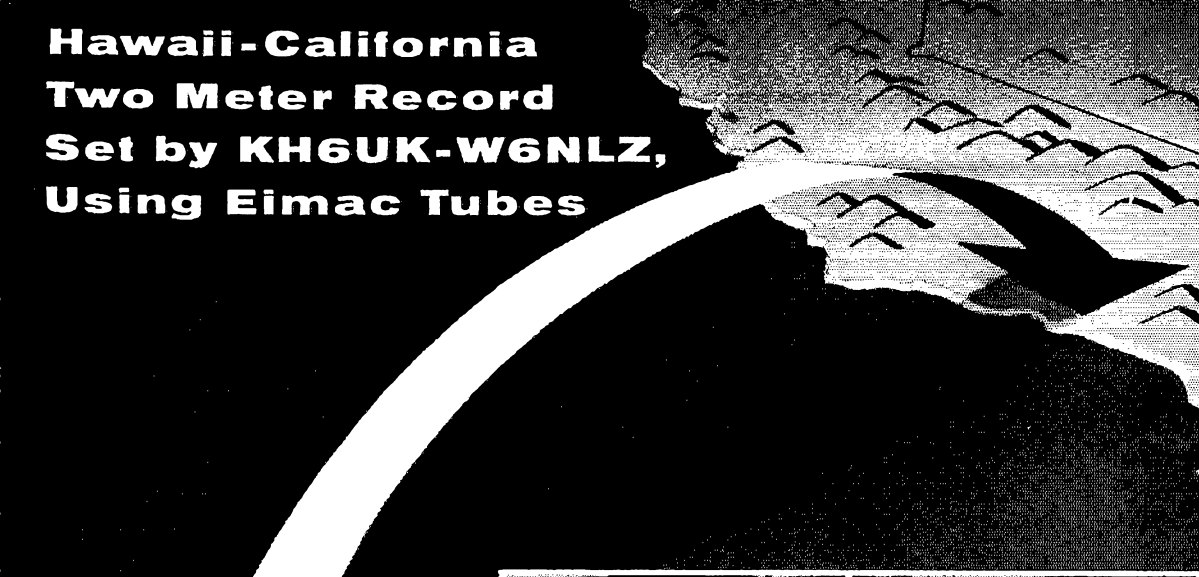
Hawaii-California Two Meter Record Set by KH6UK-W6NLZ, Using Eimac Tubes



Ralph Thomas KH6UK

John Chambers W6NLZ

On July 8, 1957, Ralph Thomas KH6UK and John Chambers W6NLZ spanned the Pacific from Southern California to Oahu, T.H. on two meters. At 9:33 PM PDST, the first signals came through. Two-way CW contact was established at 10:11 PM PDST, and the last signal faded out at approximately 10:50 PM PDST.* To W6NLZ and KH6UK goes the distinction of being the first amateurs to cover such a vast distance on two meters . . . a matter of some 2558 air miles. Of significance is the fact that both KH6UK and W6NLZ used Eimac tubes in their two meter final amplifiers . . . KH6UK running a pair of 4-125A's and W6NLZ employing a pair of 4X250B's, with inputs in both cases approximately one KW. The 120 amateur radio operators at Eimac salute KH6UK and W6NLZ on their achievement and are proud that Eimac tubes were again used in a communications first.

*On August 18, KH6UK and W6NLZ repeated their record-breaking contact.

EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA

Eimac First for quality, dependability and performance

Eimac

4-125A CW
Typical Operation

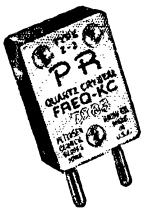
Plate volts	3000 Volts DC
Screen volts	350 Volts DC
Plate current	167 Amps DC
Plate power input	500 Watts
Plate power output	375 Watts

4X250B CW
Typical Operation

Plate volts	2000 Volts DC
Screen volts	250 Volts DC
Plate current	250 Amps DC
Plate power input	500 Watts
Plate power output	410 Watts

There's a PR for every Service!

AMATEUR

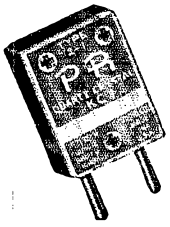


40, 80 and 160 Meters, PR Type Z-2

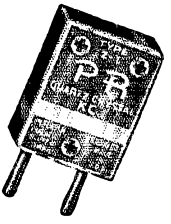
Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed.....**$2.95 Net**

20 Meters, PR Type Z-3

Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation.....**$3.95 Net**



COMMERCIAL



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Official assigned transmitter frequencies in the range.

Calibrated to .005%. 1500 to 10000 Kc. **$3.45 Net**

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FREQUENCY STANDARD

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

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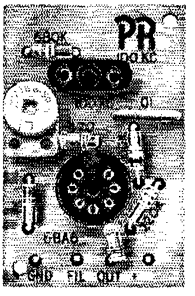
PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for Low Frequency SSB Crystals



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

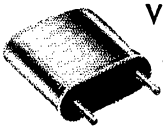
Each . . . . . **$4.50 Net**

Type 2XP

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

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

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **$4.45 Net**



VHF Type Z-9R

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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.

Ode (owed?) to the GPR

Oh! GPR, Oh! GPR
How really, really great you are.
All the hams from A to Z
Are really crazy over thee.
Your built in ease of operation
Has swept like fire across the nation.
Your lovely, lovely sensitivity
Gives life a lot more liveability.
Your low, low noise and other factors
Make other sets real bad actors.
With SSB you are akin
It goes with you like Vermouth with Gin.
Your range, your band spread sure are great
All other brands you make me hate.
Your circuits and your AVC
Are sure to me a joy to see.
Oh! GPR, Oh! GPR
How really, really great you are.

ONE of the boys in our Sales Department (Charles Dean to be specific) got all het-up about the GPR-90 and wrote the above in a moment of passion, we assume.

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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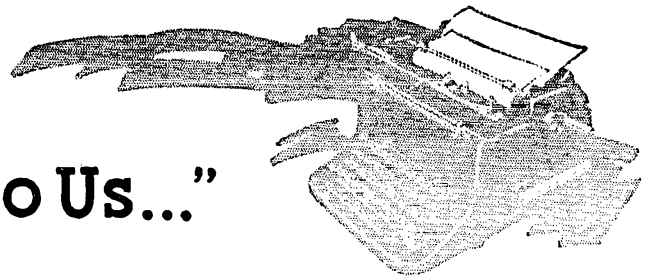


"It Seems to Us..."

PICON AND PROPAGATION

At the recent ARRL National Convention in Chicago some of you heard President Dosland make a strong plea for more amateur awareness of PICON — a Washington-style term for "public interest, convenience or necessity." Our President emphasized organization for emergency purposes, and well he may have, for such work makes news that can be appreciated by the public at large.

But another kind of hamming has been equally important in establishing the worth of amateur radio, even though your TV-viewing neighbor may never have heard of it. Many important and influential people do know about it, and more will be learning as a result of our IGY Propagation Research Project. Amateur contributions to the advancement of the radio art were recognized as far back as 1911, when a famous scientist testified before a congressional committee that amateur work had aided scientific investigations even before that time.

The amateur record in opening up the world above 50 Mc. has been especially impressive. Moving into what seemed then to be wholly useless territory, hams working on 5 meters discovered tropospheric bending, sporadic-E skip propagation and reflection from the auroral curtain. This was in the middle 30's, years before there were plans for using the v.h.f. range for commercial or military communication.

Following World War II, 50-Mc. enthusiasts turned up what is now known as transequatorial scatter, a phenomenon being given concentrated scientific attention during the IGY. They demonstrated that early postwar predictions for F_2-layer maximum usable frequency were far too low in many areas of the world. Pioneering work with reflections from meteor trails in the early 50's paved the way for development of means for long-distance communication with secrecy, a prime target in current work with meteor propagation. Scatter techniques, once thought to be usable only with very high power levels, are now being employed effectively by ham stations running less than 100 watts.

Hams have been able to augment scientific investigations mainly because of our unique character. We are everywhere. We operate largely without preconceived notions as to what will or won't work. We try anything, even when better minds than ours have already figured out that what we are attempting is impractical. No better example of this emulation of the bee (theoretically incapable of flight, but doesn't know it) has appeared in many a day than the recent but now historic 144-Mc. QSO between W6NLZ and KH6UK. Nobody outside of amateur radio would have bothered to try such a thing even once, let alone attempt it nightly for nine months!

But John Chambers and Ralph Thomas were v.h.f. crazy from way back. They had seen the "impossible" done before, and they were game to keep on trying this one, even after 250 nightly attempts had given them not the slightest sign of encouragement. Then, on the night of July 8, the curtain of background noise parted a bit, and the 144-Mc. test transmission of KH6UK was heard, bending its way across more than 2500 miles of Pacific Ocean. A few minutes later they were at it two-way, and one of amateur radio's greatest moments was written into our history. The contact broke the amateur record by more than 1100 miles, and it exceeds by some 25 per cent the greatest distance over which signals of anything like this frequency had ever been received before.

The news traveled fast. Hams over the world heard of it the next day via W1AW. The public got it shortly after, through ARRL-prepared news releases that made newspapers and radio and TV news broadcasts. Trade and scientific journals featured it in their next editions. Top people in the wave propagation world were informed through the cooperation of Dr. M. G. Morgan, W1HDA, a moving spirit in the USA National Committee of the International Scientific Radio Union (URSI).

At the XII General Assembly of URSI held at Boulder, Colo., in late August, *QST*'s v.h.f. editor found this work a prime subject of conversation with some of the world's leading propagation authorities. From Dr. R. L. Smith-Rose of England, Vice-President of URSI, and Chairman of the URSI Commission on Ionospheric Propagation, on down, scientists of varying personal interests wanted to hear more of the event. There was much discussion of the nature of the signals, and of the ionospheric and tropospheric conditions

that prevailed when the contact was made.

All agreed on one thing — the distance was well beyond anything in their previous experience for the frequency, by whatever means. Without exception, these highly-placed men of science were strong in their praise. They found it truly remarkable that amateurs would have the facilities, the know-how, and most important of all the infinite patience for such an achievement. To a man they expressed the hope that the work would continue, and that future results would be as carefully documented as has been the work to date.

The tests are continuing. Already, they have produced another break-through, as reported in our v.h.f. column this month. It is quite likely that more will have been recorded before this appears in print. But whether or not W6NLZ and KH6UK ever hear one another again on 144 Mc., they have done all of us a service of the highest order. They have made powerful friends for amateur radio in an area where backing could be mighty important in bearing out our contention that hams occasionally do more than think up better ways to interfere with television.

PICON has seldom been better served!

24th ARRL Sweepstakes — Nov. 9–10 and 16–17

How many ARRL sections can you work in two week ends? How big a contact total can you run up? If you are located anywhere in the League's field organization (see page 6), you are urged to take part in this popular annual activity. Any bands, phone or c.w., may be used. The total operating time allowed each contestant is 40 hours out of the 66 available. Phone entries compete for awards only with other phone entries — c.w. scores only with other c.w. scores — in your particular section. Special Novice certificates are also issued. The SS starts at 1800 EST (1500 PST) Saturday afternoon November 9 and 16.

A complete announcement of the contest will appear in November *QST*.

Contest reporting forms will be sent to all amateurs who request. It is not necessary to use these forms if the report form prescribed in November 1956 or in the next issue of *QST* is followed.

OUR COVER

This month's cover shows Paul Blum, W2KCR, operating his North Syracuse, N. Y., station. As reported on page 77 of this issue, Paul has just received the Navy's Public Service Award. He runs a kw. on s.s.b., and visible in the photo are, at the left, a facsimile machine and, at the right rear, a radioteletype machine. An 85-foot tower out in the yard supports three beams which are almost always pointed due south!

Hamfest Calendar

Alabama — The annual Auburn picnic will be held at Chewacla State Park on Saturday, October 12.

Louisiana — The Greater New Orleans and Jefferson Parish amateur radio clubs will jointly sponsor a hamfest and dance on October 12 and 13. The picnic will be held at Audubon Park, Shelter House #7 area, with games, prizes, and refreshments. Also a hidden transmitter hunt. The place for the dance has not been selected as of this writing.

Massachusetts — The Seventh Informal Get-together of all New England DXCC members will be held on Saturday evening, October 19, at the Harvard Club of Boston, 374 Commonwealth Ave. Social hour at 6:30, dinner at 7:30. Admission is free, with dinner tickets priced at $3.99. Contact R. E. Pierce, W1AXA, 51 Lexington Circle, Swampscott. Evenings telephone Lynn 3-0027.

New Mexico — The total Amateur Radio Club of Farmington will hold its annual dinner and get-together on Saturday, October 12. Get further details from Carl E. Black, sr., W5POI.

Minnesota — The Mankato Area Radio Club is holding a get-together at the Northern States Power Building on October 12 at 8:00 p.m. There will be several speakers on the program, including an FCC representative. No charge; the club will provide a snack. All amateurs and would-be amateurs in southern Minnesota invited.

New York — The Third Annual V.H.F. Roundup, sponsored by the Syracuse V.H.F. Club, will be held Saturday, October 12, at Martin's Restaurant in Liverpool. Speakers will include Sam Harris, W1FZJ, and Ed Tilton, W1HDQ. Reservations must be made in advance with Al Obrist, W2IYR, 8 Holly Road, North Syracuse, N. Y. Price, $4.50, including dinner.

South Carolina — The annual Rock Hill Hamfest will be Sunday, October 13, at Joslin Park. All amateurs, families and friends in the southeastern area invited. Registration $2.00, beginning at 9 A.M. Big dinner, recreational facilities for families. Further info from K4JFN.

A.R.R.L. ONTARIO PROVINCE CONVENTION

Toronto, Ontario — October 18–19

The metropolitan Toronto radio clubs will be hosts to the first ARRL convention in Toronto in twenty-seven years on October 18 and 19. Over 700 amateurs and their ladies will attend, from Ontario, Quebec, Manitoba, Alberta, New York, Pennsylvania, Michigan, and Illinois.

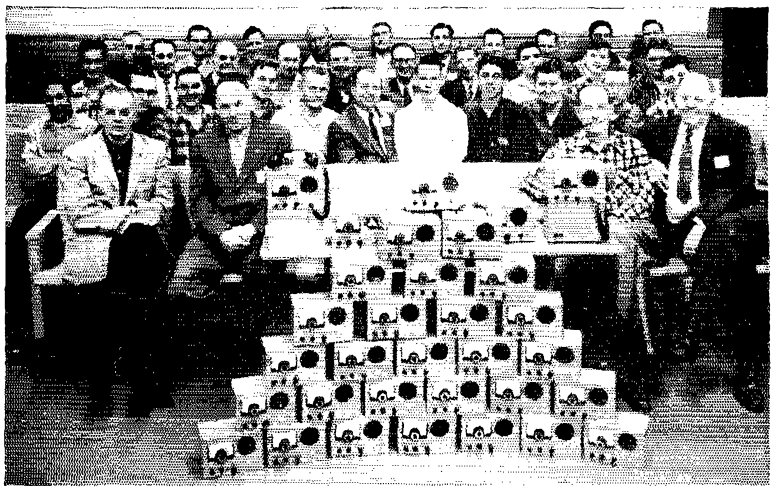
The convention will start with a reception on Friday at 5 P.M. at the King Edward Hotel, King Street East, and a banquet will follow with entertainment and speakers. Saturday there will be contests, movies, clinics, presentations of trophies, and an initiation ritual for the ROWH. A program has been prepared for ladies.

Registration will begin on Friday at 4 P.M. in the lobby of the ballroom. Fee is $5.00 per person, including the dinner. Tickets are available from Willy McCullough, VE3BCR, 203 Gamma Street, Toronto. For hotel or motel reservations, write Bob Haslett, VE3RH, 87 Divadale Drive, Leaside, Toronto 17, Ont. Chairman is Dick Roberts, VE3NG, SCM of Ontario.

COMING A.R.R.L. CONVENTIONS

October 18–19 — Ontario Province, Toronto, Ontario

November 8–11 — Far East Pacific Division, Guam



Happy members of the Wheaton Community Radio Amateurs, with some of the 2-meter stations that were built during the club project. Working together toward a common aim turned out to be fine for both club interest and local 2-meter activity.

The "Club Saver" 2-Meter Portable

A Group Project That Put New Life in an Old Club

BY ROBERT F. TSCHANNEN, W9LUO*

THE NAME "Club Saver" seems appropriate to describe the compact two-meter transmitter-receiver detailed in this article because the construction project involving it was responsible for thoroughly revitalizing a sadly waning ham club. The end results of this project were the construction of 50 units, lots of new two-meter activity, and an increase of 300 to 400 per cent in club attendance. The success of the undertaking is attributed to the fact that it was a low-cost project which appealed to nearly all of the club members, and to their inherent interest in construction.

The maximum cost of the planned building project was voted upon by club members before the unit was designed. After a $30 upper price limit was determined, the equipment specifications were prepared. (The $30 figure does not include the power supply.) In the design of the unit, every attempt was made to split the cost between the transmitter and receiver in such a way as to provide a sensible amount of performance from each.

The units were individually built by club members in their homes. In order to maintain uniformity in the design, the kits supplied to the members included punched chassis, panels and brackets and insofar as possible, equivalent components. Photographs were supplied for component location. Assistance in alignment and "de-bugging" was given as required. Further discussion of the mechanics of the club project is omitted in favor of more electrical and constructional details.

*412 E. Maple St., Lombard, Illinois

General Description

Electrically the unit is quite simple. It consists of a superregenerative superheterodyne receiver with an r.f. stage, and a simple crystal-controlled transmitter in which the output stage is a plate-modulated doubler. A common audio system serves as receiver audio output amplifier or transmitter modulator. The unit was designed to operate from a 270–300 volt power supply having a current output capability of approximately 125 ma. With a 300-volt power supply, the plate input power to the 5763 runs 9 to 10 watts. Although the receiver is simple in design, it possesses sufficient sensitivity to provide satisfactory communication in conjunction with a low-powered transmitter. The complete unit is packaged in a 5 × 6 × 9-inch rectangular aluminum box (ICA 29844 or 29801.) The cadmium-plated steel chassis measures approximately 7¾ × 4¾ × 2 inches. Most of the major components may be identified from the chassis photos.

The Receiver Portion

A 6CB6 tube is used as a fixed-tuned r.f. amplifier. The antenna input circuit employs a single tuned circuit, L_6, which is fixed-tuned at approximately 147 Mc. The plate circuit, L_7, is tuned to 145 Mc. With the plate circuit of the staggered pair tuned to the lowest frequency,

the effective load looking into the grid circuit of the r.f. amplifier is capacitive in nature and regenerative tendencies are thereby reduced. By tapping the grid lead down on the antenna coil, the loading on this coil is reduced, the coil operating Q is increased and better image rejection is obtained.

A 12AT7 tube is the oscillator-mixer. The oscillator operates on the low side of the signal frequency. Its tank circuit is padded to reduce the tuning range so as to cover the two-meter band on C_6 with a moderate amount of leeway. The oscillator frequency range of 125.8–132.9 Mc. provides a signal tuning range of 143–150 Mc. with the i.f. at 17.2 Mc.

The 17.2-Mc. intermediate frequency was not an arbitrary choice, but was selected to provide a fair amount of selectivity with a minimum of birdies and image responses, when the receiver tunes the two-meter band.

The pentode portion of a 6U8 tube is the superregenerative second detector. Smooth regeneration control is obtained by varying the screen voltage. The triode portion serves as an audio amplifier in receiving and as a microphone amplifier when transmitting. In the receive position, grid bias is obtained from contact potential, plus rectified grid current which may be developed if the peak positive grid swing exceeds the contact bias. In the transmit position, the stage is a cathode-driven amplifier, with a small bias being supplied by the d.c. voltage drop across the secondary of the transformer T_1. The d.c. required for microphone current is supplied from the by-passed cathode of the 6AQ5 output tube.

The output stage autotransformer step-up arrangement permits a high percentage of modulation, as compared with a Heising modulation system used without a dropping resistor. The transformer design is such as to permit both modulator and final plate current to flow without core saturation. (This is sometimes the case when a small receiver type output transformer is used in this application.)

The send-receive switch is a miniature ceramic rotary with five of the six available poles of the switch used. This arrangement is simple and effective, and much less expensive than a push-to-talk relay.

Fig. 1—Schematic diagram and parts information for the 2-meter portable station. Unless otherwise stated, capacitors are ceramic. Values less than .001 are in $\mu\mu$f. Resistors are ½-watt carbon. Where polarity is shown, capacitors are electrolytic.

C_1, C_4, C_5—1–8-$\mu\mu$f. plastic trimmer.
C_2—25-$\mu\mu$f. variable.
C_3—25-$\mu\mu$f. ceramic trimmer.
C_6—2-plate midget variable, shaft type.
J_1—Coaxial chassis fitting, female.
J_2—Closed-circuit jack.
J_3—8-pin chassis fitting, male. Provision is made for either 6- or 12-volt connection; see text.
L_1—12 t. No. 26 enam., close-wound on 9/16-inch bakelite form, iron-slug tuned.
L_2—2 t. wound in same direction as L_1 and about 1/16 inch below it.
L_3—5½ t. No. 18, ½-inch diam., ⅝ inch long.
L_4—4 t. No. 14, ⅝-inch diam., ½ inch long, center tapped.
L_5—1¾ t. insulated hookup wire. Wind to fit snugly inside L_4.
L_6—4 t. No. 18, ⅜-inch diam., 7/16 inch long. Tap at 1¼ and 2¾ t. from ground end.
L_7—3 t. No. 18, ⅜-inch diam., 7/16 inch long.
L_8—15 t. No. 36 d.s.c., close-wound on 9/32-inch bakelite form, iron-slug tuned.
L_9—16 t. No. 32 d.s.c., close-wound at terminal end of form used for L_8. L_8 is directly below it. Wind both in same direction.
L_{10}—3 t. No. 18, ⅜-inch diam., 7/16 inch long. Tap at 1 t. from ground end.
RFC_{1-4} incl.—R.f. choke, about 10 μh. May be 70 t. No. 38 enam. close-wound on ⅛- to 3/16-inch diam. form or high-value resistor.
S_1—6-pole 2-position miniature ceramic switch (Centralab PA-2019).
T_1—Single-button microphone transformer.
T_2—Small modulation transformer, auto transformer type (Triad M-42).

The club-project 2-meter portable station described by W9LUO. Size may be judged from the 6-inch scale at the lower right. Power supply is a separate unit, and may be arranged to suit user's requirements.

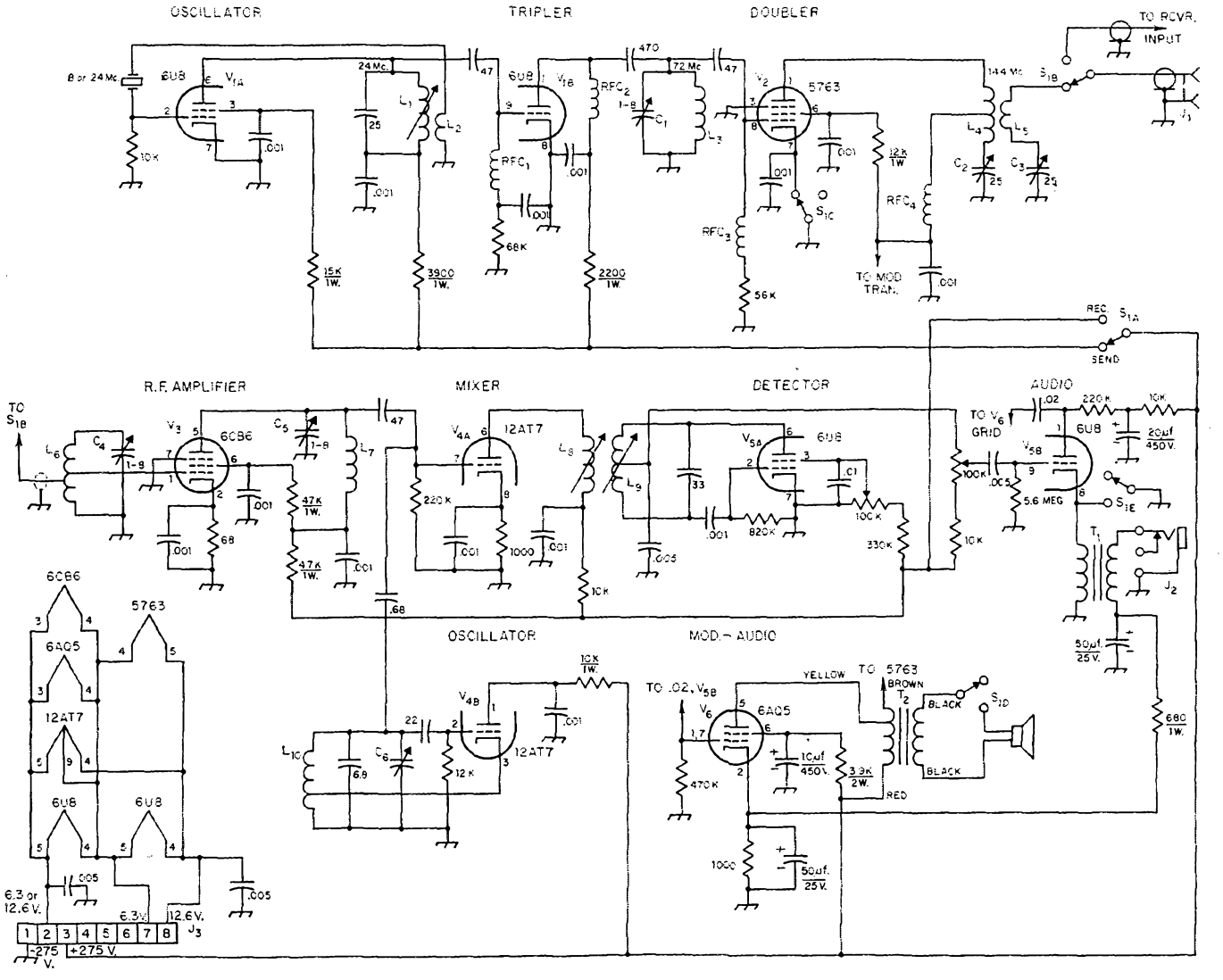

OSCILLATOR
TRIPLER
DOUBLER
TO RCVR. INPUT
8 or 24 Mc
6U8
24 Mc.
72 Mc
144 Mc
5763
15K 1W.
3900 1W.
2200 1W.
68K
56K
TO MOD TRAN.
REC
SEND
R.F. AMPLIFIER
MIXER
DETECTOR
AUDIO
TO GRID
6CB6
12AT7
47K 1W.
220K
1000
820K
100K
330K
5.6 MEG
OSCILLATOR
MOD.– AUDIO
6AQ5
12K 1W.
YELLOW
BROWN
BLACK
RED
470K
3.3K 2W.
680 1W.
6.3 or 12.6 V.
6.3 V.
12.6 V.
-275 V.
+275 V.

Fig. 1

The Transmitter

The first model transmitter designed for this project employed the same tube complement, but used a 48-Mc. crystal oscillator, tripling in the second half of the 6U8 tube. This arrangement provided straight-through amplifier operation of the 5763 stage. The input loading of the 5763 tube at 144 Mc. is considerably greater than at 72 Mc., however, and some difficulty was encountered in obtaining adequate drive, without excessive crystal current. The final design uses an 8-Mc. crystal oscillating on its third overtone at 24 Mc. The second half of the 6U8 triples to 72 Mc. and drives the 5763 plate-modulated doubler. An appreciable margin of drive capability is provided, and upward modulation with good linearity is obtained.

The heater connections of the unit are such that either a 6- or 12-volt supply may be used. For 12-volt operation, connect the source to Pins 2 and 8 of the input connector. For 6 volts, connect Pins 2 and 8 together with a jumper and connect the source between Pins 7 and 8.

Construction Hints

Best results may be expected if the layout and circuit are carefully followed. Principal components may be identified from the photos of the rear and bottom of the chassis. In the rear view the receiver portion is at the right. The tube in the right foreground is the 6CB6 r.f. amplifier. In line with it, near the panel, is the 12AT7 mixer-oscillator. The 6U8 and 6AQ5 are near the middle of the chassis. At the far left are the two transmitter tubes, the 5763 being the one at the corner of the chassis.

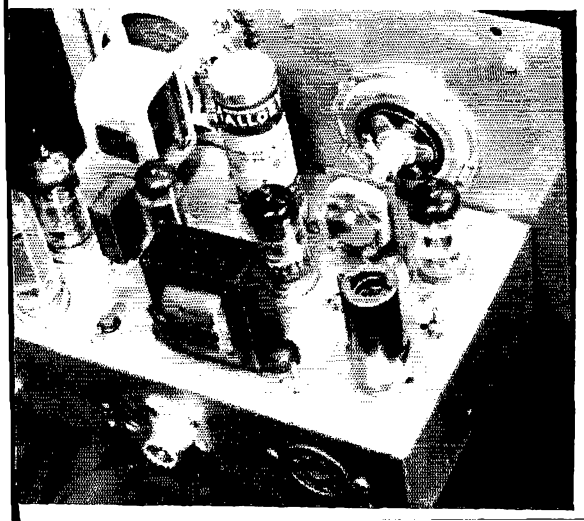
In general, the positions of various coils in both the receiver and transmitter should be as shown in the photos. Coils should be kept well away from the steel chassis. The position of the grid-plate shield on the bottom of the 6CB6 socket should be noted. This may be made of any shielding material which may be soldered into position readily. If desired, the crystal socket for the transmitter may be located on the side flange of the chassis and clearance holes punched in the case for quick crystal changing. Use a sturdy bracket to support the variable capacitor C_6 in order to prevent frequency shift due to panel pressure which may occur during use of the equipment.

If a rear cover is used on the case of the unit, drill ventilating holes in the bottom and top of the cabinet and in the chassis, for "chimney" effect. The p.m. speaker should be spaced approximately 1/16 to 1/8 inch behind the plastic grill cloth, by means of washers, since at high audio levels the cone travel is otherwise sufficient to produce an objectionable buzz, as the outer ribs in the cone strike the grill cloth.

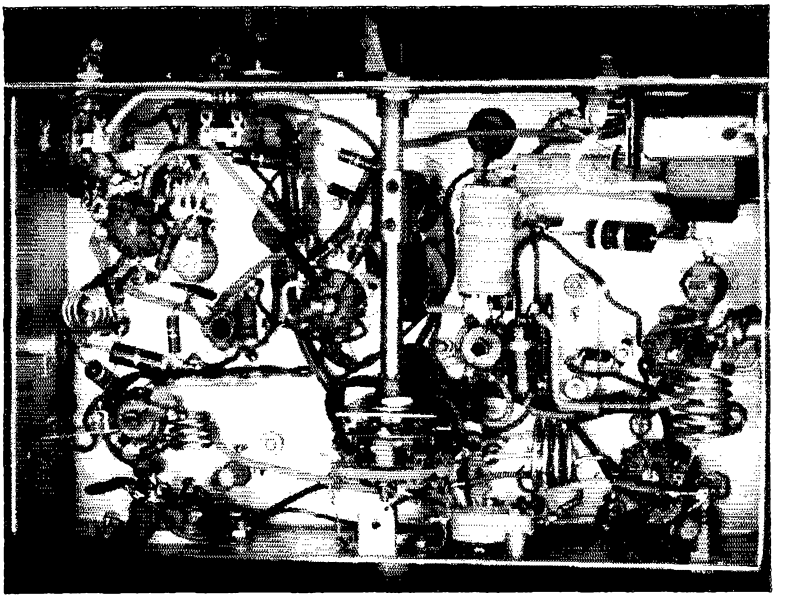
Alignment of the Receiver

After wiring is completed, check it over carefully. The receiver may now be connected to a power supply and warmed up. An accurately calibrated signal source and/or grid-dip meter is desirable for alignment purposes. An a.c. voltmeter, output meter or scope should be connected across the speaker voice coil terminals as an output indicator. A modulated 17.2-Mc. signal is loosely coupled to Pin 7 of the 12AT7 mixer. Set the volume control at maximum and the regeneration control for the cleanest output signal with least noise. The tuning slug in L_9 is then adjusted for maximum output indication across the speaker voice coil terminals. A reasonably strong signal must be used for this alignment, to override the noise developed in the superregenerative detector. If a modulated signal is not available, an alternate alignment technique is to use a c.w. input signal and tune L_9 for minimum noise output. Keep the input level sufficiently low to provide some noise for output indication.

The oscillator tuning range is adjusted next. This may be done by direct grid-dip meter pickup from the oscillator coil, L_{10}, or by insertion of an input signal to the antenna terminals. If direct grid-dip meter pickup is used, couple loosely to L_{10}, in order to minimize oscillator frequency calibration errors. The best method is by signal insertion to the antenna terminals. No oscillator interaction results from this method, so a more accurate calibration may be obtained. It is important in this case that the i.f. alignment be done first. An input signal tunable from 143 to 150 Mc. (preferably modulated) is used for this adjustment, and the oscillator tuning range is centered by spreading or squeezing turns of L_{10}. The coverage is then adjusted by bending stator



Interior view of the 2-meter station. Receiver portion is at the right side of the picture.



Receiver circuits are at the left side of this bottom view of the club-project portable.

or rotor plates of C_6 so as to tune the desired range. When the grid-dip meter is used for this adjustment, the oscillator coil and tuning capacitor are adjusted to provide an oscillator range of 125.8 to 132.8 Mc.

After the oscillator has been adjusted to cover the range, the r.f. alignment may be done. Using a modulated signal on 147 Mc., C_4 is tuned for maximum output indication. Similarly, C_5 is tuned for maximum output on a 145-Mc. signal. The tuning of these circuits is rather broad; care should be taken to adjust the input level to avoid overloading.

This completes the receiver alignment. Dial calibration markings should be made only after the receiver performs satisfactorily in all respects, as oscillator frequency calibration is influenced by changes in the r.f. plate and converter grid circuits, or by movement of components in the vicinity of the oscillator circuitry.

Transmitter Alignment

Transmitter adjustment is most easily carried out using a d.c. v.t.v.m. or a low-range d.c. milliammeter (0–5 ma.). The alignment basically consists of adjusting the tuned circuits for maximum grid current, starting with the oscillator. The tickler coupling of the regenerative oscillator must be adjusted to provide adequate but not excessive feedback, in order to assure crystal-controlled operation. Connect the v.t.v.m. from the junction of RFC_1 and the 68,000-ohm resistor to ground, or insert the d.c. milliammeter between the resistor and ground. This will read voltage or current developed in the tripler grid. Adjust the tuning core of L_1 until maximum voltage or current is read. There will usually be a sharp rise as L_1 resonates at the third-overtone frequency, 24 Mc. Listen to the character of the oscillator note at 24 Mc. on a receiver, and check if it is crystal controlled by bringing a metal object near L_1. If the note is clear and no frequency change is noted, the oscillator is crystal controlled. Back the tuning core out of the coil slightly and check to see that the oscillator starts rapidly. Feedback can be adjusted by changing the number of turns in L_2, or its spacing from L_1.

For tripler alignment, the v.t.v.m. is connected similarly in the 5763 grid circuit and the trimmer capacitor C_1 is adjusted for maximum indication.

Two No. 47 brown-bead pilot bulbs are next paralleled across the antenna connector to ground. The final amplifier tuning capacitor, C_2, is adjusted for maximum brilliance in the output-indicating bulbs. Adjustment of the series antenna capacitor, C_3, is made after the antenna system has been connected; this is commonly made by use of a crystal diode and milliammeter. With the final amplifier properly loaded, the unit will modulate upward with good linearity. If grid excitation is low, downward modulation will occur and poor efficiency will be obtained.

Conclusion

Most of the 50 kits supplied to club members and other interested parties have been completed and two-meter activity is steadily increasing. Credit is due to members of the club who have made the project successful; particularly, Don Hayworth, W9FYT, business manager of the affair, Bob Winston, W9WX, who did the chassis work, John Kullberg, W9YBG, for photographs, W9DLJ, W9IYL, W9FRE, W9NZM for components, W9FQ for bookkeeping, W9TVN for drawing, W9WKM for test equipment and Ken Guge for layout photos.

Combination Regulated Power Supply

Extending the Range of Regulated Output Voltage

BY L. D. CHIPMAN,* W4PRM

A nominally 250-volt regulator circuit is moved up by steps in the voltage spectrum through the device of increasing the stabilized reference voltage.

THE power supply described in this article makes use of relatively inexpensive components and gives good voltage regulation from zero output to full load current and with varying input voltage. The output voltage is variable over a 1200-volt range with front panel control.

The circuit, Fig. 1, is a combination of two commonly used regulator circuits. The gas-filled regulator tubes are used to establish a fixed reference voltage, to which is added an electronically regulated variable voltage.

In the author's transmitter the circuit is used with 4-125A tubes to provide regulated screen voltages of 350 volts for Class C operation when switch S_1 is in Position 2, and 615 volts for Class AB_1 operation when S_1 is in Position 1. The power transformer is a surplus unit with 600- and 1000-volt taps, a combination which is not an ordinary catalog item, but the transformer suggested in Fig. 1 will give approximately the same voltages. The design can be modified to give any voltage from 225 volts to 1200 volts, with each voltage design center variable ± 60 volts. The maximum output current is determined by the power transformer, rectifier, and electronic regulator tubes.

The number of gas voltage-regulator tubes needed can be found by subtracting 250 volts from the wanted output voltage to get the approximate reference voltage, and then adjusting this reference to the nearest value obtainable from combinations of gas regulator tubes. For example, if the wanted output voltage is 350 volts the nominal reference voltage is 350 − 250 = 100

* 816 Melrose St., Winston-Salem, N. C.

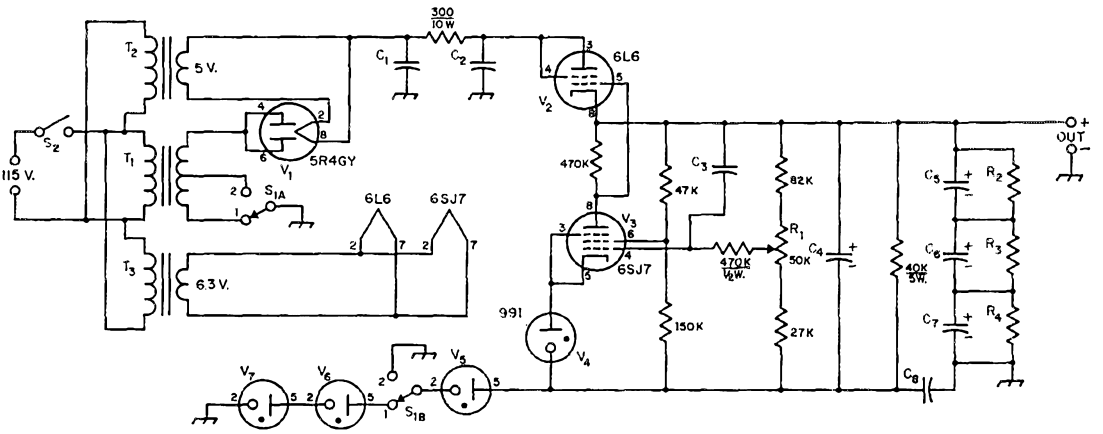


Fig. 1 — Circuit of the regulated power supply. Resistors are 1 watt unless indicated otherwise. See text for discussion of constants for various voltage ranges.

C_1, C_2 — 4-μf. paper, 1500 volts.
C_3 — 0.1-μf. paper, 600 volts.
C_4 — 12-μf. electrolytic, 450 volts.
C_5, C_6, C_7 — 120-μf. electrolytic, 350 volts.
C_8 — 4-μf. paper, 600 volts.
R_1 — 50,000-ohm potentiometer, 1-watt or higher rating.
R_2, R_3, R_4 — 27,000 ohms, 2 watts.
S_1 — D.p.d.t. rotary.
S_2 — S.p.s.t. toggle.
T_1 — Power transformer, voltage and current ratings as required (see text). For output voltages of approximately 700 and 350, Merit type P-3175 (1100 volts center-tapped) is satisfactory.
T_2 — Filament transformer, 5 volts, 2 amp.
T_3 — Filament transformer, 6.3 volts, 1.2 amp. (may be combined with T_2 in a dual-secondary transformer).
V_5 — OA3/VR75 (see text).
V_6, V_7 — OD3/VR150 (see text).

volts. Either a VR75 or VR105 can be used. A VR75 is used for this output voltage in Fig. 1 in order to reduce the power dissipation in the 6L6 regulator tube.

The 615-volt output was computed as follows:

$615 - 250 = 365$

VR150 + VR150 + VR75 = 375 volts.

The necessary reference gas-regulator tubes can be calculated in the same way for voltages up to 1200 volts.

For output voltages higher than 615 volts, the transformer T_1 will have to be changed. The voltage ratings of C_1 and C_2 also will have to be increased in proportion to the increase in output voltage. Additional capacitors and associated bleeder resistors will have to be added in series with C_5, C_6 and C_7 so that the total voltage rating is greater than the output voltage. Also, the voltage rating of C_8 has to be more than the total of the ignition-voltage ratings of the gas regulator tubes.

To increase the current-carrying capacity of this regulator two or more 6L6 tubes can be used in parallel. The current through each tube should not be over 90 ma. The current-carrying capacity of the transformer T_1 has to be greater than the total current required from the output of the regulated power supply, of course.

The heater circuits of the 6L6 and 6SJ7 tubes should not be grounded. The heater winding should be insulated from the transformer core and should not break down with a voltage equal to the output voltage of the power supply.

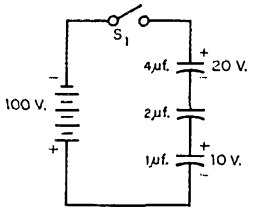
With high voltage outputs it may be necessary to mount the voltage-control potentiometer with insulating washers on a bracket behind the panel and bring an insulated shaft through the front panel.

The rectified and filtered d.c. input voltage to the regulator should be a minimum of 50 volts higher than the required maximum output voltage.

QuistQuiz

This one was submitted by Ronald Egnitz, W3YNZ of North Braddock, Pa.:

Given three capacitors of 4 μf., 2 μf. and 1 μf. respectively, connected as shown in the sketch. The 4-μf. capacitor is charged to 20 volts as



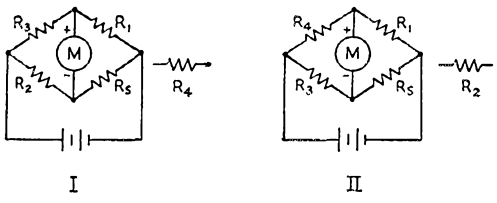
shown, and the 1-μf. capacitor has a 10-volt charge. When the switch is closed and all transients have disappeared, what voltage is across each of the capacitors? Assume the capacitors, conductors and battery are perfect.

—···—

How did you make out with the resistor problem last month? In case you didn't get it, here is the solution:

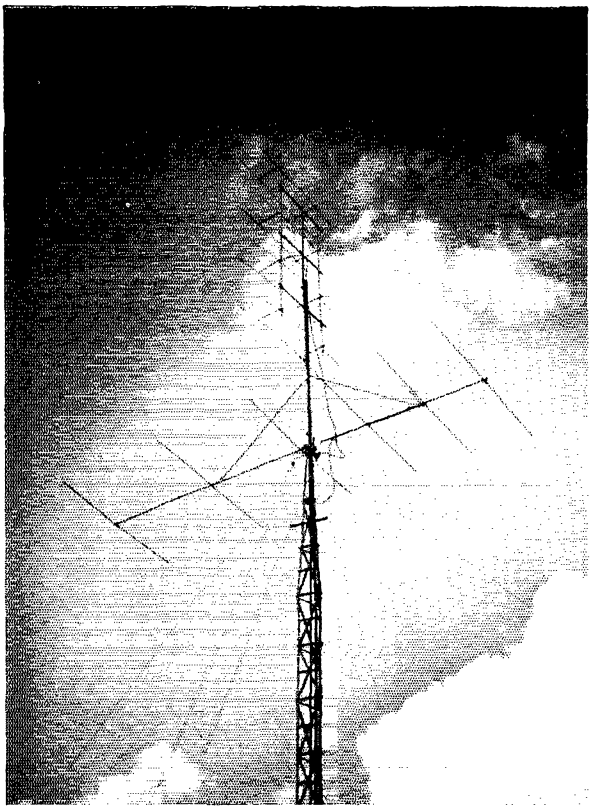
The zero-center milliammeter probably suggested some sort of bridge circuit; if it didn't it should have. Let's call the precision resistor R_s and number the others R_1 through R_4. The two measurements we are allowed will be made using the circuits shown; we must record the meter movement direction (if any) during the two measurements. Having these, we can refer to the table and it will tell which, if any, resistor was high or low or if they were all the same.

If you worked out the solution to the harder



problem involving 14 resistors and three measurements, W2ALJ would appreciate hearing from you and comparing methods of solution.

Reading I	Reading II	Answer
+	+	R_1 high
+	0	R_2 high
+	−	R_3 low
0	+	R_4 low
0	0	All equal
0	−	R_4 high
−	+	R_3 high
−	0	R_2 low
−	−	R_1 low



The 6-element long Yagi as it is installed at W1HDQ. Both it and the 16-element 2-meter array above it have separate vertical members which are fastened to the vertical support with TV-type U clamps.

Six Elements on 6

A High-Performance Beam for Today's 50-Mc. Conditions

BY EDWARD P. TILTON,* W1HDQ

FOR ABOUT TWO YEARS the 6-meter beam at W1HDQ has been the 3-over-3 shown in recent editions of the *Handbook* and *Antenna Book*. It gave a good account of itself, and it fitted conditions as they were on 50 Mc. when it was erected. Its gain was reasonably high, and its broad frontal lobe (about the same as a single 3-element job) made precise aiming unimportant. But times have changed since 1955. That broad lobe, once so convenient for random operating, is something of a liability, now that new stations are springing up in all directions.

Then, too, we wanted to stack a 2-meter beam on the same support, so with some misgivings we took down the old faithful and put together a single 6-element job. It has worked out well, and it was relatively easy to handle, for an array over 20 feet long. Thinking that others who like to build their own beams may be interested in its design, we pass along the principal details herewith.

Element Spacing

Possibly there is only one "best" combination of element lengths and spacings for Yagi arrays, but we have found from long experience that nearly identical results can be obtained from a variety of element spacings, provided that the system is tuned for optimum performance, and matched so that it will take power efficiently. Nobody has yet designed a long Yagi mathematically, so the experimentally-inclined can still have their fun with variable elements and adjustable spacings. We've had our share, and the results may be seen in the *Handbook*, the *Antenna Book* and *QST* for many years past.

One thing seems fairly sure from all this work—ours and that of many others: higher performance can be obtained from Yagis of more than 3 elements if the spacings are increased for the directors after the first one. Reflector spacing is not a critical matter. You can use anything from 0.15 to 0.25 wave length with practically identical results, except that the closer spacing lowers the impedance somewhat and makes the tuning a bit sharper. But within reasonable limits you can tailor your design to physical requirements and available materials.

This is particularly true in arrays of 2 to 5 elements. Our 3-over-3 had spacings of 0.15 wave length for both reflector and director, and tests showed this to be close to optimum for forward gain, when lengths were adjusted to values given in the *Handbook*. We have also confirmed that the 0.2–0.2–0.25 spacing used in the *Handbook* 4-element job is close to optimum for a 12-foot boom. But you can make a 5-element job on the same boom length that will give another

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

decibel or so of gain, with the elements all spaced 0.15 wave length. Its extra performance, particularly in sharpness of pattern, is well worth the extra element.

Top performance in the matter of gain does, however, call for wider spacings. The array shown here was built more or less according to the Greenblum information published in *QST* for August and September, 1956, which is repeated in part in the 1957 *Antenna Book*. One final word on dimensions: splitting hairs is definitely not required in measuring spacings. An inch one way or the other will make no measurable difference.

Construction

We are concerned here mainly with mechanical details and matching adjustments. Element mounting is handled by means of aluminum castings made especially for this purpose by Willard Radcliffe, W8LAH, Fostoria, Ohio. These fittings are made for several sizes of booms and elements, but the type here (the smallest available, Type HASL) takes ½-inch elements and a 1¼-inch boom. Both dimensions are adequate for rugged 6-meter beams. The fitting shows plainly in the photograph of the matching device. Another fine way to mount elements is shown in Fig. 1. This requires drilling through the boom, but it involves no purchased fittings, and it is mechanically excellent.

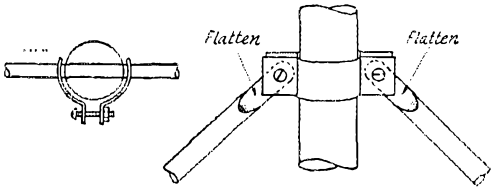


Fig. 1—Method of mounting elements shown at the left requires drilling the boom, but provides inexpensive and secure assembly. Clips are cut from sheet aluminum and bent to fit. The mounting of the suspension bracing arms to the vertical support is shown at the right. Braces are flattened at the ends and bolted to brackets that clamp to the supporting pipe.

The boom is fastened to the vertical support by means of a gusset plate method that has worked out well in the 3-over-3. The mechanical details are shown in Fig. 18-8 of the 1957 *Handbook*. A single thick sheet of aluminum or steel may be used, but a lighter method (and one employing more readily available materials) is to use two sheets of aluminum about ⅛-inch thick, separated by a sheet of plywood or tempered masonite. We prefer the latter, as it seems to be impervious to weather if it is lacquered. It also is not as compressible as wood, so the nuts may be set up really tight and the adjustment will hold indefinitely. The plate for this array was made longer than that shown in the *Handbook*, and 4 U-clamps were used on the boom instead of 2.

It is not always possible to obtain lengths of 20 feet or more on one piece for a boom, but that need not worry you. Ours was made from 3 separate pieces of aluminum and dural. If suspension bracing is used as shown, the method of splicing is not critical. One way to do it is to obtain the next size larger or smaller than the boom material, and use a short length either as a sleeve or a plug, over or inside the main boom. We used the latter method, and without a very good fit, either. We shimmed up the joint with flat strips of sheet aluminum, and pulled the whole thing up tight with a few judiciously placed self-tapping screws. (Needless to say, we slipped the element mountings over the boom before these screws were put into place.)

Suspension bracing is a great aid in using lightweight materials for a rugged beam that will take real punishment from the weather. The suspension of the boom can be done with small galvanized steel wire, or tubing can be used as in this array. If the latter, flatten the tubing at the point where it is to be fastened to the boom. We used the latter method, two screws for the foot of each brace. The upper portion of the brace is also flattened out, and it is bolted between the two halves of a clamp made of ⅛-inch aluminum. See Fig. 1.

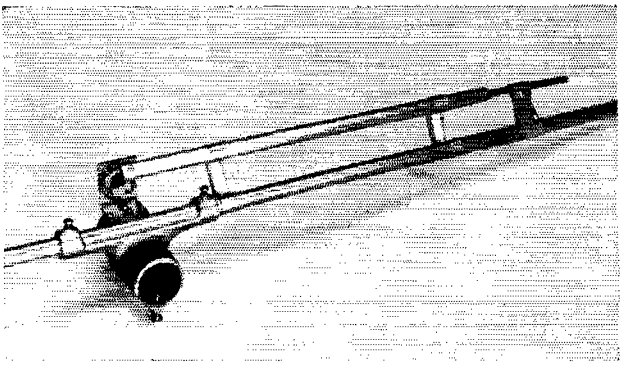
In mounting the boom to the vertical support there is always the temptation to balance the system dimensionally. If there is a large difference between the weight of the two halves of the array it is better to balance it mechanically, at the expense of some ungainliness in appearance. Where wide spacing is used on the forward directors and close spacing near the driven element, this becomes more important than in small arrays.

The Gamma Match

For years we've liked the gamma system as a method of matching rotatable arrays fed with coax. Trouble was that the variable capacitor presented quite a problem in weatherproofing. Then along came W2VS, with his trombone capacitor described in July *QST*. Our gamma match is a modification of his, well suited to v.h.f. applications. The capacitor has extremely high *Q*, and it can be weatherproofed by wrapping the open ends with plastic tape.

The main gamma arm is cut from the same material as the elements. It is suspended parallel to the driven element by means of two 1-inch ceramic standoffs and four sheet aluminum clips, as shown in the photograph. The ½-inch tube is 15 inches long. Its inner end is connected to the inner conductor of a coaxial fitting, which is mounted on a small bracket screwed to the boom casting. Holes are drilled and tapped in the casting to take two 6-32 machine screws for mounting the bracket.

The sliding arm that is the movable element of the coaxial capacitor is made of ¼-inch tubing or rod, about 14 inches long. It is maintained coaxial with the main arm by means of two polystyrene bushings. One is force-fitted to the end of the rod that goes inside the main arm. The other is fitted tightly into the far end of the main arm, but reamed out to permit the movable rod to slide freely in and out. These bushings can



Closeup view of the adjustable gamma match. Small rod, right, slides inside main gamma arm, providing adjustment of both the top position on the driven element, and value of the series capacitor.

be made from 3/8-inch polystyrene rod, or they can be fashioned easily from small polystyrene coil forms. We used the latter method. The National PRC-1 form is ideal for the purpose. It fits tightly over the 1/4-inch rod and slides freely inside the 1/2-inch arm. The bearing at the end of the arm where the adjusting rod projects was made by cutting the bottom off one of the PRC-1 forms and drilling out the inside so that it would pass the rod freely. It is shimmed up with plastic tape to a sufficient thickness to make it a tight fit inside the main arm. It is slipped over the rod and then pressed into place in the end of the arm.

A clip of sheet aluminum makes contact between the driven element and the sliding rod. Be sure that all surfaces at the points of contact are completely clean, as solid low-resistance electrical contact is of utmost importance here.

Adjustment

Tune the elements if you like. We've been through it many times, so you can take our word for the lengths given, or do the job yourself, if you have a foolproof gain-measuring setup. This is not a simple matter, as anyone who has done extensive work with Yagis can verify. Here we are concerned only with matching.

Matching *requires* an s.w.r. bridge. Don't try to do it without one! It doesn't have to be a fancy laboratory-type device, but you must have something that will enable you to adjust for zero reflected power. Field-strength meters, the gyrations of the final plate milliammeter, and all other indications except that minimum reflected-power reading are out. Buy, borrow, or build a bridge. You'll never have a more useful or necessary tool.

Put the beam up on a temporary support, as high above ground as you can get it and still reach the gamma adjustment. A half wave length will do, if the beam is in a clear flat area, with no wires, drain spouts or other metal, and preferably no foliage, within at least a half wave length all around. The larger the open space and the higher the beam position, the better, but these are minimum specifications.

Insert the s.w.r. bridge in the coaxial line at the antenna. At the transmitter will do in a pinch, but at the antenna gives the most sensitive indication. If your bridge is not the kind that can be left in the line at all power levels, you'll have to set up for operation at a power level that the bridge will take. Low power has the advantage that you can make adjustments without turning the rig off. We did the job with 100 watts in the line, and even though we wore heavy buckskin gloves the warmth of r.f. could be felt plainly. Bare-hands adjustments are out, with anything more than a few watts.

The adjustment is twofold. You've got to find the right spot for connecting to the driven element, and the right value of series capacitance to tune out the reactance of the arm. Start with the clip set at about 16 inches out from the boom. Set the nuts on the clip just tight enough to make a solid electrical contact, but loose enough so that the arm can be slid in and out.

Turn on the transmitter and read the reflected power. Maintain the clip at one position and slide the capacitor arm inward or outward slightly. Note if the reflected power changes, and which way. If it goes down move more in the same direction, until it goes as low as it will. If there is still a reading, the position of the clip must be altered a bit at a time, adjusting again for minimum reflected power. Eventually a combination will be found that gives a zero reading. That's it, except to check the reading when you get out of the antenna field. If the reading goes up, try the adjustment again, going a bit beyond the apparently optimum point, until you have a setting that results in a zero reading when you are out of the field of the array. Field glasses for reading the bridge meter may be helpful here.

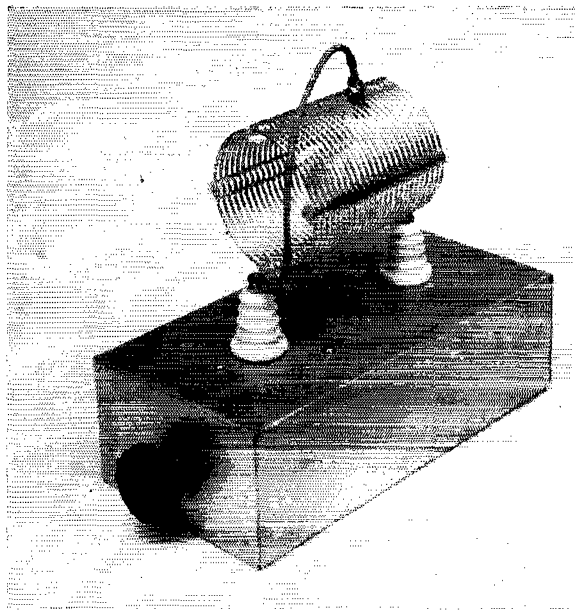
At W1HDQ we have a run of over 100 feet of transmission line. To keep losses down, we bring the coax from the gamma match down to a balun at an anchor point at the top of the tower. There we have a 300-ohm *Q*-section, working into 450-ohm open-wire line. At the station, the 450-ohm line goes to an antenna coupler, coming out on coax to the send-receive relay. The antenna coupler is thus in the line for both transmission and reception, a desirable feature, we've found.

Results

A beam of this length is definitely not a broad-

(Continued on page 172)

No place for an antenna? Not the conventional type, perhaps, but where there's a window there's a way.



The coupling circuit is constructed on a 3 × 5 × 10-inch aluminum chassis. An eight-inch length of wire is connected to the grounded end of the coil. This, with the clip at its end, serves to short out the unused portion of the coil. The clip is an E. F. Johnson Type LC8.

A Window-Sill Antenna

80 Through 6 with a Small Antenna System

BY LEWIS G. McCOY,* W1ICP

This article describes a simple antenna system of small physical size for those amateurs who have no space for conventional antennas. We call it a "window-sill antenna" because it is intended particularly for those who live in apartment buildings or rented rooms and have access to a window but have no other antenna facilities.

One of its features is that it can quickly be put up or taken down, if necessary — a feature that should appeal to amateurs who have reluctant landlords! This is accomplished by using a collapsible whip antenna mounted on a small platform that can be hooked on a window sill. Details for one type of mounting, offered as a suggestion, are shown in Fig. 2; you may need something different for your location.

If the window you plan on using is at the second floor level or higher, the whip can be mounted either horizontally or vertically, but horizontal mounting is preferable because it has the advantage of getting the antenna farther away from the building. At ground level or the first floor, the antenna should be mounted at an angle of 45 degrees or vertically with its base two feet or more from the wall of the building.

The antenna can be used on any of the bands from 80 through 6 meters. This is made possible by using a combination loading coil and matching circuit for coax line, as shown in Fig. 1. When fully extended, the whip (Ward Model SC-8) is 100 inches long. This length, plus the two or three feet of wire needed to connect from the base of the whip to the coil, is very short for 80 or 40 meters, but on 20, 15, 10 and 6, the length is comparable with a quarter wave length.

Antennas that are extremely short for a given band, such as this one on 80 and 40, are not very efficient radiators. But when it is a choice between an inefficient system and no antenna at all, it's a case of anything is better than nothing. And after all, mobiles do operate with just such antennas — and manage to have satisfactory contacts with quite low power.

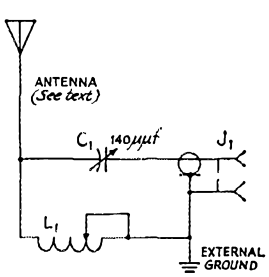
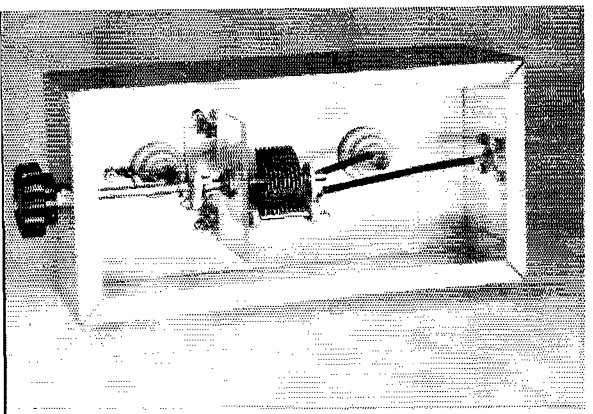


Fig. 1—Circuit diagram of antenna and coupling circuit.
C_1—140-μμf. variable (Hammarlund MC-140-S).
J_1—Coax chassis receptacle, SO-239.
L_1—24 turns of No. 12, 6 turns per inch, 3 inches diam. (Air-Dux 2406).

On 20 meters and higher frequencies the antenna efficiency improves, and the principal handicap is that a window-sill location is not the best place that could be chosen for a radiating system. However, necessity governs when no other spot can be used.

* Technical Assistant, *QST*.



Bottom view of the coupling unit showing the method for mounting C_1 on the Lucite bracket. An insulated shaft coupler is used to connect the rotor of C_1 to the shaft for the tuning knob.

The system described was tested on several bands at different locations. Here at Headquarters the building has a steel frame, typical of many apartment buildings so far as construction is concerned. The antenna was also tried at the home QTH of W1ICP, a two-story frame house. At both places the antenna was mounted horizontally at the second-floor level. Several contacts were made on each band from both locations. The power input was about 50 watts and the *worst* signal report received was a 5-6-9 from Illinois. (We won't list all the 5-9-9 reports, but we did receive a few!) One other installation was tried with the antenna mounted vertically a few feet above ground level. A three-foot metal stake driven into the ground was used for the ground connection. This setup more or less duplicates the average mobile installation. Several satisfactory contacts were made with it.

Coupling System

Construction of the loading coil and coupling system is simple. L_1 is mounted on Johnson Type 135-46 feed-through insulators. The variable capacitor, C_1, is mounted on a $2\frac{1}{2} \times 3$-inch piece of Lucite. A small right-angle bracket, $\frac{1}{2} \times \frac{1}{2} \times 3$ inches, is used to hold the Lucite to the chassis. An insulated coupling is used in conjunction with a panel bearing and shaft to bring the capacitor control to the front of the chassis. This reduces any hand-capacitance effects when adjusting C_1, if the ground lead is short.

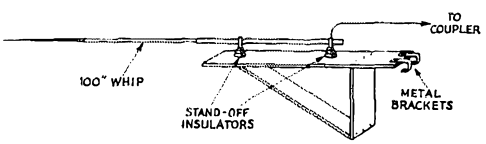


Fig. 2—This drawing shows one method of constructing a window mount. The metal brackets for hooking to the window sill can be made from shelf brackets available at any hardware store. The whip is supported by two steatite stand-off insulators.

Installation and Adjustment

The antenna preferably should be installed on a window that is near a heating radiator or water pipe. Either of these makes a reasonably good ground connection — in fact, any extensive metallic system such as water piping or the metal frame of a building will, generally speaking, be a better "ground" than a rod driven into the earth and connected to the coupling circuit through a wire of appreciable length.

The simplest method of tuning is to use a standing-wave-ratio bridge in the coax line between the transmitter and coupler. If you don't have such a bridge then by all means build or buy one. Several different units are described in the measurements chapter of the *Handbook*.

Let's assume you're going to tune the system up on 40 meters. First, set your transmitter to the frequency you want to use in that band. Turn on the rig and set your s.w.r. bridge for reading reflected power. Tune C_1 and see if there is any sign of a match, indicated by a reduction in the reflected-power reading. At first, you'll probably find that there is no such indication, unless you are lucky enough to have the coil tap at the correct position. Finding the right place for the tap is the problem. Move the tap up or down the coil and tune C_1 again. Continue taking trial tap positions until you find one where tuning C_1 causes the reflected-power reading to take a dip. Then move the tap a fraction of a turn at a time until you are able to bring the reflected-power reading down to zero with C_1. It will usually rise rapidly as C_1 is tuned on either side away from the correct setting, especially on the lower-frequency bands, because a small antenna system such as this will tune quite sharply. Once you find the proper tap point on the coil and the correct setting of C_1 as indicated by a reflected current of zero, the antenna is tuned for that frequency.

The same tuning procedure is used for all bands from 80 through 15 meters but the tuning will tend to be less critical on the higher bands where the antenna is longer in terms of wave length.

It is a good idea to make up a chart showing the proper tap points for each band. This will save a lot of work when you change bands. The amount of coil you'll need will depend on the band. Most of the coil will be used for 80 meters and less and less as you go to the higher-frequency bands. On 10 you won't need any coil; on 6 the whip should be shortened to 55 inches which is approximately a quarter wave length on that band.

If you happen to live several floors above the ground there is a simple method of increasing the efficiency of the system on 80 and 40. You can lengthen the antenna by clipping a wire to the end of the whip and letting it hang down. How much wire you can use will depend on the height.

The author would appreciate hearing from anyone who manages to work all states using this system. After all, it isn't impossible!

Note on Inductance Calculation

Designing Coils Having a Fixed Winding Pitch

BY THEODORE ELLIOTT *

IN DESIGNING air-core coils for a desired inductance and where a table or chart (or the *ARRL Lightning Calculator — Ed.*) are not readily available, the equation

$$L = \frac{0.2a^2n^2}{3a + 9b + 10c} \qquad (1).$$

is used, where L is the inductance in microhenrys, a is the mean diameter of the coil in inches, b is the length of the winding in inches, c is the radial depth or thickness of the winding and n is the number of turns. In the case of single-layer coils, 10c may be neglected so that the equation becomes

$$L = \frac{0.2a^2n^2}{3a + 9b} \qquad (2).$$

This is the form of the equation that will be discussed here.

Insofar as the coil diameter and the desired inductance are known, the equation usually is rearranged to solve for the number of turns of wire directly and a value for b is assigned that will suit the design. Thus when the number of turns has been determined from the equation, it is simply a matter of spacing these turns equally in the length b as chosen. For this purpose the equation is written

$$n^2 = \frac{3a + 9b}{0.2a^2} L \qquad (3).$$

or

$$n = \sqrt{\frac{3a + 9b}{0.2a^2} L} \qquad (4).$$

The number of turns solved for must be spaced out in the length already assigned by the value b, and very often this spacing is an odd value that is difficult to accomplish. Furthermore, the formula cannot be used for a winding with a desired turn spacing or "pitch," nor does it provide a precise solution for close-wound coils, whose "pitch" is the number of turns per inch listed in the wire tables for the particular size and type of wire being used. However, a precise solution for any "pitch" is easily found as follows:

Every coil has a certain number of turns per inch, or "pitch," whether it be the value from the wire tables or any other spacing that may be desired. Hence, the length b of any coil can be stated in terms of the total number of turns divided by the number of turns per inch, or "pitch," or, we can say $b = n/P$. Then the equation (3) becomes

$$n^2 = \frac{3a + 9\frac{n}{P}}{0.2a^2} L \qquad (5).$$

By a little algebraic manipulation this can be put in the form

$$n^2 - \left(\frac{45L}{a^2P}\right)n = \frac{15L}{a} \qquad (6).$$

This is an equation in the quadratic form $x^2 - ux = v$, the solution for which is

$$x = \frac{u \pm \sqrt{u^2 + 4v}}{2}$$

If the coefficient of n in parentheses in equation (6) is substituted for u and the right-hand term of equation (6) is substituted for v, the equation becomes

$$n = \frac{\left(\frac{45L}{a^2P}\right) \pm \sqrt{\left(\frac{45L}{a^2P}\right)^2 + 4\left(\frac{15L}{a}\right)}}{2} \qquad (7).$$

At first glance, this appears to be quite formidable, but since L, a and P are known, it is readily apparent that the values shown in parentheses will resolve into single terms, thereby making the solution quite simple.

If the terms shown in parentheses in equation (7) are tabulated, their values become constants for the particular size of wire and diameter of coil form being used. A tabulation of such constants for ½-inch diameter forms is shown in Table I.

Table I

Gauge	P	$\left(\frac{45}{a^2P}\right)$	$\left(\frac{45}{a^2P}\right)^2$	$4\left(\frac{15}{a}\right)$
18	23.6	7.63	58.2	120
20	29.4	6.12	37.5	120
24	46.3	3.89	15.1	120
28	72.7	2.48	6.13	120
32	113	1.59	2.54	120

The value of P in the above table is for enameled wire as listed in the wire tables.

To illustrate this simplification, assume that a coil of No. 28 enameled wire is to be close-wound on a ½-inch diameter form. Equation (7) then would be

$$n = \frac{2.48L \pm \sqrt{6.13L^2 + 120L}}{2}$$

and the only remaining variable would be the value of inductance desired.

* 11 Herrick St., Winchester, Mass.

Low-Pass Filters for Mobile Use

TVI Suppression With Compact Units

BY WARREN RUDOLPH,* W4OHM

• **Low-pass filters designed for home-station use in suppressing TVI usually are much too bulky to be used conveniently in a mobile installation. Those described here are small enough to be tucked away in a corner, or built directly into the transmitter.**

VOLUMES HAVE BEEN WRITTEN on the subject of low-pass filters for the home-station rig. But there has been very little concerning the application of such filters to mobile transmitters. It is true that the mobile installation starts out with several points in its favor as compared to the usual fixed station. The average mobile rig is of relatively low power and is fairly well shielded by the car body. Since cars are confined to streets and highways, the mobile antenna is seldom in close proximity to TV antennas, and its field and the field of the TV antennas are usually at right angles. Perhaps the most favorable condition is that the mobile transmitter is independent of the a.c. power line, so there is no possibility of coupling through this medium.

Nevertheless, under certain circumstances, TVI from the mobile rig can be quite as bad as from the home station, particularly when operating on 6 or 10 meters.

In most cases, commercially-available low-pass filters, as well as those described for home construction, call for components and a design not readily adaptable to the compactness required in mobile installations. In search of something that would meet the requirements of small size, ease of construction, low cost and acceptable attenuation, the author struck on the filter designs shown in Fig. 1.

No claim is made for the originality of these circuits, since they are exact duplicates of the filters used in the TA-104 series of Motorola mobile and base units for frequencies between 25 and 54 Mc. The circuit of Fig. 1A is for operating frequencies below 30 Mc., while Fig. 1B should be used with rigs operating in the 50–54-Mc. range. These filters, as described, will handle with ease anything up to and including the 829B class if the standing-wave ratio on the transmission line is reasonably low.

The author has had about 15 years of experience in the installation, design and maintenance of amateur as well as commercial mobile equipment. Over that period of time, there has never been a complaint of TVI from any rig equipped with these filters, even though we are located behind a mountain and 72 miles from Washington, D. C. (Channels 4, 5, 7 and 9), 96 miles from Baltimore (Channels 2, 11 and 13), and approximately 45 miles from Harrisonburg, Va. (Channel 3). These filters do not, however, afford the attenuation of the multisection filters commonly used in home installations and I wouldn't recommend them for this purpose.

* Berryville Ave., Winchester, Va.

Construction

A point that makes these particular filters attractive is that, if you prefer, prewound coils and the required close-tolerance capacitors are available from Motorola Inc., Repair Parts Division, Chicago 51, Ill., or any of their local service stations, for a total cost of less than a dollar for either unit. In building these filters, it is important that the coils in Fig. 1A be mounted at right angles, and that all leads be kept as short as possible. Components can be assembled on standard insulated soldering-lug strips, or on a small piece of Formica or polystyrene. The assembled unit should be mounted inside the transmitter, if possible, as close to the final output stage as possible, but completely shielded from it. If this is not feasible, the filter should be mounted in a shielding box properly inserted in the coax line, with coax fittings used at the input and output to prevent any r.f. from flowing around the filter.

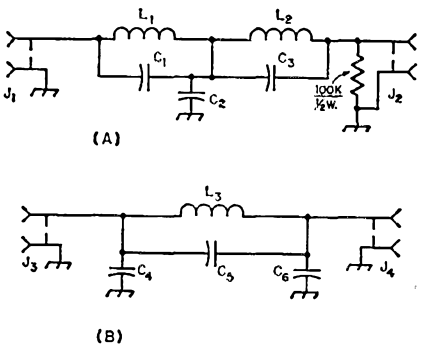
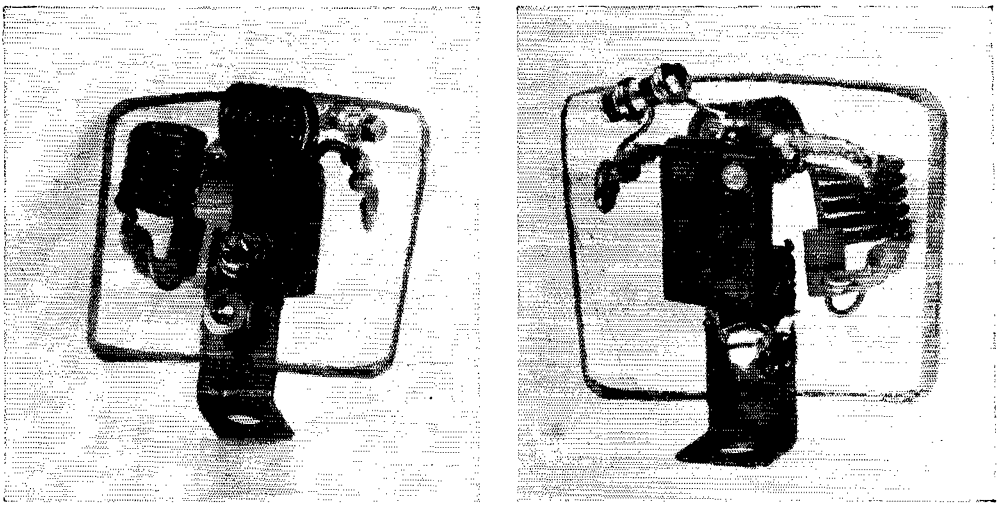


Fig. 1 — Low-pass filter circuits for mobile use. The circuit of A is for transmitters operating below 30 Mc., while B is for 6-meter installations. Numbers given in parentheses below are Motorola type numbers.

C_1 — 4-$\mu\mu$f. ± 0.5 $\mu\mu$f. tubular ceramic (21K47952).
C_2 — 170-$\mu\mu$f. 5% silver mica (21K410062).
C_3 — 24-$\mu\mu$f. 5% tubular ceramic (21R38932).
C_4, C_6 — 40-$\mu\mu$f. 3% silver mica (21K803488).
C_5 — 12-$\mu\mu$f. 5% tubular ceramic (21R891167).
J_1, J_2, J_3, J_4 — Coax connector.
L_1, L_2 — 8 turns No. 18 enam., ¼-inch inside diam., close-wound (21K810402).
L_3 — 7 turns No. 18 enam., ¼-inch diam., close-wound (21K810402).



Two views showing a typical low-pass filter assembly on a polystyrene base.

Using the Filters

These filters are designed for use with a properly-terminated 52-ohm coax transmission line. Therefore, the transmitter output should be at low impedance from a pi network with proper constants, or a low-impedance link coupled to a conventional tank, and tuned with a series capacitor.

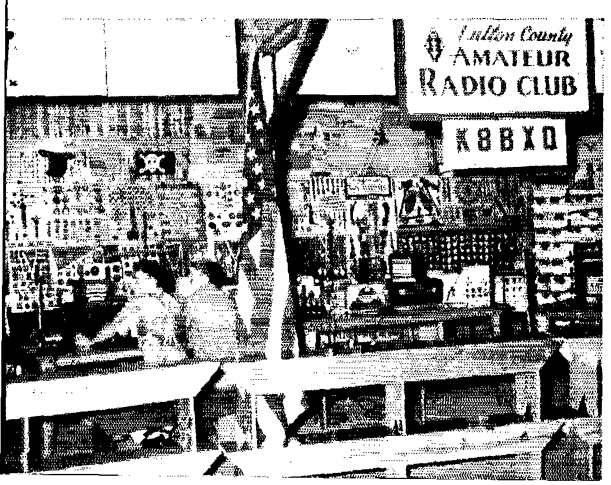
Some hams have the idea that using a low-pass filter presents a lot of problems. Of course, if you try to feed an antenna presenting an impedance of several hundred ohms through a 52-ohm filter, you're going to get very little power out of the transmitter and into the antenna. If the whip antenna is cut accurately to an electrical quarter wave length at the operating frequency (including the length of any lead through a base spring to the point where the connection to the coax is made), the antenna impedance will be resistive and sufficiently close to 52 ohms to work well. Under this condition, the length of the transmission line will be relatively unimportant. The author has used lines from a few inches to over 20 feet in mobile units and has never encountered difficulties in coupling provided the above-mentioned antenna length was observed.

Strays

Another corporate merger? K5INC worked W3CO.

On July 17 K8AEC worked KC4USK on 7205 kc., s.s.b. A first?

The Fulton County Amateur Radio Club, in Ohio, recently put on a three-hour demonstration of ham radio at a Boy Scout Camporee at Camp Lakota, near Defiance, Ohio. Nearly 750 boys saw the club members demonstrate code sending, two-way radiotelephone contact with W8OFN in Lyons, and contact with various mobile stations. Also on the program was a half-hour talk on amateur radio, a demonstration of a radio-controlled model boat, and the handling of traffic in connection with a simulated accident. The photo below at the left shows the base station setup against a background of scouting awards. At the right, the mobile is not being mobbed by an angry crowd, but much enthusiasm on the part of the Scouts is in evidence.



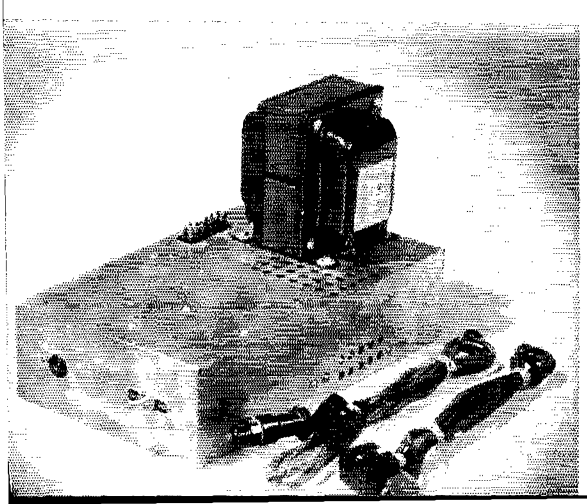
A Universal Power Supply

Fifty Watts from Battery or A.C. Line

BY ROBERT E. FOLTZ,* W9GBT

Designed for emergency, mobile or home-station use, this flexible power-supply unit can be operated from a 6- or 12-volt storage battery or from a 115-volt a.c. line. Shifting from one source to another is a simple matter of interchanging input cable plugs.

The universal power supply with its input cables. The ventilation holes in the top and sides are for the rectifier tubes mounted inside. The output connectors behind the transformer should be of the female type as mentioned in the text. On the end of the chassis are the pilot lamp and the a.c. switch. Filter switch S_2 (not shown) could be mounted between the lamp and a.c. switch or at any other convenient spot. Notice that the d.c. cable is terminated in a cigar-lighter plug.



IN PLANNING equipment for mobile and emergency use most amateurs avoid the construction of their own vibrator supplies in favor of purchasing commercial products. However if a few precautions are observed there should be no difficulty in building a unit of greater flexibility and at less cost.

While most late-model cars use 12-volt batteries there are still a great number of cars in operation using 6-volt systems. Also due consideration must be given to emergency operation under conditions where a 6-volt battery may be the only power source available. Since operation from a power line is, of course, to be preferred whenever such a source is available, provision for a.c. input is also highly desirable.

Circuit Features

The circuit of a universal power supply for emergency, mobile or home-station use is shown in Fig. 1. The unit shown in the photographs will furnish a d.c. output of 300 volts at 160 ma. It can be operated from any of the previously mentioned sources. No tricky switching arrangements or wiring changes are involved in shifting from one power source to another; it is a simple matter of plugging P_1 or P_2, connected to the selected source, into one of the two chassis connectors J_1 or J_2.

The circuit is designed around Merit P-3176 transformer T_1. In addition to the high-voltage secondary (Terminals 8, 9 and 10), this transformer has a 6.3-volt filament winding (Terminals 5 and 7) for use with 115 v. a.c. input, and a center-tapped primary (Terminals 1, 2 and 4) for 6-volt vibrator input. This primary also has a tap yielding 6.3 volts between Terminals 1 and 3 on a.c. input. This 6.3-volt section and the 6.3-volt filament winding, connected in series, form the 12-volt center-tapped vibrator primary (Terminals 1, 3-5, and 7). Although the input voltage in this case is slightly higher than the windings were originally designed for, this connection has been used for long periods of time in several duplicates of this supply with no noticeable increase in transformer temperature, or subnormal vibrator life, as long as the normal secondary rating of 160 ma. at 300 volts was not exceeded. The resulting secondary output voltage is higher (approximately 20 per cent) than with normal 6-volt operation. To compensate for this, filter input capacitor C_5 can be switched in parallel with output capacitor C_6, converting to choke input. Under this condition the d.c. output voltage under load is the same as with 6-volt input. A vibrator-primary current of 11.6 amperes was measured with 6-volt input under loaded conditions, and 6.8 amperes with 12-volt input.

It is realized, of course, that a vibrator of the split-reed type, which reverses current through the entire primary (center tap not used), could be used with the 6-volt vibrator primary for 12-volt operation.[1] However vibrators of this type generate considerably more hash, increasing the filtering difficulties as well as the switching problem. There is also the point that in case of failure in an emergency a replacement vibrator of the conventional type would probably be more easily obtained.

A pair of 6AX5GTs, each with plates in parallel, are used as rectifiers. C_1 and R_1 are the usual buffer capacitor and resistor which are highly important in maintaining normal vibrator life.

* 1214 Fourth Ave., Sterling, Ill.

[1] "Hints & Kinks," *QST*, March, 1957.

Hash filtering is provided by C_2, C_3 and RFC_1 in the primary circuit, and C_4 and RFC_2 in the output. I_1 is a warning lamp that lights when the power is on.

Heater Connections

To adapt equipment for optional 6- or 12-volt operation, 6-volt tubes must be used with their heaters in series-parallel. Fig. 2 shows a typical example of connections. The tubes in the equipment should be divided into two groups whose heater-current ratings total as closely as possible the same value.[2] The heaters in each group should be connected in parallel, and the two groups then connected in series. If it is impossible to arrive at a grouping that will have exactly the same total current, a resistor may be connected in parallel with the group drawing the smaller current as shown. The value of this resistor should be such that it will draw enough current at 6 volts to make up the difference between the two totals. One side of one group may be grounded to chassis

[2] "Revision of 6-Volt Equipment for 12-Volt Operation," *QST*, Aug., 1955.

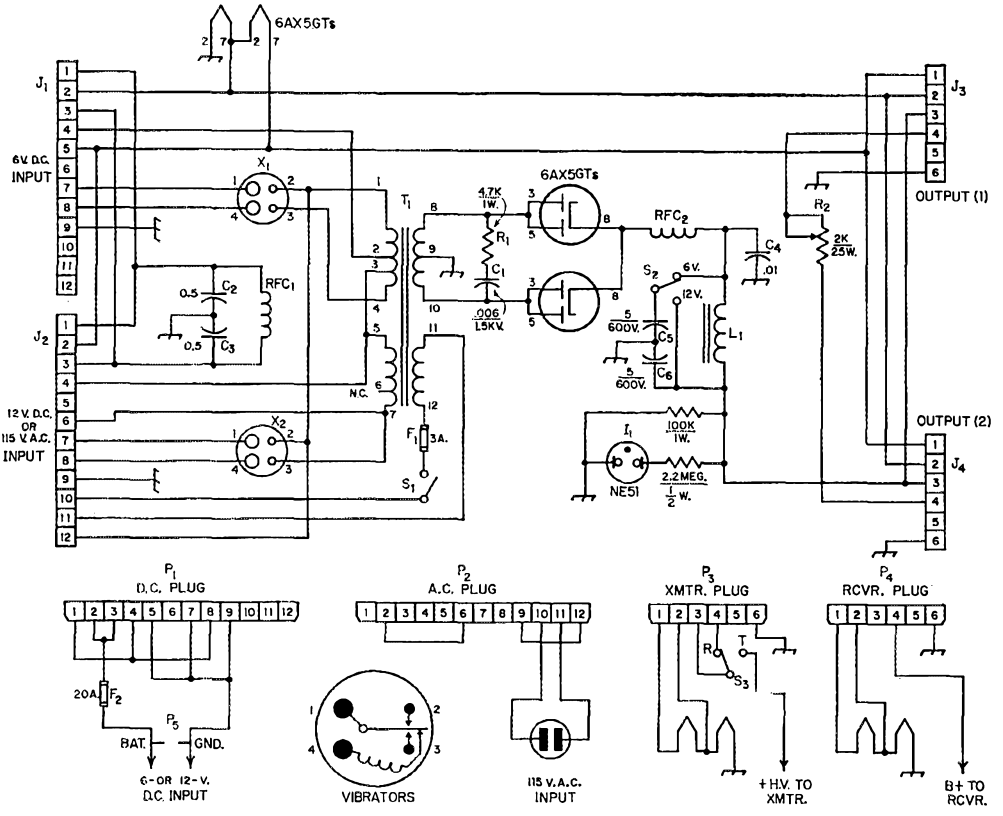
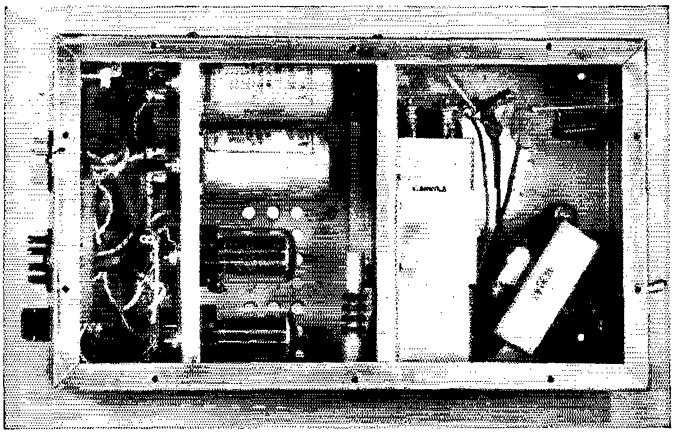


Fig. 1 — Circuit of the universal power supply. All capacitances are in μf.

C_1 — Buffer capacitor, tubular plastic.
C_2, C_3 — Hash-filter capacitor, paper.
C_4 — Hash-filter capacitor, disk ceramic.
C_5, C_6 — Ripple-filter capacitor, 5 μf. or more, 600-volt oil-filled or electrolytic.
F_1 — 3-amp. cartridge fuse (Littlefuse type 3AG) in extractor-post mounting (Littlefuse 341001).
F_2 — 20-amp. cartridge fuse (Littlefuse type SFE) in in-line fuse retainer (Littlefuse 155020).
I_1 — Neon pilot lamp.
J_1, J_2 — 12-contact male chassis connector (Cinch-Jones P-312-AB).
J_3, J_4 — 6-contact female chassis connector (Cinch-Jones S-306-AB).
L_1 — 5-h. 200-ma. 80-ohm filter choke (Merit C-1396, Stancor C-1111).
P_1, P_2 — 12-contact female cable connector (Cinch-Jones S-312-CCT).
P_3, P_4 — 6-contact male cable connector (Cinch-Jones P-306-CCT).
P_5 — Cigar-lighter plug (Mallory R-675).
R_1 — Buffer resistor.
R_2 — Series voltage-dropping resistor for receiver, slider adjustable.
RFC_1 — 30 turns No. 14 enam., ½-inch diam., close-wound.
RFC_2 — 1-mh. r.f. choke (National R-300-U, Millen 34106).
S_1 — S.p.s.t. toggle switch.
S_2 — S.p.d.t. toggle switch.
S_3 — S.p.d.t. toggle, or other, at transmitter.
T_1 — Combination power transformer: 6-volt d.c. vibrator or 115 v. a.c. input; 300 volts, 160 ma.; 6.3 volts 3 amp.; 6.3-volt 1.5-amp. tap on vibrator primary (Merit P-3176). Numbered terminals are color-coded as follows: 1 — heavy green; 2 — yellow; 3 — light green; 4 — black; 5 — brown; 6 — blue; 7 — white; 8 — red; 9 — red-yellow; 10 — red; 11 and 12 — black.
X_1 — 4-prong tube socket for 6-volt vibrator (Mallory 4501 vibrator).
X_2 — 4-prong tube socket for 12-volt vibrator (Mallory G4501 vibrator).



Bottom view of the universal power supply. Partitions divide the chassis off into three compartments. The one to the left contains 12-contact input connectors J_1 and J_2, primary hash-filter components C_2, C_3 and RFC_1, and buffer capacitor and resistor C_1 and R_1. The two rectifier tubes, 6- and 12-volt vibrators, RFC_2 and C_4 occupy the central compartment. The ripple-filter capacitors and choke, and the pilot lamp and a.c. switch are to the right.

but the other side of this group and both sides of the second group must be insulated.

Switching Circuits

Battery input connections are made through P_5 which plugs into a cigar-lighter socket in mobile service. F_2 is a special fuse designed to be inserted in the cord between P_5 and P_1.

For 6-volt operation P_1 is plugged into J_1. Through Pin 2, the ungrounded side of the battery (regardless of whether it is positive or negative) is applied to the center tap of the series-connected heaters. Through Pin 3, the ungrounded side of the battery circuit also goes through RFC_1 to Pin 1 where jumpers on P_1 connect to Pins 4 and 8. Pin 4 carries the ungrounded side of the battery circuit to the 6-volt primary center tap; Pin 8 carries it to the coil of the 6-volt vibrator at X_1. The grounded side of the battery is fed to Pins 5, 7 and 9. Pin 5 grounds the insulated end of the heater series to connect the two groups in parallel (see Fig. 2); Pin 7 grounds the vibrator reed; Pin 9 connects car ground to power-supply chassis.

For 12-volt operation P_1 is plugged into J_2. Through Pin 2, the ungrounded side of the battery is applied to the insulated end of the heater series. Through Pin 3, the ungrounded side of the battery circuit goes through RFC_1 to Pin 1 where the jumpers on P_1 connect it to Pins 4 and 8. Pin 4 carries the battery circuit to the center tap of the 12-volt vibrator primary; Pin 8 carries it to the coil of the 12-volt vibrator at X_2. The grounded side of the battery is fed to Pins 5, 7 and 9. Pin 5 on J_2 is blank. Pin 7 grounds the reed of the vibrator; Pin 9 connects car ground to chassis.

For 115-volt a.c. operation P_2 is plugged into J_2. A.c. input is fed to Pins 10 and 11 carrying it to the a.c. primary through S_1. A jumper joins Pins 2 and 6 connecting Terminal 7 of one of the 6.3-volt heater windings to the insulated end of the heater series. Another jumper joins Pins 9 and 12 connecting Terminal 1 of the other 6.3-volt winding to ground. The two 6.3-volt windings are then in series applying 12.6 volts to the heaters in series.

Positive high-voltage output from the supply is fed to Pins 3 on output connectors J_3 and J_4. The three heater connections are made through Pins 1, 2 and 6. The cable for transmitter plug P_3 has provision for connecting to a transmit-receive switch (S_3) at the transmitter. In the transmit position the plate voltage is fed to the transmitter. In the receive position the switch

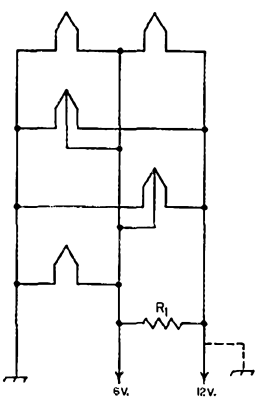


Fig. 2—Circuit showing typical series-parallel heater connections for 6-volt and 6.12-volt tubes. Resistor R_1 is used when necessary to balance the currents in the two branches as described in the text. The dashed line shows how the switching system connects all tubes in parallel for 6-volt operation by grounding.

feeds the plate voltage, via Pin 4, through series voltage-dropping resistor R_2 to Pin 4 on the other output jack and thence to the receiver. It will be noticed that the same circuit results with P_3 and P_4 in either output jack.

Construction

The unit is constructed on a 7 × 12 × 3-inch chassis, with only the transformer and output connectors J_3 and J_4 above deck. The two rectifier tubes and both vibrators are mounted below deck for compactness and shielding. This leaves a clear area on top of the chassis for mounting a receiver or small transmitter. Adequate ventilation is provided by patterns of ¼-inch holes in the top of the chassis, directly over the rectifier tubes, and along the bottom edge of the chassis on both sides.

The transformer is centered at one end of the chassis. Output connectors J_3 and J_4, shown mounted to the rear of the transformer, are the

male type because they happened to be on hand. However, in the consideration of safety to equipment and the operator, they should be of the female type as specified under Fig. 1.

The under side of the chassis is divided off into three compartments separated by metal partitions. These partitions have $\frac{3}{8}$-inch lips bent up along all four sides with notches in the bottom corners to clear the chassis lips. The partitions are fastened in place by two machine or sheet-metal screws at each end. One section houses the ripple-filter components. The rectifier tubes and vibrators are mounted on the second partition. Vibrator grounding cups (Mallory GC7) fastened under the socket-mounting screws are important not only in holding the vibrators securely in their sockets but also for good grounding of the vibrator shells to reduce hash. The pilot lamp, a.c. power switch and filter switch S_2 (not shown) can be mounted on the front end of the chassis, with fuse F_1 and the input jacks at the other end. Shielding should be completed with a chassis bottom plate.

Wiring

As much as possible of the wiring should be done before fastening the partitions and connectors in place. Leads of approximately the required length can be soldered to the connectors before mounting. Wire not smaller than No. 14 should be used for the battery-circuit wiring. If necessary enlarge the holes in the terminals of the connectors with a drill or diemaker's file. If more than one connection to any terminal is required solder one wire to the terminal and the second wire to the first. The terminals on the Jones connectors are numbered and connections should be checked with Fig. 1 before mounting connectors.

Connections to the vibrator and rectifier sockets can be made most easily by laying the partition loosely in the chassis and then fastening it permanently in place after the connections have been made. In making the transformer connections be sure to follow the color coding (see Fig. 1) carefully for proper polarization of the windings that are connected in series.

Operation

In reference to mobile operation the cigar lighters in some cars are protected by a thermal overload breaker which may not carry the full load of the power supply. In such instances the breaker will have to be bridged, or a separate socket, such as used for battery charging, mounted on the bottom edge of the instrument panel.

Although the circuit is arranged so that no damage will occur if a mistake is made, the input connectors should be plainly marked to avoid plugging a cable into the wrong socket. If 12-volt input is plugged into the 6-volt input connector the 20-ampere fuse in the line will blow before any damage is done. Plugging 6-volt input into the 12-volt input connector results in little, if any, output. If the a.c. line is plugged into the 6-volt connector nothing happens because Pins 10 and 11, which carry the a.c. input, will be open. As mentioned earlier, results are the same with the receiver and transmitter power input plugged into either of the two output connectors.

This unit has been in regular service for over two years and has proved to be a very dependable and versatile supply. Many duplicates have been constructed by other amateurs in the area with equally satisfactory results.

Strays

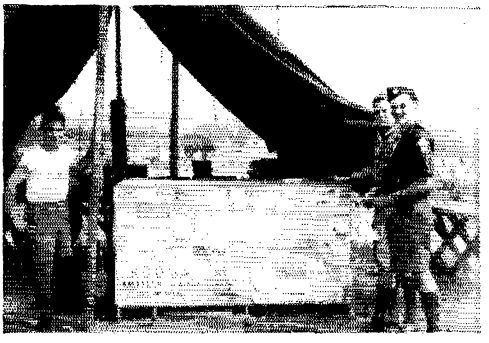
WØTJA uses a piece of "range cable" between the service entrance box and his shack, to bring in the 220 service. At the entrance to the shack is a large disconnect switch, which all the family knows about, so that if anyone gets in trouble at the rig all power can be immediately cut off. Have *you* switched to safety?

—···—

A clipping from the *Miami Sunday News* tells about W4BQA's talking parakeet, and from the report of some of the conversations it might be better if W4BQA were on c.w!

—···—

KØBMQ and WN7HKE, friends of some thirty years standing, had gotten out of touch during the past five years. A recent *QST* direct-mail advertisement sent to WN7HKE got them back together again — it contained a reference to KØBMQ, clipped from the June issue of *QST*.



WN2MTC, left, and "almost-hams" Bill Cabeen and Steve Springer obligingly swung away from the counter so that Hq. staffer W1UED could get this shot of the QSLs stapled up by some of the hams taking part in the recent Scout Jamboree. Thirty-eight states, Hawaii and Ontario were represented in the guest book.

Transistor Regenerative Detectors

A Two-Transistor Receiver for 80 Meters

BY IRVING GOTTLIEB,* W6HDM

Those who like to experiment with transistors will find some useful tips here on using them as regenerative detectors. A complete receiver circuit is shown.

TRANSISTORIZING of short-wave communications equipment is worthy of serious consideration. The advantages in size, weight and efficiency are well known. Considerable progress has been made with transistorized transmitters, and although power is still in the "flea" category, many an operator of a healthy fraction of a kilowatt can recall an earlier era of amateur radio when global contacts were fairly common with ten watts or less. As a rule, transistor transmitters generate less than one watt, but even this is practical for communication over respectable distances.

In the case of the receiver, cost becomes a discouraging factor if a transistor superheterodyne is contemplated. The regenerative circuit has probably been considerably experimented with, but in the author's experience it is not always easy to get good results from a regenerative circuit even in the broadcast band — and for a time it appeared that any results at all at high frequencies could be considered an accomplishment! Notwithstanding this somewhat pessimistic philosophy, the set to be described outperforms a two-tube version of the same circuit in several ways. It is more stable, less noisy, and is smoother to operate than a tube set. Its sensitivity is every bit as good as that of its tube counterpart.

Before discussing the actual circuit, it would be well to consider a certain peculiarity of transistors. The current gain factor, β, of a transistor connected in the grounded-emitter configuration, is roughly analagous to the voltage amplification factor, μ, of the vacuum tube. However, the β of a *given type* of transistor can vary more from transistor to transistor than μ does for a range of *three* types of tubes such as the 12AU7, 12AT7, and 12AX7. In addition, the β cut-off frequency often varies as much as ± 50 per cent among individual transistors of the same type designation. Because of this, a minimum β and a minimum β cut-off frequency are required for the detector transistor. This does not imply that the circuit is tricky but is an expected manifestation of the very loose tolerances which exist in designated type numbers of transistors.

The circuit is designed to operate in the 80-meter phone and c.w. band. The detector transistor does not have to have a β cut-off frequency in the vicinity of four megacycles, as might first be supposed, because the detector does not behave as an amplifier at radio frequencies. Rather, the r.f. is demodulated by the emitter-base diode, in which the β cut-off mechanism does not operate. The collector-base diode amplifies audio frequencies (which are far below β cutoff) and must, in addition, provide a small

* 1592 Waxwing Ave., Sunnyvale, Calif.

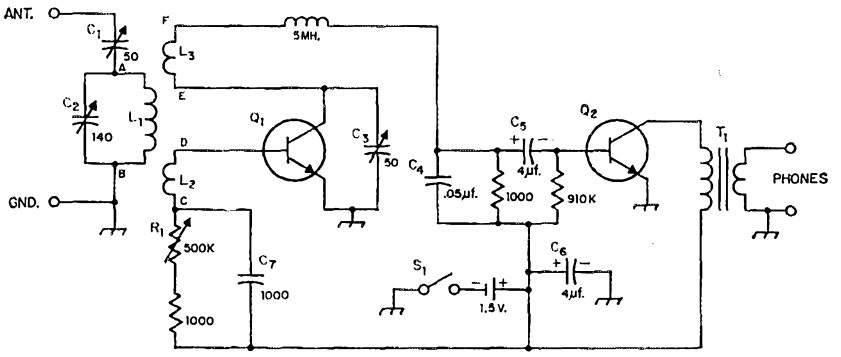


Fig. 1 — Circuit of the transistor regenerative receiver. Unless otherwise indicated, capacitances are in $\mu\mu$f., resistances are in ohms, resistors are ½ watt.

C_1 — 50-$\mu\mu$f. variable, ceramic or air trimmer.
C_2 — 140-$\mu\mu$f. variable (tuning).
C_3 — 50-$\mu\mu$f. variable (regeneration).
C_4 — Paper or ceramic.
C_5, C_6 — Electrolytic; tantalum type for miniaturization.
C_7 — Mica.
L_1, L_2, L_3 — See Fig. 2.
Q_1, Q_2 — NPN transistor (see text).
R_1 — 0.5-megohm potentiometer (regeneration).
S_1 — S.p.s.t. toggle.
T_1 — Audio transformer, 3 to 1 ratio, step down to headset.

amount of radio-frequency energy for regeneration. Thus, some consideration must be given to β cutoff but the demand is relaxed considerably as compared with the cut-off frequency which would be required if the transistor operated primarily as a radio-frequency amplifier.

As shown in Fig. 1, the detector bears a close resemblance to a grid-leak tube circuit. The 5-mh. r.f. choke in the collector circuit is an absolute necessity, inasmuch as it extends the frequency limit at which the detector is able to regenerate. This choke should not be bypassed at the point where it connects to L_3, as normally would be the case, but should be connected as shown in the circuit diagram.

The incoming high-frequency energy must be stepped down in impedance, through L_1L_2, because the input impedance of the emitter-base diode is too low for connecting directly across a tuned circuit.

Two regeneration controls are provided, to make the receiver flexible with respect to different transistors. Once satisfactory operation is achieved with a given transistor, either R_1 or C_3 may be made fixed. Regeneration is increased by decreasing the value of C_3 or decreasing the value of R_1.

The audio amplifier is a conventional grounded-emitter stage. β cut-off frequency need not be considered here, but the higher the β of this transistor, the greater the audio amplification. T_1 is connected as a step-down transformer to bring about an approximate match to the headphones.

The entire receiver can be powered from a single penlight cell. The total current drain is approximately 1.5 milliamp. An antenna consisting of twenty feet of wire provides excellent reception. Of course, the antenna requirements can be expected to vary with location and environmental conditions. In the author's model, a ground was found helpful in reducing hand capacity. A vernier tuning dial is desirable, and a small variable capacitor across C_2 would be useful for band-spread tuning.

The coil winding data are given in Fig. 2. The specifications should be followed as closely as possible. Do not substitute different wire sizes or alter the physical relationships of the three coils. It is very important that the coil connections be made as depicted in Figs. 1 and 2. If a plug-in form is used, the manner in which the coils are connected to the pins is not of great importance; this is left to the discretion of the constructor.

The transistors are intended to be General Electric type 2N78 NPN germanium units, or the type ZJ6-18 or ZJ6-32 (also made by General Electric). Any of these three types will be satisfactory for the detector transistor, Q_1, providing β is at least 60 and the cut-off frequency is no less than 200 kilocycles. This requirement can be met by any of these three types. However, not all 2N78s or ZJ6-18s will measure up to specifications. If the supplier is not willing to select one of these transistors for the specified parameters, it is better to order the type ZJ6-32. The β cut-off frequency of the ZJ6-32 may run well over 300 kc. This is not always accompanied by βs of 60 or higher but in this case the high cut-off frequency relaxes the requirement for β. The net result is that the receiver may be expected to work with *any* ZJ6-32 and with *selected* 2N78s or ZJ6-18s.

Any of the three transistor types mentioned will be satisfactory for Q_2, the audio stage. The β cut-off frequency is of no consequence here. Of course, the higher the β the more audio amplification will be provided. βs of 30 or so are entirely satisfactory and really "hot" performance is provided by transistors with βs in the vicinity of 60.

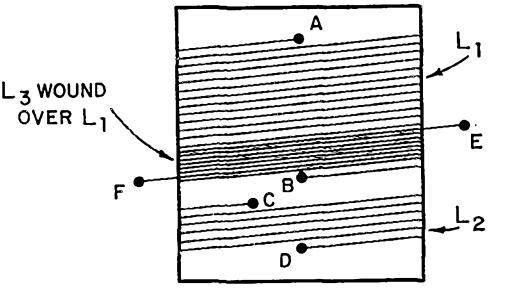


Fig. 2—Coil construction. All three windings are on a 1¼-inch diam. form (octal tube base). All coils are close-wound. For convenience in inserting the identifying letters in the drawing above, a small space is shown between L_1 and L_2 but the coils should be wound with no space between them. L_3 is wound over the bottom end of L_1. L_1 has 19 turns of No. 31 enam. wire; L_2 and L_3 each have 8 turns of No. 27 d.c.c. wire.

It may be more convenient to specify the α rather than the β parameters when ordering. For this purpose, the following relationships are useful:

1) $\beta = \dfrac{\alpha}{1 - \alpha}$

2) $\alpha = \dfrac{\beta}{1 + \beta}$

3) β cut-off frequency = $(1 - \alpha) \times \alpha$ cut-off frequency (approx.)

4) α cut-off frequency = $\beta \times \beta$ cut-off frequency (approx.)

where β is defined as the current gain in the grounded-emitter configuration when the load impedance is zero, α is defined as the current gain in the grounded-base configuration when the load impedance is zero, and β or α cut-off frequency is the frequency at which the output has decreased 3 db. with respect to a low audio frequency, say 1000 c.p.s. β cut-off pertains to the grounded-emitter circuit and α cutoff is used in connection with the grounded-base circuit, both with zero load impedance.

Strays

K9HGJ is using a 500-watt Johnson rig. Do you get it, or do we have to spell out that HGJ can stand for Half Gallon Johnson?

An Electronic Transmitter-Receiver Antenna Switch

Automatic Receiver Protection for Instantaneous Break-In

BY EDWARD ARVONIO,* W3LYP

• Electronic t.r. switches are the answer to break-in operation with one antenna. They are practically a "must" for s.s.b. voice-controlled operation, and they are also very useful on a.m. and code. This particular switch uses a twin triode, with an "all-band tank" for tuning. As a consequence, the switch provides some gain.

EVER since single side band became so popular, electronic "t.r." switches have been under discussion. There have been many articles written on the subject, and a number of good ideas have developed from them. After 4½ years on s.s.b. I felt the need for a t.r. switch that would replace the old coaxial relay and give worthwhile gain on all bands with low noise and no TVI. I believe that the t.r. switch described here will come close to meeting these requirements. It will give a gain of better than 20 db. on all bands, and its operation as a t.r. switch leaves little to be desired. The tuning control has to be set only once whenever you change bands. With proper shielding and filtering, it was possible to eliminate TVI completely. At present I operate mainly on 21-Mc. s.s.b., and no TVI is caused by the switch.

Referring to the circuit in Fig. 1, one section of a 6BZ7 is used as a grounded-grid amplifier. Its plate circuit is tuned by an "all-band tank" that requires no switching. The output is coupled to the receiver through the second section of the 6BZ7, operated as a cathode follower. Operating bias for the input section is obtained by the d.c. drop across the 2.5-mh. r.f. choke; when the transmitter is on a high bias is developed across the 470K grid return.

The choice of tube for the switch came out of many experiments. I chose a tube that would have a low noise figure and would stand up under 1-kw. s.s.b. conditions without burning out. Let me not mislead you at this point; it is possible to blow the tube under certain operating conditions. It is possible to blow the tube if you operate the switch without an antenna load or operate with an s.w.r. of more than 3 at a kw. input. After checks of several makes of tubes, it was found that RCA 6BZ7s were the only ones that would stand up with a kilowatt transmitter. If lower power is contemplated, any brand will probably do.[1]

* Box 86, Raubsville, Pa.

[1] Manufacturers do not rate their tubes for r.f. voltages between heater and cathode, and the 200-volt d.c. rating

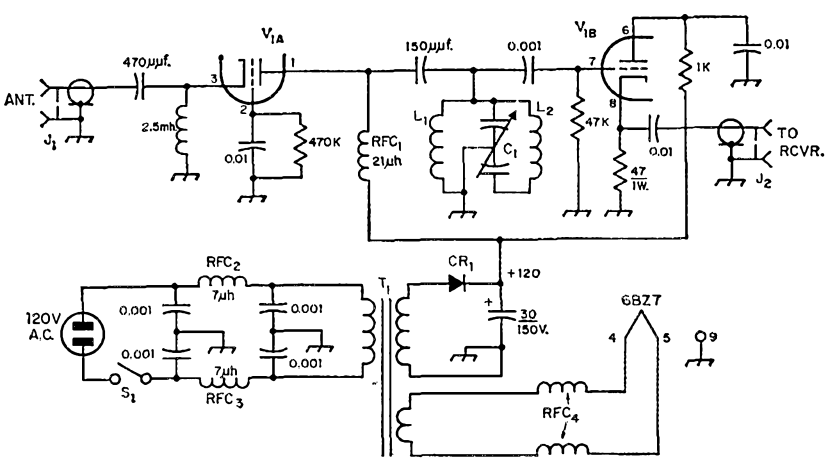


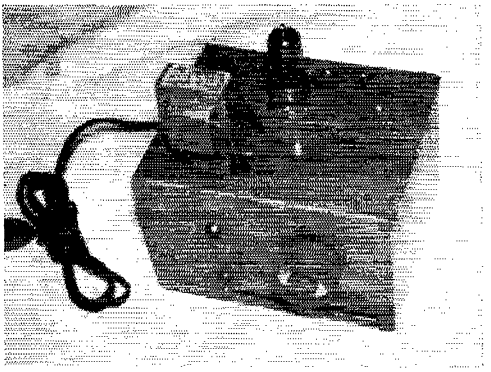
Fig. 1 — Schematic diagram of the electronic t.r. switch. Capacitances are in µf. unless otherwise noted. Resistors are ½ watt unless otherwise specified.

C_1 — 450-µµf.-per-section, broadcast-receiver type.
CR_1 — 130-volt 65-ma. selenium rectifier (Federal 1002A or equiv).
J_1, J_2 — Cable connectors, SO-239.
L_1 — 19 turns, 1-inch diam., 32 t.p.i. (B & W 3016).
L_2 — 23 turns, ½-inch diam., 16 t.p.i. (B & W 3003).
RFC_1 — Ohmite Z-28 or equiv.
RFC_2, RFC_3 — Ohmite Z-50 or equiv.
RFC_4 — Bifilar winding. See text.
V_1 — 6BZ7. See text.
T_1 — 115-v. secondary at 15 ma., 6.3 volts at 0.6 amp. (Triad R-54X or equiv.).

A bifilar winding is used in the heater circuit of the 6BZ7 to reduce the heater-cathode capacity at V_{1A}. Shown as RFC_4 in Fig. 1, it was made by putting two parallel windings of No. 26 enameled on a ½-inch diameter form 1½ inches long. The form can be a piece of hard wood or fiber rod or tubing, with the wires anchored through small holes at the ends of the form.

The switch was built in a 4 × 5 × 3-inch utility box, with the transformer and tube on top of the chassis and the remaining components inside. The tube socket was mounted close to the input connector J_1. A little trouble with oscillation of the grounded-grid section was encountered when the unit was first tried, but this was cured by connecting a lead from the rotor of C_1 to a common ground point instead of relying upon the chassis for a ground return.

It has been found that when the switch was installed in some ham stations a loss of gain occurred when the transmitter was connected to the switch, but at no time did the gain go below unity. This loss of gain only occurs when the "suck-out point" of the transmitter output circuit occurs at the frequency to which the receiver is tuned.[2] It has been my finding that by changing the *L*-to-*C* ratio of the transmitter's output circuit it is possible to move the suck-out point sufficiently to overcome this difficulty. It takes only a small change to correct the situation.



This electronic transmit-receive switch works on all amateur bands down to 10 meters. No switching is required to change bands.

I've never encountered the trouble in my own station.

I hope those who try this switch will write and tell me whether their findings are the same as mine, and I will be interested in any comments on the switch.

for the 6BZ7 is not applicable. W3LYP's findings are reported here because the t.r. switch is a useful device, but using it at power levels above several hundred watts can only be considered as a calculated risk. At higher power levels two tubes should be used, with the heaters fed from separate windings, so that the heaters can be tied to the cathodes. — *Ed.*

[2] See Campbell, "Some Variations in T.R. Switch Performance," *QST*, May, 1956.

. . . Ah, those good old days! Everything was breadboard. Doublet antennas were being used on five meters. It was rumored that u.h.f. signals would actually "bend" over the horizon if the proper method were used.

. . . Twenty-five years ago this month it was reported that Warner and Segal had arrived in Madrid and were engaged in setting up an office in connection with their attendance at the Madrid conference.

. . . W6SN reported on W6USA and its sixty days of operation at Olympic village. Speaking of breadboard, the W6USA transmitter was built on a board seven feet long and three feet wide, with the 14-Mc. amplifier mounted above it!

. . . The ubiquitous Mr. Grammer had an article on "Electron-Coupled Oscillators for the Small Transmitter", using such tubes as the '24, '46 and '47.

. . . Two PA0s described a "Stabilized 'B' Supply for A. C. Receivers", while a Cornell University engineer discussed "Transmission-Line Feed for Short-Wave Antennas."

. . . Mr. Paul Segal contributed one of his rare articles, on the "Crystal Control of Radio Commission Hearings", presented at the request of the League's Board of Directors so that amateurs would understand the mechanics of hearings which investigate rules infractions.

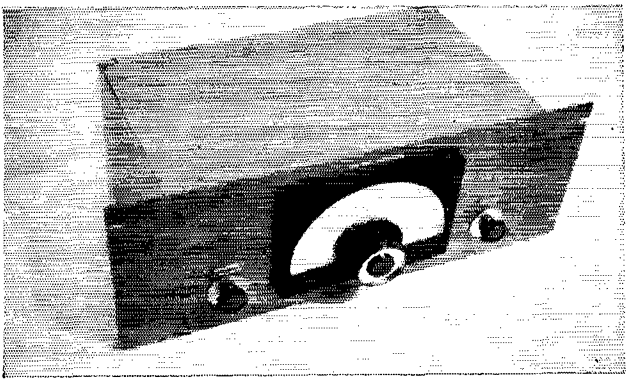
. . . Ev Battey reported on a new type of contest — phone-c.w. — in which phone stations worked c.w. stations and vice versa

. . . Hams at Headquarters? There were ten in those days. Now, twenty-five years later, there are nearly three times that number

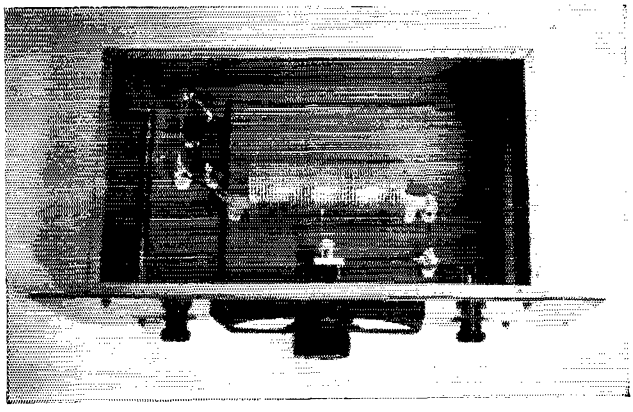
Silent Keys

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

W1LNX, James L. Barttro, Watertown, Mass.
W1QBV, Monte R. Flagg, Dorchester, Mass.
W2CNI, A. E. McConaghy, Camden, N. J.
K2YNB, Robert J. Rukeyser, New Rochelle, N. Y.
W3JVF, Clarence J. Sweigart, Gaines, Pa.
W3OUM, George T. Miller, McKeesport, Pa.
W3QKQ, John A. Rolle, Philadelphia, Pa.
W4CAY, Arthur L. Blalock, Charlotte, N. C.
W4CWS, Willis C. Parks, Dalton, Georgia
K4JTG, John Ribarich, St. Petersburg, Fla.
K5EQI, Marshall E. Farr, Tulsa, Okla.
W5MN, Horace E. Biddy, San Antonio, Texas
K6SAX, John M. Gates, Santa Fe Springs, Calif.
W7FRO, Floyd F. Dickey, Ashland, Oreg.
W7SCE, Lester P. Brunner, Oregon City, Oreg.
W8HQF, Robert E. Montgomery, New Boston, Ohio
W8II, Darley F. Thurnes, Tallmadge, Ohio
W8MPG, Hugh L. Norton, Bedford, Ohio
W8UWM, Leo F. Matuszyck
W9GSX, Albert L. Kerst, Indianapolis, Ind.
W9LQI, Faust H. Boyd, Ashton, Ill.
W9MQB, Gabriel H. Melotte, Fort Atkinson, Wis.
WØACC, Elmer A. Gunther, Fort Dodge, Iowa
WØFLZ, Clarence W. Christiason, Osage City, Kansas
WØJDO, Elmer F. Kelm, Chanhassen, Minn.
WØYQJ, Sidney P. Stocking, Portageville, Mo.
VE1XL, A. W. Doane, Truro, Nova Scotia



The rack panel of the tuning unit is 7 inches high. The controls on either side of the dial are for the bandsetting capacitors.



The tuning unit of the ultrastable v.f.o. is enclosed in a 7 × 9 × 15-inch aluminum box to minimize the reduction in coil Q by the shielding. The two feed-back capacitors are in the upper left-hand corner.

An Ultrastable Keyed V.F.O.

BY J. M. SHULMAN,* W6EBY

This article describes a v.f.o. of better than average stability. Chirps and clicks are virtually eliminated by operating the tube just within the threshold of oscillation and reducing the voltage change with keying to the minimum value that will provide reliable control of oscillation. Attention to detail results in a unit that also has exceptional freedom from drift.

FROM THE THEORY of inductance-capacitance oscillators it is evident that the effective Q of the tuned circuit is a primary factor in determining stability. However, in order for the theory to have practical significance, assumptions have to be made that the values of inductance and capacitance in the tuned circuit remain absolutely constant.

What usually happens in practice is that the effective Q of the tuned circuit is drastically lowered by the time it is serving in an oscillator circuit, and that the inductance and capacitance do not stay constant. From this it might be inferred that most practical forms of v.f.o.'s are not as stable as they could be. That conclusion can be verified by some careful listening at low beat frequencies. Rare indeed is a v.f.o.-controlled signal found on 14 Mc. or higher that drifts only an imperceptible amount when first turned on or when keyed.

*789 Garland Drive, Palo Alto, California.

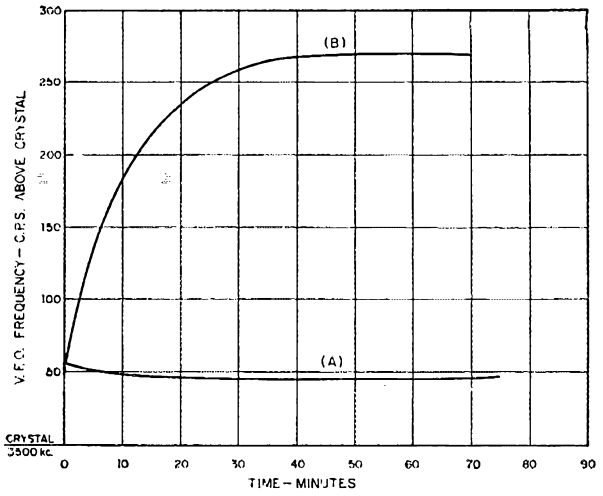


Fig. 1—Relative frequency drift of the ultrastable v.f.o. (A) vs. a commercially-available unit (B).

Such a signal is generated by the v.f.o. to be described. Its frequency stability performance is summarized by Fig. 1, where it is compared with one of the commercially available v.f.o.'s, each operating for more than an hour from a cold start. Drift of the commercial v.f.o. is 63 parts per million as compared with 2 parts per million for the ultrastable one. Driving a buffer followed by three doublers and a 150-watt final amplifier, the frequency of the ultrastable v.f.o. changes three cycles or less from that running alone. Keying by a rather unique method in the screen-grid circuit, the keying is clickless, chirpless and about as nearly perfect as the word can be defined.

All this was obtained by putting stability ahead of all other considerations in the design of a practical v.f.o. The design details can be summed up in two basic rules:

1) Use a tuned circuit with as high Q as possible, and then don't lower this Q any more than absolutely necessary for the maintenance of oscillations.

2) Give the inductance and capacitance in the tuned circuit a chance to remain absolutely constant, at least to the extent possible without resorting to temperature control.

Keying

Before discussing the features and construction of the ultrastable oscillator, a few more remarks about how it keys: With due regard for many unsatisfactory results, the *Handbook* tends to shy one away from keying a v.f.o., saying in effect that in the effort to compromise between clicks and chirps, "perfect" keying is a virtual impossibility particularly at 14 Mc. and higher frequencies. What happens with this v.f.o. is that because it operates near the threshold of oscillation, and because of the small voltage change with keying, it keys without the least sign of a chirp or click when driving two 5763 doublers and a pair of 807s in the final amplifier. And "without the least sign" refers to a check for transients with an oscilloscope as well as a listening check. Such results are not so surprising if you consider that the voltage across the key when up is only of the order of two volts. But this is getting ahead of the story. More will be told about the keying system in the description to follow.

Circuit

Since the series-tuned oscillator was introduced by J. K. Clapp [1] it has become something of a standard circuit for v.f.o.'s. Despite some controversy over its relative advantages and disadvantages for a stable oscillator, its advantages appear to outweigh its disadvantages for two reasons, neither of which is that it is inherently or theoretically more stable than other inductance-capacitance oscillator circuits. The first reason is that it enables practical realization of a higher effective tuned-circuit Q than most other circuits.[2] The second is that it is inherently well suited for physical separation of the tuned circuit from the tube circuit portion. This physical separation is of utmost importance in carrying out Rule 2 above. As little a temperature change as 2 degrees Fahrenheit has a perceptible effect on frequency, and heat from a tube adjacent to a tuned circuit must be avoided if stability is the first consideration.

[1] Clapp, "An Inductance-Capacitance Oscillator of Unusual Frequency Stability," *Proc. IRE*, March, 1948.

[2] Edson, *Vacuum Tube Oscillators*, John Wiley & Sons, New York, 1953.

Remotely Tuned Unit with Good C.W. Performance

This v.f.o. uses the series-tuned circuit and is divided into two separate sections — the tuned-circuit portion and the tube portion. The tuned-circuit portion is illustrated by the first and second photographs and is diagrammed in Fig. 2.

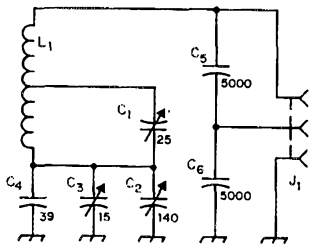


Fig. 2 — Circuit of the remote tuning unit.
C_1 — 7–25-$\mu\mu$f. variable (Bud CE-2001 with 2 plates removed should be satisfactory — see Footnote 3).
C_2 — 140-$\mu\mu$f. variable (Hammarlund HF-140).
C_3 — 15-$\mu\mu$f. variable (Hammarlund HF-15).
C_4 — 39-$\mu\mu$f. silver mica.
C_5, C_6 — 0.005-μf. silver mica.
J_1 — Twin receptacle (SP-264).
L_1 — 45 μh. — 44 turns No. 14, 2½-inch diam., 5½ inches long, center-tapped (B & W 3906–1 or Airdux 2008).

There are two significant differences between this tuned circuit and that of most Clapp v.f.o.s which have been described previously. One is that the tube coupling capacitors are .005 μf. instead of the .001 μf. frequently used. The second is that the main tuning capacitor is isolated from ground by an insulated shaft and tapped across a portion of the coil. The first of these features decreases the coupling between tuned circuit and tube by a factor of 25, and increases the theoretically possible stability by a factor of five. The tube used must of course have enough mutual conductance to sustain oscillations under this condition. The second feature serves two useful purposes: (1) the tap, made with heavy solid wire at the top of the coil, adds to the rigidity of the coil assembly, and (2) any desired degree of band spread can be had by selection of the tap position.

Tuned-Circuit Enclosure

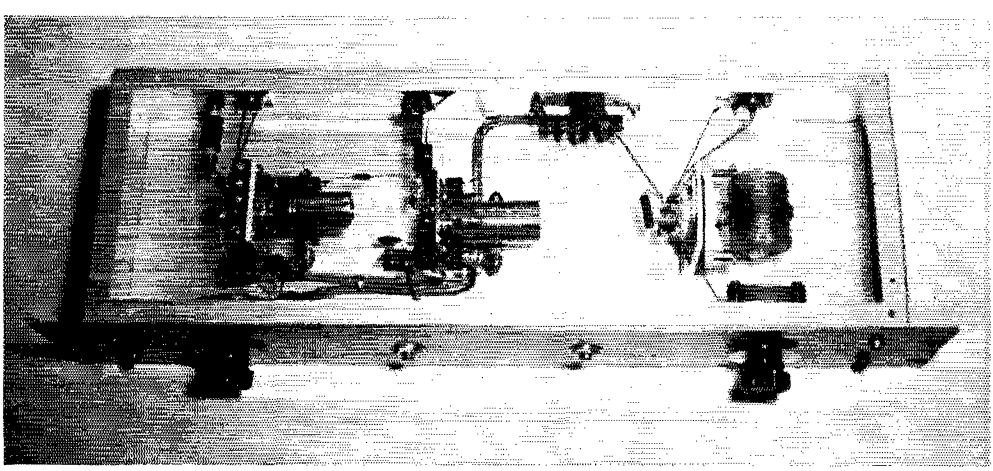
Designed to cover a frequency range of 1.6 to 2.0 megacycles, the tuned-circuit assembly has traded space for stability in that the 7-inch-high-by-9-inch-deep-by-15-inch-wide aluminum box (Premier AC-1597) is none too large to house the 2½-inch diameter, 5½-inch-long coil. A smaller coil or smaller box or both would have lowered the Q. The coil and box used represent an all-out effort to obtain maximum tuned-circuit Q within dimensional limits of a standard rack. The lower box cover was reinforced with ⅜-inch-thick plywood before mounting a 1-inch-thick plywood base which supports the coil on stand-off insulators to the center height of the box. The original top box cover was replaced with a ⅛-inch-thick aluminum cover to increase rigidity.

Tuned-Circuit Constructional Details

As shown in the photo looking down into the tuned-circuit box, all connecting leads are made with No. 12 solid wire, and the lengths are broken up by stand-off insulators so that no length remains unsupported more than about 3 inches. This kind of lead rigidity, plus rubber feet on the bottom of the box, minimizes twang from bumping or pounding on the operating table.

A length of RG-22/U cable terminated at each end by a PL-284 plug couples the tuned-circuit box to the tube portion of the v.f.o. This cable assembly is a critical point at which the stability of the v.f.o. can be ruined if the terminations are not good. A poor soldering job at either plug, or any relative motion between plug and cable, can cause frequency variations which might not be noticed in an ordinary v.f.o. but which look monstrous when you are checking stability down to the last cycle.

There has been considerable discussion in articles describing v.f.o.'s about the necessity for excellent contact in the tuning-capacitor bearings. The tuning capacitor used in this v.f.o.



The v.f.o. tube and buffer-doubler are housed in a 6 × 17 × 3-inch aluminum chassis behind a 3½-inch rack panel. The potentiometer at the left is for adjusting the keying threshold. The doubler tank circuit is to the right.

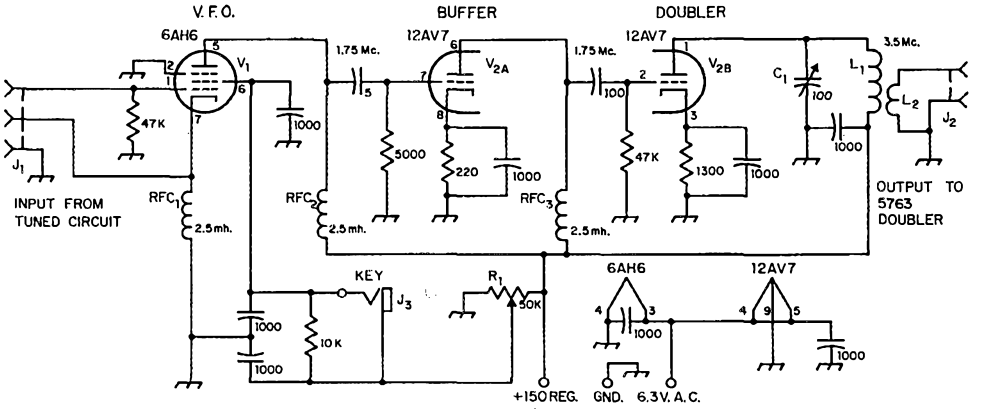


Fig. 3—Circuit of the tube section. All capacitances are in $\mu\mu$f. All 1000-$\mu\mu$f. capacitors are disk ceramic. Coupling capacitors are mica or ceramic. All fixed resistors are ½ watt. All RFCs are standard 2.5 mh. r.f. chokes.

C_1 — 100-$\mu\mu$f. variable, receiving type.
J_1 — Twin receptacle (SO-264).
J_2 — Coax receptacle (SO-239).
J_3 — Open-circuit key jack.
L_1-L_2 — 40 μh. — 50 turns No. 22, 1¼-inch diam., 2 inches long; 3-turn link (B & W MEL-80).

has a flexible pigtail between the rotor and the rotor-connecting terminal, thus eliminating completely any possibility of trouble at this point. If one like this cannot be obtained commercially, it is possible to drill and tap the back end of the shaft of a standard type and attach a pigtail with a small screw.[3] Since the rotor of the tuning capacitor should not be grounded, an insulating shaft extension must be used.

With the coil tap at the position indicated in Fig. 2, the range of the tuning capacitor is 1750 to 1775 kc. over 95 degrees, which is an excellent band-spread rate for the 14-Mc. band. With the tap on the 14th turn from the grid end of the coil, the range is 1750 to 1800 kc.

Tube Portion

As shown in the third photograph, the tube portion is assembled in a 6 × 17 × 3-inch aluminum box attached to a 3½ × 19-inch panel for rack mounting. The circuit diagram is shown in Fig. 3. With the entire unit operated from a 150-volt regulated power supply, ample output is obtained from the second half of the 12AV7 at 3.5 Mc. to drive a 5763 doubler. Neutralization of the buffer is not required because of the untuned grid and plate circuits.

The oscillator circuit is straightforward except for the keying system and the very loose coupling to the grid of the 12AV7 buffer by only 5 $\mu\mu$f. of capacitance. The 50K potentiometer in the oscillator screen circuit serves as a threshold control and is normally adjusted so that with the key down the oscillator is just within the threshold of oscillation and gives just enough output to drive the first half of the 12AV7 as a Class A amplifier without any grid current. The output of the first half drives the second half as a doubler to 3.5 Mc.

With the key up, the 10K resistance across the key drops the screen voltage about 2 volts, which throws the 6AH6 tube out of oscillation. This inherent switching action by a change of only 2 screen-grid volts occurs in the oscillator only when it is operating just within the threshold value of screen-grid voltage to sustain oscillations. Once that operating value is set, the 2-volt change by keying turns the oscillator on and off without the least chirp or click. Moreover, key-up and key-down heating effects are practically identical, thereby further reducing the possibility of drift caused by changes in tube capacitances.

At the 1.75-Mc. point in the tuning range, the critical screen-grid voltage for oscillation is 61 volts. With 60 volts on the screen the circuit is dead and with 62 volts it oscillates with just enough power to drive all the following stages to full output. The first half of the 12AV7 amplifier operates as a true Class A amplifier, and does not draw any grid current until the oscillator screen voltage is raised to 70 volts. For a two-volt keying difference across the 10K resistance, it is necessary to adjust the threshold control slightly for about each 50 kc. change in fundamental frequency. If this is considered an operating disadvantage, as it may be on the low-frequency bands, the resistance across the key can be increased so as to allow keying control of oscillation over an entire band with the threshold control set just within the threshold of oscillation at the highest frequency. For example, at 2 Mc. the threshold voltage is 81. With the control set for 82 volts key down and 100K ohms across the key, the screen voltage is 60 with the key up and the full range of 1.75 to 2 Mc. can be covered without adjustment. However, this condition is not optimum for stability except at 2 Mc., and the keyed voltage is more than the minimum necessary to control oscillation.

The very low coupling capacitance and low value of grid resistance in the grid circuit of the

[3] This trouble has been avoided in some earlier v.f.o. designs (see *QST* for December 1948) by using a split-stator capacitor, the two connections being made to the stator sections with no connections to the rotor. The bearings are thus eliminated from the circuit. In this particular case, the capacitor should have 50 $\mu\mu$f. per section since the two sections are in series. — *Ed.*

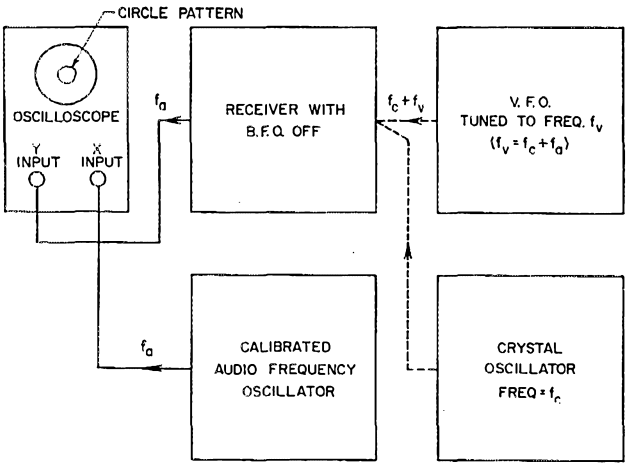


Fig. 4 — Block diagram showing the method of checking v.f.o. frequency stability.

first half of the 12AV7 make the oscillator tube highly insensitive to anything that happens following it. With all following stages turned on, the frequency is at most 3 cycles higher than with the oscillator running alone. As compared with the click, chirp and shifting-under-load problems when trying to key an ordinary v.f.o. in the cathode circuit, this small difference represents rather superb performance for a keyed v.f.o.

Method of Checking Frequency Stability

Fig. 4 shows a block diagram of the equipment used in making accurate tests of frequency stability. When an accurately-calibrated audio oscillator is used it is possible to measure a change of one cycle per second by this method. The audio oscillator used in this setup was a Hewlett Packard Type 200AB. Audio oscillators which have beat effects at 60 and 120 cycles may be used in this manner if one keeps away from the frequencies where these effects occur.

To make measurements, the v.f.o. is tuned to a convenient frequency 50 or 60 cycles higher than the crystal-oscillator frequency, picking up the beat frequency f_a from the receiver, and applying it to one set of plates of an oscilloscope. The output of the calibrated a.f. oscillator is applied to the other set of plates of the oscilloscope, and the a.f. oscillator is then tuned for a circle pattern. The a.f. oscillator dial then indicates the number of cycles per second the v.f.o. frequency is higher than the crystal oscillator. Beat frequencies below 100 cycles should be used to take full advantage of the a.f. oscillator calibration. The lower the beat frequency the better the accuracy, but frequencies below 40 cycles may not be passed by the receiver.

Additional Test Results

Fig. 5 shows the results of a test where the room temperature during the time the oscillator was on was increased to determine the approximate effect of change in room temperature on frequency. A thermometer was held near the tuned circuit box while the heating system of the room was on continuously for two hours and raised the temperature from 71 degrees to 73 degrees Fahrenheit. Setting the beat frequency at 60 cycles on a cold start, the frequency was 65 at the end of two hours with the higher room temperature, indicating a temperature coefficient of frequency of about 0.7 part per million per degree Fahrenheit.

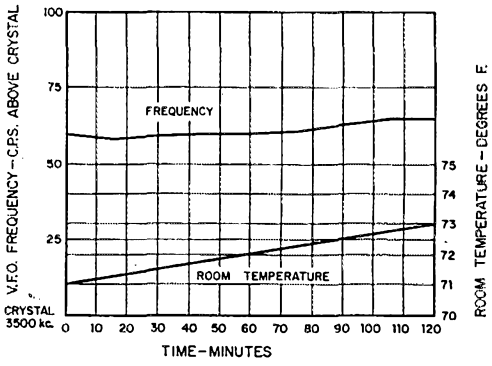


Fig. 5 — Graph showing v.f.o. frequency change with change in room temperature.

Curve A in Fig. is an expanded plot of the frequency test shown in Fig. 5, which is the frequency of the oscillator alone with all the following stages off. Curve B shows the oscillator frequency with all following stages turned on. The maximum difference between the two on any measurement was 3 cycles per second and the average about 2. These data are rather convincing evidence that the oscillator is for all practical purposes unaffected by loading insofar as frequency stability is concerned.

A "perfect" keyed signal is one completely free of backwave, drift, chirps and clicks. When such a signal is heard it is usually assumed that a crystal is used or that the oscillator is not keyed. Here is how the ultrastable v.f.o. stacks up against these requirements:

There is no backwave since the oscillator is actually switched on and off by the small change in screen voltage. At constant room temperature,

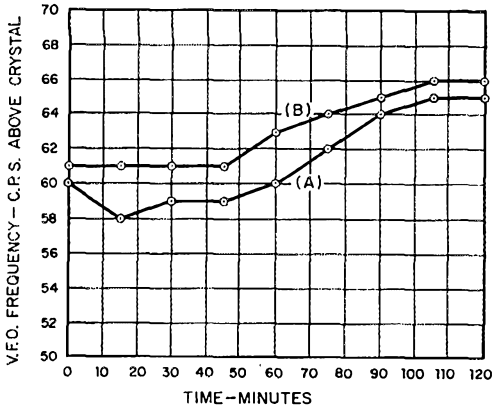


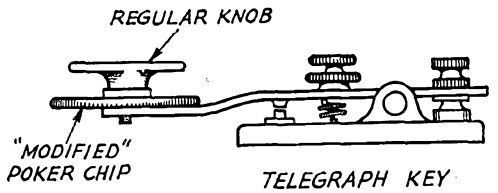
Fig. 6 — Frequency drift (A) of oscillator alone, and (B) with entire transmitter on. The difference between the two curves represents the change in frequency when stages following the oscillator are turned on.

drift is not over 2 parts per million from a cold start, as shown in Fig. 1A. Chirps, as indicated both by listening and by oscilloscope check, using the setup of Fig. 4 are virtually nonexistent (less than one part per million). Without any wave-form shaping circuit at the key, clicks tested by sweeping the receiver through and beyond the a.f. beat-frequency range as described in the A.R.R.L. *Handbook* are also virtually nonexistent. Reports from local stations, one only a block away, have confirmed the absence of clicks. A shaping circuit consisting of a 3-henry choke in series and a 0.25-μf. capacitor in parallel with the key showed no perceptible improvement in the character of the keyed signal, but it is interesting to note that the shaping circuit did not magnify the chirp as it usually does in conventional keyed oscillators. It should be remembered that the precautions mentioned in the *Handbook* in regard to the biasing of later stages in the transmitter must be observed to avoid introducing clicks in these later stages.

Strays

A teen-age baseball team from the Canal Zone touring the eastern states during August kept in touch with home by amateur radio. KZ5TG, K2DWY, and W2GY were among the stations participating in this public service. When last we heard, the Zoners were doing right well — they had won six and tied one.

—···—



All you old-time c.w. men will recognize the so-called "Navy knob." The drawing above shows how K6TWE took a poker chip, drilled a hole through the center, and converted a regular telegraph key into the *real* thing.

—···—

WØKWA sends in a newspaper clipping showing an ad for an all-transistor pocket radio which has "a push-pull audio system with 100 million watts of undisputed output." Undisputed?

—···—

Not a typical amateur mobile station, certainly! This is K9CIB, equipped with a Hallicrafters SR500, a Mosley beam, and Gonset gear on 2 meters. The crank-up tower is used only when the converted fire truck is not in motion, and power is supplied by a 2.5 kw. generator.

Several months ago we expressed a curiosity as to which hams were, respectively, the most northerly, the most southerly, the most easterly, and the most westerly here in the continental United States. We have gotten replies from all the four corners of the States except for the South. Nobody has spoken up to lay claim to being the most southerly ham here in these United States. How about it?

—···—

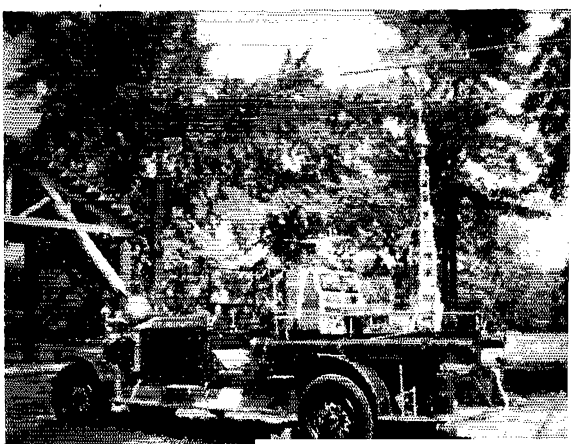
KØHBQ showed a nonamateur friend around his shack and gave him a short discourse on amateur radio. After soaking this in for a while, the friend asked, "Say, how long do you think it will be before you can turn pro?"

—···—

W2BDG says he mounts a light *under* the work bench, to help find those parts he is always dropping!

—···—

By what strange coincidence do you suppose W1MMV got the Vermont license plate 7388?



Let's Increase V.F.O. Stability

Reducing Effects of Temperature and Vibration

BY W. B. BERNARD,* W4ELZ

Fig. 1

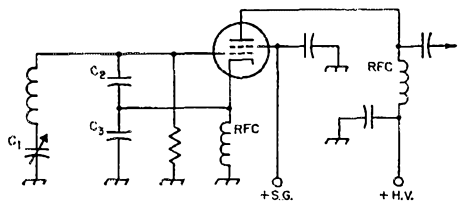


Fig. 2

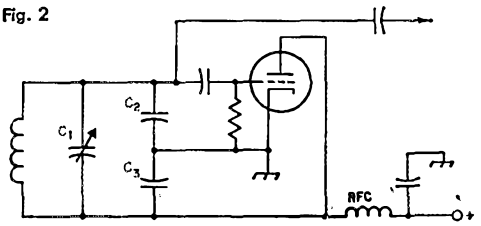
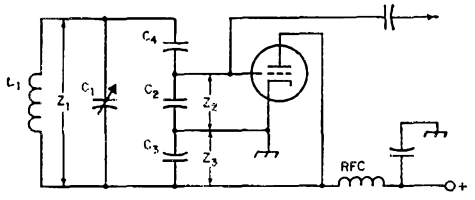


Fig. 3



FROM LISTENING to conversations on the amateur bands, one gets the impression that the average v.f.o. in use is not as stable as users might desire. The wider use of s.s.b. has put more stringent requirements on oscillator stability. This brings up the question of what can be done to improve the performance.

Most of the v.f.o.'s in operation today use the Clapp, or series-tuned Colpitts circuit. So far as stability with changes in tube characteristics and loading is concerned, the consensus now is that there is nothing to choose between the Clapp circuit and circuits of other configuration.[1] With this point accepted, there are still other considerations that may make one type of circuit preferable to another in practice if not in theory.

Practical Disadvantages of the Series-Tuned Circuit

In the Clapp circuit, shown in most-common form in Fig. 1, the very low value of tuning capacitor, C_1, causes one end of the inductor and its associated wiring to have a very high impedance to ground. Because of this, the small variation in capacitance which occurs when one of these parts moves mechanically in respect to ground, due to vibration or other movement, will cause a larger variation in frequency than would be the case if the impedance were lower. Most of us are familiar with the problem of preventing "microphonics" in a series-tuned circuit.

The search for the very high inductance required often leads to the use of inductors supported on plastic strips. These coils not only have very large temperature coefficients, but also poor retrace characteristics. That is to say, the temperature coefficient of inductance does not remain constant over a temperature cycle and varies from one cycle to another. The low thermal inertia of the fine wire used to wind a high value of inductance in small space, whether on a rigid form or not, gives rise to short-term frequency variations that can be very annoying.

In the case of a series-tuned circuit with a coil Q that is constant over the band being tuned, the tube g_m required to maintain oscillation varies with the third power of the frequency.[2] From a practical standpoint, this means that the

* Capt. USN, Code 812, Bureau of Ships, Navy Dept., Washington 25, D. C.

[1] *Proceedings of the IRE*, July, August, 1955.

[2] Clapp, "Frequency Stable *LC* Oscillators," *Proc., IRE*, Aug., 1954.

Fig. 1 — Typical series-tuned Colpitts or Clapp oscillator circuit.

Fig. 2 — Conventional Colpitts oscillator circuit.

Fig. 3 — Colpitts circuit modified to suit the value of tuning capacitor C_1.

• The proponents of series- and parallel-tuned v.f.o. circuits having battled to a draw on theoretical considerations, the author of this article now looks at the practical side. If you've been using a series-tuned circuit, this plug for a return to the old high-C Colpitts may interest you.

power output of the series-tuned oscillator is likely to vary considerably from one end of the band to the other.

The High-*C* Oscillator

All of the foregoing problems can be minimized by a change to parallel tuning — in other words, a change to the old high-*C* Colpitts circuit, as shown in Fig. 2. The large swamping capacitances, C_2 and C_3, in series, as well as the tuning capacitor C_1, are now in parallel with the inductance. This reduces the circuit impedance and thus the frequency variation due to mechanical movement of components associated with the ends of the coil. It also reduces the value of inductance needed to resonate with the capacitors at the desired frequency. This lower value of inductance can be wound with heavier wire which makes a more rugged mechanical unit of higher thermal inertia which reduces drift due to short-time heating effects.[3] The tube g_m required to maintain oscillation in a parallel-tuned circuit varies inversely as the first power of the frequency.[2] Therefore, the power-output variation in tuning over a band should be much less than with the series circuit.

Electron Coupling

There is also room for improvement in another respect. Most of the current v.f.o.s use the so-called "electron-coupled" circuit, as in Fig. 1. While this arrangement may save a slight amount of space, it has disadvantages. With the tubes ordinarily used, it is necessary to operate the cathode at some r.f. potential above ground. This is undesirable because it places the heater-cathode insulation across part of the tuned circuit. This insulation is the dielectric of a capacitor (sometimes with an associated leakage resistance) operating under very unsatisfactory thermal conditions.

With the electron coupled arrangement (screen grounded), the r.f. output plate current passes through part of the tuned circuit (C_3) in returning to cathode. Under this condition, any harmonic content in the plate current can detract from the stability.[4]

Maximum output from the e.c.o. circuit requires a minimum impedance between cathode and ground. On the other hand, the frequency effect of the grid-cathode circuit of the tube is several times the effect of the cathode-ground circuit. Therefore, for maximum frequency stability, the larger swamping capacitance (lower impedance) should be across the grid-cathode circuit.

These considerations indicate that better stability should be obtained if the cathode is grounded, as shown in Fig. 2, and a separate amplifier used instead of the electron-coupled arrangement. Where space must be minimized, a triode-pentode (such as the 6U8) could be used for this purpose.

How Much *C*?

The maximum circuit capacitance that can be used will depend upon the tube g_m, and the losses in the inductor. The latter increase rapidly as the inductor becomes very small. However, in a practical case, the capacitance will usually be limited by the physical size of the variable capacitor required to tune across the desired band of frequencies. The size of the tuning capacitor required varies in direct ratio with the amount of fixed capacitance in shunt with it. Without going to transmitting-type variables, the largest variable capacitor commonly available is the "MC" type which is obtainable in units having maximum capacitances up to 325 $\mu\mu$f. and a capacitance variation (maximum capacitance minus the minimum capacitance) of 300 $\mu\mu$f. These units are quite reasonable in physical dimensions.

Calculations of other tank-circuit values for a range of 1.75 to 2 Mc., based on a variation of 300 $\mu\mu$f. are shown in the appendix.

Should it turn out that the design has been too conservative, and the circuit superregenerates, it is only necessary to decrease the value of C_4 and connect additional capacitance across the entire circuit to restore the proper frequency range. If the error is in the opposite direction, and oscillation is not maintained across the entire band, the value of C_4 should be increased and the value of C_2 or C_3 decreased until the frequency range is correct. Similar calculations can be made for the range of 3.5 to 4 Mc. However, if the minimum circuit capacitance of 1000 $\mu\mu$f. is maintained, the inductance will have to be reduced to 1.75 μh. At an inductance this low, it may be impossible to obtain a coil of sufficiently high Q to maintain oscillation with a tube of average g_m. In this case, the design should be based on a smaller tuning capacitor.

Fixed capacitances should be made up of suitable combinations of silver-mica or TCZ units to provide the correct values. The best type of inductors temperaturewise are wound with heavy wire under tension on ceramic forms.

Although the high-*C* circuit can be operated with the tube remote from the tuned circuit as easily as with the Clapp arrangement, best stability should be obtained with the tube and circuit close together. Only a slight separation will provide adequate heat isolation, especially if heat baffling is used.

[3] In practice, this factor depends to a considerable extent on the design and construction of the coil. — *Ed.*

[4] Llewellyn, "Constant Frequency Oscillators," *Proc. IRE*, Dec., 1931

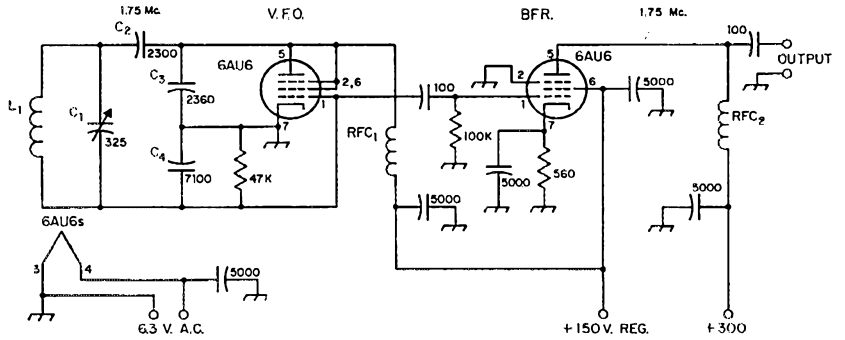


Fig. 4 — Practical circuit for a high-C Colpitts v.f.o., including a Class A buffer. All capacitances are in μμf. All 5000-μμf. capacitors are disk ceramic. All 100-μμf. capacitors may be mica or low-temp. ceramic. All resistors are ½ watt.

C_1 — 325-μμf. midget variable (Hammarlund MC-325-M).

C_2, C_3, C_4 — See text and appendix.

L_1 — Approx. 6.4 μh. — 15 turns No. 12, 2 inches diam., 2 inches long.

RFC$_1$, RFC$_2$ — 2.5-mh. r.f. choke.

A Practical Circuit

Fig. 4 shows a practical circuit using the values worked out in the appendix. The triode-connected 6AU6 has a rated g_m of 4500. The oscillator feeds a Class A pentode amplifier using another 6AU6. It is recommended that the plate supply to the oscillator and screen supply to the amplifier be regulated. If low-impedance output is desired, a Class A cathode follower may be substituted for the grounded-cathode amplifier, although the output voltage will be less. Also, the follower provides less isolation between the oscillator and the load and therefore the load on the cathode follower should be fixed.

Appendix

To cover a desired frequency range, the ratio of minimum circuit capacitance to maximum circuit capacitance must be the square of the ratio of the maximum frequency to the minimum frequency. If the frequency range is to be 1.75 to 2 Mc., the frequency ratio is 2/1.75 = 1.14. The capacitance range required is $1.14^2 = 1.3$

If a tuning capacitor having a *variation* of 300 μμf. is used, the minimum circuit capacitance must be such that when 300 μμf. is added to it, the capacitance will be 1.3 times the minimum capacitance.

$$C_x + 300 = 1.3\,C_x$$
$$0.3C_x = 300$$
$$C_x = 1000\ \mu\mu f.$$

This should be the capacitance across L_1 (Fig. 4) with C_1 set at minimum capacitance. L_1 should have an inductance that will resonate at 2 Mc. with 1000 μμf. — approximately 6.5 μh. The variable C_1 then adds 300 μμf. which should tune the circuit to 1750 kc.

The criterion for oscillation in a Colpitts circuit is

$$\frac{10^6}{g_m} = \sqrt{Z_2 Z_3} \qquad (1)$$

where g_m is the transconductance of the tube in μmhos, and Z_2 and Z_3 are the impedances offered to the grid and plate of the tube, respectively. To allow for losses, we can select a value lower than average for g_m — 2000 μmhos.[5]

To equalize the effects of the grid-cathode and plate-cathode circuits of the tube on frequency stability, the impedance from grid to cathode should be much lower than from plate to cathode. Let us say that the plate-cathode impedance, Z_3, should be 9 times the grid-cathode impedance, Z_2. Then,

$$Z_3 = 9Z_2.$$

Substituting the above values in (1),

$$\frac{10^6}{2000} = \sqrt{(9Z_2)\,(Z_2)} = \sqrt{9Z_2^2} = 3Z_2$$

$$Z_2 = \frac{10^6}{6000} = 160 \text{ ohms}$$

$Z_3 = 9Z_2 = (9)\,(160) = 1440$ ohms.

The over-all circuit impedance is given by:

$$Z_1 = QX_{ex}$$

where Q is essentially the Q of the inductor, and X_{ex} is the reactance of the circuit capacitance. At 2000 kc., the circuit capacitance is 1000 μμf., giving a reactance of 80 ohms. Assuming a conservative value of 100 for Q,

$$Z_1 = (100)\,(80) = 8000 \text{ ohms.}$$

$$Z_2 = \frac{Z_1}{n_2^2}, \text{ where } n_2 = \frac{X_{ex}}{X_{c2}} = \frac{C_2}{C_x}$$

$$n_2 = \sqrt{\frac{Z_1}{Z_2}} = \sqrt{\frac{8000}{160}} = \sqrt{50} = 7.1$$

$$7.1 = \frac{C_2}{1000};\ C_2 = 7100\ \mu\mu f.$$

$$n_3 = \sqrt{\frac{Z_1}{Z_3}} = \sqrt{\frac{8000}{1440}} = \sqrt{5.55} = 2.36$$

$$2.36 = \frac{C_3}{1000};\ C_3 = 2360\ \mu\mu f.$$

The resultant of C_2 and C_3 in series is

$$\frac{(2360)\,(7100)}{2360 + 7100} = 1770\ \mu\mu f.$$

Since the foregoing values were based on a circuit capacitance of C_x = 1000 μμf., a capacitor, C_4, must be placed in series with C_2 and C_3 to reduce the circuit capacitance to this figure.

$$\frac{(1770)\,(C_4)}{1770 + C_4} = 1000$$

$$1770C_4 = 1{,}770{,}000 + 1000C_4$$
$$770C_4 = 1{,}770{,}000;\ C_4 = 2300\ \mu\mu f.$$

[5] See Howson, "Designing the V.F.O.," *QST*, Dec., 1955, for a discussion of effective transconductance.

MEMBERSHIP CHANGES OF ADDRESS

Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.

A Simple Conelrad Alarm

Transistors in a Self-Contained Unit

BY JOHN V. FILL,* K2GC/4

• Here is a simple conelrad alarm receiver you can assemble in a hurry. Using a germanium diode and a pair of inexpensive transistors, it should be just the ticket for anyone within good signal-strength range of a broadcast station.

SINCE the first of this year it has been a legal requirement of the amateur fraternity to monitor a broadcast station while operating. Should an alert condition exist, all radio transmissions should cease as soon as possible, to prevent possible use of direction-finding equipment by an enemy bomber force.

Many amateurs have no doubt pressed into service an old a.c.-d.c. set with which they listen to nearby broadcast stations. Some have probably built multitube alarm circuits into these sets. There should be an easier way, and there is!

There is a 250-watt BC station about five miles from me. With a 40-foot antenna and a tuned circuit of reasonable *Q*, the rectified signal from the station will develop approximately 5 μamp. through a 47K load resistor. In looking up some characteristics of transistors recently, it seemed within the realm of possibility to convert microamperes to milliamperes with a minimum of gear. With the addition of a two-stage d.c. amplifier using 2N109 transistors, 5 ma. was measured in the last stage, indicating a power gain of 1000.

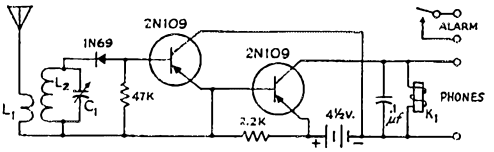
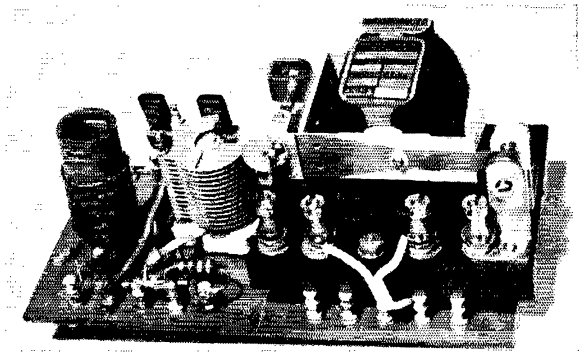
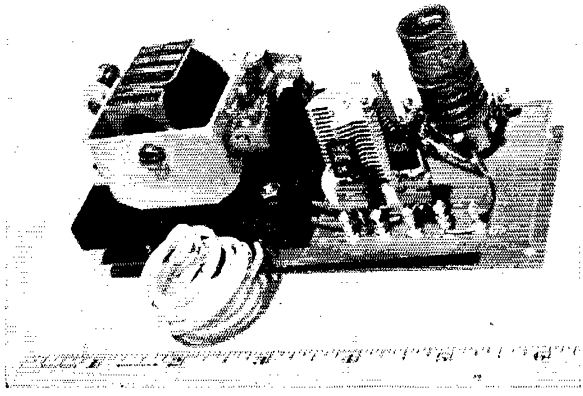


Fig. 1 — Schematic diagram of the simple conelrad receiver. Resistors are ½-watt.
C1 — Midget variable if auto-radio coil used at L_2; 100 μμf. if loopstick used.
K1 — 700- to 1000-ohm sensitive relay (Sigma 41F-1000-S-SIL, Advance SV/1C/1000 D, or equiv.)
L1, L2 — Auto-radio input coil or ferrite loopstick.

* Lt. Col., U. S. Army Signal Corps, Army Ballistic Missile Agency, Huntsville, Ala.



Two views of the simple conelrad alarm receiver. The physical arrangement is relatively unimportant, and the receiver can be built to suit the constructor.



The circuit of the finished alarm is shown in Fig. 1. Some antenna will be necessary unless one lives in close proximity to the broadcast station. The antenna coil can be an old auto radio front end coil or a ferrite rod. The main thing is to get at least 4–5 μamp. of signal through the 47K load resistor. Put a pair of high-impedance headphones in series with this resistor, identify the station and resonate the capacitor. A v.t.v.m. should indicate about ½ volt negative across the resistor. Positive voltage will not be amplified, as the base input circuit of the first transistor should be slightly negative.

The relay should have about 700–1000 ohms d.c. resistance to match the transistor output and to keep the battery voltage low. A relay that will close at 3½ ma. is satisfactory.

The entire system is "fail safe." The carrier holds the relay closed. Should the antenna become disconnected, the battery voltage drop, or practically anything else happen, the relay will open.

The switching contacts of the relay can be connected to keep a green pilot

(*Continued on page 174*)

Adapting the Viking I to S.S.B.

A "No-Modification" Method for Using the Viking as an S.S.B. Final Amplifier

BY W. O. SCHIRMER,* K2EST

This is a simple and convenient scheme for using the output r.f. stage of a popular a.m. transmitter as a linear amplifier for s.s.b. The same method should be applicable to other combinations than the one specifically discussed by the author, provided the amplifier to be used as a linear is biased from a fixed source.

ABOUT A YEAR AGO, after listening to the many s.s.b. stations, I decided to go the way of all flesh. At that time my transmitter was a Viking I that I had equipped with a coax antenna relay and a receiver muting relay. These were operated by the plate switch (SW_2 in the Viking I circuit); thus, to transmit I just pushed the plate switch, putting the transmitter on the air and muting the receiver.

A 10A exciter was acquired, along with a BC-458 for the v.f.o., and the necessary modifications to the BC-458 for v.f.o. operation were made. Then W4JMU's idea for using the Viking as a linear amplifier, as outlined on page 159 of the ARRL s.s.b. manual, was tried. While this worked fine, it limited transmission to 75 and 40 meters. Also, the Viking could not be used on a.m. without disconnecting the s.s.b. exciter and reconnecting the Viking v.f.o.

Briefly, what was wanted was a flexible system that would permit transmitting on 160 through 20 meters, a.m. or s.s.b., at the flip of a switch, and, last but not least, an easy method of doing this without modifying the Viking.

After some experimentation, the system shown in Fig. 1 was adopted. It has been in operation for over a year with most excellent and gratifying results.

Construction

A 5-turn link coil was made of No. 16 enameled wire about one inch outside diameter so it would fit snugly inside the buffer coil of the Viking. A small insulated terminal board, about 3 inches square, was attached to the aluminum shielding alongside the buffer coil. The link coil was connected to two terminals on the board. This mounting also held the link coil in place at the bottom of the buffer coil.

* Olivereа, N. Y.

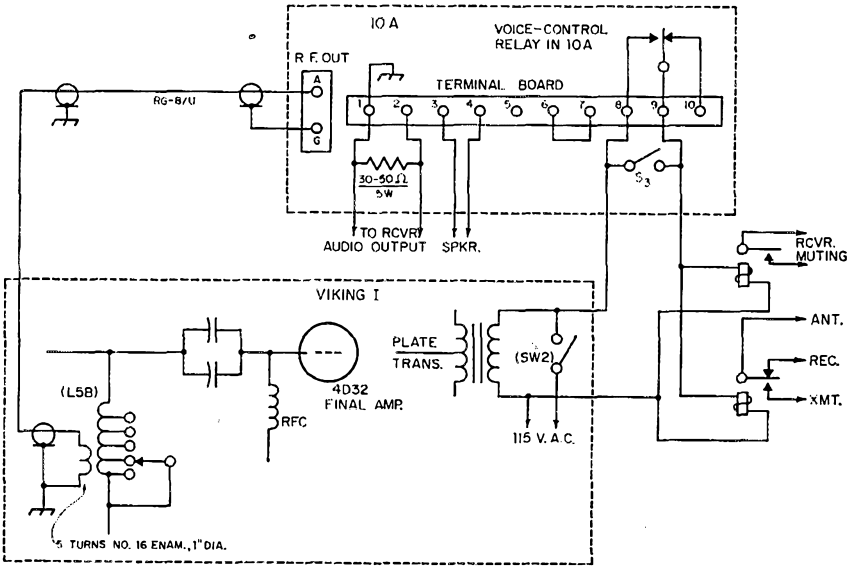


Fig. 1 — Circuit arrangement for using an s.s.b. exciter to drive the final amplifier in the Viking I.

Then a piece of 52-ohm coax was run from the terminal board to the output terminals of the 10A, thus connecting the link coil directly to the 10A output. In my station the coax is about 24 inches long. A single-pole toggle switch, S_3, was connected across terminals 8 and 9 on the 10A. This switch is closed during a.m. operation. On s.s.b. operation, the relay in the 10A operates the muting and antenna relays for the receiver, the s.p.s.t. switch being in the open position. I merely mounted this switch on a piece of metal attached to the back of the 10A, so that I could flip it on or off from the operating position.

No changes were made in the Viking. In fact, the nice part of this hookup is that only the top of the Viking has to be opened to make the connections. Just as easy as replacing a tube!

Operation

Close S_3 and tune up the Viking for a.m. operation. After tune up is complete, turn off the plate switch.

For s.s.b. operation, turn on the s.s.b. exciter and open S_3. Turn the Viking CW-PHONE switch to cw. Connect a key to the key jack, or insert an open plug. This disables the oscillator in the Viking. Then turn on the plate switch. The idling plate current of the 4D32 should run about 20 ma. Put the OPERATION switch in the 10A on CALIBRATE and insert enough carrier to bring the plate meter up to about 100 ma. Adjust the tuning controls on the 10A for maximum 4D32 plate current. This last adjustment does not put you on the air, since the antenna is open, hence you can tune up the s.s.b. exciter without causing QRM. However, the r.f. is being dissipated in the 4D32, so carrier insertion should only continue for a short period — just long enough to obtain best output from the 10A. Then remove carrier and adjust the a.m. and p.m. potentiometer on the 10A for minimum 4D32 plate current. You are then ready to transmit by throwing the 10A switch to vox.

To go back to conventional Viking operation, open the plate switch, close S_3, put the CW-PHONE switch on PHONE and you are ready to go on the air with Viking a.m. as soon as you close the plate switch. Of course, it is not necessary to remove the key or dummy key jack unless you wish to do so.

While operating s.s.b., do not drive the final plate current to more than 200 ma. In other words, adjust the audio control on the s.s.b. exciter so that 200 ma. is the largest peak. Actually, the peaks will then be about 230 ma. at 600 volts, or about 138 watts peak envelope input.[1]

While this system has not been tried with the Viking II or with exciters other than the 10A, there is no reason why it should not work with a Viking II or any other s.s.b. exciter.

The pattern obtained on a scope with two-tone modulation is excellent so long as the final is not driven beyond 200 ma. All signal reports indicate excellent quality, especially from hams with good s.s.b. receiving equipment such as slicers or receivers having s.s.b.-type selectivity. Contacts on 20 meters have been made on s.s.b. with the West Coast with 100 per cent readability, but when we switched to a.m., copy was negative.

One caution should be added: do not try to overdrive. Hold the audio gain as low as possible. Operation here is with 10A audio control at 8 o'clock.

It is not necessary to change any of the controls on the Viking in switching from a.m. to s.s.b. The meter will show some grid current on peaks, but this does not show up as nonlinearity on a scope. It is not necessary to back off on the Viking drive control in switching from a.m. to s.s.b., as in the system described by W4JMU; since all the drive is from the 10A, the Viking drive control has no effect.

For easy operation, two microphones are used here, one being connected to the Viking for a.m. operation and one to the 10A for s.s.b. operation.

Up to the present time, no effort has been made to try 10 and 15 meters, principally because of the lack of a 10-meter v.f.o. for the 10A and the requirement for somewhat different coupling for 10 and 15 meters inside the Viking. The 10- and 15-meter buffer coil is separate from the 160-20-meter coil of the Viking.

Since the output of the 10A falls off on 40 and 20 meters it may be advisable to open the resistors in the 10A final coil. This gives more drive for obtaining full output from the Viking.

So don't sell or trade the Viking! Just add an s.s.b. exciter, and with an hour's work you'll be on the air enjoying the advantages of both s.s.b. and ancient modulation.

[1] Since the relationship between peak-envelope and average currents will differ somewhat with different microphones and voice characteristics, the maximum meter reading that corresponds to the peak linear output of the amplifier perferably should be established with the aid of an oscilloscope in each case. — *Editor.*

Strays

W2BOH makes up a little decal for each item of gear that he builds, affixing it somewhere on the chassis. The decal identifies the issue of the magazine in which the equipment was described, greatly simplifying the servicing problem at a future date.

W3BBG recently worked W2BBG, who used to be W3BBG. Confusing, eh!

—•••—

W6YKE discovered that the CW Cafe of Carthage, Mo., does not serve A-1 sauce. Tch, tch!

Improved A.V.C. for Side Band and C.W.

Audio Rectification and Its Advantages

BY GEORGE W. LUICK*, WØBFL

The requirements of a good a.v.c. system for side band and c.w. are a fast "attack" and a slow decay. Merely using a long time constant in the conventional a.v.c. circuit is not adequate. The hang a.v.c. system described early this year in *QST* was a step toward better a.v.c. for side band and c.w., and in this article WØBFL tells how he modified the basic circuit to give superior a.v.c. action; the circuit is readily applicable to many receivers.

HAVING ACQUIRED a Collins mechanical filter, I set out to build an i.f. strip around it, somewhat along the lines of the high-frequency i.f. amplifier described in *QST*.[1] The "hang a.v.c."[2] seemed like a good idea, but I remembered that Luther Couillard, of Collins Radio, writing in the December, 1956, issue of the *I.R.E. Proceedings*, suggested that receivers for side band and c.w. should derive their a.g.c. voltage from the audio, which would eliminate isolation problems and give extra gain for a flatter a.v.c. characteristic. As a consequence I revised the hang a.v.c. circuit for audio rectification and installed it in the new i.f. strip. It works so well that I want to pass it along to the rest of the side-band (and c.w.) gang. I've never seen a flatter a.v.c. characteristic on any receiver, there is no problem with b.f.o. leakage into the rectifier as there is with the i.f. type, and it is very simple to set the threshold of compression so that a product detector can be run at the level that is the compromise between detector overload and available audio gain.

Those familiar with the i.f. hang-a.v.c. circuit will see that the audio-a.v.c. circuit, shown in Fig. 1, bears a family resemblance. Audio from the receiver is amplified in the a.v.c. amplifier, and rectified in the attack diode. The resultant voltage is applied to the a.v.c. line through the attack gate diode. The capacitor C_1 charges quickly and will remain charged until discharged by the recovery gate V_{1B}. This will occur some time after the signal has disappeared, because the audio was stepped up through T_1 and rectified in the recovery diode, and the resultant used to charge C_2. This voltage holds V_{1B} cut off for an appreciable time, until C_2 discharges through the 4.7-megohm resistor.

A point of difference between this and the i.f.-type circuit, other than the frequencies involved, is the use of bias on both the recovery diode and the attack diode. If bias is applied only to the attack diode, noise and such can keep the recovery gate biased to cut-off and the a.v.c. bus won't discharge. The threshold of compression is set by adjusting the bias on the diodes (changing the value of the 3.3K or 100K resistors).

Before I tried the circuit, I wondered if the attack would be as rapid as with the i.f. type, but it appears to be instantaneous. Once in a while I get a strong noise pulse that will cause the a.v.c. to hang until C_2 discharges, but most of the time the gain returns very rapidly to that set by the signal. For an S-meter circuit I use a triode and a 0-1 milliammeter in the conventional bridge, as shown in *The Radio Amateur's Handbook*. It holds so still on a steady s.s.b. or c.w.

(Continued on page 174)

* 2713 S.W. 9th, Des Moines 15, Iowa.

[1] Goodman, "What's Wrong with our Present Receivers?" *QST*, January, 1957.

[2] Goodman, "Better A.V.C. for S.S.B. and Code Reception," *QST*, January, 1957.

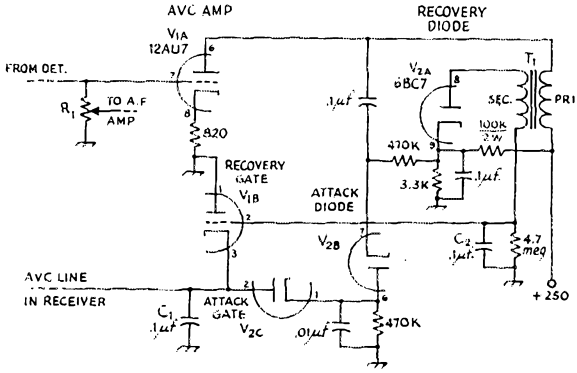
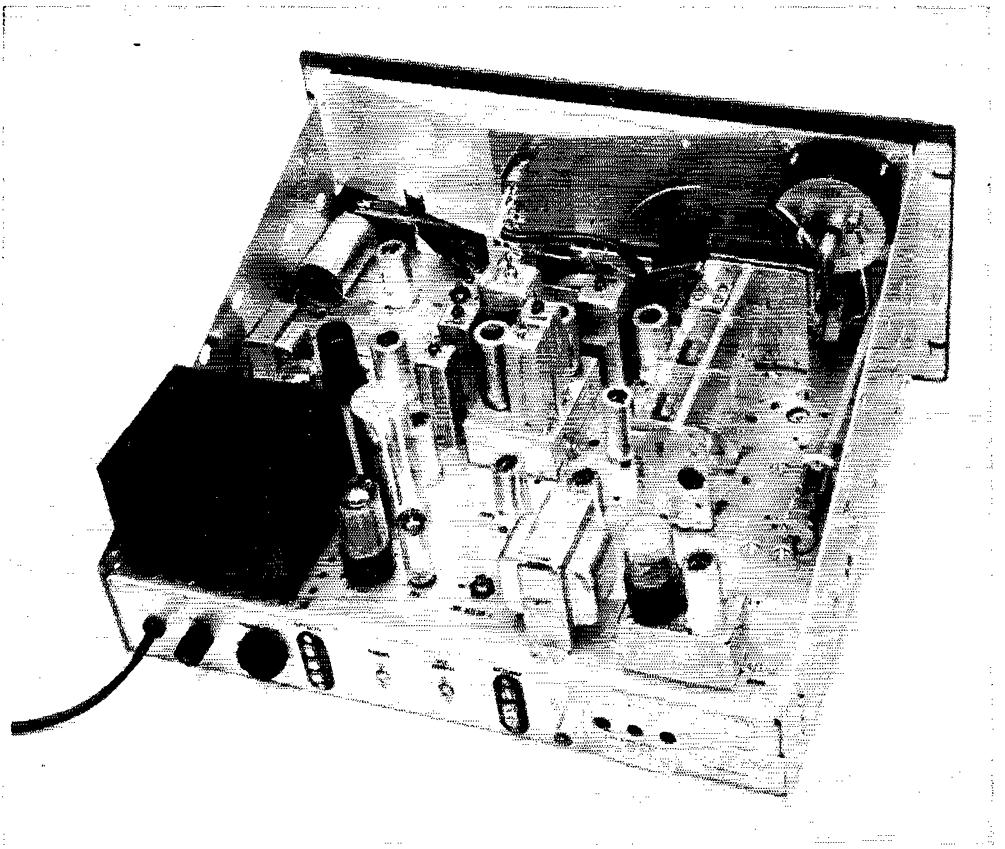


Fig. 1—Schematic diagram of the improved hang a.v.c. system. Resistors are ½-watt unless specified otherwise.

R_1—Normal audio volume control in receiver.

T_1—1:3 step-up audio transformer (Stancor A-53 or equiv.)

The hang time can be adjusted by changing the value of the recovery diode load resistor (4.7 megohms shown here). The a.v.c. line in the receiver must have no d.c. return to ground and the receiver should have good skirt selectivity for maximum effectiveness of the system.



Dust covers have been removed from the tuning capacitor gang and from the dial back and S-meter. The oscillator section of the tuning-capacitor gang uses ceramic insulation. Box in the right foreground mounts the crystal calibrator; the crystal is housed inside what looks like a glass tube envelope.

The Hallicrafters SX-101

IN MANY RESPECTS the circuit diagram of the SX-101 receiver is similar to that of the SX-100, and just glancing at the schematic you might say that the 101 is a ham-bands-only version of the 100. This would be a very good way to prove to the world at large that you know very little about receivers. Nowadays there is much more to a receiver than just the "hookup" (as the circuit used to be called), and the SX-101 illustrates the fact nicely.

Referring to Fig. 1, a block diagram of the SX-101, and comparing it with one of the SX-100 (*QST*, December, 1955), one sees that the first mixer is now a 6BY6 instead of a 6AU6, the high frequency oscillator is one triode of a 12AU7, and an S-meter tube has been added. Aside from these circuit changes and additions and the ham-bands-only feature, the receiver is quite simila electrically to the 100. It is a double conversion receiver, with a first i.f. of 1650 kc. and a second i.f. of 50 kc. Switchable side-band selection is obtained by choice of second-oscillator frequency; the 50-kc. i.f. has five bandwidths (0.5, 1, 2, 3 and 5 kc.), and a notch filter is provided for notching out an interfering carrier. (The notch filter uses the bridged T circuit; it was given in the *QST* description of the SX-100). The various bandwidths are obtained by switching in capacitors that change the couplings between high-*Q* tuned circuits in the 50 kc. i.f. amplifier, and resistors are also switched in that lower the *Q*s. A detailed explanation of this variable bandwidth system, which Hallicrafters has been using for some time, will be found in the description of the

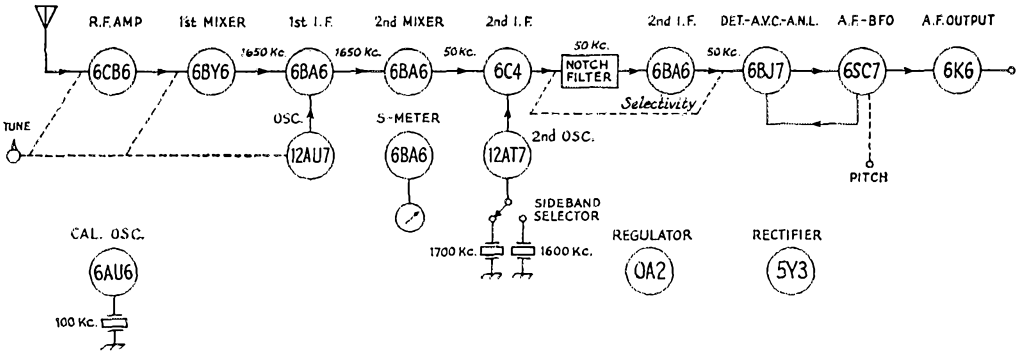


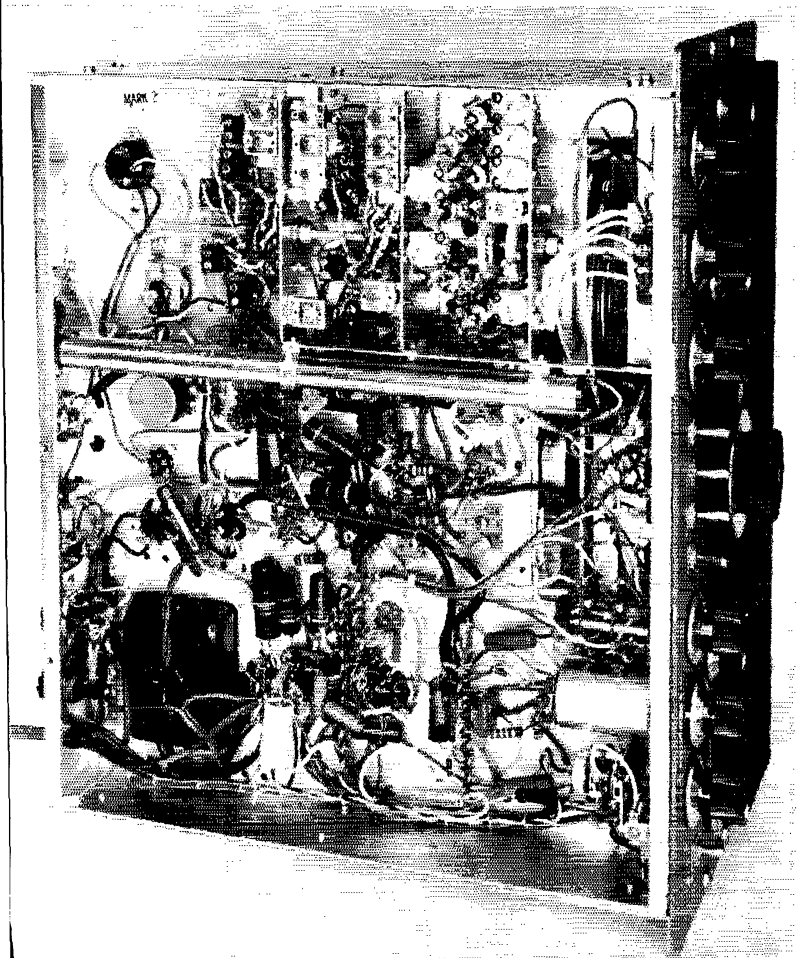
Fig. 1—Block diagram of the SX-101 amateur-bands receiver. A.v.c. is applied to the r.f. stage and the first i.f., and the manual gain control handles these two stages plus the i.f. tube following the notch filter. Regulated voltage is used on the 12AU7 oscillator, the screen of the first mixer and the screen of the S-meter tube.

SX-96 (*QST*, June, 1955).

The S-meter tube is a d.c. amplifier operated by the voltage developed by the a.v.c. rectifier. Sensitivity and zero adjustments permit setting the S meter over a wide range of adjustments; the S meter is adjusted at the factory to give a reading of S9 with a 50-μv. signal at 14.3 Mc.

So much for the circuit differences; what else is there to a receiver? In this case, plenty, as we will try to show. Right off the bat you find that this receiver is no lightweight, and once you have hefted its 70 pounds out of the box and on to the table you don't have to worry about it (or the table) blowing away. Weight *per se* is certainly no great virtue, but in this case it is a measure of the heavy chassis material that was used to insure mechanical stability.

In fact, stability certainly seems to have been a prime objective in the SX-101, since selectivity and sensitivity have been well taken care of since the SX-96. The receiver is shipped in a plastic bag with a dessicant, instead of merely protecting against scratches by the usual paper wrapping, and we learned from the manufacturer that the receivers are warm when they are sealed into these bags. When the customer opens the plastic bag



For good long-term stability, ceramic insulation is used in the oscillator band switch, tuning capacitor, trimmer capacitors and coil forms. The long thin metal tube just above the center houses the "Dampp Chaser," a small heater that runs all the time the receiver is plugged into an outlet.

he is advised to plug in the receiver immediately. Even though the receiver isn't turned on, a "Dampp Chaser" (8-watt heating element) under the chassis keeps the receiver above room temperature. All this fuss and bother is gone to because the engineers found that condensation is a serious source of long-term drift, and this is their approach toward overcoming it. Any ham who has had equipment failures during the humid summer months, as many of us have, can take a tip from this treatment.

Users of the SX-96 and SX-100 forerunners of the 101 will find the tuning knob and drive is a far cry from what they have been used to. The knob is man-sized and well removed from other controls, and the tuning is smooth and stays put when you remove your hand. The tuning scale for the band you have switched to is the only one that is illuminated. A 100-kc. calibrating oscillator is included in the receiver, and if for any reason the pointer does not indicate a band edge accurately you can reset the pointer with a panel control. Tuning rates vary from a minimum of 17 kc. per knob revolution (7 Mc.) to a maximum of 160 kc. per knob revolution (28 Mc.). The 11- and 10-meter bands are included in one range, and the band switch has seven positions, for the amateur bands 160 through 10 meters. If your quick count told you this should require only six positions, we hasten to announce that the seventh position permits tuning in WWV on 10 Mc., to check your crystal calibrator.

The panel controls range from four small knobs for antenna trimmer, pointer reset, notch depth and notch frequency through larger knobs for sensitivity, band selection, b.f.o. frequency, sideband selection, volume and selectivity, on up to the large knob for tuning. The tuning knob has a calibrated skirt around it, convenient for logging purposes. Toggle switches control calibration oscillator, a.v.c., noise limiter, b.f.o. and receive/standby; the a.c. power switch is on the sideband-selector switch. The headphone jack is on the panel, and antenna terminals (both binding posts and coax fitting are provided), speaker terminals (3.2 and 500 ohms) and the ubiquitous phono input jack are at the rear of the receiver. At the rear can also be found the fuse holder and the "d.c. power socket and plug." The latter permits using either battery or vibrator supply with the receiver, as explained in the instruction book. This socket also has a connection made to it that the writer believes could stand more explanation in the otherwise-good 24-page instruction book. The bottom end of the manual gain control is brought to Pin 4 of the socket, which makes the receiver (and its forerunners which also included it) a natural for applying the break-in system described in the keying chapter of *The Radio Amateur's Handbook* for many years. However, under section 2.9 of the instruction book very little is said about the usefulness of this connection, and unless the buyer of the receiver were unusually well up on his circuitry he would never make use of this little feature.

— B. G.

● Technical Correspondence

Power Ratings

Penta Laboratories
312 North Nopal Street
Santa Barbara, Calif.

Technical Editor, *QST*:

Enjoyed the piece on linear amplifier power ratings in the August issue, although it must be admitted that the whole field of power ratings is somewhat unrealistic when an a.m. phone can run 4 kw. peak input and 1500 watts average input, while a c.w. outfit is limited to 1 kw. peak. Actually many a.m. phones run considerably more than the legal limit during modulation when it is realized that some of the so-called peak limiters are nothing more than a rather inefficient form of controlled carrier, with the extra d.c. power being obtained by rectification of audio from the modulator.

It should be pointed out, however, that the 0.637 factor for the ratio of d.c. to peak current for a two-tone signal applies only in the case of a perfectly linear true Class-B amplifier. If the amplifier is perfectly linear and is operated in true Class B (which none are) the 0.637 factor will apply. If an amplifier has less than cut-off bias and is reasonably linear, the correct relationship between indicated (d.c.) and peak current is:

$$I_{pk} = 1.57\ (I_{dc} - 0.363\ I_0)$$

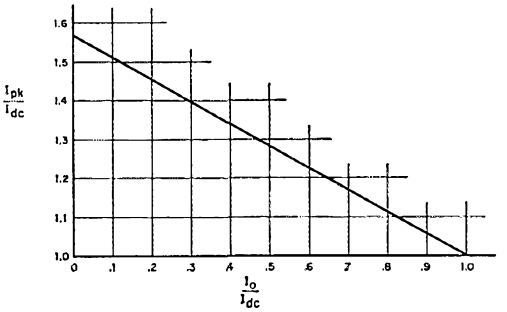
where I_{pk} = peak current
I_{dc} = average current (current read by plate meter)
I_0 = zero-signal (idling) current

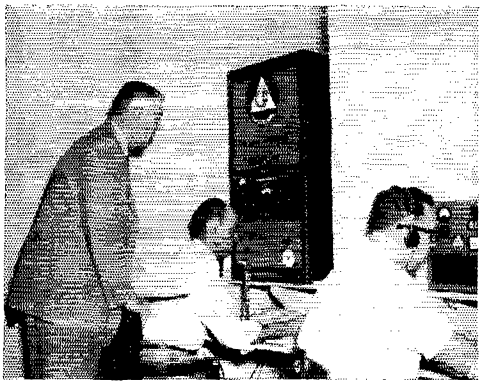
Failure to realize that the zero-signal current can have a marked effect on the meter reading for a given peak can have some rather amusing results, as is shown by some of the absolutely impossible miscalculated two-tone data published by some tube manufacturers.

For a given peak input at any particular plate voltage, the maximum output will be obtained from the tube that requires the minimum zero-signal plate current and has the maximum usable linear plate swing. The amount of zero-signal plate current that must be used is a function of the relative sharpness of cutoff (see Bruene, "Linear Power Amplifier Design," *Proc. I.R.E.*, Dec., 1956). It is for these reasons that we have designed our new beam pentodes to cut off as cleanly as possible and to have the widest possible useful plate-voltage swing.

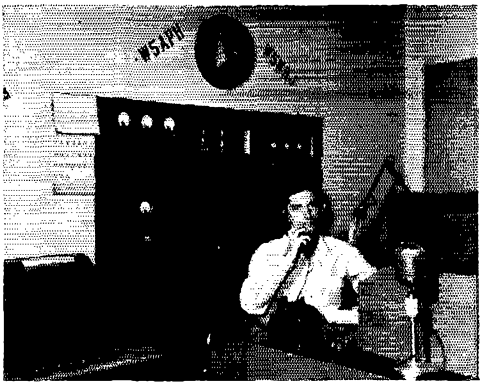
Leigh Norton, WGCEM

(*Editor's note:* The accompanying graph shows the relationship discussed by Mr. Norton. Knowing the ratio of the idling current to the plate current with the two-tone test signal, I_0/I_{dc}, one can find the factor that can be applied to give the peak current.)





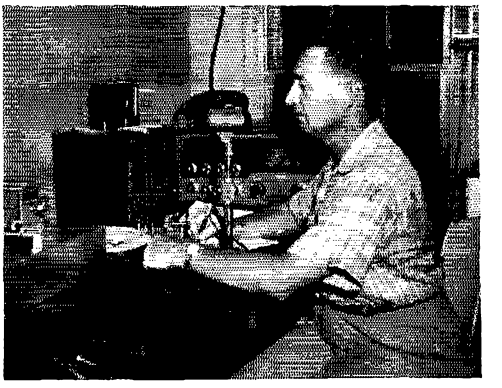
The State C.D. Control Center (left to right) Major J. H. Boh, Deputy director for La., Ken Jumonville, K5BES-ARRL SEC, Fred Hotstream, K5CYQ.



W5APH and XYL W5KRJ handled 999 "Audrey" messages.

Audrey and the Hams

BY ROGER WHITE,* W5SKW
AND VICTOR CANFIELD,** W5BSR



W5CCD (Arden Clinger, Lake Charles) use s.s.b. for contact with the state control at New Orleans.

BORN on June 24 in the southern Gulf of Mexico, Hurricane Audrey was a premature baby, an early beginning to the 1957 hurricane season. The Weather Bureau bulletin issued June 25, a Tuesday, warned: "A hurricane watch is advised for the Texas and Louisiana coasts." Less than 48 hours later, early Thursday morning, June 27, Audrey showed her power by smashing into the coast of Cameron parish, Louisiana, bringing recorded winds of 105 m.p.h., and estimates much higher.

More deadly still was the high wall of water she pushed before her. Extremely high tides were topped with pounding 20-foot waves that rolled 20 to 30 miles inland, carrying boats, homes and people with them. Besides being subjected to the ripping winds, the people of Cameron parish, driven atop their houses by the high tides, felt as if their homes were sitting in the midst of the high seas. Audrey threw mountain after mountain of raging water at them all day Thursday and on into Thursday night. It was early Friday morning before help could come to the people of Cameron.

When help did arrive, the workers found death and destruction. Survivors were huddled in isolated groups throughout miles of marshland, although one group of a thousand had reached safety at the courthouse in Cameron. Survivors were evacuated to neighboring Lake Charles. The exact total dead probably never will be known — the silent marshlands will retain that secret. The totals of dead and missing at Cameron climbed to over the 500 mark. But Audrey was not a one-parish disaster. Sixteen of Louisiana's parishes were declared a major disaster area. Lake Charles, thirty miles north of Cameron, in Calcasieu parish, housed and cared for 20,000 refugees. Cameron is now being rebuilt, and Louisiana is recovering from its worst catastrophe of the century.

Amateur radio operators made first preparations for Audrey that Tuesday night, June 25, when W5SKW, ARRL EC and C.D. Radio Officer contacted W5BSR, C.D. Communications Officer and discussed the news of the approaching hurricane. It was agreed that it looked like the Lake Charles/Cameron area was going to

* ARRL EC, 428 West Sale Road, Lake Charles, La.
** Director, Delta Division, ARRL; Communications Officer, Calcasieu Parish, Box 965, Lake Charles, La.

be in the direct path of the blow, and that immediate steps should be taken to alert all amateurs in the area. W5ZJT and W5KRJ, two XYLs who have a call list of all hams in the area, were asked to alert all on their lists to check their equipment, take necessary precautions to insure safety of their antenna systems, and to test and prepare for use any portable or emergency equipment that they might have. This they did, calling on Tuesday night and Wednesday morning until all were notified.

Also on Tuesday night, K5BTG, the ARRL Assistant EC in charge of emergency power supplies, was contacted. He started lining up previously committed emergency generators. It developed later that more generators were needed for communications and other uses. Early Tuesday night the EC contacted the Lake Charles Weather Bureau Chief, Mr. Paul Cook. Permission was granted by him to set up an amateur station in the weather bureau offices at the Lake Charles Air Base even though the bulletins were otherwise available. Mr. A. D. Spees, in charge of the lines bringing in crude oil, was contacted concerning a net to keep in touch with the Sour Lake, Texas, Cities Service field so that the flow of crude oil to Lake Charles could be controlled. His needs were only for an emergency generator for W5MOM at Lake Charles. More than twenty amateurs are connected with this company and other local plants so there was no trouble finding an amateur at Sour Lake for this circuit.

The EC made arrangements with his employer to use the telephone as much as necessary throughout Wednesday in order to get amateur radio communications arranged for emergency services characteristic of ham radio in natural disasters. Frequent contacts with C.D. Headquarters and the Weather Bureau were made to try to anticipate needs.

During Wednesday a study of available information was made to ascertain what facilities for radio communications existed in and out of the Cameron area. There were nine two-way radio systems operating. Arrangements were made for some of them to supply the Weather Bureau with on-the-spot reports of conditions in Cameron. The various oil company facilities were augmented by the Sheriff's department radio and the State Police radio with both fixed and mobile equipment.

With all these facilities available, the Communications Director and the EC decided against sending amateur radio facilities to Cameron before the storm. Later when Audrey struck with wind, wave and rain, there was a period of several hours when not one of the services was operating out of Cameron and an amateur radio installation would have been invaluable. This is one lesson which will not be forgotten.

The Director and the EC were called to attend a meeting at the city hall Wednesday at 4:00 P.M. The city, parish, Civil Defense, Salvation Army, amateur radio and other officials and services were represented. Since it was almost a certainty that Audrey was coming inland in this area, the city hall was designated as the control point for relief, rescue, and other types of activities. A steering committee was set up, charged with preparing official news bulletins to be released to try to keep down unfounded rumors that always accompany such events.

The EC appointed K5CXB to organize a news network, which he did with efficiency and dispatch. W5KHC and K5JQC moved their personal station equipment into the city hall Wednesday evening, and the Fire Department volunteered their ladder truck to put up antennas in convenient trees. W5CCD was appointed to man 3925 kc., the Gulf Coast s.s.b. frequency. He established contact with K5BES in New Orleans and maintained a "pipe line" into State Headquarters until the hams secured their stations upon order from the EC at 1800 hours Sunday night, June 30.

One of the stations at the city hall was set up on the MARS frequency of 4020 kc. Wednesday night, and the other was set up on 3850 kc., the Southwest Louisiana Emergency Frequency. W5BWZ was designated as relay station on 3850 kc. since neon and fluorescent lights were making solid copy in the city hall impossible for all except very powerful signals. W5APH and his XYL, W5KRJ, elected to act as liaison on the MARS frequency of 4020 kc., to Fort Polk, La.

At about 1:20 A.M. Thursday morning, the amateur group at city hall felt preparations sufficiently complete. They hoped then to go home and get a little rest. Except for the already-predicted high tides in the Cameron area it looked as though it would be mid-morning Thursday before the leading edge of Audrey would be felt to any extent in Lake Charles. All agreed to be back at the city hall by about 7:00 A.M. Even with this there would be a long stretch without any rest if Audrey really showed her wares. But at 1:50 A.M. that Thursday morning, BSR and SKW were called back to city hall with the statement, "This hurricane has gone crazy! It's moving in

Vic Canfield, W5BSR, Communications Officer, looks in on the set up at City Hall, Lake Charles. At the rig (left to right) Roger White, W5SKW, EC-RO and Bill Caldwell, W5KHC.

much faster than expected. It has speeded up, both in its over-all movement toward land and in its velocity within. You better get back down here!"

So back to the city hall, where plans were reviewed, and at 4:00 A.M. the rest of the previously-alerted hams were called out. Those assigned to stations other than their own went to those stations; those assigned to city hall went there. Communications were established with Fort Polk direct and through W5APH, and contact with that point was never lost. At approximately 2:00 A.M. Thursday morning a telephone call was made to Vinton to W5ZCO and W5SWQ . . . the father/son ham team and it was learned that they had already lost an antenna. Until they could get another one up, nothing could be handled through their stations. Audrey was beginning to make trouble already. By four A.M. Thursday morning custodians and principals of the various schools in the Lake Charles area had been called and asked to open up their buildings to be used for shelters, not only for the people coming out of the territory to the South of Lake Charles, but for those who felt their own homes in Lake Charles might not be safe enough to survive the anticipated winds of Audrey.

W5ZAK, W5ZJS, K4BTY/5, the only mobiles available at the time, were sent to three of these shelters where they stayed in their cars during the complete blow and afterward relayed traffic to and from the city hall. ZAK even had the back glass blown out of his car, but remained on duty until there was no longer any need of his mobile at his assigned post. After being released from this duty all three operators went to one of the key fixed stations where they went to work handling traffic at the new location.

All day Thursday the hams handled all communications directed their way. Commercial power failed at 7:10 A.M. and all work continued on emergency power. There was no break in radio communications except for a brief interval Thursday afternoon when one antenna lead-in broke. An unidentified fireman of Lake Charles tied himself to a tree in the 90 m.p.h. wind and lowered one end of the antenna. Three hams, W5SKW, KN5IZE and K5JQC, spliced the ends together and the fireman re-tied it in the tree.

Available hams were spread "as thin as the mustard on a nickel hot dog" and couldn't cover all of the shelters opened. This is where the industries around Lake Charles gave us a hand. Most of them lost their fixed antennas, but they still had mobiles on fixed frequencies, and they were put to good use by the EC. They covered shelters. They covered the city docks (Port of Lake Charles). They furnished a link from State Police Headquarters to city hall to relieve congestion on police frequencies. They even passed out portable power supplies to keep other stations on the air. They put a car or portable set at city hall with operator, were assigned Boy Scout runners, and invaluable services were rendered in the communication system.

Some time Thursday K5BQT was given the job of getting his BC669 into Cameron as soon as possible, since all communications there had failed. His was a lone responsibility to organize his personnel and get his own means of transportation down there. The EC promised emergency power and transportation from his home to docks or landing field.

K5BQT selected W5VTU and W5CTQ (who also took his equipment) to be his side kicks in Cameron and arranged transportation by boat. They were on the air from Cameron about 11:00 A.M. Friday. The first communications out of the stricken area reported: "Things are a mess here in Cameron. Boats are all over the land. Just wonder if anyone is reading this station." Not only did they have the first and only communications out of Cameron for several hours, the rig was set up on the boat and reports were transmitted back to City Hall concerning conditions down the channel from Lake Charles to Cameron. On arrival they dismantled the rig, carried it from the boat through mud, water, piles of debris and dead animals to the courthouse and put it on the air again, using emergency power.

During Friday the key stations really got into full swing, handling the traffic in and out of Cameron, relaying requests for helicopters, planes, boats, motors, clothing, food, embalming fluid, medicines, sprays, drinking water, water pumping facilities, cattle feed, requests for the Humane Society to try to come in and pick up living small animals and care for them until they could be reunited with their owners . . . if their owners survived. There were requests for hundreds of "plastic bags and blankets to handle the dead;" a request to Lafayette, "For additional priests with portable alters and equipment;" requests to anyone, "pitcher pumps to use to pump out shallow wells before treating;" requests for labor; requests for boats 40 feet and larger to be "mother" to a bunch of outboards being used in rescue service; the sad message, "To Dr. C. W. Carter, Cameron, La., Your wife and 2 boys alive and in good condition in Lake Charles, other three children were lost."

Roger White, W5SKW, ARRL EC and Area 3 RO, and XYL Bev were in the thick of things . . .

For many hours the hams had to refuse welfare messages which could have been important in helping to keep down rumors and reassure friends and relatives in all parts of the United States but emergency traffic directed to improving the danger aspects of the situation came before personal traffic.

Besides transmitting and receiving many messages, many official news bulletins were addressed to the outside through K5CXB. His net's news traffic was in some cases recorded for release on broadcast stations.

W5CCD kept a channel open into State C. D. Headquarters in New Orleans, also handled traffic and news. KRJ and APH handled a heavy load of traffic on the MARS circuit. W5WN moved many Welfare messages with help of a KL7 whose identity hasn't been established as yet. He came to help, was given a job to do, and executed it admirably along with W5IHR and others at W5WN's home. BWZ was always around to relay the Cameron traffic to and from the city hall; he had plenty to do. Several YLs spent sleepless hours at stations away from control center relaying, receiving and delivering messages by telephone.

Throughout Saturday and Sunday the hams operating with emergency generators or restored commercial power continued to move traffic of all types efficiently and without a break of any kind. On Saturday morning, W5HNS, K5ESN and W5MKI were sent to Cameron as relief operators. They remained 24 hours, doing all they could to help the situation.

The total number of messages and bulletins during the period of organized activity, was in excess of 4000. Many more welfare messages were handled by individual stations after organized and controlled operations ended.

As commercial power began to be available in the various sections of Lake Charles, Sulphur, Maplewood, and Hollywood, more amateurs came on the air, taking over most of the load of welfare traffic that was swamping the stations that had been in continuous operation using emergency power. All participating amateurs deserve great credit. All did what they could with what they had to do with, and that is all any ham involved with Audrey could do.

It is well to note that in true amateur fashion a lot of welfare traffic was handled by a couple of young Novices in Sulphur, KN5KSK and KN5JMV. These boys were helping out with some of the emergency nets operating out of Sulphur, and later when possible, they used their own flea-powered rigs and exchanged messages in the Novice Bands with other Novices throughout the county.

On Sunday morning after Audrey was well on her way northward, a message was received from Cameron requesting parts to replace some that were giving up the ghost in two rigs operating there. The EC contacted W5WN, secured the parts and flew them down by 'copter about noon. By that time, some roads into Cameron had been opened, and other means of communications were becoming available. For one, the Army had arrived with their communications vans. So after returning to Lake Charles, the EC talked with communications Director W5BSR, and it was decided that by 1800 hours local time, usual or auxiliary communication systems in the stricken area should be functioning satisfactorily, and organized amateur operations could be terminated, the Cameron stations returned home; and all ham activity thereafter would be on an individual basis as desired by each operator.

Most of the hams involved had been on duty from early Wednesday morning until the stations in Cameron were brought back to Lake Charles around 10:00 P.M. Sunday night, roughly 120 hours with less than 12 hours sleep. They had handled the emergency in accordance with the best amateur traditions. They were, as one high C. D. official put it, "The only organization involved in the emergency that did not bog down sometime, somewhere."

There follows a list of the calls of all amateurs *known* to have participated in the organized communications portion of the emergency. If the call of any amateur who lives in the Lake Charles, Sulphur, Maplewood, or Hollywood areas, and who helped in any way, is not listed, please don't feel slighted. Those who worked with you know what you did, and you have the satisfaction of knowing that you, too, have done a typical amateur radio job.

W5AOA	W5IYG	W5TVH	K5CXB
W5BMK	W5JBW	W5UGJ	K5CZV
W5BSR	W5JFR	W5UJP	K5ESM
W5BWZ	W5KHC	W5VTU	K5GRG
W5CCD	W5KRJ	W5WM	K5IMQ
W5CEZ	W5LLP	W5ZAK	K5IQZ
W5CNZ	W5MDN	W5ZJS	K5JQC
W5CTQ	W5MKI	W5ZJT	KN5ALU
W5DEA	W5MON	K5APH	KN5IZE
W5EAW	W5NHN	K5BQT	KN5JMV
W5HNS	W5OVE	K5BTG	KN5KFE
W5IHR	W5SKW	K4BTY/5	KN5KSK
W5IIF	W5TJB		

Strays

One day recently, within a two-hour period and without prearrangement, K9AZK worked K5USA, K2USA, and W4USA. No, it wasn't on Armed Forces Day!

Leo C. Young, W3WV, well-known old-timer, was recently presented with a pin signifying forty years of service with the Naval Research Laboratory in Washington, D. C.

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ANNUAL SIMULATED EMERGENCY TEST

October 12-13, 1957

The time is about upon us for another SET, the Amateur Radio Emergency Corps' annual test of its nationwide facilities. Emergency Coordinators should by this time have received the bulletin giving last minute details of the activity, which has been listed in the Activities Calendar since July *QST*. This, like the bulletin, is more a reminder than an announcement and will introduce newer amateurs to the procedure and urge all AREC members and traffic men to participate.

The Simulated Emergency Test is an ARRL activity embracing coordination with both the American National Red Cross and the Federal Civil Defense Administration, the former through contact with local Red Cross Chapters and the latter through contact with local civil defense officials. These are the two principal to-be-served agencies involved, although other agencies normally served by your AREC group may of course be included. The activity includes both local and national operation: the former through carrying out a local simulated emergency exercise of your own (or your EC's) choosing; the latter through relay of message traffic (1) from your Red Cross chapter to national headquarters, (2) from your local civil defense director to FCDA in Battle Creek, Mich., and (3) from every AREC member to the ARRL National Emergency Coordinator. It is not a contest. The scoring system is for the purpose of comparison with your last year's score if you had one; or to add to the national score to bring it over last year's national score to show that the AREC is making progress in being prepared for any eventuality.

Sound interesting? Here's what you do:

1) Contact your local Emergency Coordinator 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 membership card endorsed if it needs it. If you have no EC, get together with other interested local amateurs and recommend one to your SEC or SCM (see p. 6).

2) Take part in the local simulated emergency which your EC will organize for the October 13-14 week end. It may be that for local reasons he will throw this test on a different date. Find out, and plan to take part whenever it is to be held.

3) Originate a message to ARRL headquarters indicating your participation. Remember there are some 30,000 AREC members and if each one originates a message (we hope they do) we'll be swamped (and we hope we are), so keep these messages short. Ten words should be sufficient. Put the messages on the regular traffic nets of the National Traffic System, or clear them on one of the National Calling and Emergency Frequencies; 3550, 3875 or 7100 are usually best for this purpose. Regular traffic men will be monitoring those frequencies on the lookout for such traffic, as will W1AW and some of the ARRL headquarters gang.

4) After the test, your EC will summarize results on a form with which he will be provided. *See that yours reports, so your work will receive credit.*

Several ECs have told us that they intend making this year's SET a really gala affair, with all the trimmings, and that they expect to have a big turnout. Last year's affair was an improvement over the 1955 SET; we hope that this one will be the biggest ever, as well it might. How about *your* help, OM?

CONTESTS


The American Radio Relay League, Inc.

CERTIFICATE OF PERFORMANCE

This is to Certify

BY L. A. MORROW * W1VG

LISTEN! "CQ test de CR6AI"; a grab for the v.f.o. dial, the final amplifier switch and the bug. "CQ SS, this is WØNPR in North Dakota, over"; and the quick frequency change, the snappy reply into the mike. It's the DX Contest, the Sweepstakes, or one of the other shindigs that all of us get into if we possibly can.

For improving operating technique on both c.w. and phone, increasing code speed, putting the rig and antennas through their paces, working that badly needed country or state, and, most of all, for real fun on the air, contests are the tops.

Contest operating is certainly stimulating and is sure either to make us feel proud of our operating ability and station efficiency — or to make us realize our shortcomings and prod us into correcting them.

Just as the race track is the proving ground for many automotive advancements, contests provide excellent means for testing ideas in station design and operating practices.

There's a big difference in our favor, however: cars and drivers must qualify before they can compete in the big time, but a ham station and a ham ticket are all we need. Neither advance notice of entering nor any special qualification is required; we can jump in at any time and operate as long as we like.

And we don't have to be hot shots to enjoy it. The few 35 w.p.m. fellows with contest experience have a wonderful time fighting for top honors, but they don't get any more kick than the rest of us who move along at 20 w.p.m., happy to add a few new countries or states.

Still, it would be nice to make a top score, so let's remember that while only one entrant can win a tennis tournament or a skeet shoot, there are many winners in each radio contest. In fact, there's a winner from each area. It is well known that radio conditions are not the same everywhere, and because of this fact, amateurs in each ARRL Section and in each country compete against each other. The winner in one part of the U. S. may have a lower score than the first two or three in another part. One of the big appeals of contests is that, no matter where we live, we can enter with a chance of winning because our competitors have the same radio conditions we enjoy or suffer.

But, of course, everyone cannot be top man for his section or country, any more than every kegler can bowl 220. The fact remains that the majority of bowlers, the hundreds of thousands of golfers who never break 100, the many piscators who have the proverbial fisherman's luck, all have fun.

It's doubtful, though, that they have as much fun as we hams do in a good contest. For instance, there's Field Day. It's in June. Summer is in the air; the gang is together; we get to stay away from home all night. What if it does rain? We can always eat. There's even the possibility that someone in the group can actually cook. And the knowledge that we really are accomplishing something by setting up and operating emergency equipment instead of merely trying to get a better score than the rival Podunk Hollow group gives us a virtuous feeling.

Now it's Fall. Nights are crisp, and static on 80 and 40 has disappeared. Yes, 20, 15 and 10 are wide open, too. It's time for the Sweepstakes. QRM? Terrific — but that's what we want. The place to go duck hunting is where there are plenty of ducks, and many a new state Mallard can be brought down in the SS by a well aimed call.

Next, the holidays have passed. It's even possible that the Christmas bills have been paid. DX is really getting good. It reaches its climax in the DX Contest, the big ARRL affair that brings on the air hams in countries which have been just unknown spots on the map to most of us. Here's the big opportunity to finish off the DXCC and to prove that 200 watts with our smart operating can make that kilowatt guy down the street look like a lid.

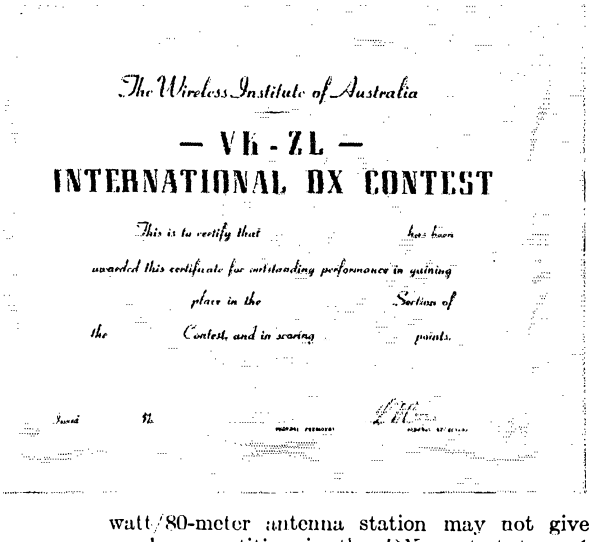
* Advertising Manager, *QST*.

There is a pattern to contests, a pattern that has evolved through the years, partly because of similarity of contest rules, partly because of knowledge of operating practices and station layout gained through experience.

The basic rule of all contests requires an exchange between two stations of a small amount of information, the receipt of which must be acknowledged by both. The information may be numbers and states as in the DX contest, message preambles as in the Sweepstakes, or ARRL Sections as in the VHF Party.

The basic operating practices are for the rare stations to call CQ and for the others to answer, for calls to be short, for break-in or push-to-talk to be used wherever possible.

The basic station requirement is ease of operating. This means rapid frequency and band change, convenient placing of controls with a minimum of switches to throw, and, of course, break-in or push-to-talk. Power requirements vary with the type of contest. Although a 100


The Wireless Institute of Australia

— VK-ZL —

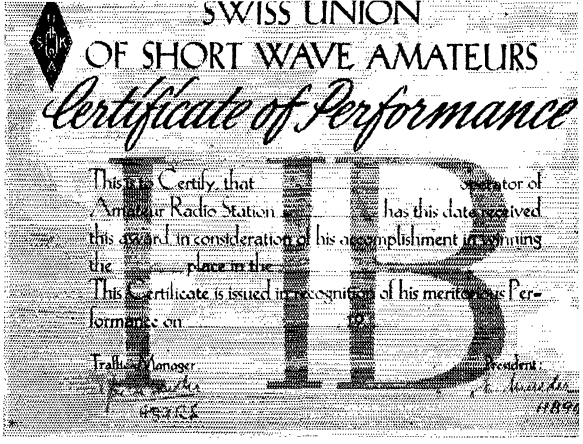
INTERNATIONAL DX CONTEST

This is to certify that has been awarded this certificate for outstanding performance in gaining place in the Section of the Contest, and in scoring points.

watt/80-meter antenna station may not give much competition in the DX contest to a 1 kw./20-meter beam layout, it may win in the SS. Flexibility, ease of operating on several bands and the power multiplier count heavily in the Sweepstakes.

At the end of this article is a table showing the most popular and important contests. In it is listed the issue of *QST* which usually contains complete information on each of them. It provides a quick method of seeing just which contests are held when and should be of value when planning how many weekends a year the family can safely be neglected. Also, it should help when something like "CQ FD" or "CQ contest" is heard, since a glance at its *QST* reference will tell what is going on, how long it will last and how to get into it. *QST* now carries an Activities Calendar under Operating News, too; it's a monthly reminder of contests coming up.

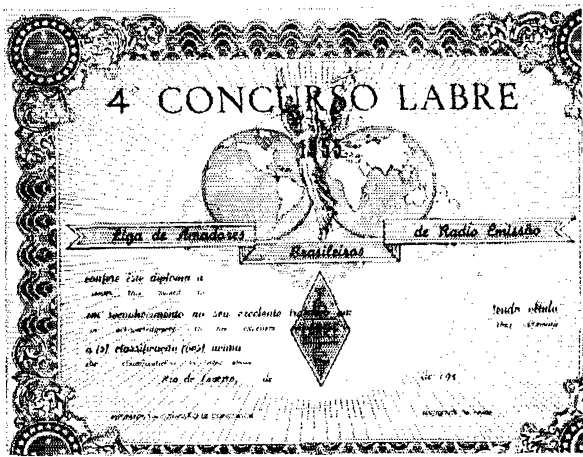
Contests are divided into two basic classes. In one class fall the contests which are usually


SWISS UNION OF SHORT WAVE AMATEURS

Certificate of Performance

This is to Certify that Operator of Amateur Radio Station has this date received this award in consideration of his accomplishment in winning the place in the This Certificate is issued in recognition of his meritorious Performance on

Traffic Manager President


4° CONCURSO LABRE

Liga de Amadores de Radio Emissão Brasileiras

sponsored by the amateur organization of a country and in which amateurs from all over the world are invited to take part. The other cases are those in which participation is limited to hams in a certain country or geographical area. The contests in the latter class range from the very large Sweepstakes to various small affairs generally sponsored by local radio clubs.

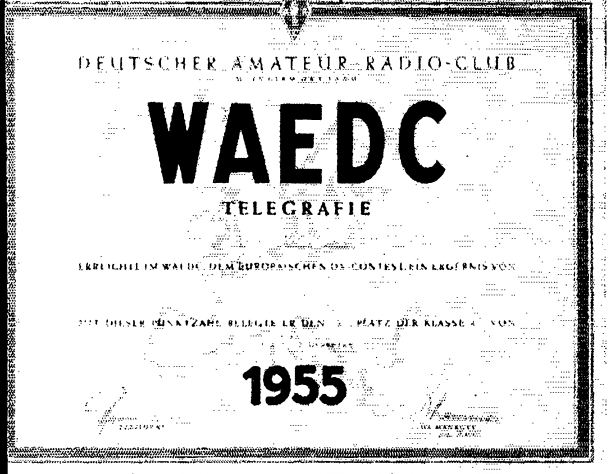
The only exception seems to be the RSGB sponsored BERU which is of international scope but open to stations in the British Empire only.

Participation in a CD Party — which is really a get-together, not a contest — is limited to Communications Department appointees, League Directors, SCMs and Headquarters employes. But any licensed ham can apply to the ARRL for one of the many appointments which, if made, will qualify him as a CD Party participant. *Operating an Amateur Radio Station* (available from ARRL) gives details on how to apply.

Two of the most important contests are the International DX Competition (DX Contest) and the Sweepstakes. A comparison of successful operating practices in these should be of value because each sets the pattern for several others. The WAE and VK/ZL Contests, for example, are in the same category as the DX Contest, while the W/VE Contest and the VHF SS are more like the Sweepstakes.

General practice in both types of contests is for the stations in the rarer locations to call CQ. In the DX Contest it's the countries outside the United States and Canada, and in the SS it's the boys in sections like Utah and Vermont whose CQs get the answers.

Calls, both CQs and replies, should be short.



In fact, a DX station usually does not have to call except when first coming on the air. Calling CQ after each contact is a waste of time, as there are always many stations waiting to work him. The answering stations should keep their calls short, too, since the DX station with many replies to choose from is quite apt to come back to the station who signs first.

The smart c.w. DX station operator will ignore calls on his own transmitting frequency. He knows how nerve-wracking it is to try to exchange information when both he and his contact have to battle the jumble of stations there who keep calling and calling but never seem to listen. He will answer the stations who call at least 2 kc. from his transmitting frequency, changing his receiver tuning to the other side as a pile-up becomes too great. If he is really sharp he is apt to tell what his new receiving frequency will be: "Down 3 kc," "Up 2," or whatever. The alert operators who want to work him will get there in a hurry — although a few of the boys will probably continue to call on the old frequency for ten minutes longer.

The operator at the DX station must make it plain to everyone just who it is he is working. The same DX contact has been claimed by more than one W because the DX operator gave the W's call when he first answered and did not send it again. QRM in the DX Contest, for example, is terrific and it is easy for two or more operators to think their calls have been answered. The following probably represents the minimum necessary for a good exchange:

KT1UX KT1UX de W1AW W1AW K
W1AW GE 589100 589100 W1AW de KT1UX KN
KT1UX R 579CONN 579CONN 73 de W1AW (A)
W1AW R SK de KT1UX (B)

It may not be necessary for the W station to send his own call before transmitting the number, as long as he signs at the end of the transmission (A). However, it is important for the DX station to confirm on his last transmission which U. S. station he was working so some other eager W will not claim credit for the contact. (B). The SK tells those waiting that he is finished with the QSO and is ready to answer another call — but not on his own frequency, let's hope!

Should a DX station answer a fellow who calls him while he is working someone else? Most ops agree that the answer to this is a definite *No.* Other stations will swoop in like pigeons around a pile of corn, including our old friends who just keep calling and never listen, and the result is a QRM nightmare.

But how about tail-ending? Some DX stations like it and some do not. Although the first-class operator will wait until the station in contact is signing off and then give the DX station a quick one-by-one, another W may hear him and decide to call a little longer. Then two or three more join the happy gathering . . . and a few QSOs later confusion reigns.

It's been said many time, but let's repeat and repeat: *The DX station is in absolute control.* There's no cause for him to get mad and quit because of pile-ups. All he needs to do is to ignore stations who call while he is in a QSO, turn his receiver dial when too many find where he's listening and never answer a station on his own frequency.

It is even more important to make calls short in a domestic contest. A snappy "CQ SS" will get excellent results, since potential answers will not wait for a long CQer to sign, but will look for a better operator. Also, a long reply to a CQ is generally worthless because the CQer will probably have already replied to a short call. Sometimes a CQer in the CD Party, for instance, has finished a QSO with a station who gave him a short call by the time the long caller has finally decided to sign.

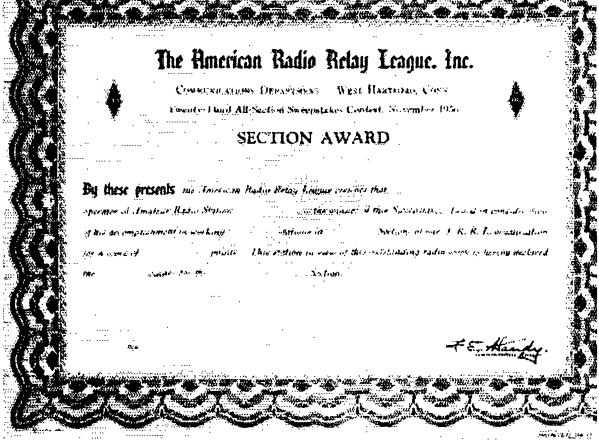
Unlike the DX contest, a domestic contest affords excellent opportunity for c.w. QSOs on the same frequency. Contests like the Sweepstakes are based on QSOs between any two stations, regardless of which Section each may be in. Pile-ups of any size seldom occur. Therefore, a CQer will not tune his receiver very far from his transmitter frequency because he wants a contact with someone and wants it fast. If he does not get immediate replies, he will either call CQ or answer a CQ; he won't wait. Also, an unsuccessful reply to a CQ will sometimes result in a contact with another unsuccessful replier. The stations are on approximately the same frequency and can hear each other.

Example:

CQ SS CQ SS CQ SS de W7KEV W7KEV BK

Suppose W1AW answers W7KEV and, since W1AW works break-in, hears W9BRD call W7KEV too. If W7KEV does not answer either of them, W1AW gives W9BRD a one-by-one and gets him before he tunes his receiver to a different frequency. Even though W7KEV, W1AW, W9BRD and the station W7KEV answered are on approximately the same frequency, it is entirely practicable for both QSOs to take place.

It is evident that efficient station operating in a contest is more than just hard brass pounding


The American Radio Relay League, Inc.

SECTION AWARD

By these presents

or fast gum beating. The advice of the high scorers is to make your time pay. It's foolish to send the preamble in an SS exchange at 30 w.p.m. when the other fellow (and we can judge pretty well by his sending) cannot copy more than 20. The whole thing will have to be sent over again and more than twice as much time will be required for the contact. And it is fruitless to rattle off phone contest information when we know that interference on our transmitting frequency is boiling and running over. We'll have to control ourselves and talk slowly and distinctly, perhaps repeating each word, perhaps repeating the entire information.

Even the big shots don't get answers to every CQ nor raise every station they call. But when they begin to miss too many, they try another band. If conditions are not good on any band, they stop for a while and go back on the air when signals are rolling in again. When they are too tired to operate and handle equipment well, they knock off for a short rest. And when they work a station, they don't wonder whether he was worked before or whether he is in a new Section. They know, because the list of stations worked and the check-off sheet are where they can be reached without fumbling through a lot of papers or knocking over the ash tray. They don't go out of the band to call a DX station, either. FCC QSLs aren't desirable collectors' items.

in future operating, whether amateur, commercial or in the armed forces. Perhaps it is like the experience of the man who went to the doctor because his back pained him and was told that certain muscles needed exercising. "Lay a pile of marbles on the floor each evening before you go to bed," advised the M.D., "and see how fast you can pick them up with your toes."

After a couple of weeks the patient bounced into the office, full of enthusiasm. "Well," smiled the doctor. "I'm glad to see your back is better."

"Gee, Doc," replied the man, "I kind of forgot about that — but, boy, am I a whiz at picking up marbles with my toes."

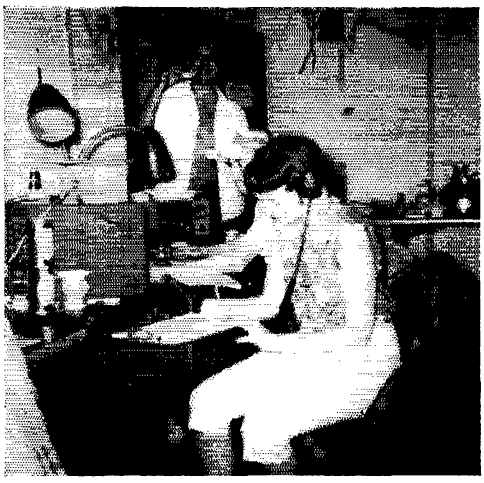
Name of Contest	*Sponsor*	*Issue of QST containing rules*	*Location in QST*
International DX Competition	ARRL	January	See Contents, page 3
VHF Sweepstakes	ARRL	January	See Contents, page 3
Belgian Contest	UBA	March	How's DX? Whence: Europe
The French Contest	REF	March	How's DX? Whence: Europe
OZ Cross Country	EDR	April	How's DX? Whence: Europe
PACC	VERON	April	How's DX? Whence: Europe
Helvetia-22	USKA	May	How's DX? Whence: Europe
Russian Contest, c.w.	Central Radio Club	May	How's DX? Whence: Europe
Labre DX Contest	LABRE	August	How's DX? Whence: Hereabouts
W/VE Contest	Montreal Amateur Radio Club	September	See Contents, page 3
VK/ZL DX Contest	WIA/NZART	October	How's DX? Whence: Oceania
Sweepstakes	ARRL	November	See Contents, page 3
21/28 Telephony Contest	RSGB	November	How's DX? Whence: Europe
Worked All Europe	DARC	December	How's DX? Whence: Europe
CD Party	Comm. Dept. ARRL	CD Bulletins	Not listed in *QST*

Good light and a comfortable chair help, while a little fresh air has been known to be harmless. It is suspected that there might be a better diet than cigarets and coffee.

The experience gained by working through contest QRM, by operating under pressure and by fast handling of equipment is of great value

When the routine, every-day operating we've been doing begins to give us a pain in the back, how about picking up some QSOs in a good, fast contest? We may find to our pleasant surprise that we've become whizzes at it — and that the backache and boredom caused by stereotyped QSOs have disappeared.

With W1FTZ looking on, the mayor of Concord, N. H. (where *QST* goes to press), transmits first "CQ Field Day" for Concord Brasspounders. W1OC/1 wound up as Class-10A winner, top One, and the nation's third-highest club.



For Pocono Amateur Radio Klub's W3MAA/3: YL WN3KZC at log, W3MDO at bug, W3YAZ at hamburger.

1957 Field Day Tops 'Em All!

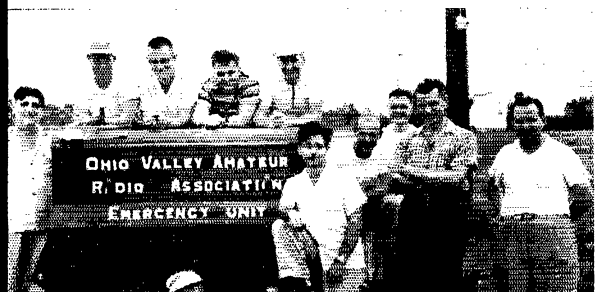
Ideal Weather, Hot Bands, Balky Generators Keynote Record-Breaking Test of Emergency-Powered Equipment

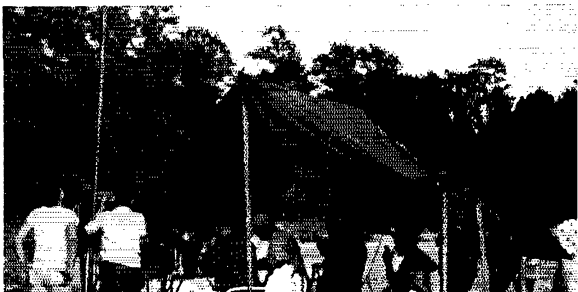
BY PHIL SIMMONS,* W1ZDP

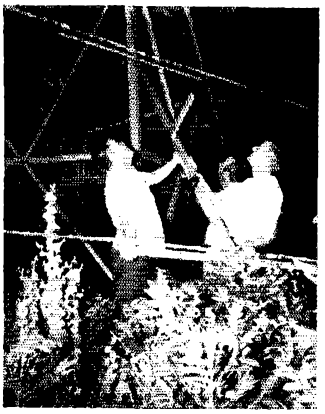
DURING the last decade almost every phase of operating you can name has grown like Jack's beanstalk. DX, v.h.f., traffic, and what-have-you are riding high, and so are the League's Code Proficiency, RCC, WAS, and DXCC issuances. The most recent ARRL DX Competition and Sweepstakes drew nearly 2000 apiece, and the last V.H.F. SS hit over 800 entries, all-time peaks for all three contests. But when we totted up the 1957 Field Day statistics our eyebrows arched; 10,264 participants just *couldn't* be right. We carefully rechecked, found no mistake. Sure enough, there were 10,264 participants in the field, a whopping 430 per cent increase, by the way, over the first postwar FD of 1946.

*Asst. Communications Manager, C.W., ARRL.

Single-side-band tent contributed mightily to Garden State Amateur Radio Association's results. W2GSA's 22,089 points ranked second among all clubs and led Class 9A. Clean-up chores completed, most of W4FU/8's DX and contest hounds cluster 'round their potent emergency-power source. Standing: W8ELB, W8BOJ, W8IFX, W8USM, W4JBQ, W8SDJ, W8PBU, W8SMC, W8FGX, W8RSW; sitting: W8GZW. The 10-kw. genny must have purred continuously. With ten rigs, OVARA ticked off 1596 QSOs and 14,364 points, enough for top W8 and fifth-ranking club tally.







Nothing is more important to success than good antennas and there are a lot of ways to get them skybound. *Left:* KN4HKM, K4HQD, and W9AJE demonstrate the elbow-grease method as they raise the 15-meter "catfish special" onto a 90-foot lookout tower for Danville Amateur Radio Club's W4CBM/4. *Center:* W6MCK and W6WYD prepare to launch a vertical-supporting box kite for Aerojet Radio Amateur Club. The wire gave an excellent account of itself on 80 and 40, helped K6CLZ/6 poll 5901 points with three transmitters. *Right above:* No, this isn't a Bell Telephone lineman, it's W7UHK outfitted in climber's belt and spikes. Gary's about to ascend a 50-foot fir and hoist up a clover-leaf for W7YK/7. *Below, right:* W5EKK shows good archery form as he shoots a pulley line toward a lofty ponderosa pine on behalf of New Mexico's Manzano Mountain Moonshine and Rhombic Society. W5EKK & Co. have recently made a notable splash on the one-transmitter scene, having placed first last year and second in '57.

And is it really any wonder? The average ham, never so versatile as he is today, often uses both phone and c.w., v.h.f. and l.f., chases DX and pushes traffic at varying intervals. This is also the age of specialization, however, and almost everyone has an operating *preference*. Field Day, primarily a group affair, has universal appeal. At the site, every type of talent is needed and can be put to good use. The brute-force DXer who pursues prefixes at home with kw. and beam perhaps can best be utilized at the 20-meter FD position. The traffic hound? 80 and 75, naturally. The hot-shot SS and CD-Party fiend, the crack brasspounder? The busiest c.w. bands. The experienced v.h.f.-er? Let him ply his accustomed trade; he knows the 2- and 6-meter locals by name and which way to point the beam to raise them. How about the member who, for one reason or another, has been off the air for several years (and what club doesn't have some deadwood)? His code speed is rusty but he can serve a stint as a commissary hand or Field Day chairman. The more fortunate outfits may boast one of those mechanical and electronic geniuses who, after a glance at a schematic, can fix anything in jig time. Because fluttering generator voltages cause equipment components to pop at frequent intervals, this fellow, worth his weight in precious gems, should be placed on 24-hour maintenance stand-by, not wasted on key-diddling. Novices? Plop them down at their own private position and let them work the 2-, 15-, 40, and 80-meter segments to their heart's content. They also make invaluable log-keepers, generator-gassers, tree-climbers, and general handy men. Yes, there's a job for everyone on that mountain or beach or hilltop. Is it so amazing, then, that the 1957 Field Day, on that one June week end, drew (a) five times as many hams as ever were active in a DX Contest or SS, (b) twelve times as many as entered the last V.H.F. Sweepstakes, and (c) more than twice as many as have qualified for the DXCC Award since its inception in the late 1930's? And there were 963 portables and mobiles and 2394 separate receiver-transmitter combinations afield in this record-smashing test of emergency-powered equipment.

Nudging upward, Tri-County Radio Association of Plainfield posted the top score in the Field Day. Employing eleven rigs, a 6-kw. generator, and their well-known W2LI/2, 35 operators racked 2678 contacts and a hefty 24,327-point total . . . Garden State Amateur Radio Association's W2GSA/2 landed 22,089 points via 2466 QSOs at its Class 9A setup,

aptly situated on Telegraph Hill, Holmdel, N. J. . . . The third-ranking score came from Concord Brasspounders, whose members accumulated 20,070 points with ten transmitters at W1OC/1.

Other Class-A portables tallying five-digit scores: W9RK/9 14,994, W4FU/8 14,364, K2AA/2 14,121, W2JIO/2 13,716, W6UW/6 13,650, W5SC/5 13,566, K6DTA/6 13,320, W7HZ/7 13,059, W2VDJ/2 12,600, W9ZAB/9 11,664, W6PID/6 11,313, W2GTD/2 10,890, W7DK/7 10,656, W6NWG/6 10,584, W6JU/6 10,548, W2KOJ/2 10,431, W2OR/2 10,365, W3RCN/3 10,296, K6EBN/6 10,080.

Competition is deemed to be between stations using like numbers of simultaneously-operated transmitters and final scores are tabulated in this fashion. We therefore salute the following

During a lull at W4PAY/4, the Amateur Radio Club of Falls Church, high-school lads K4IYE and K4MLA meandered off to check out this battery-powered 50-Mc. pack set. Note the cozy split phones.

clubs, many of whom established new contact and score records in leading their entry classifications:

Class	*Call*	*Score*
1A	W3BES/3	7383
2A	W1EIA/1	9360
3A	W3ATR/3	8118
4A	W9ZAB/9	11,664
5A	W2JIO/2	13,716
6A	K2AA/2	14,121
7A	W7HZ/7	13,059
8A	W7DK/7	10,656
9A	W2GSA/2	22,080
10A	W1OC/1	20,070
11A	W2LI/2	24,327
13A	K6EA/6	9873

For geographical comparisons, here are the top scorers by call areas:

W1OC/1	20,070	KH6RS/KH6	4482
W2LI/2	24,327	KL7AWR/KL7	540
W3RCN/3	10,296	KP4UY/KP4	7641
W4ZV/4	6840	KZ5AF/KZ5	5820
W5SC/5	13,566	VE1AEP/1	3366
W6UW/6	13,650	VE2ADX/2	3069
W7HZ/7	13,059	VE3JJ/3	5931
W4FU/8	14,364	VE6NQ/6	3042
W9RK/9	14,994	VE7ARV/7	4110
W0DKI/0	5499	VO1DS/1	1242

Things were humming too in Class B amongst the one- and two-man portables. Back again was W3EIS/3, W4YHD assisting, to amass 660 contacts and 9261 points with battery-powered Command Sets, a Ranger, and two Collins receivers. Don sums it up so, "This FD tops them all! We had everything going for us. No lightning storms, no ionospheric blackouts, no serious equipment trouble, and after several years of FD experience and careful arrangement of the setup, we just kept rolling along to a new Class-B record." . . . Runner-ups W2FBA/2 and W2JBQ, who've been going steady on Field Day since time immemorial, managed 6386 points, 448 QSOs. Says FBA: "Weather perfect as usual. On 15 successive Field Days we have never had bad weather." Anyone else around who can make that statement? . . . W3MSR/8 topped single-operator entries with 4086 points, followed by these other husky unit-individual scores: W1RAN/4 3632, K9DJB/9 3411, K5EZV/5 3042, K2DGT/6 2730, W7CJZ/7 2687, W7WOQ/7 2493, W9ESQ/9 2457.

Class C, the mobile category, is the easy way to get in on the fun, provided both the family flivver and the radio gear are in running condition. After all, what is simpler than hopping into the front seat and grinding out rapid-fire contacts? Hopping into the front seat and grinding out rapid-fire contacts was K5ENZ/5, capably aided by W6HQN. The contact total of 281 and score of 4131 came about courtesy of a Gonset station which included a v.f.o. driving a Commander and a Super 6 into a Super-ceiver. . . . Other outstanding mobile work: K2TOM/2 3591, K6EPC/6 3119, W8GHO/8 2849, W8PVC/8 2660, W8FKB/8 2579, W8QAV/8 1971, W3VXN/3 1917, W8AEU/8 1904, W8QXG/8 1836.

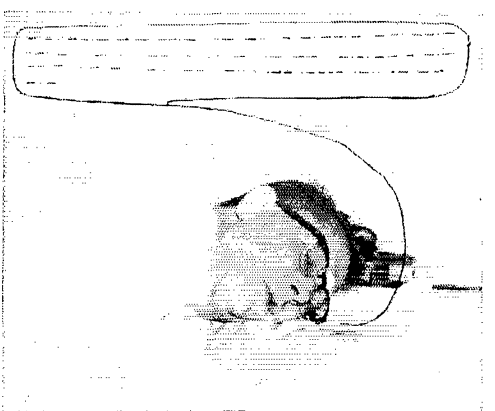
Quotes

"For sale very cheap: one transmitter, one receiver, one conglomeration of tangled wires formerly used as an antenna, one very muddy location (user must not be afraid of cows)." — *K0DSC/0.* . . . "*W8FGX:* 'FD is still the most interesting contest.' *W8RSW:* 'How about some bug-bombs and yellow lights to help insect QRM?' Re W8SDJ's coffee, *W8XXX:* 'What is this stuff, fuel oil?' *W8IFX:* 'Quit annoying W4KVX with food when he should be getting 40-meter QSOs.' *W8CEG:* 'At times we finished a QSO with as many as nine beetles on the operator's hands and arms.' *W8ELB:* 'My morale is pretty low.' *W4KVX:* 'Oh, my aching back!'" — *Ohio Valley AR Assn., W4FU/8.* . . . "Our secret weapon was a 48-foot portable tower and a 600-foot long wire. All members thoroughly enjoyed FD at the T&R ranch, as did the eight horses in the corral which kept us company through the night. Because of excellent publicity in the papers and on radio and TV, we were visited by many people. We were also visited by thousands of bugs, critters, and varmints from the Florida Everglades." — *Miami Springs RC, K4OSQ/4.* . . . "FB weather, FB conditions, FB rigs, FB ops, FB antennas, lousy generator!" — *Baltimore Polytechnic Institute RC, W3CDI/3.* . . . "We broke all our previous records for

CLUB AGGREGATE MOBILE SCORES

Westpark Radiops	15,021
Phil-Mont Mobile Radio Club	16,439
South Bend Mobile Amateur Radio Club	4632
Confederate Signal Corps	1122
Hoosier Hills Ham Club	676
Delco Radio Club	635
Atlanta Radio Club	342
Central Indiana Mobile Radio Club	180
Central Queens Radio Club	122
H.E.A. Radio Club	81
Hampden County Radio Assn.	68

stations worked. Forty was wide open from start to finish and 80 was terrific during the night. On 20 we had too low an angle with the ground plane to raise zeros and fours and had to be satisfied with fives and sixes. Activity seemed greater than ever before. Our experience has been that a growing tendency exists to leave the large 6- to 10-transmitter installations for small groups of two to five operators. The main stumbling block appears to be the a.c. generator, but these units are becoming available at reasonable prices and we feel that more hams will gradually acquire them as part of their equipment. Healthy rivalry for top club honors exists here in Canada." — *Blackheath Cold Beer & Hot Run Propagation Society, VE3FT/3.* . . . "For most of the week end we were without power, struck by lightning, fogged in and smogged in, rained upon, stuck in the mud, shocked, frozen, starved, poisoned, over-run by tourists, and thirsty. Enjoyed FD!" — *Charlotte ARC, W4BX/4.* . . . "Cows constituted a major QRM problem. We spent more time chasing them from our food supply than operating." — *W8IYL/3.* . . . "Mosquitoes, poison ivy, and QRM were present in profuse quantities but we still have the old spirit. The next FD will again lure us to our annual doom." — *Ridgewood High School RC, W2YNU/2.* . . . "Murphy's Law (p. 60, December 1956 *QST*) prevailed. The final tube of one rig went West and the brand-new spare was NG, but just wait till next year!" — *Albany Park ARC, K9CDI/9* . . . "We like the new starting and ending times. Weather perfect and already making plans for '58." — *Happy Hawaiians, KH6EN/KH6.* . . . "Our best score in four years. Some wind and rain but bands were really hot." — *Brasspounders ARC, W8FWQ/8.* . . . "Excellent weather but conditions, especially on 40, killed plans for a record-buster (in Class 1A). We had our quality-control charts set up for 800-net contacts but averaged on the low side most of the night. Impressive operating skill was encountered; the boys are certainly developing their procedure and use of break-in." — *Manzano Mountain Moonshine & Rhombic Society, W5EKK/5.* . . . "Wonderful cooperation was received from the local chapter of the American Red Cross. Mr. Wick, the Executive Secretary, declared an authorized Red Cross emergency test and furnished us with tractor, trailer, food, gasolene, and hardware. Portable antenna towers were borrowed from state civil defense. Best band was 20, with 40 next, but 80 was jammed with harmonics from b.c. stations close by. Plenty of rain squalls and precipitation static but we were snug in our sleeping bunks in the trailer. Truly a wonderful FD here!" — *WØDKI/Ø.* . . . "Even though we were operating from a funeral tent, things were very lively. A portable TV brought along for the entertainment of off-duty ops worked beautifully." — *Old Dominion ARC, K4EAS/4.* . . . "Phooey, we should have done lots better, but 15 and 10 were poor and we wound up with most QSOs on 20, set up at 150-watts input. Result: points down. Need more t.r. switches next time and may add s.s.b. for some more extra-fast contacts. All hands ate like pigs before the contest, then went on coffee and catch-can after the grind began. Wonderful weather. Everyone agrees that improving our electronic coordinator, known as 'The Thing,' will be a big help to our coming out on top in Class 1A." — *Tualatin Valley ARC, W7OTV/7.* . . . "All 21 members participating had an FB time and agree wholeheartedly that this exercise is the year's most enjoyable activity." — *Richland ARC, W7VPA/7.* . . . "Like the new flexible starting-time arrangement." — *W5NW/5, Odessa ARC.* . . . "An interlock circuit between the two main rigs kept us in the one-transmitter class while 6-meter phone contacts were 'snuck in' between lulls in the regular operation. The system led to a few cuss-words but proved very effective. We at first tried 30 watts on c.w. but couldn't get out of the back yard until we fired up the 32V and entered the new 150-watts-and-under power category. That extra two db. above 100 watts sure is an improvement, and going from 30 to 150 watts was like the difference between night and day. KØDBG spent three weeks building a neat little 30-watt rig with true break-in and all the fixings and we used it exactly 3½ hours!" — *Cedar Valley ARC, KØAZI/Ø.* . . . "Our first FD and very enjoyable, although we knocked ourselves out getting set up atop a 50-foot fire lookout tower. Strangely enough, our operating position was higher than our antennas. Hope to find another location next year, one without so many steps!" — *W4CVI/4.* . . . "Even though the weather was bad, the food lousy and the antenna poor, we enjoyed cranking out a few QSOs." — *Quad City ARC, W9YCR/9.* . . . "It doesn't pay to commit the station to one type of polarization. We could hear all call areas with strong sigs on a horizontal long wire for about four hours in the morning, but could only work a half-dozen with a vertical antenna. Next year we'll have *both* horizontals and verticals for transmitting." — *Boulder ARC, WØIA/Ø.* . . . "Just for variety we decided to use 500 watts, even though the power multiplier of one would cut down the score, and we were very busy logging 515 phone contacts with the Viking 500. A high wind threatened to carry away the tent but everything held. We had a terrific time and are looking forward to a bigger score in '58." — *WØYDX/Ø.* . . . "All for the new starting time and power-input level." — *WØFFN/Ø.* . . . "No rain. What happened?" — *W8EAN/3.* . . . "Respectfully suggest that mention be made in *QST* that foreign amateurs wishing to work U. S. or Canadian FD stations limit their QSOs to essential exchanges of signal reports, QTH, and names, if necessary. This would enable them to work a new state or province in some cases and possibly help us land a new country or, at any rate, help prove that DX can be worked with low power and an emergency setup." — *Cross Roads ARC, VO1DS/1.* . . . "Unusual equipment: a portable fogging machine to keep the winged pests from carrying off any of our operators." — *Daytona Beach AR Assn., W4MEL/4.* . . . "Never will catch up on my beauty-rest. Everybody got some sleep but me." — *K2OSY/2.* . . . "Operation was from a recently-acquired school bus from which seats had been removed and operating desks installed. The converted bus will eventually house permanent equipment for all amateur emergency services, i.e., RACES, AREC, and MARS, as well as the Civil Air Patrol, National Guard, and local c.d." — *Harrison Emergency Communications Assn., W5WEE/5.* . . . "Nine operators, including two KNs, tried their luck with mike and key. However, all members were on hand to take an active part in setting up, cooking, etc., and to enjoy some wonderful 'eyeball' QSOs. We tried out our new club call for the first time." — *Mason County RC, K8DXF/8.* . . . "The Beaumont Boy Scout Camp of St. Louis County showed our group fine consideration in permitting use of



Obviously W1IJM can't get the code off his mind. Lou is purported to be operating the Dream Band while off duty at Bristol County Amateur Radio Association's W1LAM/1.

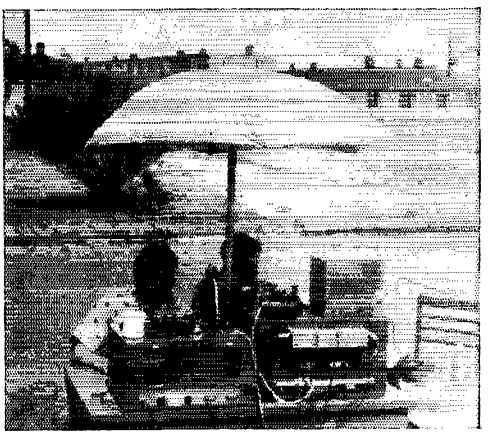
their Ranger tower and chow hall. We stayed on the air the full 24 hours except for five minutes when one of the guys went to sleep and let the generator run out of gas." — *W9FLR/0.* . . . "Everything went smoothly until our antenna fell down. Then the rig started blowing fuses. After a thorough (?) investigation we decided that a power transformer was shot and put another transmitter into service. Actually, a bad low-voltage rectifier was the trouble. But looking over the whole event, we had a grand time. As for our score and other mishaps, wait till next year!" — *KØDKA/0.* . . . "A new interlock phone-c.w. system in the one-transmitter class, along with revised operating techniques, boosted our score. Tried verticals with little success. Higher power improved our QSO total but was of questionable value score-wise. A wonderful time with the same old gang!" — *Dayton AR Assn., W8CEA/8.* . . . "Everything FB except that we plan to forgo the 30-watt multiplier for higher power. It takes a lot of juice to get over the Utah 'hills.' We strongly recommend that the 150-watt multiplier be lowered to the previous 100 watts." — *Utah ARC, W7CTI/7.* . . . "Consideration should be given to providing a special category of recognition for those organizations who are necessarily restricted to six meters due to membership consisting mainly of Technicians. Obviously there is not the potential in v.h.f. that exists on the lower frequencies, both as to number of stations and the distance factor." — *Mobile Sixers, W3JBA/3.* . . . "Our generator had to be turned off every two hours to allow the driving motor to cool for about 20 minutes." — *W3CQZ/3.* . . . "Upon firing up we discovered so much line-voltage drop that our antenna relay wouldn't kick over. For the remainder of FD, two operators were on duty at all times, one at the rig and the other to hold in the relay manually." — *W8MNV/8.* . . . "Everything was full of r.f. except the antenna but we still managed over 100 contacts." — *WØUJK/Ø.* . . . "Torrential rains and a wet generator nearly finished us, what with three inches of rain in the tent, and it was late in the evening before we finally coaxed a CAP generator to turn over. Next year we will have a high and dry tent plus boots to wear. Despite insects, mud, and poor luck, we had a great time." — *Tri-State AR Society, K9AZK/9.* . . . "The war-surplus generator started with the first tug of the rope when we arrived at the site. To our dismay, we then found we had no tree-climbers present, but many tosses of rocks finally got our antenna almost 13 feet in the air. When we happily tried to restart the genny, it took three solid hours of rope pulling. A doe, a porcupine, and other forms of wildlife having invaded our food box, the following morning we breakfasted on chipmunk-chewed bacon and murdered eggs. While yakking with a W6, Cliff got 65 watts of pure r.f. through the seat of his pants before we replaced our bare-wire lead-in with 300-ohm ribbon. In trying to get rid of hash without any capacitors, we directly grounded the generator. Wonder why the motor backfired and quit? Then the fuse box vibrated loose with a loud bang and flying sparks. Our log caught fire from our small stove. We hope other hams can profit by our mistakes." — *Mt. Shasta High School Mike & Key Club, K6CDQ/6.* . . . "A surprising amount of s.s.b. activity." — *Richmond ARC, W4ZV/4.* . . . "Loads of fun but where were the customary thunderstorms? In '58 we are shooting for more seasoned operators, better antennas, and maybe also a better location. The surplus 2.5-kw. generator, of which we had only one, held up swell and ran continuously for the whole 24 hours. Looking forward to and making plans for next year's bigger and better FD!" — *Elizabethtown Area Contest Group, W3MFW/3.* . . . "Two meters was hot as a firecracker and our most successful band. The new 24-out-of-27 hours of operation rule is a good one. Keep it!" — *Santa Monica Bay Area Emergency Net, K6LDA/6.* . . . "Our ninth annual FD as a club and for the first time it didn't rain. This fact, along with an absence of equipment failures, resulted in our best score yet." — *Keystone ARC, W3PSH/3.* . . . "Unusual experience: no rain. Thanks." — *Night Owl Net, W2GVV/2.* . . . "The Bandhoppers have obtained a two-wheel trailer and built into it provisions for a complete c.w. station. It is also used to carry all gear, including antenna poles, tent, two generators, guy ropes, and operating table. An extremely neat arrangement, it will keep our gear together and available for FD and local emergencies. The FD rules are satisfactory and workable and should be kept as much the same as possible from year to year." — *Bandhoppers RC, W0RFU/0.* . . . "In all, 70 members participated with 32 actual operators in six shifts of four each and rotating shifts on two rather undependable generators. Our only lady member did the cooking. For the first time in four years we had no storm." — *Palmetto ARC, W4MN/4.* . . . "Of ten antennas, only the trusty 40-meter dipole worked well. Much difficulty matching and loading up the others." — *Delco RC, W3DUU/3.* . . . "All-band trap dipoles FB all bands. No loading problems." — *Southington AR Assn., W1MEZ/1.* . . . "Conditions were a lot more favorable than in '56 and we are looking forward to next year when we can fight the mosquitoes and weather again." — *Indian Hills RC, W8ICS/8* . . . "Even though K4IYE's forecast was correct (see Strays, p. 14, July *QST*), we had more fun than a rain-filled barrel of monkeys!" — *W9VT/9.* . . . "We wish to offer our sincere thanks to K4IYE for his accurate long-range weather forecast, although he forgot to mention anything about the tornado that just missed us." — *Duncland AR Assn., W9EEO/9.* . . . "The weather was excellent, hot and humid with temperatures about 90°. The usual thunderstorm did not materialize until we were all through Sunday. By running lower power this year we had hoped for a considerable advantage points-wise, but although we made a gain we did not get the lead expected." — *VE2SU/2.* . . . "No generator trouble for the first time in six years." — *AR Society of Queens, W2CGK/2.* . . . "The ARRL publicity release, locally modified, was used before Field Day and followed up later with another article, including photos, in the local weekly paper." — *Eylin AR Society, W4SRX/4.* . . . "We operated practically in the shadow of the Brigham Young monument in Whitingham, Vermont. The 60-cycle generator frequency was ingeniously checked by comparison with a record-player turntable. This, our initial FD, taught us enough to better our score considerably next year. A great experience!" — *Royal Order of Left-Handed Chicken Pluckers, W1DGL/1.* . . . "Most successful one yet but the phone men beat the c.w. boys. For shame! The addition of two new 40-foot masts next year will make the difference, wait and see!" — *Waterbury ARC, W1LAS/1.* . . . "We learned that the attractive features of antenna procedure, as seen on paper, 'ain't necessarily so.'" — *Southwest Iowa AR Assn., KØGPV/Ø.* . . . "An HRO was used as a monitor receiver to investigate the profitability of changing bands from time to time. A Conelrad monitor with suitable relay and large 'alert' and 'safe' lights was also provided." — *Aiken ARC, K4JIY/4.* . . . "Pre-testing of one 2500-watt generator, by letting it run for four hours at one-half its rated capacity, indicated its non-usefulness. It was therefore replaced with a 4-kw. job that performed FB." — *Mt. Vernon ARC, K8EEN/8.* . . . "As a time-saver, suggest that more participants familiarize themselves with the ARRL sections as listed in *QST*." — *K6YZR/6.* . . . "Our 3.5- and 14-Mc. receivers had audio outputs split into pairs of 'phones so that Novices could sit in, copy, and maintain duplicate logs. The newcomers appreciated this excellent opportunity for on-the-air code practice." — *Hamden ARC, W1WHF/1.* . . . "A t.r. switch on the c.w. rig proved very worthwhile, but Windoms gave us trouble. We changed to doublets at about 3 A.M." — *Peninsula ARC, W4KEK/4.* . . . "The increase to 150 watts probably took the load off many guilty consciences." — *Rochester ARC, KØCPW/Ø.* . . . "Best way to stay awake all night: drink coffee and keep eating. The hungrier you get, the sleepier you get." — *Montgomery County AREC, W9BXR/9.* . . . "The Kohler generator was very reliable as we were off the air only eight minutes for fuel pump repairs. Our one Novice had QRM trouble but managed to salvage 16 contacts out of the maze. Would like to see in *QST* an explanation of logging procedures, methods for avoiding working the same station twice, and any other ideas to make the paperwork easy." — *Old Post AR Society, K9GQP/9.* . . . "Receiver b.f.o. frequency shifted when phone rig went on air because of change in line load of generator. Next year, VR tubes." — *Fullmer Horton Memorial Radio Society, W4BUW/4.* . . . "This was an all YL Field Day, except that we had some very welcome OM technicians along to help put up fallen antennas and keep the gas tank full. Several families spent the entire time on location. There was food galore and plenty of coffee, tea, and soft drinks. Not many contacts, but what fun!" — *Women Ham Operators of Tarrant County, W5PFU/5.* . . . "We used FD as a partial c.d. drill for our mobiles at various points within a 30-mile radius. Best FD yet!" — *Red Cedar RC, W9WDK/9.* . . . "We brought along everything but the club license for K2BR, so we used the call of K2LZB, on whose farm we were operating." — *Southern Counties AR Assn., K2LZB/2.* . . .

"Our generator developed a gas-tank leak which we unsuccessfully patched with chewing gum. We ended up catching the gas, as well as bugs and grass, in a borrowed bucket and periodically emptying the whole mess back into the tank. When we marched into a nearby restaurant Sunday morning, dirty, ragged and wearing our W3BOA T-shirts and started talking about guys we had hung on poles, we had the waitresses scared stiff!" — *W3BOA/3.* . . . "Saturday evening our Disaster Warning Net was called into service due to a thunderstorm and possible tornadoes. The *Midland Daily News* carried a release on our activities, which of course tied in nicely with the purposes of FD." — *Midland ARC, W8KEA/8.* . . . "This is a new club and with only two FDs under our belts we have much to learn. We will give it the old college try again next year." — *Triangle RC, K8BLP/8.* . . . "We put up a tent but what for — no rain! Quick calls on 75 were a 'must' and two meters was really hot." — *K2KFJ/2.* . . . "Our 3-kw. surplus generator performed nobly for the 24 hours. It needs some work, however, and when overhauled will be trailer-mounted with portable gear for prompt emergency use." — *Seward County RACES Group, WØVEV/0.* . . . "SBARS' first FD and eight of the twelve ops were Novices. Although the score was low we learned a lot about antennas and operating and are already setting our sights for '58. We QSLed 100 per cent if addresses were listed in the latest *Call Book.*" — *South Bay AR Society, K6ULZ/6.* . . . "We made over 1000 contacts; however, after eliminating duplicates and contacts where signal reports were incomplete, we had 945 valid QSOs. Since this was the first FD for all but three of ten operators, we feel it was a creditable showing. The

At Radio Amateur Megacycle Society's K9CJU/9, son W9PTZ and dad W9STZ join forces to set up printer, reperf, and converter, sole RTTY installation reported active in the '57 FD.

MARS Director of Caribbean Air Command has now included participation in FD activities as part of the local MARS program." — *Albrook AFB RC, KZ5AF/KZ5.* . . . "A rare Field Day without rain or static and despite Murphy's Law we bettered our '56 score." — *Mid-Island RC, W2UBW/2.* . . . "Operations were conducted from Geiger Grade Summit, four miles north of historic Virginia City and the famous Comstock Lode, at an altitude of 6900 feet. Three teams had been organized to cooperate in supplying equipment and setting up the three transmitters. This worked very well with the three group leaders having an 'internal' contest to see who could milk the most points out of each setup." — *Nevada AR Assn., W7YN/7.* . . . "The usual assortment of burned-out lights, fuses, and tubes, without which no FD would be complete." — *Vancouver ARC, VE7ARV/7.* . . . "We got a nice write-up in the June 23 issue of the *Sunday Oregonian.*" — "A most successful FD. However, we've learned much about running up points and next year watch our smoke! A salmon fisherman with rod and reel helped fling antenna lines over the nearby firs. One complaint: a pox on all those ops who felt that a poorly-handled bug and a 30-w.p.m. code speed were necessary. May their contacts be few and their wrists glass!" — *North Kitsap ARC, W7SRX/7.* . . . "For a group that had never participated in a FD outing, we feel we made a satisfactory showing and learned much for future emergency operation if the need should arise." — *Kentuckiana RC, W4MQ/4.* . . . "Not quite like Field Day with no rain and few mosquitoes. Needed more coffee; only one op awake at 0300. On the operating side, we found break-in and v.f.o. to be 'musts.' A t.r. switch would have helped too, although we did pretty well with separate receiving antennas. C.w. accounted for over two-thirds of the QSOs and is undoubtedly the most reliable way to get points quickly." — *Trumbull Emergency Communication Assn., W1USV/1.* . . . "No power troubles and very little interference between rigs, but where were the five rigs the phone boys were supposed to bring?" — *Abilene ARC, W5QA/5.* . . . "We found that by having an s.s.b. rig available we were able to snag a few more QSOs than otherwise. Let's hope other groups will do more s.s.b. work in the future. It's pretty hard to beat!" — *Halifax ARC, VE1FO/1.* . . . "Some were over-enthusiastic in operating too long stretches, causing lost time because of excessive tiredness. This has led to a complete revision of procedures to be used in '58. Publicity received in local papers attracted quite a few visitors, both hams and others. We picked a spot easily accessible to the public in one of the Passaic County parks, and visitors were guided through the various setups and given explanations." — *Paterson Emergency Radio Group, W2LIO/2.* . . . "Antennas were erected Friday and stations set up early Saturday. Everything went along smoothly due to extensive advance planning." — *Harrisburg RAC, W3ZEK 3.* . . . "The beam, a quick-disconnect type which could be carried on a car, was placed on a telescoping mast 30 feet high. All equipment was located in station wagons for quick mobility, and the entire area was secured and units departed in less than 30 minutes after QRT." — *K4BWB/4.* . . . "It was routine this year. No snakes, bugs, or torrential rains, but the 10-kw. generator gave up at noon and the 2-kw. stand-by had to carry the load from then on. All hands had a most enjoyable time." — *Naval Air ARC, W4NEK/4.* . . . "At 1600 Saturday the Mobile Chapter of the Red Cross brought coffee and doughnuts, with which they kept us supplied throughout the event. Later a photographer from WALA-TV arrived to film our operations and these were shown on a news program the following day. All in all we had beautiful weather and wonderful cooperation in making the '57 FD a big success." — *Mobile ARC, W4QEE/4.* . . . "In spite of the check-off sheet, we still managed to come up with some duplicate QSOs. Doesn't everyone?" — *W1SFW/1.* . . . "A bear was spotted in the vicinity Sunday afternoon, probably the culprit who made off with several packages of hot dogs Saturday night. All seven Novices worked the Gonset on 145.5 Mc. and five helped log on other bands. Three did a terrific job of c.w. logging; these three will soon be generals!" — *Pocono AR Klub, W3MAA/3.* . . . "The mosquito situation was excellent this year but then again Florida never did have any mosquitoes." — *Lake AR Assn., W4YKY/4.* . . . "An r.f. keying monitor and break-in relay helped speed up operation, but next year we hope to have separate antennas or t.r. switches for change-over." — *Otsego ARC, K2DLB/2.* . . . "The borrowed generator insisted on supplying only 70 volts, so we rented a 2½-kw. Onan. Our four-transmitter setup turned into three due to a 9:1 s.w.r. on the ten-meter beam and a broken trap condenser. We probably had the biggest assortment of inoperative equipment in history, seven receivers and six rigs. Score notwithstanding, our first FD was a huge success." — *Southside RC, K2TBW/2.* . . . "Not enough people present. Next year we are going back to two stations to have less trouble finding operators." — *Harmonic Hill Radio League, K2HJG/2.* . . . "Swimming was good so FD results were poor. Excellent eats were catered by three XYLs. A tornado a mile away got us off to a poor start, but all members had a great time, plenty to eat, and as much operating and sun-bathing as they wanted." — *Civilian AR Monitoring & Relay System, W8WSX/8.* . . . "The v.h.f. gang really enjoyed a tremendous band operating on six meters Sunday." — *Auburn AR Assn., W2TCU/2.* . . . "With a minimum of advance planning our goal to beat last year's score was accomplished, thanks to a generator which furnished 100-per-cent performance." — *St. Louis ARC, WØCDA/0.* . . . "We had much generator trouble before the big day but none during the important period. If good results are to be obtained, pre-checking of all gear is an absolute necessity." *Red River ARC, WØILO/0.* . . . "We made many mistakes we hope to correct next year but all who took part enjoyed FD and believe this was the biggest yet." — *Mineral Wells ARC, W5ABF/5.* . . . "Main trouble to

be solved at MARC is interference between rigs being used simultaneously." — *Marathon ARC, K2ORH/2.* . . . "Atop Mount Pierce, elevation 3278 feet, we believe we were the farthest west FD expedition in the U.S. Were we?" — *Far West RC, W6KJF/6.* . . . "All bands were in good shape, with many cross-country and DX QSOs available, and there was beautiful but hot weather on Mt. Lukens, 5081 feet high and overlooking the whole Los Angeles area. A combination of vertical and horizontal antennas which are quickly switchable certainly pays off. Thanks for making possible the greatest event in ham radio." — *Crescenta Valley RC, W6JU/6.* . . . "The 40-meter position ran 28 watts to a 2E26 'high final' suspended in the center of the antenna. The v.f.o. was fed to the final from the operating position through 100 feet of RG-59U and B-plus and filament voltages ran through 100 feet of lightweight armoured cable. Most of the members snickered and sneered as we raised the 'high final' but not when the 599 reports started to roll in." — *Joliet AR Society, W9OFR/9.* . . . "The location at the Bourne Hill fire tower, as the name implies, is ideal for spotting forest fires or making contacts on the bands. Unfortunately the weather had been very dry and the fire index near the danger point all summer. FD week end was no exception and when we started out we had our doubts as to whether we would be allowed on the premises. What happened Sunday morning confirmed our fears. A fire was spotted and although many operators were willing to keep pounding away despite the threat (we teach all our Novices that do-or-die business), local authorities ordered us to vacate the area at about noon, five hours before our scheduled ending time." — *Narragansett Assn. of AR Operators, W1SKT/1.* . . . "Our men still prefer operating during daylight hours. This always leaves some single op to work long periods during the wee hours of the late evening and early morning." — *Citrus Belt ARC, W6JBT/6.* . . . "Much better results obtained this year by taking advantage of the rule whereby the transmitters can be spaced out to a 1000-foot circle. Far less interference was experienced." — *YL Radio Club of Los Angeles, W6MWO/6.* . . . "The three c.w. rigs were specifically designed and built as one-band FD rigs incorporating features our group has decided are important. The results



Beach umbrella shields busy W4PRO and W4ZZS at sun-swept site of Peninsula Amateur Radio Club's W4KEK/4 in Newport News, Virginia.

exceeded our hopes and we are already thinking about improvements for '58." — *Schenectady AR Assn., W2EFU/2.* . . . "Band conditions were fairly good, weather ideal, DDT killed all the mosquitoes. In general, it could be said that operators and equipment performed the best yet." — *Quinte ARC, VE3BSQ/3.* . . . "The 40-meter position alone provided more points than five transmitters could in '56 and for the first time in a Windsor FD we got no rain. We sort of miss it!" — *Windsor ARC, W3KIK/3.* . . . "We found that four folded dipoles lessened the confusion. As always we ate well, food being available around the clock through our three chefs. How do you cross-reference contacts to avoid duplications?" — *San Fernando Valley RC, W6SD/6.* . . . "This FD was a grand success, but the 40-c.w. and 15-c.w. ops worked each other and had logged 599 Ohio reports before realizing they had worked W8ID/8 from W8ID/8. This happened in the wee hours, of course." — *Seneca RC, W8ID/8.* . . . "Surprised at the 6-meter activity. A great improvement over '56 and an FB time!" — *Teen Age R Assn., K8DDH/8.* . . . "At 5 A.M. Sunday the bleary-eyed 10-meter operator heard, 'W1B1M, tell Harry, W1DRD, to come home immediately; his wife is having a baby.' And sure enough, an hour later Harry was the father of a bouncing baby boy. We think his name should be 'Mike.'" — *Central Massachusetts AR Assn., W1BIM/1.* . . . "The new 20-meter 'Wonder-Bar' from June *QST* (p. 44) worked FB, but at 3 A.M. someone filled the generator with water after a mix-up in gas cans." — *Wheat Belt RC, W0HLQ.* . . . "Feasted on charcoal T-bone steaks and polished off two watermelons. We were surprised at the number of 15-meter contacts. Next year we expect to have an s.s.b. rig and beams for 15 and 20." — *Detroit Metropolitan RC, W8UMI/8.* . . . "The members had a wonderful time, a good site, tall trees for shade and antennas, the generator worked perfectly, and the weatherman cooperated by providing ideal weather. Now that we've rested up, we're looking forward to next year." — *Ulster County Mike & Key Club, K2YOU/2.* . . . "We used the bow-and-arrow idea to save wear and tear on the shins." — *Chicagoland Mobile RC, W9UPN/9.* . . . "Towers that furnish the light for the night games of the Brooklyn Dodgers served as swell antenna masts at our site in Roosevelt Stadium. We shared the home team dressing room with the Bums." — *Jersey City Dept. of Parks RC, K2RLG/2.* . . . "Our score in the five-transmitter class is 50 per cent higher than any other made in eleven consecutive Field Days. We are particularly proud of our homebrew equipment and the commissary crew provided by Scout Troop 104 of Fanwood, N. J." — *Watchung Valley RC, W2KOJ/2.* . . . "The new starting-time arrangement is FB. We had a ball!" — *Westchester AR Assn., K6EBN/6.* . . . "The club enjoyed its most successful FD in history thanks to W6AGO and W6MSG, who designed an effective antenna system for all bands." — *Paso Robles RC, W6AGO/6.* . . . "First FD without thunderstorms and conditions were superb." — *Ridgewood RC, W2GTD/2.* . . . "Although conducted in all seriousness, it was the usual highly-disorganized funfest that marks all FD operations." — *Rio Hondo RC, K6IVN/6.* . . . "It was necessary to place the generator in a small, inclosed building to keep engine noise from bothering *normal* people who wanted to sleep." — *Greenwich ARC, W1TLS/1.* . . . "Next year it'll be different. Ha!" — *Prairie ARC, W9GFD/9.*

SCORES

CLASS A

Class A stations are clubs and groups in the field. Scores are tabulated according to the number of transmitters operated simultaneously at each station. The figures and letters following each call indicate the number of valid contacts, the power inputs used, the number of participants at each station and the final score. The "power classification" used in computing the score is indicated by the letters A, B or C after the number of QSOs shown. A indicates power up to and including 30 watts (multiplier of 3); B indicates power over 30, up to and including 150 watts (multiplier of 2); C indicates over 150 watts (multiplier of 1).

One Transmitter

W3BES/3	Frankford RC	816-	AB-	3-	7383
W5EKK/5	Manzano Mt. Moonshine & Rhombic Soc.	679-	A-	6-	6336
W9DKI/9	American Red Cross of St. Paul	586-	A-	9-	5199
W8CFA/8	Dayton AR Assn.	619-	AB-	9-	5229
KH6RS/KH6	Maui ARC	473-	A-20-		4182
KH6EN/KH6	Happy Hawaiians	463-	A-10-		4392
W1EH/1	South Lyme Beer, Chowder & Propagation Soc.	452-	A-	9-	4311
W8RTR/8	Canton ARC	422-	A-26-		4023
KH6BRJ/KH6	(nonclub group)	661-	B-	7-	3984
W8FWQ/8	Brass Pounders ARC	411-	A-10-		3924
KH6WO/KH6	Honolulu ARC	435-	A-16-		3915
W3PZW/3	(nonclub group)	401-	A-	4-	3843
K2KDG/2	Morristown High School RC	386-	A-	3-	3699
VE3FT/3	Blackheath Cold Beer & Hot Bun Propagation Soc.	376-	A-	4-	3609

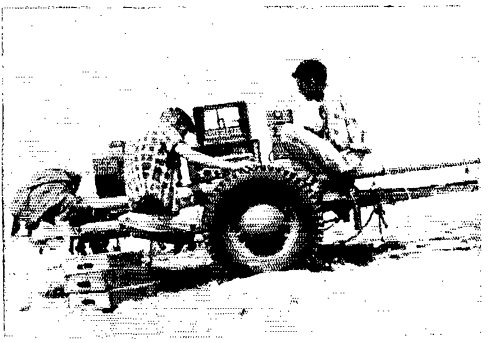
K4EAR/4	Old Dominion ARC...	375-	A-10-	3600	
W7OTV/7	Tualatin Valley ARC	448-	AB-15-	3570	
KH6AQL/KH6	Hilo ARC.....	323-	A-18-	3132	
W6HGY/6	Whittier Radio 50 Club.....	310-	A-12-	3015	
WØNWX/Ø	(nonclub group).....	285-	A-13-	2790	
W3FT/3	Baltimore ARC.....	268-	A-16-	2646	
K4GBG/4	(nonclub group).....	408-	B- 3-	2598	
W3RVC/3	Allegheny-Kiski AR Assn.....	400-	B-14-	2550	
W8FZB/8	Muskingum AR Assn.	394-	B-20-	2514	
K6GNM/6	York Mt. Boys ARC	394-	B- 9-	2514	
W8JTB/8	(nonclub group).....	277-	A- 4-	2493	
W9NZ/9	SWANI ARC.....	252-	A- 9-	2493	
W8MAI/8	Blossomland AR Assn.	385-	B-16-	2460	
WØGTU/Ø	(nonclub group).....	385-	B- 3-	2460	
W5GB/5	New Mexico A&M ARC.....	242-	A- 5-	2403	
K4OYS/4	(nonclub group).....	241-	A- 7-	2394	
W8OFW/8	Bacral RC.....	240-	A- 7-	2385	
WØLUX/Ø	Winona ARC.....	370-	B-11-	2370	
W7VPA/7	Richland ARC.....	364-	B-21-	2334	
W5NW/5	Odessa ARC.....	361-	B- 4-	2316	
WØDEP/Ø	(nonclub group).....	248-	A- 3-	2232	
VE1DN/1	Dartmouth ARC.....	221-	A- 4-	2214	
W6QWK/6	(nonclub group).....	339-	AB- 5-	2193	
W3SBI/3	Friendship ARC.....	238-	A- 6-	2142	
W4WQT/4	Clarksville ARC.....	307-	AB- 5-	2112	
K8BTP/8	Quaker Radio Assn....	326-	B-10-	2106	
W7QXS/7	Astoria ARC.....	230-	A-21-	2070	
W4MM/4	Albany ARC.....	330-	B-16-	1980	
W7JKB/7	(nonclub group).....	305-	B-10-	1980	
WØTIU/Ø	Central Iowa MARS Group.....	326-	B- 6-	1956	
W9LIT/9	Tri-State AR Soc.....	192-	A-15-	1953	
K8APE/8	Massillon ARC.....	217-	A-16-	1953	
WØSLC/Ø	Central Iowa ARC....	190-	A- 6-	1944	
W4BOW/4	Lakeland AR Soc.....	295-	B- 9-	1932	
KØAZI/Ø	Cedar Valley ARC....	270-	AB-10-	1929	
W7SAA/7	Salem ARC.....	188-	A- 3-	1917	
WØZWY/Ø	Sioux Falls ARC.....	317-	B-17-	1902	
WØRAP/Ø	(nonclub group).....	289-	B- 9-	1884	
W6IFZ/6	Richmond ARC.....	288-	B- 9-	1878	
W7ROX/7	Gallatin ARC.....	285-	B- 7-	1860	
W8ZHO/8	Muskegon Area AR Council.....	310-	B- 8-	1860	
W4CVT/4	(nonclub group).....	195-	A- 3-	1755	
W6EFD/6	(nonclub group).....	289-	B- 4-	1734	
W5HA/5	Tupelo ARC.....	262-	B-10-	1722	
W5PAA/5	Aeronautical Center ARC.....	254-	B-29-	1674	
W7SYB/7	McMinnville ARC....	186-	A-10-	1674	
W9YCR/9	Quad City ARC.....	186-	A- 8-	1674	
W7SSR/7	Butte ARC.....	277-	B-13-	1662	
W3ZEM/3	(nonclub group).....	276-	B- 4-	1656	
K2EIC/2	South Salem Radiops	182-	A- 3-	1638	
W2TDZ/2	(nonclub group).....	154-	A- 4-	1611	
WØIA/Ø	Boulder ARC.....	154-	A-18-	1611	
W4EM/4	Mid-South AR Assn.	242-	B-15-	1602	
W7SO/7	Benton Band Spanners, Albany ARC..	261-	B- 7-	1566	
W8VPV/8	Cuyahoga Falls RC...	147-	A-28-	1548	
WØYDX/Ø	(nonclub group).....	515-	C- 5-	1545	
W1FWH/1	Newington AR League	221-	AB-11-	1530	
WØEEE/Ø	Rolla AR Assn., Missouri School of Mines RC.....	228-	B- 7-	1518	
W7ACY/7	Tillamook R Communication Club.....	224-	B- 8-	1494	
WØFFN/Ø	(nonclub group).....	216-	B- 6-	1446	
W3CD1/3	Baltimore Polytechnic Institute RC.....	135-	A- 5-	1440	
W7UCA/7	(nonclub group).....	213-	B- 3-	1428	
W9CSH/9	(nonclub group).....	235-	B- 3-	1410	
W2UMI/2	Oswego County AR Assn.....	233-	B-15-	1398	
WØCYE/Ø	Minnetonka RC.....	154-	A-10-	1386	
W9GHA/9	Central High School RC.....	205-	B- 4-	1380	
W9WLY/9	Liberty RC.....	128-	A- -	1377	
W9GYA/9	(nonclub group).....	168-	AB- 8-	1371	
W4CCC/4	Winter Haven AR Assn.....	126-	A- 9-	1359	
W7TRU/7	Harlo RC.....	187-	B-12-	1344	
W9NGI/9	Society R Operators	448-	C-12-	1344	
K8EBV/8	Athens RC.....	123-	A-12-	1332	
W6AFP/6	Dot, Dash & Mash Group.....	219-	B- 4-	1314	
W3EAN/3	(nonclub group).....	220-	B- 4-	1320	
WØFAJ/Ø	(nonclub group).....	216-	B-10-	1296	
WØGHZ/Ø	Des Moines Tech High RC.....	209-	B- 9-	1254	
VO1DS/1	Cross Roads ARC....	113-	A- 4-	1242	
W4MEL/4	Daytona Beach AR Assn.....	137-	A-15-	1233	
W8PFP/8	Tecumseh AR Tribe..	179-	B- 7-	1224	
W7YK/7	Benson Polytechnic School RC.....	199-	AB- 3-	1203	
W8TQK/8	Barry AR Assn.....	197-	B-10-	1182	
K5NBD/5	Ruston RC.....	166-	B- 8-	1146	
W8PHU/8	Mt. Pleasant ARC....	190-	B-16-	1140	
W7EGP/7	Rodeo City RC.....	164-	B- 3-	1134	
W4SUD/4	Owensboro ARC.....	185-	B-11-	1110	
W5WEE/5	Harrison Emergency Communications Assn.....	159-	B- 5-	1104	
K2OSY/2	(nonclub group).....	159-	B- 4-	1104	
W9ZSK/9	Martinsville ARC....	157-	B- 6-	1092	
K8DXF/8	Mason County RC...	182-	B- 9-	1092	
W4AB/4	Broward ARC.....	181-	B-12-	1086	
W2ZJ/2	Elmira AR Assn.....	154-	B-12-	1074	
W9FLR/Ø	(nonclub group).....	349-	C- 7-	1047	
KØDKA/Ø	(nonclub group).....	125-	A- 8-	1047	
W9CHD/9	(nonclub group).....	173-	B- 3-	1038	
VO2HA/2	Goose Bay ARC.....	102-	AB- 8-	1035	
W9PSD/9	Richmond AR Assn...	172-	B-15-	1032	
W3KYR/3	Boys' Club of St. Marys AR Soc.....	113-	A- 5-	1017	
W7YXG/7	Great Falls RC.....	144-	BC-15-	1005	
W6VEF/6	(nonclub group).....	167-	B- 3-	1002	
W4SQE/4	Harpeth Valley AR Assn.....	139-	B- 5-	984	
W7CTI/7	Utah ARC.....	84-	A-11-	981	
WØIER/Ø	Redfield ARC.....	161-	B-11-	966	
KØAAF/Ø	(nonclub group).....	134-	B- 4-	954	
W8PYH/8	Woodville RC.....	105-	A- 4-	945	
W3JBA/3	Mobile Sixers.....	157-	B- -	942	
W7FL/7	(nonclub group).....	78-	A- 4-	927	
W1LNI/1	(nonclub group).....	129-	B- 5-	924	
W8RCIA/8	Louisville ARC.....	154-	B- 3-	924	
W9LZW/9	Kishwaukee RC.....	154-	B-10-	924	
W9GPS/9	Hamfesters RC.....	151-	B- 6-	906	
WØZZE/Ø	(nonclub group).....	151-	B- 4-	906	
W9KZM/9	(nonclub group).....	124-	B- 3-	894	
WØQCB/Ø	(nonclub group).....	148-	B- 5-	888	
WØRTC/Ø	Soo RC.....	121-	B- 8-	876	
KØGQU/Ø	(nonclub group).....	71-	A- 3-	864	
W2JVZ/2	Greene ARC.....	133-	B- 5-	798	
W3CQZ/3	(nonclub group).....	132-	B- 4-	792	
W8MNV/8	(nonclub group)	87-	A- 3-	783	
W8DFK/8	Brass & Java League..	104-	B- 3-	774	
W6AQB/6	(nonclub group).....	127-	B- 4-	762	
WØUJK/Ø	(nonclub group).....	101-	B- 4-	756	
W4CN/4	AR Transmitting Soc.	120-	B-12-	720	
W9MAK/9	(nonclub group).....	92-	B- 6-	702	
W1ZLH/1	Middlebury Mike & Key Club.....	113-	B- -	678	
W4BX/4	Charlotte ARC.....	113-	B- 4-	678	
W4MI/4	Tuscaloosa ARC.....	111-	B- 7-	666	
VE3AJ/3	Lakehead ARC.....	111-	B-14-	666	
VE2APX/2	St. Johns RC.....	110-	B- 8-	660	
VE2JB/2	(nonclub group).....	84-	B- 3-	654	
KØCVG/Ø	Clinton ARC.....	105-	B-11-	630	
W4UHC/4	Ancient City RC.....	68-	A- 6-	612	
KN8REF0/8	(nonclub group).....	32-	A-12-	594	
W9KBP/9	(non-club group).....	65-	A- 4-	585	
W8ESR/8	(nonclub group).....	282-	B- 4-	564	
W7HDK/7	Spark-Gappers.....	91-	B- 3-	546	
W3IYL/3	(nonclub group).....	60-	A- 4-	540	
W3HEU/3	(nonclub group).....	58-	A- 3-	522	
W9VSX/9	Warren County Amateur Emergency Communication....	87-	B-10-	522	
K9AZK/9	Tri-State AR Soc.....	53-	A- 6-	477	
VE6QE/6	Central Alberta R League.....	77-	B-11-	462	
KØBUD/Ø	Lake Region ARC....	49-	B- 3-	444	
WØVEM/Ø	Albert Lea Area Spider Web AR Assn.....	47-	B- 3-	432	
VE1GM/1	Yarmouth ARC.....	47-	B- 5-	432	
W8BFF/8	Ostemo VHF ARC...	46-	A- 9-	414	
K6CDQ/6	Mt. Shasta High School Mike & Key Club.....	67-	B- 4-	402	
KN4JWB/4	Tuscaloosa ARC.....	66-	B- 7-	396	

The Morning After finds W9CSH, W9ZHD, and W9VWM mighty bushed.

W8ITF/8	Wayne County ARC	63-	B- -	378	
WØUHL/Ø	Humboldt ARC.....	34-	B- 5-	354	
WØFX/Ø	Jamestown ARC.....	327-	C- 8-	327	
W1FT8/1	Hoosac Valley RC....	16-	B-10-	246	
W9CTD/9	Signal Hill ARC.....	38-	B- 6-	228	
W1CUT/1	(nonclub group).....	23-	A- 3-	216	
W5ADC/5	Hughes County AREC.....	29-	B- 3-	174	
W6GGK/6	San Diego ARC.....	21-	B- 7-	126	
KØDSC/Ø	(nonclub group).....	61-	B- 3-	122	
W6QXF/6	Porterville ARC.....	19-	B- -	114	
KN6VSK/6	Porterville ARC.....	18-	B- 4-	108	
KN4PGG/4	(nonclub group).....	11-	B- 4-	66	
KNØISW/Ø	(nonclub group).....	15-	B- 7-	30	

Two Transmitters Operated Simultaneously

W1EIA/1	Connecticut Wireless Assn.....	1015-	A-14-	9360
W6SG/6	Marin ARC.....	816-	A-60-	7344
W4ZV/4	Richmond ARC.....	733-	A-20-	6840
W3CWC/3	Antietam R Assn.....	774-	AB-22-	6642
W2ODP/2	Irvington RAC.....	691-	A-17-	6444
W3MFW/3	Elizabethtown Area Contest Group.....	689-	A-11-	6426
K2CF/2	Order of Boiled Owls	656-	A-10-	6129
K2GIW/2	RA of Erie County...	653-	A-10-	6102
W3ISE/3	(nonclub group).....	650-	A- 5-	6075
W9ERU/9	(nonclub group).....	628-	A- 9-	5877



Two-wheel trailer served as 14-Mc. phone position at Downey Amateur Radio Club's W6TOI/6, whose 7992 points earned second place in Class 8A.

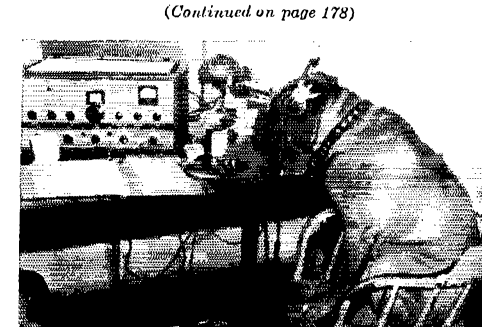
W5LGG/5	(nonclub group)	603-	A- 4-	5427
K6LDA/6	Santa Monica Bay Area Emergency Net	542-	A-18-	5103
W3PSH/3	Keystone ARC	619-	AB- 9-	4881
W2GVV/2	Night Owl Net	492-	A-15-	4653
W2UDD/2	KBT ARC	765-	B-23-	4590
K2OML/2	Raritan Bay RA	533-	AB-12-	4251
W8HZA/8	Kanawha RC	662-	B-30-	4122
W9REG/9	Tippecanoe AR Assn	665-	AB- 7-	4089
W9DKR/9	Kokomo ARC	656-	B-25-	4086
W2IQ/2	RCA Moorestown ARC	428-	AB-10-	3945
W1VB/1	Candlewood AR Assn.	478-	AB- -	3927
W3BIP/3	The DX Club	654-	B- 4-	3924
W2ODV/2	Bayonne Civil Defense ARC	611-	B- 9-	3828
WØRFU/Ø	Bandhoppers RC	476-	AB-11-	3798
W2QY/2	Ether Busting Four	388-	A- 4-	3726
W4KX/4	Rappahannock Valley RC	579-	B-10-	3627
W2TFL/2	Walton Ham Group	400-	A-10-	3600
W8RYI/8	Kalamazoo ARC	369-	A-14-	3555
K6VTT/6	Merced ARC	565-	AB-14-	3546
W1GFM/1	Willimantic ARC	527-	AB-14-	3519
W8AW/8	Edison RA Assn.	435-	AB-12-	3498
W4MN/4	Palmetto ARC	458-	AB-70-	3495
W3DUU/3	Delco RC	489-	AB- 7-	3459
K6EFR/6	Stockton College RC	355-	A- 7-	3420
W3GAG/3	Philadelphia Wireless Assn.	488-	AB-12-	3411
W9MNO/9	Lake County ARC	542-	B-15-	3402
W9QFH/9	R.A.R. RC	348-	A- 3-	3357
W8ZZ/8	Detroit AR Assn.	371-	A-21-	3339
K2LSA/2	State Line RC	371-	A-12-	3339
KZ5JW/KZ5	Canal Zone AR Assn.	523-	B-15-	3300
K4OBQ/4	Miami Springs RC	522-	B-20-	3282
KØDLE/Ø	Jayhawk AR Soc.	492-	B-20-	3102
W4RSS/4	Norfolk Naval Shipyard RC	486-	AB- -	3087
W9UDU/9	Racine Megacycle Club	382-	AB-15-	3033
W5SRW/5	Mesilla Valley RC	502-	B-21-	3012
W8IQS/8	Indian Hills RC	491-	B-25-	2946
W9VT/9	Tri-Town RAC	466-	B-31-	2946
W9LJ/9	Gary RC	489-	B- -	2934
K4DXZ/4	Valley ARC	299-	A-15-	2916
W1KKS/1	Manchester RC	339-	AB- 9-	2811
VE2BU/2	(nonclub group)	286-	A-10-	2799
W1VXL/1	Cranston R Assn.	401-	AB-52-	2769
W6TO/6	Fresno ARC	466-	B-50-	2766
WØFLN/9	St. Louis Univ. ARC	397-	AB- 9-	2739
K2MFN/2	Amps	448-	B-11-	2688
W6JVA/6	Encanto RC	420-	B- 7-	2676
K4HNY/4	YMCA RC	352-	AB- 9-	2601
W4CVY/4	Columbus AR Assn.	433-	B-40-	2598
W2GLO/2	Levittown ARC	425-	AB-10-	2568
W2CGK/2	AR Soc. of Queens	281-	A- 3-	2529
W5WDD/5	Pittsburg County ARC	392-	B-12-	2502
WØCET/Ø	Kaw Valley RC	410-	B-10-	2460
W6NTF/6	Poinsettia RC	392-	AB-10-	2454
W8FT/8	Findlay RC	405-	B- 8-	2430
WØERH/Ø	Johnson County RAC	287-	AB-10-	2424
W4SRX/4	Eglin AR Soc.	375-	B-10-	2400
KØAFN/Ø	Iowa-Illinois ARC	375-	B-29-	2400
W1DGL/1	Royal Order of Left-Handed Chicken Pluckers	237-	A- 5-	2358
W3AAU/3	Short Skip RC	382-	B- -	2292
K9BJU/9	New Castle AR Assn.	309-	AB-15-	2277
K9AXD/9	(nonclub group)	268-	AB- 4-	2214
VE7ASM/7	Fraser Valley ARC	218-	A-13-	2205
W1MEZ/1	Southington AR Assn.	320-	AB-12-	2199
K4FFU/4	18th Air Force MARS	340-	B- 7-	2190
K2OJF/2	(nonclub group)	339-	B-11-	2184
W8RDL/8	Ford AR League	363-	B- 6-	2178
W9HRM/9	Milwaukee RAC	242-	A-15-	2178
W1LAS/1	Waterbury ARC	312-	AB-15-	2172
W9WPZ/9	(nonclub group)	348-	AB- 7-	2166
K4FAI/4	Shaw-Sumter ARC	361-	B-12-	2166
KØGPV/Ø	Southwest Iowa AR Assn.	360-	B-17-	2160
W4NVU/4	Dade RC	285-	AB-15-	2157
W3DOD/3	Philadelphia High Frequency RC	210-	A-10-	2115
W4OIX/4	Kinston AR Soc.	352-	B- 8-	2112
W7LA/7	Twin City RC	348-	B- -	2088
W5FQ/5	Meridian ARC	306-	B-10-	1986
W4N8M/4	Central Virginia ARC	315-	B-16-	1980
W4HNF 4	Suburban Colonels	302-	B- 6-	1968
K4MC/4	Tidewater Mobile RC	316-	B-11-	1896
W5MRK/5	Bartlesville ARC	315-	B-30-	1890
KØAPS/Ø	Des Moines RA Assn	290-	B- 7-	1890
KØDTK/Ø	Larimer County ARC	315-	B-10-	1890
K5WAC/5	MARS Ft. Bliss	284-	AB- 5-	1868
W8DOG/8	Forest City ARC	307-	B- 7-	1842
W3ABW/3	(nonclub group)	306-	B- 4-	1836
W9OUI8/9	Kankakee Area R Soc.	306-	B- -	1836
W6BWM/6	Madera County ARC	305-	B- 8-	1830
K9BPK/9	(nonclub group)	203-	A- 4-	1827
W8OAJ/8	Mercer County R Assn.	279-	B-10-	1824
KØEAT/Ø	(nonclub group)	200-	A- 3-	1800
W1NBN/1	Merrimac Valley ARC	172-	A- 7-	1782
W5VLW/5	(nonclub group)	297-	B-10-	1782
K4JIY/4	Aiken ARC	218-	AB-18-	1743
WØBSA/Ø	Northern Colorado ARC	260-	B-11-	1710
W4UN/4	Jackson RC	186-	AB-13-	1689
K8EEN/8	Mt. Vernon ARC	213-	AB- 8-	1686
VE2EE/2	(nonclub group)	275-	AB- 5-	1662
W6ZUM/6	(nonclub group)	251-	B- 3-	1656
W1DDD/1	Blackstone Valley ARC	250-	B-12-	1650
K6YZR/6	(nonclub group)	249-	B- 4-	1644
W8EXT/8	Ottawa ARC	248-	B- 8-	1638
WØVTZ/Ø	(nonclub group)	271-	B- 4-	1626
W3PGA/3	Aero ARC	270-	B- 7-	1620
W5BHF/5	Hobbs ARC	241-	B-18-	1596
W1WHF/1	Hamden ARC	229-	A-16-	1590
K9ESN/9	Point RA	238-	AB-12-	1578
W2SV/2	Sunrise RC	262-	B-18-	1572
W4KEK/4	Peninsula ARC	259-	B-12-	1554
VE1LC/1	Loyalist City ARC	219-	AB-14-	1527
KØCPW/Ø	Rochester ARC	180-	AB-10-	1494
K7FBE/7	(nonclub group)	139-	A- 6-	1485
W9BXR/9	Montgomery County ARC	218-	B-10-	1458
KN6VVV/6	Rio Hondo RC (Novice group)	161-	A- 7-	1449
W1HEB/1	Middlesex ARC	207-	AB- 6-	1416
K9GQP/9	Old Post AR Soc.	210-	B-20-	1410
WØIFM/Ø	Northwest St. Louis ARC	208-	AB-12-	1392
W4IFR/4	Sampson County ARC	231-	B- 7-	1386
W2HIP/2	Mid-Hudson RC	206-	AB- -	1383
K2HCI/2	Wantagh RC	185-	AB-11-	1353
W4BUW/4	Fullmer Horton Memorial R Soc.	200-	AB- 5-	1335
K5DOM/5	Tyler ARC	222-	B-25-	1332
W2QW/2	Raritan Valley RC	121-	A-10-	1314
W5PFU/5	Women Ham Operators of Tarrant County	192-	B-14-	1314
W9AIQ/9	Door County ARC	209-	B- 7-	1254
W3AD/3	Lancaster R Transmitting Soc.	186-	AB-25-	1251
W3KQR/3	Clearfield County RC	208-	B- 4-	1248
W8YIL/8	Calhoun Area RC	183-	B-13-	1248
W9AML/9	Central Illinois RC	112-	A-16-	1233
KØITZ/Ø	Nodaway Valley R Assn.	180-	B-10-	1230
W5FEG/5	(nonclub group)	174-	AB- 5-	1188
W3UG/3	Coke Center RC	172-	B- 4-	1182
K5FGJ/5	MARS RC	196-	B- 6-	1176
K8EMY/8	South East ARC	167-	B- 6-	1152
W9GKT/9	Roekford AR Assn.	187-	B-15-	1122
K6ENK/6	Camellia Capital Chirps	156-	B- 7-	1086
W9WDK/9	Red Cedar RC	123-	AB- 7-	1074
W8FNL/8	Mt. Clemens RC	178-	B- 8-	1068
W5DXW/5	Dumas ARC	167-	AB- 8-	1062
W7ILX/7	West High School RC	93-	A- -	1062
W3CAB/3	Washington RC	135-	AB- 7-	1047
W3ZAC/3	Fort Venango Mike & Key Club	171-	B-15-	1026
W7ETO/7	Apple City RC	142-	B- 3-	1002
K2LZB/2	Southern Counties AR Assn.	139-	B- 8-	996
W2DBN/2	(nonclub group)	151-	AB- 3-	942
W3BOA/3	North Pittsburgh Brass Pounders & Gum Beaters	113-	AB- 3-	933
W7BLN/7	Coquille Valley RC	130-	B-15-	930
W8KEA/8	Midland ARC	155-	B- 9-	930
K2QNI/2	Ruhway High School RC	109-	AB-10-	918
VE3SCD/3	Stratford ARC	153-	B- 6-	918
K8BLP/8	Triangle ARC	213-	BC-14-	903
W8MAX/8	Lorain County AR Assn.	443-	AB-22-	900
K5BDO/5	Fort Bend County ARC	146-	B- 6-	876
K2KFJ/2	(nonclub group)	126-	AB- 3-	873
WØQPO/Ø	(nonclub group)	120-	B- 4-	870
W4TR8/4	Sarasota AR Assn.	117-	AB- 8-	855
W1USV/1	Trumbull Emergency Communication Assn.	120-	AB- 9-	834
W9CDO/	Electron Club of Chicago	107-	ABC-10-	828
KØJOQ/Ø	Crete ARC	113-	B- 6-	828
WØVEY/Ø	Seward County RACES Group	110-	B- 9-	810
KØBVB/Ø	(nonclub group)	128-	AB- 3-	801
WØJEG/Ø	Three Rivers Ham Club	107-	AB- 6-	795
W4BNN/4	(nonclub group)	105-	B- 9-	780
K5NCP/5	(nonclub group)	105-	B-12-	780
WØUOX/Ø	RF ARC	156-	BC-16-	735
VE3BAT/3	Kirkland AR League	116-	AB- 5-	735
K6ULZ/6	South Bay AR Soc.	79-	A-12-	711
W9JEF/9	Green Bay YMCA RC	113-	B- 5-	678
K2PQL/2	Bethpage ARC	75-	A- 6-	675
W2YNU/2	Ridgewood High School RC	112-	B-10-	672

K4DYE/4	Humboldt ARC	303	B-10		656
WØGYK/Ø	Kansas Nebraska RC	84	B- 7		654
W1SBF/1	Meriden ARC	196	AC-10		652
WØOKA/Ø	Ottawa R Emergency Club	106	B- 3		636
WØQDN/Ø	Huron ARC	106	B-15		636
W5MFX/5	Enid ARC	93	B-		558
KL7AWR/KL7	Kodlak ARC	65	B- 7		540
W4LG/4	Atlanta Teenage RC	63	AB-10		501
WØYVY/Ø	RC of Leavenworth Senior High School	80	B- 4		480
K4BDT/4	Manatee ARC	51	B-12		456
K6KHZ/6	Tehama County ARC	301	BC-15		401
K2HLL/2	Peekskill Communications Club	17	AB-16		381
W1EPN/1	(nonclub group)	63	B- 3		378
K9DHR/9	(nonclub group)	124	BC- 6		372
K8BYZ/8	(nonclub group)	183	AB- 6		368
K4OFZ/4	Edisto ARC	61	B- 7		366
W3EXW/3	Etna RC	53	AB-12		342
W3CD/3	(nonclub group)	55	B- 8		330
W1BRF/1	Quinebaug Valley RC	90	ABC- 8		327
K2KED/2	Burlington County RC	32	A- 3		288
W3GFE/3	Hazleton ARC	37	AB- 5		273
KØETC/Ø	(nonclub group)	132	B-16		264
K9CDI/9	Albany Park ARC	42	B- 6		252
W2KYN/1	Knickerbocker ARC	36	AB- 4		219
K9ENM/9	Pontiac RC	86	B- 8		172
W2BMW/3	Tu-Boro RC	67	AB-		170
KN2VJN/2	(nonclub group)	16	A- 7		144
W4ZZ/4	(nonclub group)	41	B- 6		82
W8EPJ/8	Valley ARC	60	AB- 9		63

Three Transmitters Operated Simultaneously

W3ATR/3	Beacon RA	877	A-12		8118
KP4UY/KP4	Ramey ARC	824	A-12		7641
W2OYH/2	Morris RC	787	A-12		7309
W6MGJ/6	Helix ARC	742	A-12		6903
W2PE/2	R Assn. of Western New York	1078	AB-21		6681
W2QYV/2	Niagara RC	687	A-20		6408
W9AB/9	Michiana ARC	646	A-25		6039
K6CLZ/6	Aerojet RAC	696	AB-22		5901
W3FRY/3	Frankford RC	1257	ABC-13		5823
KZ5AF/KZ5	Albrook AFB RC	945	B-10		5820
W1OMI/1	El-Ray RC	625	AB-12		5817
W2MO/2	Livingston ARC	704	AB-20		5601
W3RDM/3	York Road RC	562	A-10		5283
W2FEB/2	Lockport AR Assn.	802	AB-23		5271
W8CZM/8	Westpark Radiops	790	B-30		5178
W3AJU/3	Amateur Transmitters Assn. of Western Pennsylvania	548	A-24		5157
W9IRH/9	Hamfesters RC	763	AB- 8		5034
W7NTO/7	Lewis County ARC	510	A-15		4851
W2UBW/2	Mid-Island RC	691	AB-13		4653
W6IKB/6	Pasadena RC	492	A-15		4653
W2DPQ/2	Huntington RC	662	AB-15		4623
W3RQZ/3	Phil-Mont Mobile RC	668	AB-40		4557
W9CAF/9	Chicago ARC	492	AB-24		4344
W3OK/3	Delaware-Lehigh ARC	467	A-27		4203
W4PAY/4	ARC of Falls Church	175	AB-22		4176
W7YNJ/7	Nevada AR Assn.	435	A-26		4140
VE7ARV/7	Vancouver ARC	566	AB-20		4110
W6MHM/6	Bell Gardens AR Assn.	418	A-11		3987
W7IO/7	Arizona ARC	635	B-15		3960
W1SYE/1	Newport County RC	548	AB-15		3912
W4TRC/4	Kingsport ARC	610	B-26		3810
W4GNF/4	Greensboro RC	612	B-		3672
W4PLB/4	Orlando ARC	408	A-18		3672
W7YYE/7	Oregonian AR Soc.	576	B-23		3606
KH6AHQ/KH6	Barbers Point ARC	560	B- 6		3522
W7SRX/7	North Kitsap ARC	429	AB- 8		3435
W4MQ/4	Kentuckiana RC	569	B-		3414
W8VVL/8	Queen City Emergency Net	369	A-40		3321
K9AVO/9	Western Electric ARC	519	B-15		3264
W9UKY/9	Chicago Radio Traffic Assn.	393	AB-11		3240
W5QA/5	Abilene ARC	412	AB-32		3198
VE1FO/1	Halifax ARC	330	A-15		3195
W5KHB/5	Old Natchez RAC	504	B- 9		3174
K4JVA/4	South Miami RC	490	B-20		3126
W5DPA/5	Houston ARC	417	AB-40		3099
W3NA/3	(nonclub group)	514	B- 5		3084
W2LIO/2	Paterson Emergency Radio Group	453	AB-13		3078
VE2ADX/2	South Shore ARC	336	AB-15		3069
W3ZEK/3	Harrisburg RAC	493	B-30		2958
VE3YJ/3	London ARC	396	AB-15		2949
K4BWB/4	(nonclub group)	486	B-17		2916
K6EDK/6	Sacramento Aerojet RAC	159	B-42		2904
W3VV/3	McKean RC	468	AB-14		2868
W1MHL/1	Waltham AR Assn.	315	A-15		2835
VE7APL/7	North & West Vancouver ARC	374	AB-10		2808
W3LCL/3	Lehigh Valley ARC	437	AB-15		2802
W4NEK/4	Naval Air ARC	459	B-12		2754
VE7EZ/7	Victoria Short Wave Club	429	B-15		2736
W4QEE/4	Mobile ARC	311	AB- 4		2610
KØHEB/Ø	Missouri Valley ARC	430	B-14		2580
W3GUR/3	Pottstown AR Assn.	428	B-10		2568
W1SFW/1	(nonclub group)	418	AB- 3		2562
W5KC/5	Baton Rouge RAC	418	B-10		2508
W4QED/4	Alamance RC	387	B-20		2472
W1ZKE/1	Tri City ARC	371	A-15		2439
W3MAA/3	Pocono ARC	355	AB-19		2424
W4SVL/4	Frye ARC	403	B-		2418
W9BNH/9	Vermilion County AR Assn.	376	B-20		2406
KP4US/KP4	Air Force ROTC RC	238	A-12		2367
W8MBZ/8	Niles ARC	394	B-25		2364
W1OGT/1	East Providence AR Assn.	358	B-14		2310
K4AI/4	Morganton ARC	357	B- 8		2298
W3MKA/3	West Philadelphia R Assn.	341	AB-21		2283
W7WZW/7	(nonclub group)	380	B- 9		2280
W8AM/8	Coffee Dunkers	355	B-12		2280
WØWWA/Ø	Prairie Village Teenage RC	281	AB- 9		2268
W4YKY/4	Lake AR Assn.	220	A-16		2205
W7TZ/7	Grays Harbor ARC	363	B-16		2178
W1IHJ/1	(nonclub group)	327	AB- 9		2166
K2DLB/2	Otsego ARC	239	A- 9		2151
W5FC/5	Dallas ARC	321	AB-12		2138
VE1CL/1	St. Croix Valley RC	208	A-14		2115
K9EPL/9	Klix, Chirp & Splatter Soc.	327	B-19		2112
K6BCV/6	Mojave Desert ARC	326	B-12		2106
W6SNK/6	Santa Monica City College ARC	345	B-14		2082
K2MMM/2	Forty New Jersey Net	315	AB- 5		2082
W7GV/7	Old Pueblo ARC	343	AB- 8		2061
W1HQH/1	Cape Cod & Islands AR Assn.	308	AB-31		2052
W1YFA/1	Walpole ARC	249	AB-12		2050
W2GBY/2	(nonclub group)	226	A- 5		2034
W6QEQ/6	Southern California VHF RC	305	AB-10		2034
W3QKC/3	Harford County AR Assn.	337	B-14		2022
W1UEY/1	(nonclub group)	285	AB- 6		2004
K4JLA/4	Spartanburg ARC	334	B-19		2004
W9EEO/9	Duneland AR Assn.	301	AB-32		1998
K2ZOG/2	Putnam County AR Assn.	311	AB- 8		1992
W9DUK/9	Delaware ARC	195	A-15		1980
W5YM/5	Univ. of Arkansas ARC	301	B- 8		1962
W6CND/6	(nonclub group)	309	AB- 5		1956
W1KYZ/1	Yankee RC	294	AB-		1950
W7ECA/7	Electric City RC	291	B-		1896
K5EVO/5	Santa Fe RC	261	AB- 9		1875
W1LAM/1	Bristol County AR Assn.	311	B-22		1866
W3TEB/3	(nonclub group)	221	AB- 4		1794
W3RQM/3	Burroughs ARC	297	B-14		1782
K2TBW/2	Southside RC	271	AB-10		1755
WØBLK/Ø	Black Hills ARC	266	B-24		1746
W8TRR/8	New Vienna Signal Pushers	256	B-12		1686
W4LCR/4	Panama City ARC	253	B-14		1668
KØCCL/Ø	Southwest Missouri ARC	253	B-20		1668
W6IAC/6	Escondido High School RC	252	B-		1662
K4ALI/4	Pensacola ARC	187	AB-10		1631
K2HJG/2	Harmonie Hill R League	247	AB-10		1605
W4COY/4	Tri-County ARC	241	B- 8		1596
W8WSX/8	Civilian AR Monitoring & Relay System	251	B-12		1506
W5CT/5	Austin ARC	428	BC-		1482
W7MXH/7	Cascade RC	246	B- 8		1476
W8OVG/8	Dayton AR Assn.	232	AB-17		1470
W2TCU/2	Auburn AR Assn.	238	AB-27		1461
W2GBN/2	Schoharie County ARC	185	AB- 6		1440
W3DJL/3	(nonclub group)	208	AB- 4		1404
W9GFD/9	Prairie ARC	166	ABC-20		1377
W7HMK/7	Central Oregon RA	200	B-10		1350
W7ANA/7	Yuma County RC	178	AB-		1332
VE7ANW/7	Royal City AR Assn.	194	B- 6		1326
W1TLS/1	Greenwich ARC	147	A-15		1323
WØPMW/Ø	Boot Hill ARC	193	AB-16		1323
W1BBB/1	Portland A Wireless Assn.	116	A-11		1269
K4GDL/4	Mike & Key Club	210	B-10		1260
K2ESM/2	(nonclub group)	209	B-		1254
VE7IP/7	East Kootenay ARC	205	B- 9		1230
W8LTZ/8	Gratiot County AR Assn.	129	A- 7		1161
W0CDA/Ø	St. Louis ARC	193	B-16		1158
W1VNX/1	(nonclub group)	167	AB- 5		1137
K6KHE/6	Yuba-Sutter RC	187	AB- 8		1131
K2GQX/2	(nonclub group)	180	AB- 8		1116
W3EDU/3	York ARC	164	AB- 7		1059
W4KH/4	Nashville ARC	245	ABC-15		1053
K6LHV/6	(nonclub group)	139	AB- 5		1008

(Continued on page 178)



Spokane Radio Amateur Club members posed their boxer mascot at the Viking controls during an idle moment at W7NBR/7.

QST — Volume V

*Part III† — Foreword to Sumner B. Young's *(WØCO) Index*

• Mr. Young concludes his outline discussion of the material contained in Volume V of *QST*.

(b) Short Waves: Adams-Morgan Co. exhibited its Type 2-5-U Radiophone, capable of transmitting on 7 wave lengths between 160 and 325 meters.[87]

8DE operated a c.w. set, "very nicely," on 180 meters, by using a counterpoise under his antenna, instead of a ground.[88]

The Twin City Radio Lab. (St. Paul, Minnesota) advertised that it would calibrate wavemeters over any range between 100 and 3000 meters.[89]

Editor Warner said: ". . . The use of wave lengths less than 200 meters should be encouraged. . . . We will bet a pink hat we could work from Hartford to Chicago on 50 meters if we had to, and if QRM gets any worse we are going to try it. . . ."[90]

Kruse pleaded with manufacturers to produce a wavemeter tuning from 125 to 250 meters.[91]

Boyd Phelps, 9ZT, published his pioneer article: "Radio Below 200 Meters."[92] Among other things, he said: ". . . Working on 150 meters is now equivalent to a Z call and 373 meters, as far as interference is concerned. . . ."[93]

John Reinartz, 1QP, at South Manchester, Conn., operated an i.c.w. set on 174 meters.[94]

After joining the Headquarters Staff of the League as assistant editor, Boyd Phelps, 9ZT, opened up station 1HX at Hartford, Connecticut. And with it he worked Boston, Mass., reliably, on 130 meters; and he also succeeded in radiating energy on 70 meters.[95]

In the July (1922) issue, it was announced that 9DSG had sent signals 1250 miles with a 5-watt tube on a one-wire antenna and a 180-meter wave length.[96]

Hoover's 1922 experts recommended that the band from 150 to 200 meters be devoted exclusively to use by amateur telegraph and telephone stations; and that the hams should share 200–275 meters with technical and training schools.[97]

(c) Curiosities: Four Amateurs in San Diego were boycotted by the League for disregard of the new Pacific Plan for the use of the air.[98]

British hams proposed to the GPO authorities that they be allowed to communicate with *any* amateur station, instead of being limited to contacts with just 5 stations specified in the License. However, they also proposed that no amateur be allowed to send out a CQ call![99]

The Wireless Society of London began a campaign against "rude radio men."[100]

The conference of experts convened in Washington at the call of Sec. Hoover (beginning February 28, 1922) and suggested, among other things, ". . . that direct advertising by radio be absolutely prohibited. . . ."[101]

Testifying before that same body of experts, Mr. Krumm (of Westinghouse) declared that 12 to 15 broadcasting stations were enough to cover the entire U.S.A.[102] However, Mr. Nichols (of Western Electric) thought all 15 were needed.[103]

Mr. Krumm also stated that a cheap Limited Commercial broadcasting station could cause QRM to expensive Westinghouse broadcasting-plants costing $15,000.00 apiece.[104]

Robert Garcia, 7 years of age, passed the Amateur First Grade License exam.[105]

Dr. Lee DeForest resigned as active head of the DeForest Radio Tel. & Tel. Co. on September 26, 1921. It was announced that he would ". . . live in Germany the next few years where freedom from business cares and the opportunities for obtaining highly trained help [would] enable him to complete certain important research work. . . ."[106]

In the course of radiotelephone experiments between the Lackawanna Limited and various stations (including amateurs), the train entered the Bergen Tunnel (4283 ft. long and 90 ft. underground). Inside it two c.w. stations and several ships were "heard distinctly."[107]

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* Rural Route 3, Box 94, Wayzata, Minn.

† For previous installments see following *QST* references: "*QST* — Volume I," October, 1954; "*QST* — Volume II," February, 1955; Part I of "*QST* — Volume III," March 1955; Part II of "*QST* — Volume III," April, 1955; Part III of "*QST* — Volume III," June, 1955; Part I of "*QST* — Volume IV," July, 1955; Part II of "*QST* — Volume IV," August, 1955; Part I of "*QST* — Volume V," December, 1956; Part II of "*QST* — Volume V," July, 1957.

Editor's Note: The call 2FP, mentioned on footnote 66 on page 77 of July 1957 *QST*, should have been 2PF.

87 26, October 1921. Paul F. Godley designed it. (Same ref.).

88 44, September 1921.

89 113, October 1921.

90 28, November 1921

91 57, August 1921 (Letter).

92 21 to 26, March 1922. The Smith Cup Contest Committee thought very highly of the article. 32, April 1922.

93 25 to 26, March 1922.

94 12 to 13, June 1922.

95 See "Changes at the *QST* Factory," 56, June 1922.

96 53, July 1922.

97 16, June 1922. In a preliminary report, the Hoover experts recommended that wave lengths *below 150 meters* be "reserved," and that they *not* be assigned for use. See 10, April 1922. In the final report (released April 29, 1922) only waves *below 100 meters* were recommended for "reserved" status. See table at 15 to 16, June 1922. The lowest wave band recommended for *use* was 100–150 meters; and it was recommended for "private and toll broadcasting," exclusively. 16, June 1922.

98 41, May 1922 (Wise's Report).

99 40, June 1922.

100 30, September 1921.

101 15, June 1922.

102 9, April 1922.

103 9, April 1922, also.

104 9, April 1922, also.

105 48, September 1921.

106 54, October 1921 (in Strays).

107 25 to 26, June 1922. When the train emerged from

Two small gas-filled balloons were used by L. F. Kridler, 8BDM (of Detroit), to carry aloft a long receiving antenna made from wire which he had stripped from the secondary of a Ford spark-coil. A letter from him, describing the results, said: ". . . Oh Boy, the sigs. came in much louder. Hams could be read anywhere in the house and Arlington, who usually can hardly be read, could be read anywhere in the room. I don't know how much wire I had up but it seemed like a half-mile at the least." [108]

A Stray at 61, April 1922, reads as follows: ". . . San Fernando, California, possesses one of those real outsiders that have the interest of Citizen Radio at heart. Willis A. Rowe, who runs a garage, charges the storage batteries of most of the gang there free of charge. A Willis A. Rowe would be a welcome man in most every town."

L. C. F. Horle pointed out that in all the world there was not one modulator capable of producing as much as 5 kilowatts of audio-frequency energy.[109]

To exclude distracting noises, Paul Oard (of Stockton, Calif.) used an aviator's helmet headset in connection with a radio receiver in his auto.[110]

Each month enough lists of Calls Heard to fill 100 pages of *QST* were received by the Editors.[111]

(d) Big government and commercial long-wave stations: President Harding opened RCA's Radio Central on Long Island, N. Y., November 5, 1921. Through it he sent a message addressed to the entire world; and about 33 nations acknowledged its receipt, via the quickest available means.[112]

This huge station had 12 towers 410 ft. high, spaced 1,250 ft. apart; thus its antennas extended over a strip of land nearly 3 miles long.[113]

(e) Legislation: The full text of the proposed new radio law which was drafted after Hoover's experts had made their recommendations will be found at 56, 69 to 71, July 1922. For introductory and explanatory material see the article called "The New Radio Bill" found at 32, July 1922. After asking the hams to compare this draft with the Radio Act of 1912, this article said:

> ". . . Notice that this bill does not repeal the old law *in toto* but amends it, principally by substituting new Sections 1, 2 and 3. . . .
>
> "The general idea of the bill is that the law shall not specify wave lengths or classes of stations or any other technical consideration but instead shall be given almost unlimited authority to the Secretary of Commerce to classify stations, license them, and to make, alter and revoke regulations respecting their service, location, wave length, decrement, range, power, operating hours, etc., with authority to refuse or revoke a license whenever it is in the public interest to do so. It is an open secret that at present the Department of Commerce has no option but to issue a broadcasting license to every aspirant who asks for it, regardless of the chaos certain to result. The situation at present is entirely out of hand and confusion reigns supreme on the broadcast air. . . .
>
> "But the main concern of our ARRL must be the effect the proposed measures will have on the amateur. At the hearings we asked for definition of our status in the law, and Mr. Hoover's Commission unanimously recommended that the status of the amateur and his wave-length bands be defined in the law. *This has not been done in the present bills.* It is true that Regulation Fifteen of Section 4 of the old law is to be amended to the effect that no private station shall use a wave length more than 275 meters nor less than 150 meters but it takes quite a stretch of imagination to construe that as a definite grant of those wave lengths to us amateurs. Nor is our existence given any guarantee in the bill — we are not named as one of the classes which shall always be provided for, as we asked. . . ." [114]

(f) "Firsts," or "Near Firsts": The N.A.W.A., an amateur organization sponsored by Wireless Press, Inc., broadcast the Dempsey-Carpentier fight returns over a powerful RCA radiophone station, located at Hoboken, N. J., on 1600 meters. The date was July 2, 1921. J. Andrew White, at ringside, spoke over a telephone line; and J. O. Smith (a former ARRL director) repeated the reports over the air. ". . . Amateurs in many nearby cities copied the returns and

the tunnel, all signals "increased with a bang." (Same reference).

[108] 57, September 1921.

[109] 15, July 1922.

[110] 51, August 1921. On other portable stations, located in automobiles, see: 41, December 1921 (Dallin), and 45, November 1921 (Springfield Club). Dallin had an i.c.w. transmitter in his car, which covered distances exceeding 20 miles.

[111] 52, March 1922 (Strays).

[112] 30, June 1922. On Radio Central, see Mr. Boucheron's article at 26 to 31, June 1922.

[113] 29, June 1922.

[114] On the original conference, see Warner's article, "The Washington Radio Conference," 7 to 12, April 1922. At page 12, he said: ". . . We have to thank our present guarantee in the 1912 law for our present existence — several times we would have gone up the flue if it hadn't been impossible to abolish us without changing the law, which is always a hard matter. . . . Altho contrary to the plan of the proposed amendment which would leave the specification of classes and wave lengths subject to change at the discretion of the Department, we feel that an exception can be made with propriety in the case of the amateur because his wave-length band is at one end of the spectrum and his province can be defined and all other frequencies left subject to change without disturbing the operation of the scheme. This has an added advantage in stabilizing the use of the frequencies near us, for what company would want to put their millions into equipment that might be made junk of by sudden shift in the amateur wave? . . ."

On the results of the conference, see "The Radio Telephony Conference," at 15 to 17, June 1922. The "Preliminary Report" was issued in March 1922; and a "Final Report" was released April 29, 1922. See 15, June 1922.

As to Chief Radio Inspector Terrell's suggestion (at the Third and Fourth Dist. Conventions) that the amateurs ought to release 375 meters for broadcasting use, see 24, April 1922.

On fear of "wave grabbing," by the "commercials," after the second "Transatlantics," see 25, January 1922.

The proposed new radio bill (HR. 11964 and S. 3694) did not grant to anybody a *title* to any band of wave lengths. See 32, July 1922.

presented them to assembled audiences whose admission fees were turned over to charitable works under arrangements made by the Madison Square Garden Corp." [115]

A new department called "With the Radiophone Folks" appeared in *QST*.[116]

In Pittsburgh, radio electioneering was practiced for the first time when KDKA gave each candidate for mayor five minutes of time to address the voters over the air.[117]

The first *verifiable* signal to be heard across the Atlantic was that of 2PF. He was picked up by a British amateur at 2:30 A.M. (GMT) on December 8, 1921, about two days before Godley heard 1BCG.[118]

Note that 2PF also did the first *definitely established* amateur transcontinental work with a "tube" transmitter when he was heard (at Reedley, Calif.) by 6ALE, on October 6, 1921.[119]

Hiram Percy Maxim's first introduction to amateur radio is mentioned at 48, June 1922: ". . . He was pushed into radio by his son, Hamilton, in 1910 and mastered the code at the age of forty. . . ."

Probably referring to an event which happened long before World War I, an ad found at 111, May 1922, stated that the first wireless telephone in the U. S. Navy was installed on the flagship *Connecticut*. It showed a photo of the apparatus, but gave no date of installation.

The Maryland Radio Association broadcast a sermon from Har Sinai Temple, via 3RM (Baltimore), on November 20, 1921.[120]

At 45 to 46, February 1922, the manager of the Vancouver Division reported a "first," but failed to note the date: "Canadian 4CB was heard by Canadian 5CZ of Vancouver and it is the first time that a Canadian amateur signal has passed over the Rockies. It is reported that 4CB uses 10 watts of c.w. . . ."

At 49, March 1922, the following information appears: ". . . The first national market report to be broadcast by wireless anywhere in the world was sent out by the United States Department of Agriculture from the radio station of the United States Bureau of Standards a little over a year ago. . . ."

A letter from 9DTW (F. M. Ende of Ft. Riley, Kansas) suggested the establishment of amateur standard-frequency stations (on both spark and c.w.).[121]

NSF (Anacostia) was referred to as the first *powerful* short-wave c.w. station.[122]

Capt. William Rind, commanding the liner *America*, became the first master of a merchant vessel to talk by radiotelephone to his owners ashore and to receive orders for his vessel by this same means. He talked with Thomas H. Rossbottom, General Manager of the United States Lines, on March 6, 1922, while the *America* was still a "considerable distance from Ambrose Channel Lightship." The transmitter on the coast was at Deal Beach, N. J. The receiving station ashore was at Elberton, N. J.[123]

On May 2, 1922, at the YWCA Building in New York City, the Women's Radio League of America was organized.[124]

(g) League Affairs: The Board of Direction continued its policy of holding some of its meetings away from home. Having met at St. Louis during the December (1920) convention, and in New York City in early June 1921, it met at Chicago in September 1921, for the First National Convention.[125]

At 8 to 9, October 1921, the part played by the Radio Club of Hartford in the formation of the League was reviewed by Maxim.

Representatives of "quite a few" affiliated clubs attended the so-called Washington Radio Conference, called by Mr. Hoover.[126]

Amateurs on the West Coast adopted the "Pacific Plan," a scheme of control modeled on the "Chicago Plan." [127]

An editorial at 35, June 1922, announced that QST was not to be tempted into the business of catering to the needs of the "BCLs," but was determined to remain a magazine "of, by and for the amateur." [128]

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[115] 47, September 1921 ("Strays"). In the December, 1955, number of *Reader's Digest*, Mr. White published a most interesting article describing this event. See "The First Big Radio Broadcast," pages 81–85 of that issue.

[116] 31 to 34, December 1921. The last appearance of this Department was at 38 to 39, 41, September 1922 (Volume VI).

[117] 31, December 1921.

[118] See footnote 27.

[119] 32, April 1922. For date, see 47, December 1921. 2PF's i.c.w. signals were heard "all over the tent" by Godley at Ardossan on December 11, 1921 at 5.25 A.M. (GMT); 26 to 27, February 1922. Godley first heard 2PF at 5:18 A.M. on that date; 26, February 1922. In turn, 6ALE was the first "ham" station to send a signal across the U.S.A. on a transmitter having an input smaller than one kilowatt; 19, January 1922. For a description of 6ALE, see 46 to 47, December 1921. This station later became 6ZF and participated in a quick round-trip relay between NOF (Washington) and 6ZAC (Maui, T.H.), on April 21, 1922; 38, June 1922 ("Strays"). As 6ZF, he copied 2PF "quite often"; 59 to 60, April 1922 ("Strays").

[120] 29, January 1922. Rabbi Louis Bernstein preached.

[121] 64, March 1922.

[122] 32, April 1922; in the "Smith Cup" award write-up. See item about L. C. Young who got 6 points "for his persistence and operating skill which contributed to a large extent to the fine performance of station NSF, the first powerful short-wave c.w. station."

[123] 57 to 58, April 1922. For a photo of the radiotelephone room aboard the *America*, see 39, September 1922, in Volume VI.

[124] 49, June 1922. On May 16, 1922, Mr. A. A. Hebert, Treas. and a Director of the ARRL, and V.P. of the Second Dist. Exec. Council, spoke before this "YL" organization, on "Cooperation and Organization." (Same reference.)

[125] 19, August 1921; 15, October 1921.

[126] 7, April 1922.

[127] 50 to 51, March 1922. This plan was endorsed by all Pacific Coast radio clubs; and only in San Diego was there lack of cooperation. Four "ringleaders" there were placed under League "boycott"; and the license of one of them was revoked by the Department of Commerce. 41, May 1922 (Wise's Report).

[128] This editorial also stated, in italics: ". . . *we* [intend] *to continue to be a magazine devoted to the practical improvement of short-wave two-way communication! . . .*"

It differentiated between BCLs and hams as follows: ". . . we want to protest the occasional characterization of the new radio folks as amateurs. They're not amateurs. An amateur is one who pursues a line of endeavor for love thereof and not for commercial gain. Broadcast listeners of course have no financial incentive but neither are they interested in radio as such, but rather are concerned only about hearing something and hang how they get it. They're not amateurs — they are *radio fans*, novices. We hope

It was announced that Traffic Manager Schnell would tour the West Coast and visit as many affiliated clubs as his limited time allowed.[129]

(*h*) *Non-Amateur News:* The old Fessenden 100-kilowatt 500-cycle synchronous spark set at NAA developed trouble and was replaced by a 35-kilowatt Telefunken 500-cycle quenched-gap spark set which had been used at Sayville before World War I. Reports indicated that the results produced by the smaller transmitter equaled those of the old 100-kilowatt set. The *QST* item continued: ". . . A tube set has been tested out but no information is available at this time."[130]

At 59, April 1922, the "stray eliminator" invented by Dr. Louis Cohen, Chief of Army Radio Research, was mentioned. No details were given.

The Westinghouse Elec. & Mfg. Co. announced that it had sold the assets of The International Radio Telegraph Co. to the Radio Corporation, retaining certain patents and rights in foreign fields. The announcement added that Westinghouse had also obtained a substantial interest in the stock of the Radio Corporation and had made commercial agreements regarding the sale of radio equipment manufactured by Westinghouse.[131]

In a surprise decision, Judge Hugh M. Morris (U. S. Dist. Court, Delaware) held that Radio Audion Company was *not* infringing the Fleming Patent by manufacturing and selling 3-electrode amplifiers. R.C.A. had claimed infringement of this patent, which covered 2-electrode rectifiers.[132]

Before the biggest audience ever gathered at a meeting of the IRE, Edwin Howard Armstrong (on June 7, 1922) "gave his new invention of super-regeneration to a tense and expectant audience in the form of a paper entitled 'Some Recent Developments of Regenerative Circuits.'"[133]

(*i*) *Reminiscences:* A letter from Geo. Roy Clough, found at 65 to 66, January 1922, mentioned the fact that he was once an operator "at the old De Forest station on Barge 94, also serving as assistant at old GV at the city of Galveston, Texas"; and the letter pointed out that this was 'way back in the days of the Morse code and untuned sets using the Fessenden electrolytic detector.

(*j*) *Radiotelephones:* Part II of R. A. Heising's paper on "Modulation in Radio Telephony" appeared at 9 to 15, August 1921. This installment described his "constant current system." The first part of this fine article had appeared at 7 to 12, July 1921 (in Volume IV of *QST*).

A letter from K. B. Dokas, 9DKL, of Slayton, Minnesota, found at 65, January 1922, described a device for linking "land" and radio telephones. (He remarked, therein, that the literature on this subject appeared to be scanty).

Under the direction of D. W. Richardson, 3XM, of Princeton, N. J., the Delaware, Lackawanna & Western Railroad resumed experiments (commenced in prewar days) re conducting radiophone communication from a moving train. Tests were made in late March (1922), on the "Lackawanna-Limited," which signed the call DL. Many amateur stations were worked.[134]

At 14 to 18, July 1922, L. C. F. Horle's paper on "Modulation in Radio Telephony" was also published. Among other things, he emphasized the desirability of using 100% modulation.[135]

Dr. Alexanderson's method of modulating a high-frequency alternator was described (by Horle) at 16, July 1922; and Mr. Ernest Amy's "magnetic modulator," for use with such rotating machines, was also discussed at 17, July 1922.

(*k*) *Emergency Work:* In August 1921, a bad flood wiped out the town of Hatch, New Mexico, and partially destroyed other towns in the Rincon Valley. It also damaged property and crops. Losses totaled several millions of dollars; and thousands of people were forced to "flee to the hills for their lives." At 23 to 24, November 1921, Mr. R. W. Goddard (5ZJ) described the setting up of portable spark station 5FY at Rincon on the edge of the flooded area and recounted its use in producing communication back to station 5ZJ at Mesilla Park. From 5ZJ, messages were telephoned to Las Cruces. Although phone lines into the stricken district were soon repaired, this relay circuit continued to be used to a considerable extent, "as the cost was negligible and the service good."

At 40, October 1921, Mr. Reynolds, Supt. for Colorado in the Rocky Mountain Division of the League, referred to floods in that state (time of occurrence not fixed) and stated: ". . . When Pueblo was cut off from the outside we went down to Colorado Springs and tried to reach Pueblo by radiophone but we couldn't get anybody there. We then tried to take our portable radiophone to Pueblo but the authorities would not let anyone out of Colorado Springs onto the Pueblo road. . . . The wire connections were out two or three days. . . ."

The most important emergency work was done when an ice storm hit the Fox River Valley in northeastern Wisconsin. This storm became acute about 4:00 A.M. on February 22, 1922. ". . . About this time electric wires went down, train service was brought to a standstill, and the entire telephone, telegraph, and power and lighting service in the Fox River Valley was cut off. . . . The next act of the storm was to bring still colder weather and high winds which

(*Continued on page 174*)

that some day they'll become amateurs but they are not today. . . ."

[129] 51, July 1922.

[130] 60, April 1922.

[131] 47, November 1921 ("Strays").

[132] 52, March 1922. The result of prior litigation, based on the same patent, had been that R.C.A. was the only firm permitted to manufacture 3-electrode tubes. (Same reference.)

[133] 7, July 1922. For a description of this invention, see 7 to 11, July 1922.

[134] 25 to 26, 34, 40, June 1922.

[135] 15, July 1922.

Mobile

Mo Billing relaxed in his 1946 Supersix as he drove home from work. It was spring, ham radio was in the air, and Mo had just finished a terrific 15 minute QSO on the mobile rig. He had received an RST 599 from Incandescent, a small town just west of the Dark Mountains. This was 1550 miles airline from the home QTH and just about the longest DX he had ever made on the mobile installation.

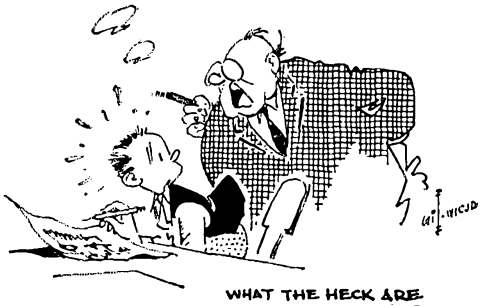
Mo was mighty pleased with the performance of the 25 watt mobile rig and the base loaded 8-foot whip. The car had the usual grunts and groans that 11 years of service can add, but the rig and antenna installation were perfect.

As Mo pulled into the driveway, he stopped the car and, letting it idle, set the brake. He opened the garage door, bent the whip antenna into a graceful half-arc and locked it into position to the roof. As he did this he heard the rear end grunt. Although it was a rather loud grunt, he paid little heed to it since it had happened each night for almost two years and he was quite used to it.

That evening after supper, while Mo was reading in the easy chair, his XYL said, "Mo, I'll need the car tomorrow as I have to go into town to do some shopping, so I'll drive you to work in the morning." Mo nodded his approval and stuck his head back into *QST*. The article on a remotely-tuned auto antenna had him entranced.

Rising a little late the next morning, Mo rushed down to the office, kissed the wife good-bye and waved to her as she drove off. The day passed in not too unusual a manner. Mo closed out three big sales, signed off two contracts, and set up a sales re-organization meeting. After lunch he passed a couple hours drawing a revised physical layout of the remote antenna installation in the car. As luck would have it, he didn't hear the boss come over to his desk.

"What the heck are you doing, Billing?" Mo broke out into an immediate sweat, his voice rose an octave and clearing his throat he answered, "Just a new layout, Mr. Rud."



Kay Rud, the big business tycoon, wrinkled his brow in confusion, "What layout?" he bellowed. Mo snatched at the proverbial straw. "This is a layout of the second floor facilities. A better way to handle incoming orders, sir."

"Well, what's this box here with the circle with numbers on it." Mo looked at the base-loading coil assembly he had drawn. "Oh, that's a desk with a rotating file of customer credit cards."

"What are these two parallel lines that connect to that square saying 'relay box and mike connection'?"

Mo gulped once and said, "That's an inside telephone relay line that ends at Mike Jones desk. He can give special preference to cash orders and relay the information to the file desk."

Flushed with his own thoughts he continued, "Enna Smith, we call her 'Aunt Enna,' will transmit the stock information to the stock room via a 'send-receive' light system depending whether the order is incoming or outgoing."

Mr. Rud slapped Mo on the back. "*By golly, Billing, this is terrific.* Write this up in a form presentable to management and I'll push it through. This really deserves a raise!"

As Kay Rud left, Mo weakly slid down in his chair. Again he realized ham radio — and Lady Luck — had helped him in his job.

At 5 P.M. Mo walked out front to the parking lot where the XYL was waiting in the car. She was fuming! Mo opened all the windows (one didn't close anyway) to let the steam out of the car's interior.

"I got a ticket, Mo."

"A ticket? What happened?"

"I went around a corner on two wheels."

"On two wheels! How fast were you going, 100 miles per hour?"

The XYL vibrated as she said, "15 miles per hour."

Mo smiled. "Who are you kiddin', that's impossible."

The XYL said, "Not on the front two wheels it isn't."

As Mo pulled into the driveway of the home QTH and parked he yelled, "What's this drivel about front two wheels. I've never heard of such nonsense."

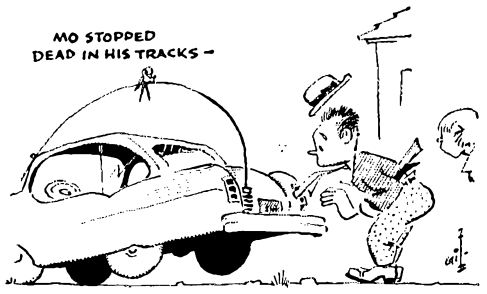
The XYL replied, "Look, Mo, I don't know what new piece of ham gear you're thinking of buying but that ticket will cost us $25.00. The officer said next time it will cost you $100.00 and the third offense will require impounding of your car. If you don't believe me, get out and look for yourself. It's still that way."

Mo shrugged his shoulders, got out of the car, walked to the rear — and stopped dead in his tracks. The rear wheels were a good three inches above the ground! Mo pushed down on the fenders and trunk but to no avail. The rear end kept rising up off the ground.

Mo then disconnected the whip antenna from the roof hitch point. Crunch! The rear end of the

car banged to the driveway. Visibly shaken, the XYL clambered out.

"Mo, we are going to get a new car. This heap is unsafe and is falling apart." Poor Mo had no argument. Obviously the frame was becoming rubbery.



That evening Mo went through a couple of motor magazines and two dozen pieces of sales literature on cars. Keeping in mind the new mobile installation, he narrowed it down to two or three models of a couple different manufacturers.

The XYL interrupted to tell him that she wanted a four door sedan with all leather and vinyl upholstery so that it would be resistant to kids that liked chocolate ice cream, greasy tools, and ham gear. Mo himself was the conservative type and shunned away from the deluxe models with tons of chrome stripping both on the interior and exterior.

Saturday morning they stopped off at Atomic Motors to see the new 1957 Nuclear Six. As the XYL was choosing the color scheme of the custom 4-door six cylinder job, Mo wandered about the showroom.

As he entered the side door of the display area his eye lit on a brightly polished beauty. He couldn't believe what he saw. His heart jumped a foot and almost stopped beating. In front of him stood a brand new 1957 Atomic Motors Fission V-8 with the revolutionary Rocket Heap stylings. The rear fenders canted upward almost out of sight. And along the top of each fender was a strip of chrome. Mo paced off the length of the chrome strips. Exactly right for a 10/20-meter beam. Excitedly he looked at the rear of the trunk. A huge V-8 design was there. Just perfect as a delta-match to the chrome strips.

Further investigation proved the dual exhaust lines were perfect for 40 meters. Under the hood, the fan proved perfect for 144 Mc. work. And the electrical system contained a 12-volt battery and oversize generator.

It took just 10 minutes of high pressure talk to convince the XYL that this model would have a high resale value. The XYL chose one with red and white upholstery and the car was theirs.

Of course the rest is history. Mo Billing won five U. S. and two foreign awards for the most outstanding achievements in amateur mobile operation for 1957. He servo-controlled the trunk lid to remotely stop it in any position to act as a ground plane for the Fender Beam. He has two patents on a "Dual-Muffler-Loaded 40-Meter Beam." He revolutionized 144 Mc. operation with his article on "Circularly Polarized 144 Mc. Operation with Rotating Fan Antennas." The IRE awarded him the honor of Extreme Fellow following his paper on "Delta-Matched V-8s."

He won the International Mobile DX Contest by amassing 3 million points more than the second place winner. And this he accomplished with a dead cell in the battery and a hole in one muffler.

Mo took his mobile equipped Nuclear V-8 to the manufacturer and pointed out it was a natural for hams. Now, Atomic Motors sells the car factory-equipped for hams and for the past two months is leading the nation as first in auto sales. In appreciation, they gave their national advertising business to Mr. Kay Rud's agency who in turn made Mo a senior vice-president.

The only sales bug proved to be a 6 db. loss between hams communicating between the Nuclear V-8's and older cars with lower rear fenders. However Mo designed the "6V8 Booster," an electronically controlled jack for raising rear fenders a quarter-wave off the ground.

Today, hams all over the world are waiting for even greater things to come from Mo Billing. Yesterday he got a ticket — for three wheels off the ground. — *W6WED*

Strays

A Capitol Records recording session with Ella Mae Morse had these hams on the job: left to right, standing, John Krause, W6QMB (recording mixer-engineer); Hy Lesnick KN6ZSY (orchestra manager); Lee Gillette, K6HSZ (Capitol Records artist and repertoire producer); and Paul Weirick, K6AK (orchestra conductor). Seated, Frank Carlson, K6GXG (drummer); Ella Mae Morse; and Alvino Rey, W6UK (guitarist). Miss Morse's next Capitol Records album will, incidentally, be named the "Morse Code."

Just a Big Old Bird

Spencerville, Maryland

Editor, *QST:*

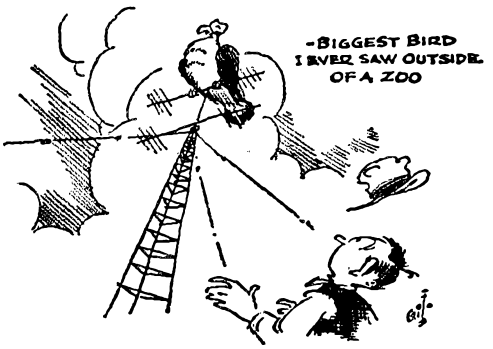
I just didn't have the heart to tell W4ZXI.

I had sufficient reason, I guess. But then "osprey" isn't a common word to find spelled out in the middle of a c.w. transmission. Might take a repeat if it hit him cold. Then again, if his knowledge of ornithology was as meager as mine, a long-winded explanation might be required. And there really wasn't that much time. We both wanted to get aimed up on Orlando and count meteor bursts on W4LTU.

So when he said my signals were a bit below par, and had a queer fade, I just told him his were the same. Didn't say anything about the s.w.r., or wet bird feathers, or anything.

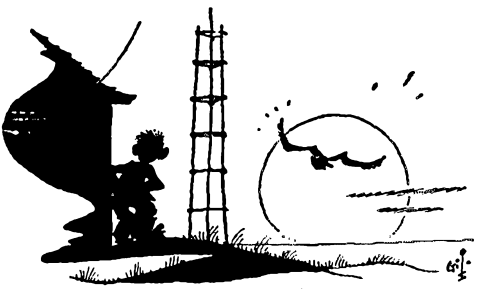
You see, once I had mentioned s.w.r., we both would have been stuck for an hour. I'd have had to tell him the whole story. About being in the garage just before supper, working on the new sump pump. And how I glanced up at the antenna as I headed for the house for chow. And saw the darned thing up there. Biggest bird I ever saw outside of a zoo, and perched right on the top bay of the 144 Mc. array, 83 feet or so up, squeezing with those big claws on that little ⅝" boom, and looking around like he owned the county.

And then I'd have to mention how the wife came out with the bird book and binoculars. And the call we put out for the nature-loving neighbors on the east side. And they had more bird books. And how we decided it wasn't big



enough for an eagle, and must be some kind of a hawk. And how I figured the first time I nudged the rotator switch, he would be off. And how I did, but he didn't. 180° around I took it, and all the rascal did was turn around so he could again face away from the sun and into the wind. But he used his wings a bit for balancing on that one — guess the boom wasn't quite fat enough to suit him — and that's what gave the local experts a good look, wings and all, and that's what they said he was. An osprey, or fish hawk. Judging by those 38" rods he looked five feet or so in span.

And how I started to worry then about the rods. Just ¼" aluminum tubing. And him hanging on right near the driven element, with those claws snuggled close to the #18 feed line. And how I fired up the transmitter and it didn't even bother him. Loaded fine, s.w.r. low and normal, but bird still there.



– IT WAS JUST TOO LONG A STORY

And still there after dark, by the glow from the spotlight. We all thought he might run for shelter when the rain started, but no, sir. Sat right there and got soaking wet. And the plate current went down, and the s.w.r. went up, and the meters jittered all around, and kept it up even after the rain slacked off. And old W4ZXI, his signals sounded frightful, all jumpy like.

But it was just too long a story, so I kept mum. Besides, I didn't want him thinking I hit the bottle so hard so early in the evening, and the whole thing simply didn't sound reasonable. Besides, he would have had me on the grille the next night to find how it came out. About how the bird left between 6 and 7 A.M. And the s.w.r. back to normal. And how inspection by binocular showed all in order. And that would have been the end of it.

So that's why I didn't say anything about it.

— *William L. Smith, W3GKP*

Strays

What's in a call? W1SGT (SGT is the abbreviation for sergeant in the Marine Corps) is a captain in the U. S. Navy.

What are the odds? W1COL taught the code to a would-be ham, who thereupon passed the exam and received the call K1COL.

W2KCR Receives High Navy Award

W4IH presents Navy Public Service Award to W2KCR at ARRL National Convention.

THE highest award made by the U. S. Navy to a civilian, its Navy Public Service Award, has just been made to Paul Blum, W2KCR, of Syracuse, N. Y., for the terrific job he's done in the past year and a half in handling all kinds of traffic to the Antarctic.

The citation which accompanies this award reads in part as follows, ". . . Mr. Blum, an outstanding radio amateur and communicator of the Greater Syracuse, N. Y., area, has given unselfishly of his time and effort to the great benefit of the morale and welfare of Naval personnel . . ."

Specifically, W2KCR has now been engaged since the spring of 1956 in handling traffic to and from the Antarctic, and in August of this year he passed the 10,000 mark in numbers of messages handled. Unless you could leaf through his message files and follow the exchanges between sailors and families, and read some of the mail that he has received from grateful addressees, it is impossible to realize what a great service he has rendered to Navy personnel in a frozen wasteland and their families at home. The messages run the gamut of emotions from joy to sorrow; they concern matters of love, sickness, family business, misunderstanding, loneliness and faith. Reading over his traffic file, it is small wonder that Paul Blum devotes so many hours of each day to this undertaking.

We visited W2KCR in August, having been advised by RADM Bruton in the Navy Department that the award had been approved and was to be presented by him at the ARRL National Convention in Chicago. After having spent a night (and we mean a *night!*) watching W2KCR in action, we assure you that he is highly deserving of the honor. Some of the Headquarters staff had previously visited W2KCR, but we wanted to see the operation firsthand. Arriving in mid-evening, we spent some time in getting acquainted over a cup of coffee or two. Along towards 2300 we got down to business, and by midnight we were working the Antarctic. And we continued to work them until after six A.M. We handled voice traffic. We handled some c.w. And we handled RTTY. We did it constantly. It was a busy night! At 0645 your writer headed for the airport and a Hartford plane, while Paul headed for bed and an hour's sleep before starting off to his regular job at the office. According to his wife, this is the customary routine!

How did he get started on this project? Well, in the spring of 1956 Kenneth Thomas, a Red Cross Disaster Communications official in Syracuse, conceived the idea of handling morale traffic to and from the Navy's Operation Deep Freeze. The late W2BTB was chosen by the Radio Amateurs of Greater Syracuse to journey to Washington and seek the Navy's cooperation, which she obtained. And so the RAGS set up a committee to get the ball rolling. On March 21 K2BQO made the first contact with the Antarctic group, but it was apparent right from the start that it would be advantageous to have both ends of the circuit on s.s.b., and so W2KCR's station was pressed into service by the RAGS committee. Fourteen volunteers were signed up to keep the station on the air seven nights a week, and the Syracuse-Antarctic schedules were on their way.

The complexion of the operation has undergone steady changes through the months. W2KCR has added both radioteletype and radio facsimile facilities, and both of these modes have handled an increasing amount of traffic. He has personally financed the sending of Christmas greetings and anniversary greetings, by mail, to the families of the Antarctic sailors. His list of volunteer assistants has dropped to six. With the traffic load up and the number of assistants down, W2KCR has personally taken on an increasingly heavy load of operating, the result being the handling of a maximum number of messages with a minimum amount of sleep.

Rear Admiral George Dufek, Commander of the U. S. Naval Support Force, Antarctica, and author of the newly-published book *Operation Deepfreeze*, recently wrote us as follows: "I heartily concur that no morale factor has been as important to the men of DEEP FREEZE as has amateur radio. In the past we have taken every opportunity to express warm appreciation to those amateur operators who have been so important to us . . . I hope every amateur radio operator is aware of the great service to our operations ham radio is performing and how highly we value their cooperation."

Through the unselfish efforts of amateurs like W2KCR (and his volunteer assistants W2ABV, K2DUY, K2HWP, W2QAR, K2QXL and W2WS) amateur radio continues to maintain a high standard of exemplary public service.

— *R. L. B.*

Happenings of the Month

27-MC. FILING

In April, the Federal Communications Commission issued a series of proposals for a rearrangement of frequency assignments to a number of radio services, one of which would withdraw from amateur use the present 11-meter segment, 26,960–27,230 kc. At its meeting in May, the Board of Directors of ARRL instructed the General Manager to file comment opposing this proposal. We publish below the text of the League's filing in support of a continued assignment of this band for amateur use.

Before the
FEDERAL COMMUNICATIONS
COMMISSION
Washington 25, D. C

In the Matter of Complete revision of Part 19, Rules Governing the Citizens Radio Service, and reallocation of frequencies in the range 26.96–27.23 Mc. from the Amateur Radio Service (Part 12) to the Citizens Radio Service.	Docket No. 11994

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, Inc.

Pursuant to Paragraph 10 in the Notice of Proposed Rule Making in Docket 11994, the American Radio Relay League, Inc., submits these comments on behalf of more than 60,000 U. S. amateur radio operators who are members of the League.

The League is opposed to the adoption of the proposed rule changes for the following reasons:

POINT I

The adoption of the Commission's proposal would constitute a derogation of the Atlantic City Radio Regulations.

1. In its allocations planning during and immediately after World War II, the Commission concluded it was necessary to make expanded provisions for the operation of "industrial scientific and medical" equipment in the 27-Mc. region. The Commission found it impossible to acquire frequencies for that purpose by reducing the assignments to government and non-government fixed and mobile services in that portion of the spectrum. The Commission thereupon reduced the amateur 28-Mc. band by 300 kilocycles to make space available for ISM purposes. The Commission's announcement of these decisions, in its final report of frequency allocations above 25 Mc. (Docket 6651, May 25, 1945), indicated that the amateur service would be authorized to use a 270-kc. band shared with ISM.

2. These decisions became a part of the proposals of the United States for the then-forthcoming Atlantic City Radio Conference. For example, a Commission release of March 20, 1947, indicating certain views of the United States toward the world conference, stated, "A band of 270 kilocycles will be available to the United States amateur radio service." At the conference itself, in recognition of the ISM problem and to implement its control, it was found desirable to set up a worldwide ISM frequency, chosen by compromise as 27.120 Mc., ±0.6%, or approximately 320 kc. In that portion of the spectrum, the present Atlantic City table of frequency allocations reads as follows:

Frequency Band and (Bandwidth) kc.	*Allocation to Services*	
	World-Wide	*Regional*
26,100–27,500 (1400)	a) Fixed b) Mobile except aeronautical mobile	
57)	58)	

57) The frequency 27,120 kc. is designated for industrial, scientific and medical purposes. Emissions must be confined within the limits of ±0.6% of that frequency. Radio communication services operating within those limits must accept any harmful interference that may be experienced from the operation of industrial, scientific and medical equipment.

58) In Region 2, Australia, New Zealand, the Union of South Africa and the territory under mandate of Southwest Africa, the amateur service will operate within the band 26,960–27,230 kc.

3. The United States is, of course, a signatory nation to the Atlantic City Radio Regulations. These regulations, and particularly footnote 58 thereof, make it perfectly clear that by international agreement the band 26,960–27,230 kilocycles is assigned to the amateur service in Region 2 and to the amateur service in a number of other countries located outside of Region 2.

4. It is a well-known fact that the propagation characteristics of frequencies on the order of 27 Mc. are such that even low-power stations are capable of causing harmful interference to stations in other countries even at great distances. Therefore, any assignment of the frequencies here involved to a service not provided for by the Atlantic City table may well permit the operation of stations capable of causing harmful interference to stations in the amateur service in other countries where the service is authorized. Thus, the Commissions's proposal, if adopted, would be in derogation of the Atlantic City Radio Regulations.

5. The League recognizes that under Paragraph 88, Chapter III, § 3 of the Atlantic City Radio Regulations, this government has a technical right to assign frequencies in derogation of

the allocations table on the express condition that no harmful interference shall be caused to authorized services. Nevertheless, it is absolutely essential that the United States, on the eve of participation in another world radio conference, avoids even the slightest indication that it is derogating under the existing treaty. The United States must support the international table of frequency allocations, to which it is a party, without equivocation.

POINT II

The Commission errs in its conclusions as to the nature and extent of amateur use of the 27-Mc. assignment.

6. In Paragraph 5 of the Notice, the Commission states that (1) there is comparatively little amateur use of the 27-Mc. band, and that (2) such use as is made consists primarily of remote control operations or short-distance communication. The League disagrees with both these conclusions.

7. The recent DX (distance) tests of the American Radio Relay League held in February, 1957, indicate (even allowing that such a scheduled event promotes more occupancy than normal) that there is actually a substantial use of the 27 Mc. band by amateurs. For example, during those weekend tests, one amateur station outside the United States was in communication with nearly 250 different amateur stations in this country on 27-Mc. using radiotelegraphy, and another foreign station similarly communicated with more than 150 different amateur stations using 27-Mc. radiotelephony. During the scheduled February weekends, amateur stations in more than 40 different countries (including colonies or possessions) were active in the 27-Mc. band. The above figures include only those amateur stations known to be participating in these specific tests and do not take into account any additional casual amateur operation which may have occurred simultaneously. We believe that comments which individual amateurs will file with the Commission in this proceeding will adequately indicate the extent of amateur use of the 27-Mc. band.

8. The information in the preceding paragraph contradicts the Commission's view that the band is used mostly for short-distance work. Indeed, if only short-distance (ground-wave) communication is contemplated by an amateur wishing to work in that portion of the spectrum, the 28-Mc. band is more suitable because of heavier occupancy. There are, on the other hand, occasions when the maximum usable frequency is in the vicinity of 28 Megacycles, so that there is considerable use of 27 Mc. for long-distance work when the 28-Mc. band will not provide sky wave communication.

9. To the best of our knowledge, there is no particular amount of radio-control operation at 27 Mc. by amateurs. There is, in fact, comparatively little use by amateurs of radio for remote control purposes in amateur bands; when such use is made, it is more often within other bands such as 50 Mc., in preference to 27 Mc. because of the comparative lack of a sky-wave interference problem.

10. On the other hand, some experimental use of the 27-Mc. band is made by amateurs interested in "duplex" communication techniques, with some additional occasional use of facsimile transmissions, this being the lowest frequency band in which such emissions are permitted.

11. It is also worthy of note, in connection with Paragraph 5 of the Notice, that although the Commission indicates its proposed rules changes would permit amateurs, as individuals, to obtain Citizens licenses, this would only apply to amateurs 18 years of age or over because of the age restriction in § 19.2 of the Commission's Rules.

POINT III

The 27-Mc. amateur assignment is needed by the amateur radio service.

12. In November, 1945, the band 28,000–29,700 kilocycles was made available to the amateur service, instead of the 28,000–30,000 kilocycle band assigned before World War II. In March, 1946, a 270-kc. portion of the then-new "ISM band" was assigned, for the first time, to the amateur radio service, subject to interference from ISM. In the 27–28-Mc. region, therefore, the amateur service is provided with less space than had previously been assigned.

13. Despite the rapid development and adoption by amateurs of communication techniques more economical of spectrum space, congestion in the family of amateur bands continues to grow. The comparatively new amateur band at 21 megacycles to some extent compensated for a postwar reduction of frequency privileges elsewhere in the spectrum and has afforded some relief. But in the dozen years since World War II the amateur service in the United States has

(*Continued on page 190*)

A recent visitor in the States was Robert W. Ford, ex-AC3SS and ex-AC4RF, two calls well-known to DXers of six or seven years ago. Ford was captured by the Chinese communists and held prisoner for five years. His adventures before and during his confinement are brilliantly recounted in his recent book "Wind Between the Worlds," which we recommend for your reading. Ford was in this country doing a TV show on brainwashing, and through the courtesy of CBS spent a day in Hartford. In the photo below AC4RF (left) shows W1IKE and W1BUD the routes he followed. His TV appearance is tentatively scheduled for November 24 on the CBS documentary series "The Twentieth Century."

YL News and Views

BY ELEANOR WILSON,* W1QON

Eighteenth Anniversary Party

Sponsored by the Young Ladies Radio League

Please heed the changes in the awards section of this year's rules for the Anniversary Party. All other rules remain essentially the same as in last year's contest.

YLRL Vice President Mildred Wright, whose new Texas call is K5LIU (ex-W3YTM), extends a cordial invitation to all YLs throughout the world to participate in the contest. Contestants do *not* have to be members of the YLRL. The Party provides the best opportunity of the year to work the greatest number of YLs with the least effort, and have a grand time doing it.

So, get your Fall housecleaning done early, gals, and advise your friends that you're all booked up already for November 6th, 7th, 13th, and 14th.

Eligibility: All licensed YL and XYL operators throughout the world are invited to participate. Non-members of YLRL are not eligible for cup awards but are eligible for certificates. Only YLRL affiliated clubs will be eligible for the club award. Contacts with OMs do not count. (The YL-OM Contest will be held early in 1958.)

Operation: All bands may be used. Cross-band operation is not permitted.

Procedure: Call "CQ YLRL" or "CQ YL."

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

Among the 59 hams who gathered for the Eastern Pennsylvania-Pennsylvania Fone Net joint picnic at Easton, Pa., on July 28th were W3FHP, Rachel; W3GEU, Elaine; W3CUL, Mae; W3DBM, Flo; and WN3GTP, Irma (left to right in the photo). What we want to know is what did photographer W3PYF say (or do) to evoke such sportive smiles from the girls?

CONTEST PERIOD

Phone —

Starts: Wednesday, Nov. 6, 1957, 12 noon EST

Ends: Thursday, Nov. 7, 1957, 12 midnight EST

C.W. —

Starts: Wednesday, Nov. 13, 1957, 12 noon EST

Ends: Thursday, Nov. 14, 1957, 12 midnight EST

Exchange: QSO number; RS or RST report; name of state, U. S. possession, VE district, or country. California sections will include the name of their section in the exchange. California is divided into eight (8) sections as follows: Santa Clara Valley, East Bay, San Francisco, Sacramento Valley, San Joaquin Valley, Los Angeles, San Diego, and Santa Barbara.

Scoring: (a) Phone and c.w. contests will be scored as separate contests. (b) Add number of QSOs in each contest. A station may be contacted no more than once in each contest for credit. (c) Multiply the number of QSOs by the number of different states, U. S. possessions, VE districts, countries and California sections worked. Maryland and the District of Columbia count as one state. (d) Contestants running 150 watts input or less at all times may multiply the result of item (c) by 1.25 (low-power mutliplier).

Logs: Copies of all phone and c.w. logs, showing claimed score, must be postmarked not later than November 30, 1957, or they will be disqualified. Please file separate logs for each mode of operation. Send logs directly to YLRL Vice President Mildred Wright, K5LIU (ex-W3YTM), P. O. Box 1088, Pasadena, Texas.

Awards: Highest individual phone score.....Cup
Highest individual c.w. score.....Cup
Highest (average) club score.....Gavel

Certificates will be awarded to high place c.w. and phone winners. Highest score in each district, U. S. possession, VE district, and country, where at least three entries are received, will be awarded a certificate. If a member wins both contests, she will be awarded the two cups.

The aggregate scores of phone and c.w. reported by club secretaries and confirmed by the receipt of contest logs by the Vice President shall constitute a club entry. Segregate club entries into phone and c.w. totals, add the two for aggregate club score, and divide the result by the number of members participating.

Scoring Example:

QSO No.	*Station*	*RST*	*Place*	*No. of Each New Section or State*
1	W4BQI	5-9	Va.	1
2	VE3AJR	5-9	Ontario	2
3	W6JZA	5-9	Calif.-Los Angeles	3
4	W4BLR	5-9	Va.	3
5	W6GGX	5-9	Calif.-San Diego	4

Total QSOs 5 times 4 states times 1.25 for low power multiplier equals 25 points score.

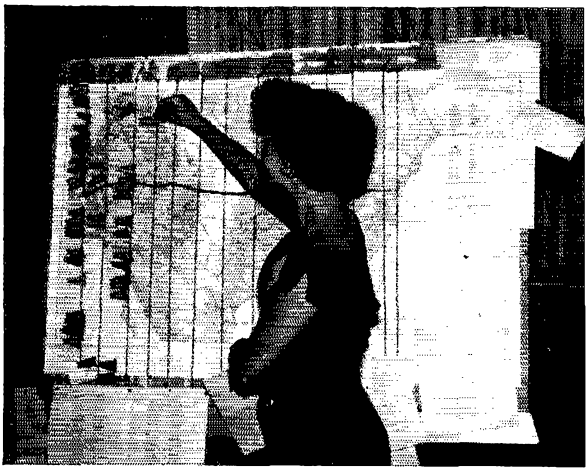
For the fifth consecutive term, Mrs. Betty H. Gillies served as Chairman of the All Woman Transcontinental Air Race Board of Directors in 1957. A past president of the 99's, Betty was a contestant in the 1949, '50, '51 and '52 races. During World War II she was a WASP Squadron Commander, and she has logged more than 3000 flying hours, holding commercial, flight instructor, instrument, single and multi-engine land and seaplane ratings. Betty has been operating as W6QPI since 1952 from her San Diego QTH.

EXPRESSING thanks and appreciation to all concerned with the 1957 All Woman Transcontinental Air Race, Betty Gillies, W6QPI, Chairman of the Board of Directors of AWTAR, Inc., (see photo) wrote: "The amateur net was great, and we officials certainly are grateful to all the YLs and OMs who gave so unstintingly of their time and effort to make it so. I just don't know how we would ever run the AWTAR without the help of the ham net."

Co-chairmen of the amateur net, George Graue, W9BKJ, and Thelma Zimmerman, W9JYO, were pleased with the results of the five day operation, July 6th thru the 10th, across the country from San Carlos, California, to Philadelphia, Pennsylvania, and at each of the eleven stop-over cities in between. W9BKJ summarized that flyers' progress reports were relayed rapidly, with the bulk of traffic moved on 3900 kc. and 7250 kc., as conditions warranted. (Portable v.h.f. equipment was generally used at the airport for initial relay to city stations.)

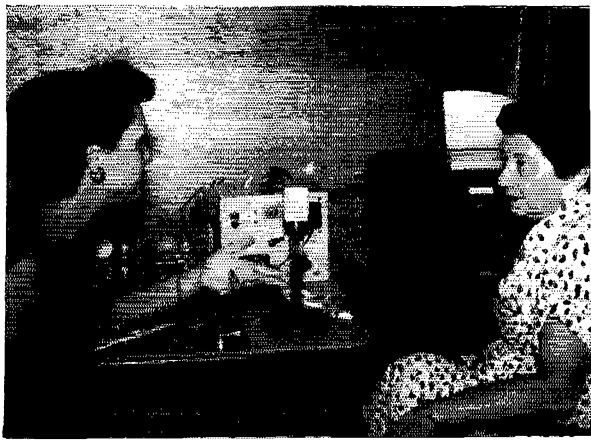
At the start of the race, the San Mateo County Airport was linked by teletype to amateur station W6PHS set up at the Villa Hotel in San Carlos and to amateur control station W6YFM in Belmont. Hal Jones, W6ZVV, and John Chamberlain, W6IUK, made the initial relays via a v.h.f. audio frequency shift keying teleprinter setup at the airport. Coordinating the information at the hotel were Chuck Bey, W6PHS, Jeri Bey, W6QMO, and the chairman of amateur communications for California, Rose

The initial take-off at San Mateo County Airport in San Carlos, California! The exact time of take-off of each of the 49 planes was carefully logged by both race officials and amateurs at the starting line.



On a plot board in the lobby of the Hotel Villa in San Carlos Rose Jolly, W6QPV, chairman of amateur communications for California, kept up to the minute on the progress of each of the planes with information received via teletype link with the airport.

The two meter teletype station at the Villa Hotel was operated on race day and the day before by Chuck and Jeri Bey, W6PHS and W6QMO, and Rose Jolly, W6QPV. Rose (left) and Jeri (right) are shown in the photo.



Jolly, W6QPV. At control station W6YFM information was received via teletype and relayed eastward on 40 and 80 meters by Howard Hale and Jim Jolly, W6WRI.

The function of the amateur net was to closely follow the progress of each contestant along the entire flight route, to relay personal messages originated by the pilots, and to supply unofficial start and finish times to race officials.

More than one hundred women flew some fifty aircraft in the 2600 mile race. Mrs. Alice Roberts of Phoenix, Arizona, Pilot, and Mrs. Iris Critchell of Palos Verdes Estates, California, co-pilot, placed first in the handicap. Flying a Beechcraft Bonanza, their average ground speed was 188.54 m.p.h. Esther Gardiner, W1YUO, of Waterford, Connecticut, was co-pilot of the aircraft which placed third.

Contestants included school teachers, grandmothers, aeronautical engineers, fashion models and flight instructors, acrobatic flyers, artists, and housewives. Some co-pilots held student licenses, with as little as 25 hours flying time; one pilot had 7700 hours in the air. The race is sponsored by the Ninety-Nines, Inc., an organization founded by the late Amelia Earhart for women pilots.

Assisting amateur co-chairmen W9BKJ and W9JYO were the following chairmen of the stop-over cities: San Carlos, California — Rose Jolly, W6QPV; Reno, Nevada — Wilma Sowle, W7QJH; Elko, Nevada — Janet Small, W7QYL; Salt Lake City, Utah — Reva Paulson, W7QWM; Rock Springs, Wyoming — Heber Brown, W7PJX; Cheyenne, Wyoming — Gilbert Dugger, W7MNW; North Platte, Nebraska — Robert Applegate, W0EVY; Omaha, Nebraska — Robert Sleyster, W0OSE; Moline, Illinois — Curtis Roseman, K9AKS; Fort Wayne, Indiana — Esther Clifton, W9PFO; Akron, Ohio — Charles Whitaker, W8BDM; Harrisburg, Pennsylvania — Bernard Schmidt, W3VDA; Philadelphia, Pennsylvania — Edith Rosner, W3AAU. Scores of other amateurs aided in the relaying of traffic throughout the race, and W9BKJ expressed appreciation for all of the help received.

Carolyn Currens, W3GTC, will serve as net chairman for the 1958 race. The AWTAR committee will begin planning of the flight route early in September. The terminus will be Charleston, South Carolina.

WAC/YL Applications

Barbara Houston, W3OQF, custodian for the YLRL WAC/YL award requests that applicants for the certificate hold their QSLs until notice is given here of her new Iowa address.

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Coming Get-Togethers

The third annual Birthday Party of the Texas YL Round-Up Net will be held in Dallas, Texas, on Nov. 9, 1957, at "Choppy's". Details may be obtained from President K5BNQ.

We are happy to publish advance notice of coming YL get-togethers. Please remember, however, that notices must be received at least two months prior to publication.

That's an XYL QSL Betty Chase, KØDTM, is presenting to John Froome, M. C. of "Party Line," a local TV ladies show on KAKE-TV, Wichita, Kansas. Betty extended the QSL with the good wishes of twenty XYLs of members of the Air Capital Amateur Radio Association present in the studio audience. The "ACARA Gals" wore club hats, and according to KØDTM succeeded in hamming up the show, while generating some local publicity for ham radio via video.

A HAMFEST

I was asked to go to a hamfest
  And I thought that meant eating ham
But to my surprise I soon found out
  Just what a dummy I am.
    The hams at this feast were all human
      And not the four-legged kind;
    The one interest they all had in common
      Is transmitting just what's on their mind.
It was a da-dit-da on one hand,
  And a dit-dit-dit-da on another;
Or a C.W. fan arguing
  With a phone band man, Oh Brother.
    How's your grid drive in the final?
      How's your power supply holding up?
    You got a QSL from Russia?
      You sure are a lucky pup.
I'm using an old folded dipole,
  Not me, I've got a beam;
Well now me, I'll stick to a longwire,
  For the calls come in like a dream
    How's everything up on 80?
      I don't know, I'm on 75;
    Not me, I'm strictly a 10 man,
      Say that band's more dead than alive.
What'll ya swap for some 304 TLs?
  Say, gal, you can't give 'em away;
Someone hollered "Let's eat," BOY what a treat,
  It was the first thing I understood all day.

W. S. GALLANT

Reprinted in the May issue 1957 of the Camellia Capital *Chirps*.

Strays

K6JFK gets a bang out of his mobile rig. He recently blew a fuse during a QSO and, after searching frantically through the glove compartment, could find only a .22 caliber long rifle cartridge. Into the fuse block it went. He now needs a fuse *and* a new power supply. — *K6JYR*

The Morning After the Night Before

THE morning after. I somehow managed to get to the office. Not on time, mind you, but I got here. Although my head still throbs and I'm literally shaking from utter exhaustion, I made my way through the long, dimly-lit corridor to my own little one-windowed cubby hole.

I'm vainly trying to recall the happenings of the night before. I know it wasn't a dream. My wrists are stiff and sore and my fingers ache (my sacroilliac isn't doing so badly either!). My head still whirls, and my ears are ringing R-5 S-9!

As far as I can remember it was a perfectly ordinary day. I arrived home from the office about 5:15 and scanned the ice-box for supper. After satisfying my insatiable appetite (and *that* isn't easy!), I went down to the shack. From here on things get pretty hazy.

I can remember putting the finishing touches on my new transmitter and checking all my antenna connections. My one-week-old vertical, like the transmitter, had yet to be put to the test. As the final connections were made, I could feel a sudden surge of excitement beginning to grow . . . you know, that ol' butterfly feeling.

I threw the receiver on and placed the transmitter back in its chassis. Got everything all tightened up and flipped the switch which controlled the filaments. It did my little heart good to see the green light go on and a faint orange color appear in the tubes.

I put the receiver on 15 and listened around a while. Heard nothing but a few faint signals. S'funny, now that I think of it. I can remember exactly where I set the v.f.o., 21,020 kc. I tapped out a CQ. Nothing. I tried again. Still nothing. Being a man of patience, I sat back and lit a cigarette, took a deep drag, set my jaw tightly, and tried another CQ. An amusing thought flashed across my mind. Why not slap a "DX" on the end of that CQ? I chuckled to myself. I couldn't even raise a W let alone a DX station. But being a perfect slave to my own whimsical notions, I tagged the CQ with a "DX," signed my call, and dah-di-dah'ed. Then it happened. My heart pounded, spots danced before my eyes, and although the sound was in my earphones, I still moved closer to the receiver. I don't remember the rest. I must have collapsed.

--THE DXER

As I sit here in the office, head in hands and in dire need of a shave and a cup of coffee, a cynical voice lifts me from the abyss of despair to the realm of realism. "Well, the DXer finally made it to work!" Yes, that was it! That's what had happened, I had worked my first DX station, a . . . . a . . . an 11, I had worked an 11. "The DXer," I revel in that glorious word. Just think, only 99 to go! — *W1FGF*

Strays

"DX Night" at the Milwaukee Radio Amateurs' Club brought forth these displays of cards. In all, there were 20 displays, and it was quite a colorful exhibit of the interesting cards that can be collected by a DXer. The display was arranged by the club's DX chairman, W9FDX.

How's DX?

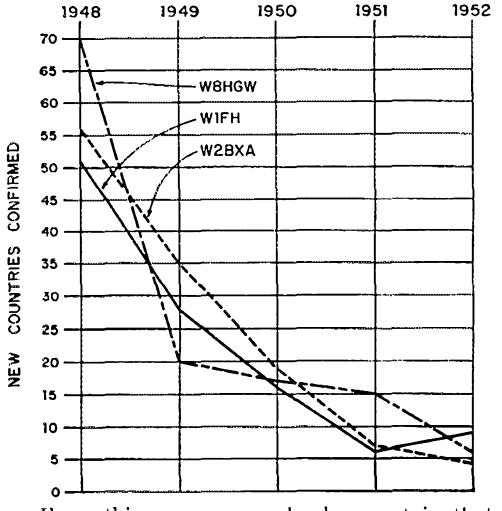
CONDUCTED BY ROD NEWKIRK,* W9BRD

How Not:

We strive to limit our preachments on negative DX aspects. Ham radio is meant to be pleasant, and we prefer to accentuate the positive. A certain soapbox responsibility falls our lot, however, and sober October is as good a month as any to discharge a portion of this obligation. . . .

In high-pressure 1957 it seems strange to contemplate the fact that your ARRL DX Century Club and its Countries List were conceived in the middle 1930s more as a *means* than as an *end*. A stable DX yardstick was badly needed then, a reliable measure of station-operator long-distance effectiveness as an answer to the pertinent question, "How'm I doin'?" DXCC delivered. Subsequent years of painstaking administration and promotion have caused DXCC to become a wonderful game within The Game, an urgent incentive of itself. And no other certification of ham communications achievement has ever been wooed with such steadfast and universal zeal.

So much is all to the good. Ham radio is a hobby, a hobby is supposed to be fun, and programs such as DXCC are designed to enhance that enjoyment. But there is perspective to be maintained. ARRL Communications Manager W1BDI puts it well on page 77, August *QST*. *I.e.*, there are other things in DX life besides a numbers game. There had better be, because this graph, based on cold statistics appearing in our October 1952 "How's" effort, points up a massive moral:



From this anyone can clearly ascertain that DXers who become totally obsessed with the collecting of "new ones" are doomed to have their pastime pitifully peter out. It's inevitable. If a numbers angle is the *only* kick they've conditioned themselves to derive from DX pursuit then the inexorable law of diminishing returns will wither their fun, dry it up and blow it clean away.

So don't be like the bird who takes wonderful week-end drives into the country but misses all the scenery because he's too busy watching mileage roll up on the dashboard. Sure, it's interesting and necessary to know how far we've traveled. But an *ignis fatuus* of comparative numbers never was intended to be the intrinsic end of all DX effort. Relax — savor your DX. Linger awhile and enjoy the beautiful rolling DX bandscape!

* * *

Losing a little perspective is one thing; each of us is susceptible to this at one time or another. But going clear off one's rocker is something else again. In any contest — DXCC fundamentally is a long-range never-ending contest — some immature and mentally unstable participants really pop their tops and get carried 'way off the beam. Indeed, some DX-stricken BB-brains have been known to go off their rockers to such extent that they willfully violate the legal power input limit, rig bogus QSLs, intentionally gum up frequencies, and pull other puerile stunts well calculated to alienate their saner DX associates and the amateur world in general.

Some offended victims and shocked observers would go so far as to blame DX, DXCC and the ham radio environment itself for such sordid psychoticism. Don't you believe it. Chronic eight balls are just as disreputable in any other pursuit, be it collecting stamps or breeding guppies. It is unfortunately true, however, that the very nature of amateur radio makes all of us particularly vulnerable to the depredations of sneaks who

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 the FCC Public Notice of December 21, 1950 (p. 23, Feb., 1951 *QST*), and as since revised.

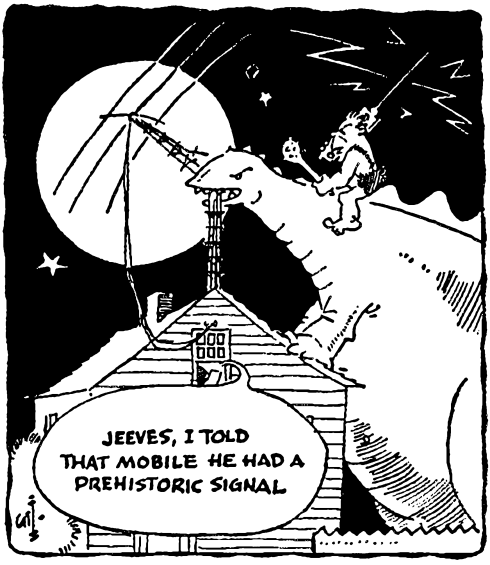
Cambodia (F1S, XU), Indonesia. (PK, YB-YH), Iran (EP-EQ), Korea (HL-HM), and Viet Nam (F1S, XV, 3W).

For those whose *QST* files do not go back to 1950 we will gladly supply, upon request, literature describing the circumstances of this prohibition.

*4822 West Berteau Avenue, Chicago 41, Ill.

bravely bilk their colleagues from behind locked doors. This for the sake of a hobby!

We are fortunate in one respect. Many of these megalomanic misfits burn themselves out like short-fused ionospheric stinkbombs, quickly wearied by their own obnoxiousness. But each new DX generation bears a small fringe of such vipers. At the local level especially, these pests can spoil a lot of fun. They must be attenuated at the local level and it's heartening to note that some of the clubs mentioned last month are seriously concerning themselves with this problem.



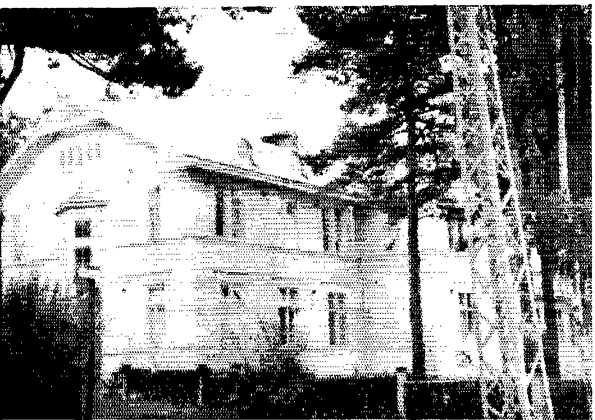
What:

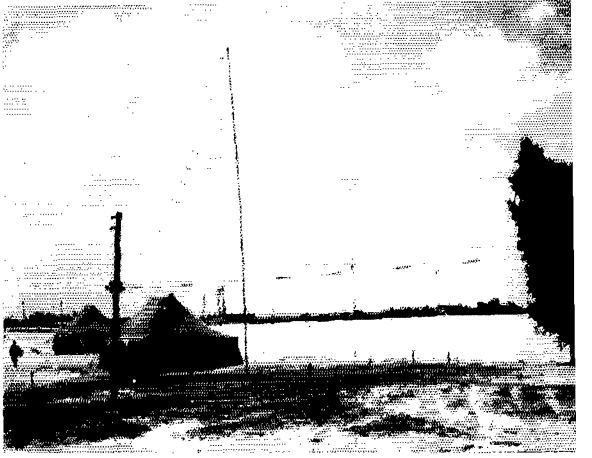
October may be poetically sober but it's also one of the most DXceptional months of the year. Ten-meter time! Solid strapping 7- and 3.5-Mc. DX signals at your fingertips, while 20 and 15 meters, DX mainstays all summer, take on a lively long-path wide-open tone. Even old 160 crashes the act with surprising miles per watt. . . . In the following reports of DX activity over the past few weeks frequencies (in number of kc. above the lower band limit) appear within parentheses, times without. *E.g.*, (9) = 14,009 kc. if the paragraph treats 20-meter work. Times are GMT using the nearest whole-hour figure such as 7 for 0720, or 0 for 2349. As a rule, for space considerations, each DX-station suffix appears no more than once per band-paragraph. . . .

40 c.w. is back with a bang as signal-to-static ratios bar once more. Let's start with *W1YNP:* **LZ**1KPZ, **SP**6EG, **UB5**KDQ, **VP3VN**, **YO**s 6KFA 7DL to reach 145. *W2EQS:* **4X4**RE (35) 3, **5A5**TZ (30) 3, VP3. *W2HUG:* **CN8**BL, **PJ2**AW, **SP8**CP, **VP**s 5BI, 8CW, **YU2**HEF, finds his 7-Mc. stuff between 7010 and 7035 kc., uses a 44-ft. rainpipe vertical. *W2JBL:* VK 8M. heard **LZ**s 2KML 2KWR 2KPZ all hugging the low edge. *K2PGP:* **CT1**CN, **OK**s 1AJB 2HW, PYs VKs, rare prince Edward Island's K2UUT/VE1, made it 72/44. *W3FMH:* **CT1NT**, **LZ**1KRU, **YO7**DL, **YU3**HIJ, runs 40 watts to a BC-459, plans a 7-Mc. Lazy-H; heard **HA3**MA, **LZ2**KSB, UA2KAW, **UB5**KKK, **VQ4**RZ, **VS9**AT, **ZP5**HK. *W3MQY:* nailed that HA3 plus **ZS1**IC (37) 0, 5A, has 98 countries confirmed on 40. *K5DKL:* KH6 VK. *K5GHP:* **WH6**CEA, XE2RC. *K6KIV:* **JA**s 1BJH (3) 13, 7IW (15) 13, LU2YRM (25) 11, **UA0I**J (25) 11, also raised s.s.b. **JA**s 1AVS and 1MQ with c.w. calls (3) 13-14. *K6QEY:* closing in on AJD and WJDXRC thanks to QSOs with **JA**s 1ACA 1AEA 1CO 1EC 1EF 1GF 2AQ 2BL 2LC 2RA 3BG 3MC 3MF 3UU 3XY 3ZT 3ZU 4HM 4JL 5AB 5AI 6MZ 7AZ 7BO 7FS 8AA 8AH 8GK 9BY 0GG 0HF. *K6QHC:* JA VP8, **VS1**GL. *K6RGO:* **DU7**SV, four JAs, XE2LT, KR6 KL7s. *K6SHJ:* **KL7**AVF. *W7DJU:* **KR6**AK, VKs VP8. *VE8OJ:* K2OBJ. . . . . Don't-hold-your-breath-for-QSLs contacts: CS3AA by Ws 1YNP 8YFJ, K2PGP; BV1US by W3FMH, Ks 2PGP 0DON; and PX1YR by K2PGP. . . . . In the dark hours the **Novice** DX spotlight swings to 40 from 15. Luck at *KN2UZJ:* **WH6**CBX (158) 1 on AT-1 and dipole. *KN4KTN.* **WH6**CBY (167) 10. *KN4MZN:* **WV4**BW (175) on a CQ. *KN5KWC:* **WH6**CHV on DX-20, ARC-5 receiver, doublet. *KN0HGB:* **KH6**BXH.

20 c.w. enjoys its usual equinoctial boom despite occasional auroral jitters. Zeroes first — *W0NCS:* came out of DX retirement for **FB8**CD (195) of the Comoros, HB1UE/FL of Liechtenstein, **KP6**AG, **PJ2ME**, **UN1AE** (20) T5, **UQ2**AS, **UR2**AK, UQ2AS to reach 90/75 on his "tired old" 807s. *W0QGI:* **UR2**AR, **XW8**AG for 190. *K0ARS:* **HP1**LO, **KA2**s KS OZ, Jamaican **VP5BL**, now going after No. 57. *K0DON:* is tied with K0ARS after KV4BO. *K0DQI:* **EL1**R, **FE8**AE, **FF8**AC, **KP6**AL, **OA4**EY, RAEM, **TF2**WBO, TI2ES, UAs 1AI 3MIA, Leewards VP2, now 71/44. *W9JJN:* **CN2**AO (10) 22. *W8CCD:* **ZC4**GT (23), Sint Maarten. *W8IBX:* 77/54 via **HP1**BR, **KV4**AA (80) 21-0, **OA7I**, **SP9**EU, **UA3**ZR, **YO3**WL, YV5ES, FP8, Sint Maarten, Leewards. *K8ANX:* **TI2**VA, UA6KOB. *W7CSW:* **CR7**DQ, **XW8**AB. **XZ2**TH. *W7DJU:* **DU7**SV, **JA**s 1ACU 1BC 1QI 4AF 4AH 6CI 8AH 0GG, **KA**s 2MP 2SH 5MC. *W7DKH:* **JA**s 1AHC 1VE 5AI, KA2KS, **VK9**XK 9-10, **ZK2**AD 9, KV4 DU on 65 watts and 12-ft.-high doublet. *W7FBD:* Alands, **LA2JE/P** of Svalbard (15) 6 who seemed to go unnoticed, **5A5TZ** for 190 worked. *W7GYR:* **JA**s 1AL 1CC 3AZ 3UI, **KA**s 3CY 3JL 4AS 5MK, KV4 ZSs. *W7WMY:* **CN8**FW, **FK8**AC (90) 7, **HB**s 1GJ Glaris 4FE, **JA**s 1AJU 1BCO 2NX 3FT 6CI 7IV 0FZ/1, **KC4**USA (45) 7, **KG6**AAY 18, K9HRW/**KG6** (45) 8, **KR6**QW (60) 16, **SP**s 1JN 3PH 6BZ 9KAD, **UA0**KFG (50) 3, **UB5**UA (45) 5, **UQ2**BA (70) 3, **VS2**DW (50) 16, **ZC5**JM (75) 16, **ZE5**JA (80) 4. *W7YAQ:* reached 98/75 on **JA**s 2WB 4KM 7HL 8GA 0BI all 7-14, **KA7**DM (80) 7, KH6CV/**KW6** (75)15. **KR6**s MD (75) 9, RX (80) 15, **UA0**KCA (88) 14, UPOL6 (10) 15 near the North Pole, **VS**s 1HU (10) 14, 2FF (40) 15, 2FN (52) 15, both XW8s, **ZC5**AL (40) 10, XZ2. *W6KG:* **EL2**P (30) 5, **GD4**VH (80) 5, **HA5**DH (60) 5, **KG1**JA (40) 5, UPOL7 (100) 7 *'way* up north, **VK0**AB (20) 5, YV1AD (75) 6-7, **ZE2**JD (45) 7, UA3MIR (83) 18, one ZM7AC (80) 15. *W6RLP:* made it 131/100 because of **CN8**CJ (84) 7, **CR7**BN (35) 13, **EL2**L (49), 8, FB **FB8**s XX (38) 7, ZZ (28) 8, **FK8**AT (25) 10 on Lifou Isle, **GC2**FZC (47) 9, **KC4**USB (21) 9, LZ1KPZ (79) 4, **OX3**WE (119) 4, **ZB2**I (72) 9, **ZC5**RF (58) 15, **ZE**s

Clipperton, Cocos and Navassa were never like this! You can DXpedition to the Aland Islands in the sedately sumptuous atmosphere of Old Europe. OH2s FC, IK and KQ (shown here, l. to r., are OH2s KQ and IK) steamed to the islands aboard *SS Regin* in late July, entered their names in the Hotel Hjorten guest book, hauled their gear upstairs, mounted a ground-plane on that chimney, and then leisurely accumulated over 400 QSOs. To save wear and tear on that roof the management might well install a permanent all-band antenna, this coax-fed from a luxurious DXpeditionary suite appointed with a markka-in-the-slot serve-yourself ham station. Anyone for room service? (*Photos via W1VG*)





VE3AHU/SU logged contacts with some 100 countries on 14- and 21-Mc. phone since firing up on Gaza Strip in June. Shown here are ops VE3AHU and S. C. Hemsley, both of Canadian Signals, and they are assisted by VEs 1ACK and 6QK. That Levantine landscape supports a Canada-beamed rhombic and Lazy-H, an all-band trap-type radiator, and a 15-meter ground-plane. The transmitter is a BC-610; a Collins R-388 receives. VE3AHU leaves Egypt this month but expects that replacements will help keep Canadian UNEF members in touch with the homeland and well represented on DX bands.

2JBY (48) 14, 5JU (79) 14, **4X4JS** (67) 14, FF8 FP8 KP6 XW8 ZK2. *W6RZS:* climbed to 118/104 via **FK8AL**, **FO8AQ**, KP6 ZE. *W6ZZ:* some twenty G-men, **JA4AG**, **OE3VP**, KP6 ZK2, Leewards, **ZS2CV**. *K6ICS/6:* **HK5CR**, **UA0KJA**, **YV5BX** for No. 52. *K6LEB:* UA0 ZC5, **VR3B**. *K6LZI:* **BV1US** (67) 9–10, **4X4BX** (29) 5–6, KP6 KS6 XZ2; heard **PZ1AM** (9) 5–6, **UA0GK** (57) 13, **VK9VM** (17) 12, **VP8CW** (45) 8, **VU2KM** (41) 13. *K6QEY:* **CE9AS** (25) 12, **DU1RTI** 15, **FY7YF** (25) 9, **HH2OT** (20) 8, **HK5BY** 6, **KGs 1DT** 7 of Fletcher's Ice Island, **4AO** (20) 7, **VS6AE** 10, **YV4AU** 7, BV1 KP6 VK9 ZC5. *K6QHC:* **CX1BO KG1AX**, **LU1NE**, **YO3RM**, **UA0s** FB FR KKB, **UL7KBA**, **ZD9AE**, KC6 KM6 KR6 VS1s. *K6RGO:* **KA3JL**, KH6AIK, **KG6** on an AT-1. *K6SHJ:* CX2CO, **KR6AY** (80) 10, **KX6AF** (60), UA0 KS6. *K5BGB:* tried new 700-watter on **FP8AP**, **KC4USV**, **KS6AD**, **VQ6AC**, **VU2SX**, New Amsterdam FB8, UA0 XZ2 ZC5. *K5GHP:* **KA4EB**, *W4EJP:* **CE2GB**, **OA4FM** 2, **YV5GY** (100) 2, heard **UQ2KAA** (20) 2. *W4HKJ:* **FF8BZ** (60) 22, **UAs** 6JB **9KAB** (72) 4, **UB5s** KBB KCB KMA, **UD6KAB** (75) 0, **UG6AB** (60) 1, **UL7KAA** (84) 13, **VU2RM** (50) 11. *K4DAS:* **FY7YE** (50), **HA5AL** (4), **UB5s** KAW KBR, **YO3FT**, **ZK1AU**, FP8 SPs UAs UG6 UQ2. *K4IEX:* **OQ5GU** (20) 22, UD6, *W3CAZ:* **CP1CJ** (40) 0, **JA1BIQ** (94) 12, **OE8KI**, **SP4JE**, **UA1KAL**, DU FF8 HA UQ2, declares that Threes are insufficiently represented in these archives. *W3GRO:* Leewards VP2. *W3RPG:* monitored taboo 3W8AA (60) 9–10. *W2EQS:* **SV0WR** (10) 4, **UA3XL**, **VK9AD** (25) 10, **VP6KL** (100) 1, **VQ6AB** 23, **YO8MS** 23, **ZB2J** 22, **ZC4IK** (95) 3, **3V8GA** 2–3, FE8 FO8 FP8 KP6 UQ2 ZK1, Liechtenstein. *W2HMJ:* **DU1OR** (60) 10–11, **FO8AC** (80) 5, **ST2AR** (4) 23, **VK5TL** (55) 10 of scarce Australia Northern Territory, **VS1s** HC HJ HU all 10–11, **VS9AD** (20) 0, **YJ1DL** (20) 10, **ZC4CB** (60) 21, **ZL5AA** (50) 9 of New Zealand Antarctica, Spitzbergen, CR7 KC4 KP6 OH0 VQ6 VS6 ZK2, Kerguelens, wonders if anybody markets a "Stop DXing" pill. *K2CJS:* KV4, Dutch St. Martin. K6NCG, operated by *K2DGT:* **FK8AS** (110), **HK3JC** (80), **LX2GH**, **PZ1AP** (4), **UA9VA** (2), **VS1GZ**, **VS4BA** (9), CP1 FO8 FS7 KP6 KW6 OA VS2 ZC5. *K2ENO:* **UO5KAA**. *K2BZT:* **CR6CK** (35) 0, **FQ8AP** (42) 4, **OHs** 2RD and 3QC in the Alands, **SV0WP** (W3JTC) (60) 22, **UA9s** AU CN DI all 2–3, **UC2AR** (55) 2, **UD6DD** (79) 2, **UF6KAF** (38) 4, **UH8BA** (58, 90) 22, **UI8s** KAA (37) 2, KAE (10) 2, **UL7KBK** (62) 3, **UM8KAA** (50, 95) 0, **UO5s** AA (21) 2, PK (78) 1, **UP2AT** (68) 1, **ZC4s** AM (6) 2, GT (50) 0, one 2G1AE (6) 0, **4X4s** IM (48) 23, IX (37) 3. Liechtenstein, FE8, Spitzbergen, KS6 UQ2, Leewards, VS9. *K2GFQ:* **CRs 5SP** (135) 7, **10AA** (95) 13, KS6 UM8, Kerguelens. *K2IKS:* DM2ALN, TT2AA, UA1KAG, **YU5GN**, HA. *K2MGR:* FP8 SV0 UO5. Liechtenstein. *K2PGP:* **YO3FB**, HH UB5 4X4, still stalks **YI2DC**. *K2PRR:* **HA5s** AIR AP both (80) 17, **TI2PZ** (76) 17, FP8 SPs VKs galore. *K2QXG:* VS1 ZC5, shadows **KG1BB** (35) 2–3, **VK0PK** (70) 8, **VU2CR** (50) 10–11, that UPOL6 and one **HA0KHB**. *K2SLL:* LU1AA. *W1BDI:* **ZD4CM** (44), **5A1FA** (47). *W1BPW:* **FF8AJ** (60) 12, **HH2CL** (80) 22, **IS1CXF** (20) 21, **LX1DA** (75) 21, **KR6MD** (60) 12, UA1AS, UA3s DA KAF, **UA4s** HC KSA, **UA6s** AJ KEB, **UB5s** CI KKA UX, **UQ2AW**, **UA9CM**, **VP5BH** (60) 12, one ZA1KAA (20) 23, FY7 OA OQ SV0 VK9, Leewards, now has 103/70. *W1DBA:* **DMs** 2AIB 3AVU 2FGO 3KXH, **HAs** 8WS 0HC both (50) 22–1, **SPs** 2CI 5BP 8CP 8FT 8HU all (35–65) 2–3, **UAs** 1DZ 1KAP 3AC 3BW 3WZ 4HL 6KVB 6LF 6UL **9AU** (50) 2, **UB5s** CZ DU (40–45) 0–2, **UC2AD** (50) 3, **4X4CJ** (10) 3, OQ UD6 UO5 UQ2 VS1 YO YV, numerous VKs. *W1HKA:* **OE5PV**, **SP1KBT**, **UB5KIA**. *W1JMI:* **FB8BX** (70) 12, **VR6TC** (20) 8. *W1YVP:* **CE9AQ**, **CX5PV**, **JA3BB**, OA4EY, OY1R, UA6UL, FY7 UP2 UQ2 YV, Sint Maarten. *I1ER:* W7CXZ—Utah! *KH6CMM:* **AC4HN** (15) 14. *KL7BPK:* **JA3QY**, K2HLQ **KG6** (75) 8, KC4 KP6 VK9 VK0, needs only Maine for WAS after catching W3IYE for Delaware. *ON4KT:* **CR4AH**, **LUs 4ZB 9ZC**, **UL7s** GN KAK, **YV5HL**, **VK9JF** of Cocos-Keeling, **ZC4H**, **ZS3B**, DU KA OH0 ZA, **4X4YL**. *VE8OJ:* **CE3RE**. **KJ6BD**, OX, is overrun with Russian listeners' reports.

20 phone's favors were sought and won by *K2BZT:* **FB8BC** 4, I1ZJG/M1 3, **I5FL** 4, **SP5KAB** 4, VE3AHU/SU 0, **VK9YT** 12, **VQ5GJ** 22, **VQ8AL** 4, **ZC4CN** 4 and **3V8AS**. *K4DAS:* **CR5SP**, **KG4AO**, **TG9US**, **VP9DC**, **YS1MS**. *K4IEQ:* **KA2KZ** (170) 7, **KG6AAY** (280) 6, **KS4AY** (240) 3, **KH6BZZ** **KJ6** (260) 5. *K4IEX:* **VP7NP** (200) 20. *K5BGB:* s.s.b. customers **KA0SC**, **KG1HL**. *K6ICS/6:* the aforementioned YS1 regular. *K6LZI:* **s.s.b.** fan **HS1A** (295) 14, heard side-banders **TF2WBU** (302) 5, **VS6s** AZ BE (302) 14, **5A5TH** (310) 5 and a.m. **VR4JB** 8–9 on 14,114 kc. *W7WMY:* **KA2CU**. *HK7LX:* **CE0AC**, **CNs 2BK 8FQ**, **DU7RL**, **FO8AC**, **4S7s** MG YL, all after midnight Colombian time . . . . . **TF2WBU**, working s.s.b. with K9HZM's 10-B driving 813s, had a busy afternoon in August with **HS1A**, **DJ1CE**, **DL4VT**, **G8OO**, **OZ3EA**, **GM3CIX**, **SM6SA**, **ON4DM**, **VQ4EO**, **ZF5JJ** and **ZS6AJH**. "This is the first time I have ever heard such excellent DX from this location!"

15 c.w. surveys roll in from every call area and this range is cookin' with hydrazine! Down the list we find *W0WHW:* **CN2AQ**, **CR7LU**, **DU7SV**, **FO8AC**, **OD5XX**, **3V8AO**, **9S4CM** to reach the 103rd plateau. *K0CER:* **JA1CC** (62). *K0DMY:* **HA8WS**, **LX1AS**, **OH3QC 0**, **OQ5HP**, UA6KOB, **UC2KAB**, **VR2AM**, **VS6s** DO DV, **YO2KAB**, **ZC4FL**, 5A3TO, DU FO8 3V8 to make it 104 worked with his 813. *K0GCZ:* **OKs** 1KTI 2LW. *K0GRS:* **DM2ALN**, **UQ2KAL**, **WP4AIT**, **3V8AQ**. *W8CCD:* **FA3OA** (62), **GD3FXN** (43), **UB5AQ** (64), **YO8MS** (51). *W8IBX:* **LA8ZC**. *W8YGR:* scads of Euros, **OKs** 1MB 3AL, **3V8AD**, CN2, Leewards on 50 watts, says "Next year I'll be 51 and will raise my power to 51 watts." *W7DJU:* **LA5HF**. *W7QNI:* Leewards, 3V8, sundry Europeans. *W7YAQ:* **DM2s** AEK AJG both 0–23, **HA5AM** (40) 6, **HP1LO** (20) 2, **JA1AAW** (80) 4, **KG1JA** (20) 17, **LZ1WD** (60) 16, **OH3UI 0**, **SV0WP** (15) 20, **UJ8AF** (80) 5. *W6HPB:* **CT1CF**, **OK3DG**, **PJ2ME**, **SP3PL**, **VP6PL**, XE1PJ, GD OH0; heard **FQ8AU**, **UB5s** UW WF, **UQ2AS**, **VQs 2RG** 4EU 4GP, XW8AG, **9S4AX**. *W6RLP:* **LZ1AH** (16) 6, **ZB1CR** (12) 6. *W6ZZ:* 3W8. *K6ICS/6:* FA, Sint Maarten. *K6LEB:* **KP6AL**, **VP7NB**, Alands. *K6PBI:* **HA5BI**, **SP2BK**, Alands. *K6QHC:* **CE3DZ**, **KX6AF**, **JAs** 1AA 1ADW 7AD, VK7KM. **VK9**, **VS6DW**. *K6YBQ:* **HCs** 1WP 2GR, **OAs** 4BP 5C, XE2BC. *K5DKL:* **LU8EE**. *W4EJP:* **EI4A** c.w.-to-phone. *K4CWS:* **DM2ADN**, **OA4AU**, **OK3EM**, **SPs** 3PL (20) 3–4, 6EG (55) 3, UA1DH (43) 6, **YO3WL** (60) 5, LZ UB5 3V8, heard **UC2AX**. *K4HQD:* **UB5ER**, still seeks **MP4BBL** (22) 4–5. *K4IEX:* **VP5CM** (250) c.w.-to-phone. *K4OJW:* **FF8AC**, **UA3IX**. *W3GRO:* many Euros, **FF8BZ** (100), **WP4AJZ** (108). UC2, Dutch st.

Martin on one crystal frequency. *W2EQS:* **ZC6BU** 20, **XW8AB** (100) 19. *K2PGP:* **HA5BW, HH2LD, TF2WBZ, UA1KAS**, French St. Martin's **FS7RT** (W6ITH). *W1YNP:* GB3SP only England, **HA1KSA, JA7AD, UAs** 1BE 9CR, **UO5AA**, that 2G1AE, **4X4FQ**, HP1 984, *I1ER:* **CN8FM, CR6KR, JA5AI**, all W, K areas save No. 9. *KL7BPK:* **HC7WK** (140) 3, was **LU1VV**'s first KL7. *ON4KT:* **CP1CJ, JA1AH, KN8CRJ**, heard **FU8AA**.

15 phone has just begun to roll again. Sneaking under the tent early were *K0CER:* **CR6BH** (246), **HI7TB** (227), **OK1AA** (252). *K0DON:* **VP7NV** 1-2. *K0GRS:* **CN8GL, HH2s DB RM, KG1HL, OA4EU**. *W9BEK:* **DU6IV, ET2PA, FB8BX, FS7RT, KB6BF, KC4USK, PJ2MC** (W6ITH), **VQ6ST, VR6TC, VS4JT, ZD4BR, ZK1BS**, KS6, now at 130 113 on 21-Mc. phone. *W8CCD:* exhibition station GB3SP, **HC1DL** (175), **HK7AB** (209). *KG1JA:* (258), **VP4LO** (250), YN1TF (250). *W7YAQ:* KA2MA (230) 23, **KR6AU** (280) 5. *W6ZZ:* climbed to 112 phone countries worked, 99 on 21 Mc., with **KB6BE, KW6CJ, KX6BQ, VR2BC, ZLs** 1AFQ 1DE 3FM 3JD, KS6, sneaked away from his favorite band for sporadic cracks at 20 meters. *K6ICS/6:* **HR1EZ, TG9US, VR2AZ**, various MMs. *K6PBI:* **CN8FY, CX2FH, KA2AL, OE5CK, TF2WBZ, ZLs** 1GH 2MA on 100 watts. *K4HQD:* **CN8GX** (365) 23, **HP1LB** (320) 23, **TI2CHV**, VE2YE, **VE8** (325) 2 on Baffin Island, **VP1EK** (163) 22, **ZD6RM** (165) 19. *K4IEX:* caught DXpeditioner K2CPR signing **FP8AA**. *W1PMZ:* has 172 worked on 15 including **CN8s** BC FN HB JW, **CT1OR, ETs 2PA 3XY, KGs 1CT 6AGO, WØBLV, KG6**, **MP4BCC, OE5FK, OQ5DT, TG9WB, UA1BE, VP6WR, 9S4CM**, missed **VS2DO**. *W1YNP:* **ZP5s** MC MD. 5A1TJ. *ON4KT:* **ZP5CF**.

15 Novice frequencies are QRV for the fall rush. Nice worms caught by early bird *KN2UTC:* **CN2AQ, GC2CNC, HC1LE, IT1AI, PZ1AQ, SVØWZ, XE1BI, 3V8AD, 4X4JT**, 5A3TO, has half-DXCC. *KN2YIZ:* **HC1FS** c.w.-to-phone, **OK3BG, SP1KAA, TI2EA, UA3CR**, VK3s, **VP2AD, ZB1DC, ZL1APM, ZS6EU, WL7BYA** on 50 watts and dipole. *WN3JEE:* **SP6EP**, other Europeans, likes his 8JK beam. *KN4LHC:* **DL2YU, OA4AU, WL7BWY, WP4s** AJI AJZ, **YO3WL, YU1NM**, more Euros with Adventurer, S-38, 7-Mc. doublet. *KN5HMS* (now K5HMS): closed his Novice DX career with 19/17, advises *WN/KN* DX hunters to do more listening and less CQ-DXing. *KN6ZDL:* **CE3RE, CX1FB, PY2BQI, VS1HC**, VK WL7 ZL on Ranger, 75A-1 and beam. *KN0GZY:* **CM8EM, OH1ST, ON4MV**, WL7 WP4, other Europeans and Oceanians. *KNØHGB:* **JA1ADN, KZ5KK, OK1LM, OY2H, WL7s** BXV CAJ, **WP4** AIS, **UQ2AS, ZL1ADM, ZS6EU**. *KNØHJY:* **WP4AIU**.

10 phone, spotty into September, supplied entertainment for *W6ZZ:* a dozen different KH6s, KH6CV/**KW6, VK2AMD, ZL1s** BY GJ. *K6LOM:* **KX6AF** (700) 2, **VR2DB** (400) 1. *K6QHC:* **VP6GN, ZL1GH**, KX6. *W8GUZ:* chases **VS9AI, ZD3BFC, ZS8I** (60) 15-16, has 105/97 on 28-Mc. phone alone. *W8IBY:* **VP6US**, YN4CB. *KØDON:* CX8CD (400) 0. *HK7LX:* **CE3QG, CN8CR, CX2s IY LU, EA8BV, OQ5AZ, VQ2NS, VS2EZ, ZC4IP, ZL4AU, ZP5CZ, ZSs** 1NI, 4PB 5MP 5OV 6APA and a hatful of W/Ks. . . . . **Ten c.w.** grudgingly gave up **CP1CJ** (50) 17-18 to W2EQS, and **KZ5EH** (280) 21 to W7YAQ.

Lower frequencies had little to offer the long-haul sports in late summer although W7DJU and other westerners picked up such stray **VKs** as 3FC during the wee hours on **80 c.w.** . . . . . W2EQS and **FP8AA** (K2CPR) shattered the late-summer calm on **160 c.w.** with a July "first" when an 1810-kc. 0300-GMT schedule paid off in fine style . . . . . Apparently about a third of us have schedules with Asiatic influenza this year or next. The darned stuff already has made WAC and is well on its way toward DXCC and WAS. If you *do* catch it, kang, may your cases be mild and may your convalescences be chock-full of DX!

Where:

Europe — Regarding our August mention of the SARL (South Africa) QSL bureau policy, ON4KT writes: "Our UBA bureau does not handle cards for nonmembers, either. *Call Book* QTHs are the best bet for ON4s although most active ON4s are UBA members." Then Ted adds, "ON4CK has answered all QSLs received for past ON4CK/LX work. . . . DM5MM/MM tells me that he was on land and officially licensed during his ZA2ACB activity." . . . . . OVARA has it that some 3000 UA1KAE Antarctica QSLs are being readied for the mails. . . . . The prefix UA and its numerical indicators cover an awful lot of ground. Without *Call Book* info to help you perhaps this rundown, courtesy Austria's OVSV, will be of interest: **UA1**-A-B-C-F-KA-KB, Leningrad; N-O-P-KE-KF, Archangel; Q-KI, Vologda; T-KM, Novgorod; Y-Z, Murmansk. **UA2**-A-KA, Kaliningrad. **UA3**-A-B-C-D-F-G-H, Moscow; I-KE, Kalinin; M-KH, Jaroslav; N-KI, Kostroma; P-KK, Tula; Q-KL, Voronesch; R-KM, Tambov; S-KN, Ryaschen; T-KO-KT, Gorky; U-KQ, Ivanovo; V-KS, Vladimir; W-KU, Kursk; X-KW, Kaluga; KY, Briansk. **UA4**-A-KA, Stalingrad; C-KC, Saratov; F-KE, Penza; H-KH, Kuibischev; M-KK, Uljanovsk; N-KN, Kirov; P-Q-R, Tatar; KU, Mordov; KY, Kuvasch. **UA6**-A-KE, Stavropol; J-KV, No. Osetin; L-KO, Rostov; P-KP, Grosny; S-KS, Krim; U-KT, Astrakhan; and KW, Daghestan. Which carries us into

Asia — **UA9**-A-KA, Tscheljabinsk; C-D-KC-KD, Sverdlovsk; F-KE, Molotov; K-KH, Tomsk; J-KJ, Tyumen; M-KM, Omsk; O-KO, Novosibirsk; Q-KQ, Kurgan; S-KS, Schkalov; U-KU, Kemerovo; W-KW, Baschkir; and Y-KY, Altai. **UAØ**-A-KA-KB, Krasnojarsk; F-KF-KG, Kabarovsk; L-KK-KO, Primorsky; O-P-KP, Buryat-Mongol; KQ, Yakutsk; S-KS-KT, Irkutsk; and U-V, Tschita. . . . . "I operated KAØIJ on Iwo during the fall of 1955 and got thoroughly messed up there. Was evacuated to Japan for surgery and then a typhoon wrecked the island, blowing the station over a cliff, before I got back. In fact I never did get back! Much of my log was lost and it turned out to be quite a mess. I did send out many QSLs but was always with the feeling that I'd lost some somewhere." That from rover W3YHI (see "Whence"). Goes to show you what severely DXtenuating circumstances can develop 'twixt QSO and QSL. . . . . The grapevine informs W2HMJ, KP4KD and others that oodles of overdue XW8AB QSLs are about to circulate. . . . . WGDXC learns that XZ2TH is a philatelist — adorn your mail accordingly . . . . . NNRC suggests that G. C. Voller, 13 Marlborough Rd., Ashford, Middlesex, England, may assist in confirming 1956 YI2AM contacts.

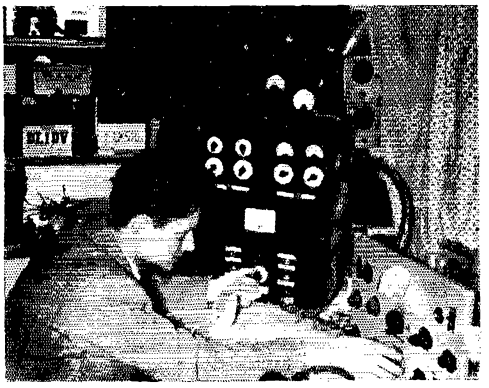
Africa — "I was active in 1951 as ZD2AO, Port Harcourt, Nigeria, and I've just discovered that a number of cards, both to and from stations worked, were lost in the

I5REX, with I5FL pictured last month, has contributed more than his share of Somalia DXCC credits to the North American crowd. Ed, like almost all of some twenty licensed I5s, radiates from the Italian trust territory's capital, Mogadiscio. (*Photo via I1FT*)

"HB9EU holds about every worth-while DX award in the books. His 813 rig, one-third of a mile away from this shack, v.f.o. on 80, 40, 20 and 15 meters, is remotely controlled over a 430-Mc. link. That receiver is a triple-conversion job. Rudi's an amateur's amateur!" This from ARRL Communications Manager W1BDI who visited HB9EU's Zug diggings with HB9QO during a jolly July swing through Switzerland.

mails." If this note from G2AO applies to you, glom the ex-ZD2AO QTH to follow. . . . . ZD4CM writes W6AM: "It is my intention to QSL all contacts. If any of the boys haven't had cards from me, and the delay seems unduly long, they should write and let me know." . . . . . VE3AHU/SU advises, "Since we started operations on the 1st of May we have sent out over 500 cards, maintaining a 100-per-cent service to all new contacts. Over a hundred of these have been Stateside QSOs. Who knows — if band conditions improve toward the west we may even make WAS from Gaza Strip!"

Oceania — VR6TC writes W1LVQ anent QSL difficulties on Pitcairn. Tom would roll off many more QSOs but for the fact that "QSLs just get too heavy." Any ideas for him? . . . . . ZC5AL tells Ws 1WPO and 2GT that IRCs are welcomed and are quite usable in his area. ZC5AL's first 1000 QSLs vanished in four months thanks mostly to eager W. Ks.



SP5HH's Warsaw installation is representative of Poland's current ham radio boom. W9OYZ points out that Warsaw Radio Club now sponsors these certifications of world-wide availability: AC15Z (All Countries 15 Districts) based on confirmed QSOs with FC, HA, HV (!), I1, IS1, IT1, M1, OE, OH, OK, SP, UP2, UQ2, UR2, YU, ZA, ZB1 and Trieste amateurs; W21M (Worked 21 Meridian Warsaw) requiring QSLs from CR6, FQ8, HA, LA, LA/P, OH, OH/Ø, OK, OQ5, SM, SP5, SV, UP2, UQ2, YO, YU, ZA, ZS, ZS3, ZS9 and 5A stations. For necessary details write WRC, P.O. Box 122, Warsaw 10, Poland.

Hereabouts — From beleaguered HKØAI: "I certainly appreciate all the kindness I have received from various hams that I contacted and would like very much to write each a personal note. But this is quite impossible because there are so many. I promise, now that my sister is here to help me, that every card will be answered sooner or later." This via W1s UED WPO, W6AM and other informants . . . . . W4IHKJ understands that YS1MS QSL chores for QSOs dating after August 1st are being handled by W3EQK . . . . . "I was VP5ML on Grand Turks last year and part of 1957, making quite a few contacts with amateurs throughout the world. After I returned to the States I spent quite a few months getting married and such, neglecting some QSLs. But all set to go now in my new QTH!" Marty's current K2SRN QTH follows . . . . . HH2OT writes W6RLP, "W4HYW does my QSLing from the States because it costs about 25 cents per card to send 'em out from here, up to 80 cents per card to some parts of the world." . . . . . The following whereaboutses result from the efforts of W1s BDI BIH BPW HKA UED WPO, W2s CNT EQS HMJ, K2s BZT PRR, W3s GRO RPG VZJ, W4ANE, K4s DAS HQD IEX KTN, W5OER, W6s AM KG LTX NAZ RLP ZVQ, K6s DV ICS, W7FBD, W8YGR, W9s JJN OYZ VCH, K9EDI, WØQGI, KØDQI, KNØHGB, TF3KG, 4X4CJ, Japan DX Radio Club, Northern California DX Club, *Newark News* Radio Club, Ohio Valley Amateur Radio Association, OVSV (Austria), Southern California DX Club, West Gulf DX Club and Willamette Valley DX Club:

CN8GX, R. A. Hunt, APO 113, New York, N. Y.
DL2YU, D. Willoughby, 22C Rothenbach, Post Effeld, 3 Kelenstrasse, Germany
DL3TG, K. Silber, Langenhorn 2, Hamburg, Germany
ex-F7ER (to K2JCS)
FB8XX (via FB8BC)
FP8AA (to K2CPR)
GD4VH, Glenburn, Phildraw Rd., Ballasalla, I. of M., U. K.
HA5DQ (ex-HA2KTB) I. Jonas, Budapest XX, Sagvari Endre, 80, Hungary
HC1WP, E. Escobar P., P. O. Box 461, Quito, Ecuador
HH2HH, P. O. Box 248, Port-au-Prince, Haiti
HH2Z, Box 72, Port-au-Prince, Haiti
HH3VC, P. O. Box 4, St. Mare, Haiti
ex-HP1EH (to HH2DL)
HA1M, A. Saggiori, Corso Vittorio Emanuele 6, Padova, Italy
JA1ADN, F. Ihara, P. O. Box 7, Ogikubo, Tokyo, Japan
JA7JL, Miss C. Osato, 15 Herita-Minami, Yamadashinden, Sendai, Japan
K2SWQ/KP4, P. O. Box 242, Rio Piedras, P. R.
KØDEG/KG6, K. Oliver, 852nd AC &W Sqdn., APO 334, San Francisco, California
KA4AS, Fushimi Radio Club, 10th US ASA FLD STA, APO 9, San Francisco, California
ex-KA5CL-W4DNU, P. G. Roemer, KH6CMM, Staff Allowance, FAW-2, Base Radio, USNAS, Navy 14, FPO San Francisco, California
KAØIJ (see preceding text)
KAØSC, APO 815, San Francisco, Calif.
KG1AS, 931st AC & W Sqdn., Box 95, APO 23, New York, N. Y.
OA5M, Box 1229, Lima, Peru
OZ4FF, Box 88, Roenne, Bornholm Island, Denmark
PY1KZ, P. O. Box 125, Rio de Janeiro, Brazil
PY2BKV, Box 540, Campinas City, Sao Paulo, Brazil
PY3PA, P. O. Box 256, Porto Alegre, Brazil
PY5AL, P. O. Box 260, Caritiba, Parana, Brazil
PY7YS, P. O. Box 417, Ceara, Brazil
SP1KBT, Box 148, Szczecin 1, Poland
SP5HS, K. Slomzynski, P. O. Box 92, Warsaw 32, Poland
SP9EU, Box 326, Katowice, Poland
TI2VA, C. A. Angelini, Box 441, San Jose, C. R.
ex-VK9AJ (to GD3GBG)
VK9JF, M. Fulton, Direction Island, Cocos-Keeling Gp., Indian Ocean, via Darwin, Australia
VQ1DQ/VE8, 920th AC &W Sqdn., APO 863, New York, N. Y.
VP2VB (via KV4AA)
VP5CM (ex-GW3CMK) (via VP5AO)
ex-VP5ML, M. Leeds, K2SRN, 67 Park Terr. E., New York 34, N. Y.
VP7NP, USN Mobile Construction Bn. 4, FPO, New York, N. Y.
VP8BS (to G4NT)
VQ2IB, P. O. Box 558, Broken Hill, No. Rhodesia
VQ6AC, Beven, Sgts. Mess, Hargeisa, British Somaliland
VQ8SP (to VQ8AP)
ex-VR3G (to G3KDE)
VS1HU (via MARTS)
VU2AK, L. King, Vehicle Depot, Avadi, Madras, India
WG6AHF, R. K. Kula, Stn. 8, Agana, Guam, M. I.
WG6AHG, J. Royse, Maite Barrigada, Guam, M. I.
WG6AHH, T. E. Blackburn, Qtrs. 1758, Bingham St., NAVCOMMSTA, Guam, M. I.
XE2PY, L. Mordecai, 41 Mississippi, Col. de Valle, Monterey, Mexico
XZ2TH, Tun Hla U, 75 Bogyoke St., Rangoon, Burma
ex-YI2AM (see preceding text)
ex-ZD2AO, F. E. Wingfield, G2AO, 86 Leigh Sinton Rd., Malvern, Worcs., England
ZD6FC, Box 434, Limbe, Nyasaland
ZD8JP, John Packer, Ascension Island, South Atlantic
ex-ZE2KL, G. Metcalfe, Sgts. Mess, RAF Stn., Watton, Thetford, Norfolk, England
ZL1APM, C. M. Rowe, 8 Morrow Ave., Bucklands Beach, Auckland, New Zealand
3V8GA, Box 303, Tunis, Tunisia
5A1FA, J. Bergonzi, Ghadames, Libya

Whence:

Oceania — Cocos-Keeling chatter courtesy VS1BB: "VK9AJ's old rig now is operated by Mike Fulton, a New Zealander, signing VK9JF on 20 c.w. He is on most evenings around 1030 GMT and hopes to get an all-band rig going soon. Mike is a newcomer to the game and seems quite surprised at the wild pile-ups he causes! On West Island is another new arrival, VK6ZAE, holder of an Australian v.h.f. ticket. When he becomes proficient at c.w. he will be getting a full VK9 license." . . . . . *Reminder:* As detailed last month, the gala 1957 VK/ZL Test comes off on October 5-6 (phone) and 12-13 (c.w.). . . . . W6ZZ captured WAZL No. 38, only the fourth awarded to W. Ks, for confirming QSOs with 35 of NZART's 55 New Zealand branches. In the other direction W6ZZ also has worked 42 of England's shires . . . . . Collectors of significant ham literature might check with VK3NY regarding WIA's latest *Call Book* edition, a neat volume of 136 pages . . . . . Writes VR6TC: "I'm sorry I don't get on c.w. more often to give the chaps a better chance. I've been on only a few hours for a few evenings and have made about fifty QSOs." . . . . . NZART's Manawatu branch, ZL2HP secretary, makes available a WAM (Worked All Manawatu) certification based on the logging of QSOs with twelve Manawatu ZL2s after September 1, 1956. Check with award manager ZL2HT for the finer points . . . . . W6RZS's donation of 6AB7/1853 bottles pepped up FK8AL's SX-28 . . . . . CR1ØAA tells K6ICS that his new 6V6-807 ensemble is

rarin' to go . . . . . W3RPG finds ex-VR3G now active as G3KDE on 20 c.w. . . . . KH6CMM (W4DNU) and K2GNY take steps to help KP6s AK and AL spread the DX gospel from Palmyra. "We intend to spend up to three weeks on the island depending upon our transportation, working c.w. only on 40, 20 and 15 meters." Mac and Bill also have longer-range plans to do extensive island-hopping in other Pacific areas when both retire from the Navy next year. . . . . Club Oceaniagrams: (OVARA) A rundown on New Caledonia doings finds FK8s AB QRL on shipboard; AC active on 14, 21 and 28 Mc.; AH available on 14- and 21-Mc. c.w. around 0600 GMT; AL rebuilding and laying in new QSL stock; AO off to France; and AT, a separate job for DUF purposes, still busy on 7, 14 and 21 Mc., mostly c.w. (WGDXC) W6UOU/KS6 spiced up the August DX menu from Pago Pago with 20-meter c.w. and s.s.b. gyrations. Ted intended a VR5 stop but found that Tonga had disengaged from commercial airline service. . . . ZC3AC is reported inactive for want of receiving equipment. (JDXRC) PK1AQ, "QSL via PKRL," may or may not be in Indonesia but the prefix is out of bounds for FCC-licensed amateurs — and for all other law-abiding International Telecommunications Union signatories, for that matter.

Africa — More from VE3AHU/SU: "We still have to work our first Six or Seven and have only Iowa, Kansas and Missouri logged among Zeroes. But neighboring 4X4s, MP4s, etc., assure us that the western U. S. A. will come in as soon as the weather back home cools down. We originally went on the air in the hope that we might be able to reach Canada or the States every now and then to pass messages, get first-hand news, etc., but found conditions on 20 to be so good and so reliable that we have been able to maintain skeds every day with various stations across Canada for phone traffic. One thing, due to the intense heat here our working day finishes at 1300 local time; so we manage to make up in the afternoons for sleep lost hamming during the ungodly hours. Most frequently asked question is, 'Do you count as a separate country, OM?' Biggest pest: the ham who zeroes in and then calls every few minutes for 'a short QSO, OM,' and who, if ignored, calls consistent CQs on the frequency. But to counteract these are the dozens who act in the best traditions of ham radio. Sand, filtering in at 122 degrees in the shade, forces us to do a complete cleaning of all equipment at least once each week using vacuum cleaner, air hose and brushes. At least we have no worries of ice bringing the aerials down!" . . . . . EA9DF tells W8KML he's been reassigned to Spain. This tumbles Rio de Oro stock and Ifni DXpeditionary possibilities as well . . . . . W9JJN discovered that CN2AO is ex-EA4AO and a prewar luminary of wide DX renown . . . . . CN8FY (K4ESI) knocks off next month but meanwhile keeps watch for buddies on 20 and 15 phone from 1900 to 0000 GMT . . . . . W6ZZ learns of the passing of 3V8AN, former Tunisia QSL chief and remembered by the old DX school as F4AA of yore . . . . . WAS-wise, W7FBD hears that FE8AH needs only Utah for the full 48; he concentrates on Sevens around 14,035 kc. FF8AC scouts 14,070 kc. at 0600 GMT for Montana with his 50-watter . . . . . WVDXC mentions August activity by VQ8SP (VQ8AP) on tiny Cargados Carajos a few hundred miles off Mauritius (20 c.w.) while SCDXC mentions the return to France of FB8XX operator Louis.

Asia — "I tuned up once on 20 meters at KAØIJ, signed the call and never got a chance to call CQ," recalls W3YHI. "There was a pile-up beyond description right on top of me! I was forced to announce that I would answer no one within 15 kc. of me, purely in self-defense. It's impossible to describe the pile-ups that came along. I know many fellows didn't get answers but you can't work anyone when everyone lands atop you. Some fellows were unbelievers; they didn't get QSOs." This episode could almost be titled, "WAS on *No* CQs." . . . . . JA notes courtesy K6DV: JA8AA scored the first Japan-to-JA1JG/Antarctica phone QSO on 20 meters. Takeo prefers 14-Mc. A3 action but keeps an ear tuned to the c.w. segment because he wants to raise his total of 47 YL QSOs to an even 100. . . . Japan's prime minister saluted JA6 licensees for outstanding service during disastrous summer floods. Falling in step with Uncle Sam, more and more overseas authorities are coming to respect ham radio's full public service potential . . . . . From KA4AS: "We, the Fushimi Amateur Radio Club, have been on the air for only three weeks now and have made 114 contacts with 37 countries on 14-Mc. phone and c.w. W7WTU and myself (W9VCH) will soon be joined by several more operators and we QSL 100 per cent." . . . . . "At RAF club station VS1GL we are still feeling for the elusive last few rungs on the WAS ladder — Ark., the Dakotas, Vt. and some others," writes VS1BB, staff op . . . . . OVARA mentions UAØKAI in connection with Tannu Tuva emanations . . . . . WGDXC credits VS1HJ with Maldives operational intentions.

Europe — Notice a recent upsurge in I1 activity? Well, in commemoration of Christopher Columbus's voyage of New World discovery, the Genoa branch of Italy's ARI rather belatedly announces an annual Columbus Marathon Contest. The first of these, a 70-day session, concludes at 2359 GMT, October 12th. You still have a few days left to try your luck working I-stations; exchanges are merely RSTs or RSs and one's final score is simply total QSOs. The filing of results is interesting: Each candidate for various awards must forward before July 31, 1958, a claimed score; then the contest committee, on the basis of claims received, will request those with highest scores to submit transcripts of their logs which must be certified by two amateurs in the same country as the claimant. (This *modus operandi* is calculated to dodge bulksome paperwork and those of us who have seen blizzards of multipage contest logs buffeting ARRL Hq. can fully appreciate this objective. But three or more mailings are involved in this system instead of one conclusive filing, definitely a pitfall where a major contest is involved.) Furthermore, special awards are declared available for those who contact the greatest numbers of Genoa I1s in the affair (sixty are listed workable) and this facet

HK7LX of Bucaramanga, high in the Andes, has collected over forty United States and fifty countries on 10 and 20 phone since activating last June. Edmundo's rig, carrier-controlled with clamp-tube modulation, runs 200 watts.

requires that your I1-bound QSLs be shipped to ARI, Casella Postale 347, Genoa, Italy, to arrive by December 31, 1957 . . . . . *Another* marathon, this one sponsored by the Munich chapter of Germany's DARC: From October 1 to December 31, 1957 (no times given) amateurs world wide are invited to work as many Munich DJ/DLs as possible. Munich stations will identify themselves by appending "C12" to their calls. Scoring: "Each contact with a single Munich station is counted as one point per band. . . . The sum of points thus gained is multiplied by the number of bands used during the contest (3.5, 7, 14, 21 and 28 Mc. available). Amateurs outside Europe may count two points for each contact established on the 3.5-Mc. band." Additionally, EYMA (800 Years Munich) certifications requiring contact with twenty Munich DJ/DLs are made available to W/K/VE/VO participants who ship their Munich-bound contest QSLs to OV München, P. O. Box 4, Munich 40, Germany, postmarked no later than January 31, 1958. This shindig commemorates Munich's 800th anniversary and dig *this* angle: "The amateur with the highest score from each continent will be awarded expenses for a three-day stay in Munich on the occasion of the Anniversary Festival, July, 1958." *Prosit!* . . . . . As of August 1st, SSA (Sweden) substitutes a fee of ten Swedish crowns (about two smackers) for the IRC's hitherto acceptable in applying for WASM certifications. Write SM5AHK for complete scoop on the award . . . . . European amateurs flock to and from DXpeditionary spots this fall with gay abandon. W3TLN mentions M1B (I1s KCG and ZJG); W8DAW comments on OK1MB & Co. Albanian efforts as OK1KSR/ZA; and W1FH lists HB9s KB MQ and OQ as August visitors to Liechtenstein . . . . . W2EQS points out that SV0s WB WE and WO, using phone for the most part, hold out on Rhodes. Also that more Crete SVØWN work is in the offing . . . . . Swiss gist via W1BDI: HB9PA determinedly dials for Utah and Arizona to complete WAS. . . . HB9GJ's June DXcursion to canton Uri, one of the rarest of H-22 certification trophies, resulted in only two U. S. A. contacts. Uri, a deep valley shielded on all sides, is one of the roughest radio locations in Europe. . . . HB9MK shortly will be MMing on 21 and 28 Mc. . . . . That controversial August U.S.S.R. Youth Festival was represented DXwise by UA3s MIA and M1R . . . . . W2HMJ notes that the current UQ2AB operator is not the same fellow who still owes him a QSL for a 1948 QSO . . . . . I1FT's log weighs in at 564 U. S. A. QSOs with 45 states plus a 111/97 DX record . . . . . From W3YH1: "I'm taking a 100-watt s.s.b. rig to Germany and will be on 20 meters as soon as I get my ticket. Used to operate as DL4CK from 1949-'52, mostly 144 Mc." W7QNI

(Continued on page 176)

Hints and Kinks For the Experimenter

USING THE NC-300 ON MARS FREQUENCIES

THE 80-meter range of the NC-300 may be lowered to receive some of the MARS frequencies by connecting a "two-bit" capacitor in parallel with the high-frequency oscillator section (front end of the gang) of the ganged variable.

The capacitor is made with a length of bare solid hookup wire, a coin and a layer of Scotch tape. Solder the wire to the free lug on the oscillator tuning capacitor, and then bend as shown in Fig. 1. The coin must make good contact

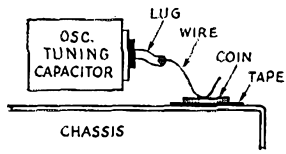


Fig. 1 — Sketch showing the "two-bit" capacitor connected in parallel with the oscillator tuning unit of a type NC-300 receiver.

with the wire *spring*, and must be completely insulated from the chassis by the tape. A 25-cent piece will lower the receiver tuning range to include the MARS frequency at 3250 kc.

— *Capt. J. R. Hagen, K4JMA*

IF you want to include a MARS frequency — say, 4025 kc. — in the 80-meter tuning range of a National NC-300 try the following:

Using a pair of tin snips or good quality side cutters, cut about one sixteenth of an inch from the dial stop on the ganged tuning capacitor. Then, with the aid of long-nose pliers, bend the tab until it breaks off. Now, you have extended the tuning range of the receiver without harming its resale value.

Just be sure not to cut too much off the dial stop. Otherwise, you may run the dial pointer off scale and down the side of the receiver!

— *Leonard M. Norman, W5CIN*

HI- AND LO-BAND EDGE MARKERS FOR "COMMAND" TRANSMITTERS

SOME operators may be interested to know that the "resonance-indicator" circuit in the popular Command transmitters will work with two crystals. Therefore, it is possible to use the arrangement for marking both the upper and lower limits of a band.

The two crystals must be connected in parallel before being inserted in the original crystal holder. An adapter for a pair of FT-243 holders can easily be made by wiring an 8-prong octal socket to an 8-prong octal plug. The latter may very well be the base of an old tube. Prongs 1 and 7 of the socket should be connected to Pin 7 of the base, and socket prongs 3 and 5 to Pin 3 of the base. Remove the unused prongs from the socket to prevent shorting, and bind socket and base tightly together with friction tape.

The magic eye (1629) may not open as wide with the dual-crystal arrangement as it does when a single crystal is used, but it will give a positive indication of resonance as the v.f.o frequency slides onto either crystal frequency. The frequency of the oscillator may "pull" slightly toward the crystal frequencies, but this slight pull may even help so far as staying in the band is concerned. Of course, when using this system, one must first make very sure that the marker crystals are *within* the band.

— *Joseph W. Thane, K0GGL*

ALUMINUM FOIL TEMPLATES

CHOKES, transformers, etc. — especially surplus brands — are frequently housed in complicated castings with mounting holes at the bottom that seem to have been laid out any-old-how. This type of construction usually presents a problem when the time comes for laying out the chassis.

One solution is to take a sheet of aluminum foil such as Reynolds Wrap and lay it flat over the mounting surface of the component. Gentle rubbing with a fingertip will then bring out the position of the mounting holes as well as the outline of the casting. The template may then be trimmed down to size with a razor blade, transferred to the chassis, and the mounting hole locations spotted with a scribe or center punch.

Credit for this technique goes to the small boy observed "making money" by rubbing a tinfoil wrapper placed on a fifty-cent piece.

— *John Paldon, VE2EE*

ADDITIONAL USES FOR THE S METER

USING the S meter of the station receiver with external leads for certain measurements is not new, but the value of the trick is certainly enhanced when the available meter is of the microampere type. While the fact does not seem to be too widely known, several types of Hammarlund receivers carry a 200-microampere unit, including the HQ-129X, SP-400X and military equivalents. A meter of this rating is ideal for g.d.o., v.t.v.m., f.s. measurements, etc. In the case of the SP series, the meter is rather easily removed and replaced.

— *Otto L. Woolley, W0SGG*

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

Cleaning up 220-Mc. reception with a crystal-controlled converter is not easy — when the receiving location is close to a high-powered TV station operating on Channel 13. Other high-band v.h.f. channels may be nearly as bad, for there are innumerable ways for the TV signal to get into the receiver i.f. system, if the signal level is really high.

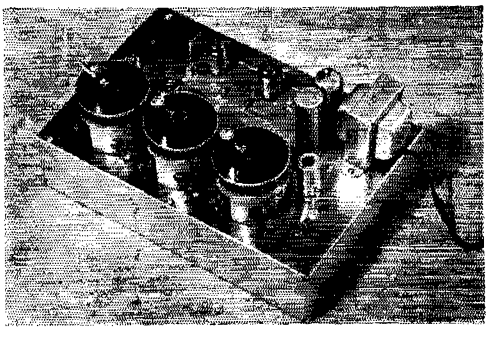
W8JLQ Toledo, Ohio, found that the ordinary variety of crystal-controlled converter was just about useless, in the face of some 70 kw. on Channel 13, less than 2½ miles away. A weird combination of birdies, video buzz and f.m. sound centers on 220.25 Mc., where it is over S9. The interference tapers off slightly in either direction, but it repeats at 221 Mc. At the lowest point in the first megacycle of the band, 220.6 Mc., the strength is S6.

What appears to happen is this: a beat between the sound carrier, 215.75 Mc., and the video carrier, 211.25 Mc., is produced in the mixer, by severe overload. This 4.5-Mc. signal beats with the sound carrier to produce the horrible mess at 220.25 Mc.

Several trap arrangements were tried, with little success. The interfering signal is too close in frequency to the desired one for ordinary traps to be of much use. A series-resonant trap across the input, or a parallel-resonant one in series with the input, made a dent in the interference, but either one raised the noise figure from 6 db. to about 12. A half-wave section of coax, shorted at one end and connected across the converter input at the other, was more effective, but it also degraded the noise figure excessively. It was made of high-Q line of the sort used for transmission purposes in TV stations, and resonated at the TV frequency.

Remembering a commercially-built u.h.f. receiver he had seen, W8JLQ decided to try coaxial-line r.f. interstage coupling circuits, loosely coupled to the tubes, in a series of grounded-grid stages. The beer-can lineup shown in the accompanying photograph is the result. It is by no means a complete cure, but it is the best yet tried, and its performance in other respects is quite good. Possibly other 220-Mc. workers who have troubles with off-band signals would be interested in trying the approach. In conditions somewhat less severe than these it should afford a complete cure.

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



Beer-can coaxial line converter for 220 Mc. by W8JLQ. Two of the three 6BC4 grounded-grid amplifier tubes are not visible in this picture. They are mounted on a line 15 degrees to the right of each tank circuit. Oscillator-multiplier stages are on small insert plate, to the left of the power supply components.

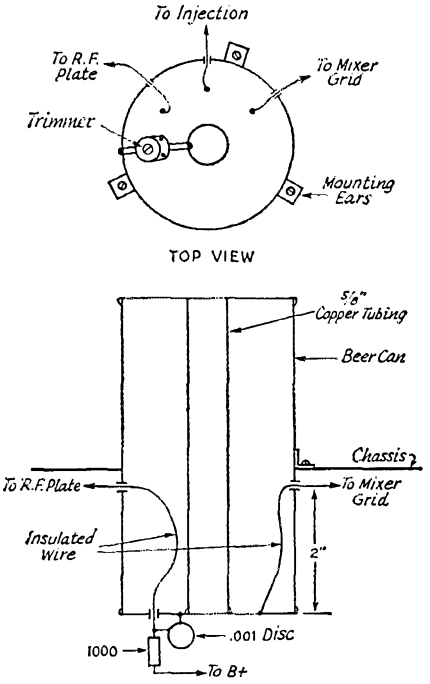


Fig. 1 — Mechanical details of the beer-can 220-Mc. tank circuits.

The Beer-Can Circuits

First procure three beer cans, 12-ounce size. Help on the project is easy to get at this stage of the game, if you start with cans of the full variety. Details of the coaxial line assemblies are shown in Fig. 1. The inner conductors are ⅝-inch o.d. copper tubing, a standard size readily obtainable at plumbing shops. The mounting

1 WØZJB	7 W6OB	13 WØDZM	19 W3OJU
2 WØBJV	8 WØINI	14 WØHVW	20 W6TMI
3 WØCJS	9 W1HDQ	15 WØWKB	21 K6EDX
4 W5AJG	10 W5MJD	16 WØSMJ	22 W5SFW
5 W9ZHL	11 W2IDZ	17 WØOGW	23 WØORE
6 W9OCA	12 W1LLL	18 W7ERA	24 W9ALU
	25 W8CMS	26 WØMVG	

W1VNH	47	W4LNG	45	K6HYY	43	W9MFH	42
W1CLS	47	W4CPZ	45	W6ABN	43	W9EPT	41
W1CGY	46	W4UCH	45	W6NIT	42	W9SWH	41
W1LSN	46	W4IKK	44	W6IWS	41	K9EID	38
W1AEP	46	W4QN	44	W6CAN	40	W9KLR	36
W1RUF	44	W4FLW	43	W6BWG	39		
W1SUZ	44	W4RFR	42	K6RNQ	38		
W1FOS	44	W4OXC	41	W6ERG	38		
W1KHL	42	W4MS	42	W6OJF	31		
W1ELP	41	W4FNR	40				
W1MFM	39	W4ZBQ	40			WØQUIN	47
W1SPX	36	W4AYV	38			WØNFM	47
W1UHE	35	W4IUJ	38	W7FFE	48	WØTKX	47
W1FMK	34	W4YRM	38	W7HEA	47	WØKYF	47
W1LGE	33	K4DNG	37	W7BQX	47	WØJOL	46
W1FVZ	32	W4HHK	37	W7FDJ	46	WØUSQ	45
W1FTF	31	W4AKX	36	W7DYD	17	WØFKY	45
W1WAS	31	W4GJO	35	W7ACD	45	WØPFP	45
		W4ZD	35	W7JRG	44	WØOFZ	44
		W4HZG	34	W7BOC	42	WØQVZ	44
		K4AGM	32	W7JPA	42	WØCNM	44
W2MEU	47			W7FTV	41	WØYJF	44
W2RGV	47			W7CAM	40	WØURQ	44
W2AMJ	46			W7QDJ	34	WØJHS	43
W2BYM	46	W5VY	48	W7UFB	33	WØIPI	43
W2FHJ	45	W5LFQ	47			WØWNU	42
K2ITP	43	W5GNQ	46			KØDXS	42
K2ITQ	43	W5FSC	45			KØGKR	41
W2SHV	43	W5ONS	45			WØPKD	41
K2JNS	42	W5JLY	45	W8OJN	46	WØZTW	41
K2AXQ	42	W5ML	44	W8SQU	46	WØYZZ	38
W2GYV	40	W5EXZ	43	W8HXT	46	WØZKD	37
K2HPN	39	W5JME	42	W8NQD	45	WØVIK	36
W2ORA	39	W5VV	43	W8UZ	45	KØBPM	35
W2QVH	38	W5CVW	41	W8RFW	45	KØCIJ	35
K2HRB	37	W5FAL	41	W8LPD	44	WØIJR	35
K2LTW	35	W5HEZ	41	W8HJR	43		
K2YWH	34	W5BXA	41	W8WPD	43		
		W5FXN	42	K8ACC	43		
		W5EXZ	38	K8CIC	42		
W3TIF	47	W5EUQ	38	W8EVH	42		
W3KKN	45	K5ABW	38	W8YLS	41	VE3AET	46
W3KMV	44	W5HFF	38	W8INQ	40	VE3AIB	35
W3NKM	41	K5CYK	38	W8PCK	38	VE1EF	35
W3MQU	41	W5NSJ	36	W8NOH	34	VE3BBX	33
W3RUE	41	W5FRK	36			VE1QY	32
W3MXW	41	K5CYK	36			VE2AOM	31
W3OTC	41	W5WZF	33			VE3DER	31
W3FPH	40	K5AJW	33			VE3BHQ	30
W3LFC	40	W5ZUL	33	W9BRN	48	XE1GE	27
W3AMO	36	W5ZVF	31	W8ZHB	48	VE1PQ	23
W3TDF	36	W5LFM	26	W9QUV	48	VE3OJ	22
W3UQJ	32			W9VZP	47	VE1WL	21
				W9RQM	47	CO6WW	21
		W6WNN	48	W9QKM	47	VE1HS	20
W4EQM	47	W6UXN	48	W9JFP	47	CO2ZX	16
W4FBH	46	W6BJI	45	W9AAG	46	LU9MA	16
K4DJO	46	W6ANN	45	W9UIA	45	PZ1AE	15
W4UMF	46	W6NDP	45	W9UNS	45	KL7VT	9
W4EQR	45	K6GTC	44	W9MHP	43	A1AUH	5
W4AZC	45	W6GCG	43	W9JCI	42	VQ2PL	5

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

brackets, spaced 120 degrees, are soldered to the outside of the can at about 2¼ inches up from the bottom. Coupling loops are brought through the wall of the can, 2 inches up from the bottom.

The coupling loops are all the same length, but the plate loops are coupled much more closely than the output loops. Coupling is adjusted by bending the loops. The cathode and mixer loops are bent almost over to the wall of the can, while the plate loops are close to the inner conductor. The degree of coupling that is most desirable will depend on the severity of the interference problem. Generally speaking, the coupling should be adjusted for the lowest noise figure that will still give the attenuation of the spurious signals.

Assembling the coaxial circuits is not difficult. The thin and nicely-tinned stock from which the cans are made makes soldering easy. The trim-

2-METER STANDINGS

	States	U. S. Areas	Miles
W1REZ	24	7	1175
W1FZJ	21	6	1120
W1RFU	20	7	1150
W1HDQ	20	6	1020
W1AJR	20	6	810
W1AZK	20	6	1160
W1KCS	19	6	1080
W1IZY	17	6	750
W1UIZ	17	5	680
W1BCN	16	5	650
W1KHL	16	5	540
W1MMN	15	6	800
W1AFO	15	5	810
W2ORI	32	8	1200
W2NLY	31	8	1390
W2CXY	28	8	1140
W2AZL	25	8	1050
W2BLV	23	7	1020
W2DWJ	21	6	720
K2CEH	21	8	910
W2OPQ	20	6	970
W2AMJ	20	6	960
W2PAU	20	6	880
W2CBB	20	6	740
W2UTH	19	7	880
W2AZP	19	7	650
K2INJ	19	6	925
W2RGV	19	6	720
W2KIR	19	6	—
K2IEJ	19	6	785
W2AOC	18	6	660
W2LHI	18	7	620
W2RNG	17	6	675
W2SHT	16	6	650
W2PCQ	16	5	650
W3BGT	28	8	740
W3RUE	28	5	850
W3IBH	23	7	650
W3GKP	23	6	800
W3TDF	22	6	880
W3FPH	21	8	—
W3KCA	21	7	—
W3LZD	20	7	—
W3KWL	19	7	740
W3NKM	19	8	660
W3YHI	19	6	800
W3BNC	18	7	750
W3LNA	16	7	720
W4HHK	30	9	1280
W4HJQ	30	8	825
W4MKJ	24	8	725
W4LTU	23	8	1150
W4AO	23	7	950
W4JCJ	22	6	660
W4UMF	21	6	720
W4DWU	20	6	675
W4OLK	19	6	720
W4JFV	18	7	830
W4IKZ	18	6	720
W4VLA	17	7	825
W4WNH	17	7	750
W4TLV	16	7	1000
W4CLY	15	5	720
W4ZBU	14	5	800
W4WCB	14	5	—
W4TCR	14	5	720
W4SOF	13	5	680
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	11	5	68
W4KCQ	10	4	860
W4GIS	9	2	335
W5DFU	24	9	1300
W5RCI	23	7	950
W5AJG	18	7	1280
W5HEH	15	7	830
W5JWI	14	6	1150
W5MMW	14	5	700
W5FSC	12	5	1390
W5ABN	12	5	780
W5QNL	10	5	1400
W5CVW	10	5	1180
W5SWV	10	3	600
W5ML	9	3	700
W5NDE	8	3	520
W5PZ	8	3	500
W5FEK	8	2	580
W5VY	7	3	1200
W6NLZ	9	3	2540
W6WSQ	5	3	1380
W6DNG	5	3	660
W6AJF	5	2	640
W6RRZ	4	2	360
W6PJA	4	3	1390
W6ZL	3	2	1400
W6AJF	3	2	640
W6BAZ	3	2	400
W6MMU	3	2	388
W6ORS	3	2	365
W6LSB	2	2	360
W7VMP	11	5	1280
W7LEE	6	3	1020
W7JRG	4	3	1040
W7LHL	4	2	1050
W7JU	4	2	353
W7JIP	3	2	850
W7YZU	3	2	240
W7JUO	2	2	140
W8KAY	35	8	1020
W8WXV	30	8	1200
W8RMH	29	8	800
W8LOF	27	8	1060
W8SRW	27	7	850
W8SEG	26	8	850
W8PT	26	8	985
W8ILC	25	8	800
W8LPD	25	8	750
W8DX	25	8	720
W8WRN	23	8	680
W8BAX	23	8	675
W8SVI	22	8	725
W8JWV	22	8	710
W8EP	18	7	800
W8ZCV	17	7	970
W8RWW	17	7	630
W8LCY	17	7	610
W9KLR	35	8	950
W9WOK	28	8	800
W9REM	27	8	850
W9FVJ	26	8	850
W9ZHL	25	8	760
W9EQC	25	8	820
W9GAB	24	7	1100
W9EHX	24	7	725
W9BPV	23	7	1000
W9UCH	22	8	750
W9UED	22	7	960
W9AAG	22	7	850
W9OKP	21	7	690
W9MUD	19	7	640
W9REM	19	6	—
W9LF	19	6	—
W9ALU	18	7	800
W9JGA	18	6	720
W9MBI	16	7	660
W9JYI	15	7	560
W9LEE	15	6	780
W9DSP	15	6	760
W9DDG	16	6	700
W9EMS	27	8	1175
W9IHD	26	7	870
W9GUD	25	7	1065
W9INI	19	6	830
W9UQP	18	6	—
W9ONQ	17	6	1000
W9SMJ	16	6	1000
W9USQ	14	6	750
W9IFS	14	5	—
W9OAC	14	5	725
W9MVG	13	5	700
W9TJF	13	4	—
W9ZJB	11	4	650
VE3DIR	26	8	915
VE3AIB	25	8	910
VE3BQN	17	7	790
VE3DER	16	7	820
VE3BPR	13	6	715
VE2AOK	12	5	550
VE3AQG	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365
KH6UK	1	2	2540

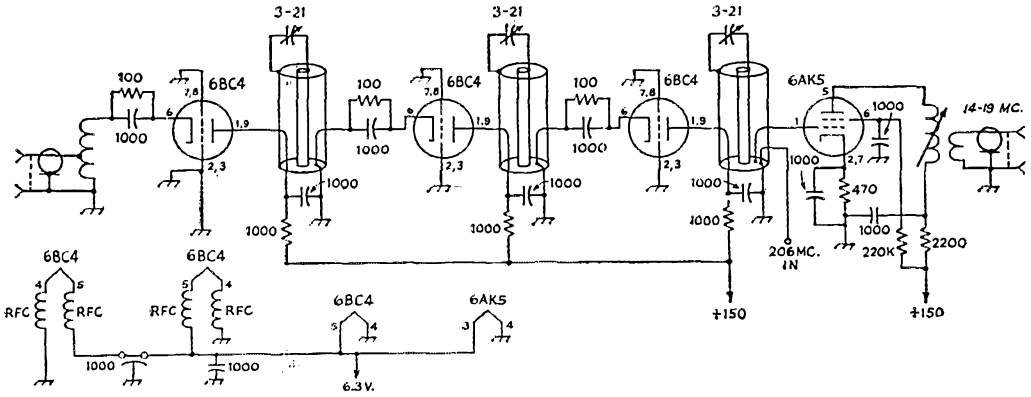


Fig. 2 — Circuit diagram of the W8JLQ 220-Mc. converter. Oscillator-multiplier system employing two dual triodes is not shown, as its circuitry is conventional.

mers mounted across the open ends of the tank circuits help to hold the inner conductors in alignment.

The r.f. amplifier tubes are 6BC4s, a type well adapted to grounded-grid service. The mixer is a 6AK5, operated with low cathode bias. The high value of cathode bias often shown for pentode mixers was found to aggravate the overloading and cross-modulation problems[1] and lowering the bias seemed to have no adverse effects. The idea was to protect the mixer, and possibly the last r.f. stage, for they are where most of the trouble develops. Possibly one more coaxial tank in the input circuit of the first 6BC4 would have helped still more. Injection at 206 Mc. is supplied by a 12AT7 oscillator-doubler, and a 6BQ7A doubling twice. The crystal is on 25.75 Mc., and the circuitry is conventional.

Adjustment and Results

If the interference problem is a very severe one, as in W8JLQ's case, the coupling should be adjusted as loosely as possible and still retain a good noise figure. His converter showed 5 to 6 db., a very respectable noise figure at 220 Mc. Where a conventional converter showed a minimum interference level of S6 (at 220.6 Mc.) the beer-can job shows substantially no Channel 13 interference at this frequency. It is possible to read an S3 voice signal around 220.6 Mc., even with the beam aimed at the TV station. There are still some strong birdies around 220.25 Mc., but reception is possible on 220 now, where it was not before.

Where the interference level is lower, or on channels farther removed in frequency from 220 Mc., it would seem that these inexpensive and easily-built tank circuits should solve the problem entirely. When the converter is tuned for high attenuation it is definitely not a broad-band device. If you want to cover more than one megacycle of the band, with high attenuation of off-band signals, it might be desirable to make provision for gang tuning.

[1] Mixers in v.h.f. converters have been designed in years past for optimum noise figure. This objective, important when no r.f. stage is used, was achieved by keeping the plate current to the lowest usable value. When this is done, by either high bias or low screen voltage, the stage becomes very susceptible to overloading. Where good r.f. stages are employed, they control the over-all noise figure of the system. In that case the mixer may be set up for better overload characteristics, by eliminating grid-lead bias, lowering the cathode bias and increasing the screen voltage. Probably the only limit in this respect is the safe plate and screen dissipation of the tube used for the mixer. — *Ed.*

KH6UK — W6NLZ REPEAT ON 144 MC.

The record 144-Mc. contact of July 8 between *KH6UK* and *W6NLZ* was repeated Aug. 18, under quite similar conditions. Tests made by KH6UK for other West Coast stations were first heard by W6NLZ at 2000 PST. Two-way communication was held from 2050 to 2114, and the signal remained audible until 2127.

Most of W6NLZ's reception was weaker than during the first QSO. After some minutes of very low signal level at the start, reception improved so that the two-way portion was solid, though never reaching the peaks that marked the first success. KH6UK, on the other hand, recorded clearer reception of W6NLZ than during the July contact, probably the result of less interference from the h.f. transmitters of RCA Communications, whose antennas are close by the big array at KH6UK.

When signals were at their best, W6NLZ tried his 144-Mc. s.s.b. A tape recording received from KH6UK shows the signal at the threshold of voice readability at this time.

How were these contacts made? Evidence from the Los Angeles Weather Bureau, and scientific opinion gathered by your conductor while attending the URSI General Assembly at Boulder, Colo., point definitely to tropospheric propagation. While the 2540-mile path is some 25 percent longer than any previous proven reception of signals at 100 Mc. or higher, some authorities on tropospheric propagation over ocean paths are of the opinion that the new record is far from unbeatable.

One well-known scientist expressed the opinion that conditions favorable to very long-distance work exist frequently in the Doldrums belt. He does not rule out the possibility of 144-Mc. work with Europe, even across the frequently turbulent North Atlantic.

Correspondence From Members-

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

RAGCHEWING A LOST ART . . .

1745 Helen Drive, N.E.
Atlanta 6, Georgia

Editor, *QST:*

I want to comment on the lack of imagination, interest or intelligence on the part of Novices. Conservatively speaking nine out of ten QSOs go like this: "O.K. OM. Tnx for call. Ur RST is 599. QTH is Anytown, Ga. Name is Illwind. Bk to u." The other ham reciprocates with pretty much the same thing, addresses are exchanged and so ends a "QSO."

Often I'll try to liven up a QSO with "Hw WX there" "Hw old r u " or "Hw many states hv u got?" with poor results. Often the reason is they don't know what WX means, or they have gotten so used to sending only RST, name, address and 73 they can't copy anything else. What is this strange aversion Novices have for ragchewing? Surely they're not interested only in collecting QSL's.

Perhaps you can suggest some intelligent questions aimed at striking up a conversation. Maybe ARRL can develop another operating aid called, "Friendly Conversation for the Deadhead Amateur."

I hope you will continue to encourage fraternalism among hams with things like the RCC.

— *Danny Gross, KN4OGY*

. . . OR IS IT?

3836 Sylvania Road
Petersburg, Michigan

Editor, *QST:*

At 8:40 A.M. Friday, May 17, I was scanning the 80-meter band for a contact when I heard KN8DNJ calling CQ. We began our QSO as usual, with name and QTH, but the real conversation began with a blimp flying low over Lorain. He gave me a description of it and what it was doing. Then we went on to describe our rigs, family, ages and so forth. The QSO finally wound up with the weather conditions and an invitation here for a steak dinner, with gravy. After saying hello to the XYLs this QSO signed off at 11:05. I do not know if a QSO of two hours and twenty-five minutes sets a c.w. record or not. There were no messages, just friendly ham talk.

I have never met Bill — this was our first QSO, but you can bet it will not be the last one. In fact, I want to make a trip to Lorain to meet Bill and his family. I am very much in favor of the friendly QSO, not the name, QTH, QRT kind.

— *Earl Valentine KN8ENY*

DURABLE

1214 Fourth Avenue
Sterling, Illinois

Editor, *QST:*

I have been very much surprised at the continued correspondence that I receive from the interest in building the low cost code-practice oscillator [September, 1955 *QST*, page 22]. In spite of more recent transistor oscillators, persons looking through their back copies of *QST* seem to find the features of satisfactory loud-speaker operation and safe A.C. operation very appealing.

My correspondence originates due to the difficulty in obtaining the TV horizontal oscillator coil which in the original was a GE type RLC-091. This is a tapped coil and it appears that it is one of the few types used in TV sets that provide a tap. The inductance is not difficult to duplicate but no data was given in the original article.

Due to the policy of GE distribution, their parts are quite difficult for the beginner to obtain. When the original was constructed, one of the large mail order houses carried this particular item but they have since discontinued doing so. I have found that a "Miller" coil No. 6324 (J. W. Miller Co., Los Angeles) is the equivalent and is quite readily available through parts suppliers. This tapped coil has an inductance of 60-130 Mh. and does a very satisfactory job in this circuit.

Although I had expected the interest and correspondence to die down by this time, each month brings me an average of six letters making this inquiry, so I thought you might be interested in inserting information relative to the Miller coil in *QST*.

Quite a number of schools have written me that they have built a dozen or so of these units and find them very satisfactory. Correspondence stems from every walk of life including the armed services.

— *Robert E. Foltz, W9GBT*

STILL MORE "INCENTIVE"

847 Lee Hall Street
San Antonio 12, Texas

Editor, *QST:*

I have read, with much interest, about the clash of the classes, extra and advanced, and it seems that neither side has yet hit upon the true argument. I am an extra class licensee holding license number AE-9-31 and cannot see where the extra class fellows have any beef whatsoever since the advanced boys were simply graduates of the early days when academic requirements were not quite so rigid. To say the advanced licensees were not entitled to the same privileges afforded extra class would be the same as to say that lawyers who graduated in 1935 did not have to know quite so much as lawyers of the class of 1957 due to expanded tax matters and such so they cannot enjoy the same privileges offered to the 1957 class. That would be ridiculous. Extra class, today's model, passes a stiffer examination and faster code than the advanced did so we just chalk it up as being born a few years too late.

— *Thomas J. Prothro, W5HBP*

THE JOLLY ROGER

15 Bucklin Street
Pawtucket, Rhode Island

Editor, *QST:*

I would like to take advantage of your publication to bring to the attention of my fellow amateurs one of the lowest forms of life, the Bootlegger.

Sometime during January of this year, which was during my novice days, I received a QSL from a WØ in Iowa (I still need Iowa) for a QSO on 15 Meter phone.

Then to add insult to injury I heard this bootlegger on 15 Meter Fone myself. He was engaged in a local QSO. Shortly after he proceeded to start to fool around using an accent which I would be ashamed to use in any company.

This matter has been reported to the FCC and I would like to have any other reports of a QSO with any station using my call on 15 Meter Fone.

— *David E. Tetreault, W1MOP*

PSE QSL

645 Cowles Avenue
Red Bluff, California

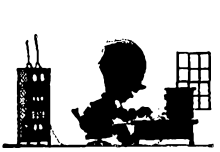
Editor, *QST:*

I think all Generals should take a lesson from the Novice. I am working very hard for my WAS but I have to have QSLs to do it. I have worked stations who said they would QSL and never do. I would like to suggest to those who do not QSL to say they don't when asked for a QSL.

I am fully aware that I have just said what has been said many times before and will be repeated many more times to come. So what do you say — how about that long-awaited QSL for someone's WAS?

— *Peter S. Freeman, K6RFT*

(Continued on page 188)



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

Traffic. Traffic volume in domestic amateur circles has been substantially constant over the last couple of years, with of course seasonal or holiday variations. A careful look at activities reports in preparing information for the ARRL Board of Directors this year indicated increases not so much in traffic volume but in the *number of reports*. More amateur interest in nets and traffic was indicated. During 1956, 39 BPL medallions were issued to amateurs completing three months of BPL-high traffic standings, not necessarily for consecutive months.

"Over" *vs.* Break-Break. ARRL's July Phone Bulletin to PAMs and OPS reviews ideas utilized by successful phone nets throughout the nation. It is the practice in the Virginia Fone Net to avoid break-break, just giving the call, so the NCS gets the identity of stations reporting in *faster*. Apparently concurring with VFNs idea, VE7FB comments that there could be further avoidance of break-break, especially as he has heard it in net traffic sessions! He would suggest much greater use of the very proper procedure word: OVER.

Let us quote from VE7FB's letter: ". . . We are trying to move traffic faster by nets which in general do a very good job. But one little word is worth all the break-break you hear! That word is OVER. It is simple and has more meaning. The use of the word 'break' can sometimes bring break-in stations on the net at the wrong time, instead of the proper station." To those in QSO pausing for possible corrections to traffic in progress may we suggest use of OVER, reserving the word 'break' for actual break-in use. And in net practice, as observed by VFN and others (one is calling in and identifying after the NCS has made his call) one's call, and not 'break', seems the preferable practice.

Single Side Band Progress. An analysis was made of affiliated club reports of s.s.b. use. Returns from 100 clubs were examined at random, these representing a membership of 3151 amateurs. In the group 157 operative s.s.b. stations were identified; also 116 other club members were planning s.s.b. operation. In a survey made a year earlier by the same method 46 per cent of the clubs had s.s.b.-using members; in the Feb. '57 survey 73 per cent of all the clubs surveyed were found to have some s.s.b. installations in use. In this sort of a look at our over-all operations a five-year charting of the development of this type of use shows a linear or straight line increase. The number of s.s.b.-users per 100-amateurs according to this club survey is now up to five and still growing.

Clubs . . . On Organized vs. Individual Effort. Individual operating is probably the greatest main spring amateur radio has for getting the results! However, great benefits in our amateur radio result in all larger programs as a result of teamwork or group effort. A thousand active affiliated clubs attest to the services they offer individual club members in as many communities. It is practically individually helpful as well as fraternally rewarding to share and pool our experiences and ideas. Many letters from clubs attest their high success with code and theory programs, TVI committees, auctions, hamfests and their own operating programs and club-to-club challenges in connection with each of the major ARRL operating activities through the year.

Clubs and individuals each can benefit by tying local to the national programs and patterns. Organized effort makes many benefits possible not realized without. Besides the Sweepstakes, Field Day and contests in general, each club can aspire to recommend to SCMs their operators of a caliber qualified to hold Official Relay Station or Official Phone Station appointment and through their participation in section nets the club has communications links to outside communities. Each SCM especially will welcome word from clubs not now having an ARRL Official Observer SCM-appointee and an OBS to extend self-advisory and radio bulletin information to these groups and communities of active amateurs. Such posts are available in the national ARRL field organization plan to make such services widely available. Every club (we hope) likewise will assist in encouraging qualified and available operating members with mobiles to be registered in the Amateur Radio Emergency Corps and enlisted in local, county or area RACES plans.

It is in the full creation and establishment of these recognitions and recruiting to take on the appropriate and qualified activities that we can greatly strengthen both our local club interests and national organization . . . and by doing this increase the enjoyment, benefits and recognition accorded all as amateurs.

For Better Traffic Handling. *Pacific Area Net News* makes a point of suggesting that all traffic handlers concentrate on *accuracy* instead of volume to make their hobby of handling traffic of utmost value in the amateur ranks. Here are some principles to follow: The message, all parts including check, should be copied correctly

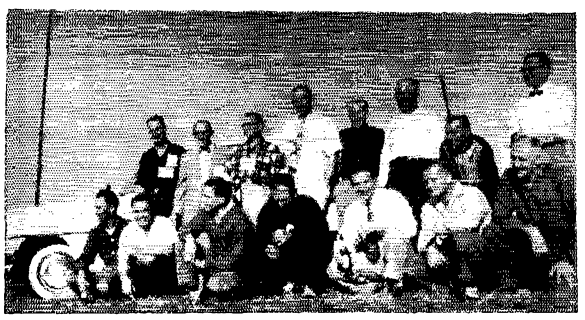
and completely before an "R" is sent to indicate its full and correct receipt. Ask fills as necessary. There is no place among the elite in traffic for the guesser! PANN points out that if all amateurs participating in traffic work make the effort, every single message can be delivered with the exact wording in which it was filed. This never can be done if originators, and those receipting to originators for traffic, accept originated messages that are incomplete, or without a word count, or obviously misrouted. Call back to query any point of uncertainty *before* receipting for traffic.

Message Routing Suggestions. The casual greeting message may be highly important to the mother or father who has not heard from service-connected persons overseas for many a month! But another message that *looks* important may be lightly valued by a recipient with many other interests. The worth or importance of traffic cannot be decided by radio operators; *only* the addressee or originator knows that aspect! In PANN W7BA decries some improper routing of traffic observed as "just to build up a score." From his remarks some general principles can be stated: (1) Unless one can expedite traffic directly and with reasonable promptness, it shouldn't be accepted. (2) Unless he has definite schedules to expedite it, an operator should refuse northbound traffic headed south, eastbound traffic headed west, etc. (3) Long-haul traffic should invariably go into the National Traffic System (via area, regional or, if necessary, state nets or those having liaison with NTS . . . or be relayed alternatively via stations on any band having proper schedule connections for the given traffic). (4) 75 and 80 meter nets can best handle all traffic in a given region covered by such nets or to specific points covered by definite schedule guaranteed by a net-member. (5) Movement of messages through casual operators unfamiliar with or not having net connections and outlets is not to be recommended, generally speaking.

The phone and c.w. net members of organized groups, however, almost always can give advice and best routing service. The distinction between commercial and amateur service is that the former has to be *guaranteed* as to delivery. In the amateur service, speed and reliability depend exclusively on *unpaid and voluntary* efforts with no guarantee but our integrity as individuals and our love of conducting successful communication!

How Is Your Code? In the last calendar year nearly 3500 copies of W1AW and W6OWP qualifying runs were submitted to ARRL. Certifications were issued to 3151 individuals showing their status and progress in code. About one-third these certificates were issued in the lower speed brackets, 10 and 15 w.p.m. There was progressively smaller participation at higher speeds. Ten to 35 w.p.m. runs are *equally* available. Over 30,000 individual amateurs will have been certified in the ARRL program by the time this appears in print. The larger number of all certificates and endorsement stickers issued are at the speed of 15 w.p.m., probably indicating that one of the great uses of the program is to help in qualifying for the General Class FCC ticket. We *hope* that all prospective amateurs know about the ARRL W1AW and W6OWP program and take advantage of the daily tape-sent practice that is available as well as the monthly qualifying runs. For the newcomer who is extremely nervous and working c.w. ardently for his General Class preparation (and a WAS), we suggest possible acquisition of the 20 w.p.m. certificate. It gives a greater margin of "certified confidence" in sitting down for the test. This speed and higher speeds are well worth following up on other grounds than any examination need. A generous share of the difficult DX, the ability to communicate reliably through QRM or with limited equipment, or in emergency, the traffic know-how of the real communicator, all these things and your reputation as a skilled and full-fledged amateur spell out that you owe it to yourself to go much farther than any minimum requirement in code. Operating in contests may help code ability; regular DX work or taking part in a good c.w. traffic net, as soon as your ticket will permit, will do even more for you according to several of those in the know.

The number of code proficiency endorsements and initial certifications continued in an uptrend for the year 1956. The number of endorsements *over* initial certification increased 7%, while the number of new certifications were at a rate 27.4% higher than the previous year. This CP program incidentally seems to be one of ARRL's most useful and generally appreciated programs. If you haven't been certified or endorsed all the way up to the top of this program, we invite you to make full use of all the W1AW and W6OWP runs as they take place. —*F. E. H.*



Not long ago the New Jersey Phone Net held a picnic, attended by the above characters. They are (top row, l. to r.) K2EMJ, K2HXW, W2SUG, K2JTU, W2VC, W2HIR, W2SHL, K2HPV; bottom row: W2VDE, W2KFR, K2CDH, K2ETG, W2RHX, K2CLD.

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	W3NNT	Douglas Morick	510 Hickory St.	Bethlehem
Maryland-Delaware-D. C.	W3PKC	John Campodonico	629 McCabe Ave.	Baltimore 12, Md.
Southern New Jersey	W2YRW	John Wesley Sammis	120 Rhoads Ave.	Haddonfield
Western New York	W2UTH/FRL	Henry A. Blodgett	515 Victor-Holcomb Rd., Rt. 1	Victor
Western Pennsylvania	W3OMA	Walter P. Remele	20 N. Howard Ave.	Bellevue 2
CENTRAL DIVISION				
Illinois	W9HOA	A. B. Brand	1211 Harlem Blvd.	Rockford
Indiana	W9QYQ	Frank M. Carroll	542 S. Maple Ave.	Orleans
Wisconsin	W9EIZ	C. E. Finger	1422 Arctic St.	Antigo
DAKOTA DIVISION				
North Dakota	W0CAQ	Douglas H. Classon	449-16th Ave., So.	Fargo
South Dakota	W0YOB	Wallace Koppman	725 St. Charles St.	Rapid City
Minnesota	W0WVO	Jerry K. Fraser	2019 4th St., West	White Bear Lake
DELTA DIVISION				
Arkansas	W5DAG	Malcolm Q. Y. Hovis	909 Ruby St.	Osceola
Louisiana	K5BES	Kenneth Jummonville	1647 Pratt Drive	New Orleans 22
Mississippi	W5GG	Harvey Lee Treft	P.O. Box 527	Cleveland
Tennessee	W4RRV	S. B. DeHart	227 S. Purdue	Oak Ridge
GREAT LAKES DIVISION				
Kentucky	W4JSH	Meek W. Brazelton	222 State St.	Lexington
Michigan				
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.	Elizabeth 3
MIDWEST DIVISION				
Iowa	W0MIG	Russell R. Rosenkrans	2121 Byron Ave.	Waterloo
Kansas	W0PAH	W. G. Sebrenk	144 Westview Drive	Manhattan
Missouri	W0BUL	Charles O. Gosch	711 S. Oakland St.	Webb City
Nebraska	W0JDJ	Francis B. Johnson	820 S. 44th St.	Lincoln 10
NEW ENGLAND DIVISION				
Connecticut	W1EOR	John L. Henley	RFD 1	Andover
Maine	W1TVB	Chester A. Dykeman	RFD 1	Gray
Eastern Massachusetts	W1BL	Raymond E. Boardman	53 Thurston Rd.	Newton Upper Falls 64
Western Massachusetts	W1RRX	William F. Ham	222 Westfield Rd.	Holyoke
New Hampshire	W1BXU	William E. Goldthwaite	24 Franklin St.	Concord
Rhode Island	W1PAZ	Thomas C. McCormick	1934 Smith St.	North Providence
Vermont	W1SIO	Carl M. Anderson	9 West St.	Brattleboro
NORTHWESTERN DIVISION				
Alaska	KL7AMS	Delbert Bailey	Box 1071	Anchorage
Idaho	W7IWU	Alan K. Ross	2105 Irene St.	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	KH6ABI	Leon K. Johnson	6081 Keoki St.	Honolulu
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	W6KZF	William J. Ray	52 Matilda Ave.	Mill Valley
Sacramento Valley				
San Joaquin Valley	W6EBL	F. E. Robinson	Sonora Motor Hotel	Sonora
ROANOKE DIVISION				
North Carolina	W4ZG	Roy C. Corderman	730 Yorkshire Rd.	Winston-Salem
South Carolina	W4SOF	James E. Murff, jr.	104 So. 16th Ave.	Dillon
Virginia	W4PAK	Frederick D. Hackworth	Route 1, Box 7-H	Fentress
West Virginia	W8KXD	Alvin Huntsman	524 Ninth St.	Moundsville
ROCKY MOUNTAIN DIVISION				
Colorado	W0NIT	Donald Middleton	920 West Adams	Pueblo
Utah	W7JOE	John Tempest, jr.	1599 Orchard Dr.	Salt Lake City
New Mexico	K5DAA	Allan S. Hargett	1001 Birch Lane	Carlsbad
Wyoming	W7MNW	Gilbert A. Dugger	120 No. Ave., C4	Cheyenne
SOUTHEASTERN DIVISION				
Alabama	W4TKL	W. W. Varnedoe	Rt. 4, Box 486	Huntsville
Eastern Florida	W4IYT	Andrew C. Clark	41 Lenape Drive	Miami Springs
Western Florida	W4HIZ	B. G. Moore, jr.	P.O. Box 808	East Pensacola Heights
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	W6KUU	Harold W. Eberle	334 Patricia Lane	El Cajon
Santa Barbara	K6CVR	Robert Henke	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	VE1FH	Dr. L. P. Doucett		Cheticamp, N. S.
Ontario	VE3KM	T. W. Clemence	2278 King St., East	Hamilton
Quebec	VEQ2N	Felix Edge	2604 de la Falaise	Sillery
Alberta	VE6MJ	Sydney T. Jones	10706-57th Ave.	Edmonton
British Columbia	VE7JT	F. M. McIntyre	981 W. 26th Ave.	Vancouver
Yukon				
Manitoba				
Saskatchewan	VE5LU	Lionel O Byrne		Rowatt

The last year has seen an upsurge of activity within our AREC. In some cases, sad to relate, this has been caused by decreased activities along RACES lines in areas where civil defense activities have not been stressed or are disappointing to participating amateurs. In others, more gratifyingly, the increase has been due to a gradual straightening out of the relations between the AREC and RACES into a more unified program in which things are beginning to assume their proper proportions and find their proper places.

But most of all, we think, the increase has been brought about by the infiltration into the AREC of young amateurs in the novice category or those just graduated therefrom, and this is the most gratifying of all because it insures us a supply of youthful enthusiasm and vigor which we very much need in our organization. In the earlier days of amateur radio most of us were youngsters ourselves. We had to set up the AREC without, generally speaking, the guiding hand of age and experience. It was a long, hard row to hoe, and we had to learn by bitter experience what was wise and what was unwise, what was practical and what was impractical, what was effective and what was ineffective. Today, largely because of the novice program, we get many inquiries from youngsters who are just getting their feet wet in amateur radio and are eager and anxious to direct their activities along service lines. They look to us for guidance, and it is our responsibility to guide them along the most beneficial channels.

We know only too well that youngsters of teen age and under can be a dadgummed nuisance, and it is easy enough to fall into the fallacy of considering them more trouble in a serious organization than they are worth. They are noisy, impetuous, impulsive, and cocky. At club meetings they are disorderly, mischievous, disrespectful and quarrelsome. They get in your way, under your feet and in your hair. It is very hard to drum anything into their thick skulls, but they think they know it all. In other words, they are boys (except the ones who are girls, in which case about the only difference is obvious) and act as such despite the fact that they are amateurs. Regardless of all this, the influx of young people into amateur radio, brought about largely by novice programs, is a very valuable asset which must be encouraged and preserved.

So, all you ECs and older AREC members, how about giving a hand in helping these kids along? Set up a novice program in your AREC group, give them something to do, make them feel like a part of the organization so they can be proud of the part they play, and assist them in obtaining their general licenses so they can take a more active part. Above all, when a novice asks about registering in the AREC, don't turn him down just because you don't know what you'll do with him. No amateur willing to register in the AREC should be turned down; AREC is open to all amateurs — novices, technicians, general, extra and all, old or young, ARRL members and *CQ* subscribers. Let's not have anyone excluded because he can't find out whom to sign up with. It's our own organization and we need every amateur we can get in it.

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From WØKXL's *Midwest Clixs* we now have more details of tornado operations in the Kansas City area in May. This, then, is supplementary to the account which appeared in September *QST*.

Shortly after the tornado ripped through the Ruskin Heights area of Hickman Mills, just east of Kansas City, 25 amateur mobiles were at the scene, the first of which was KØAFW followed by *WØs* LRU OLO QLW and RDI. WØMID took over as NCS from his fixed station in Raytown and also acted as liaison station with the 6-meter net. Mobiles were dispatched to key points. The Kansas City 6-Meter Net on 50.4 Mc. also went promptly into action with *KØs* BGW DGU GPS GYE and *WØs* ETB MID and TBM active. This net obtained prompt action in getting the gas cut off from broken gas lines, thus avoiding serious fires and explosions. WØMID relayed to WØRVG, club station of the Heart of American Radio Club. RACES radio officer WØQLW, operating as an amateur, says that amateur communications in the tornado area were well organized after the first half hour, although state law forbids civil defense from taking over in natural disasters. At the request of the Hospital Association, amateur mobiles were dispatched to all hospitals to endeavor to get a better distribution of the injured from the tornado area, telephone communications being overloaded to the point of breakdown. In the evening of May 20, KØAFW switched from his mobile to a transmitter and receiver set up in the back of his station wagon, using a generator supplied by WØAOK. This unit handled a great number of official and personal emergency calls. In the morning of May 21 this setup was moved to the Baptist Church Center, relieving the mobile stationed at that point, and mobiles were henceforth used at survivor registration centers, to check on inquiries, investigate damage and determine safety of occupants of damaged residences.

In the afternoon of May 21 a two-meter teletype link was set up between the area and Kansas City. Many operators did much operating with little sleep. An "unofficial" version of the Missouri State CD Net operated on 3995 kc. for 30 hours, NCS'd by KØBZK assisted by WØMCH, but the bulk of out-of-town communications came over commercial circuits whose long-haul lines were little affected. Inquiries coming in through regular traffic and emergency nets were handled mostly by the amateurs themselves because of the heavy load on the Red Cross. The Kansas CW Net and the Tenth Regional Net of the ARRL National Traffic System funneled this traffic into and out of Kansas City with characteristic dispatch, mostly through KØBXF and WØNIY. Some normal channels were bypassed because of the emergency situation.

The active Lawrence, Kans., Mobile C.D. group sent mobiles to Ottawa, Kansas, to help, where they ran into some conflict of authority between the police and National Guard but succeeded in being of material assistance. Fixed stations were WØFON and WØUNT operated by WØLUB. Mobiles were *WØs* ABZ KLK NSB OBH OYZ RZF TIX, *KØs* BIU EDZ.

WØMID notes that the tornado had no apparent effect on 10 and 6 meter conditions, but plenty on 80 and 75 — an important point to remember in future operations of this kind.

Other amateurs reported to have participated: *KØs* AEU BIX BVD BXU CFI CTG CTK DWK GZR HBC HDT HJQ IAH BZK BXF HIM HBG: *WØs* ASI AUC BYM CBD DOK DVC DXE DXI EDB EPB ESW FIF FJK GHS GPS GVI GVE HOK IDL IIS ITJ JET JXT KMV KUC LK LKS LOH LQV MAF MMJ NNU OMM QIZ QJC QPJ QPM RVY SSG SVQ SZH TFQ TNA TOD TOQ TQR TQS UBR UBS UNP VBX VFI VRF WWA WWB WYK TOL FNS ERH UXT, W9GEX/Ø, W7VXF/Ø, W5WFA, W5KLB, W8AQW. There are unquestionably omissions, Mert says. Tnx, Mert.

—•••—

Rains up to ten inches brought serious flooding throughout much of southwestern Minnesota on June 19. WØSKQ at Marshall commenced emergency operation at once, assisted by *WØs* VTZ UNG DXY TWO, *KØs* TWO and CUO, all of whom reached the WØSKQ location by army truck and hip boots. Messages were handled for Civil Defense, Red Cross and the telephone company. WØQIQ, EC for Lyons County, after being flooded out of his home, assisted from the east side of the flooded river. WØBMJ "whomped up" a six-watt transmitter and assisted in taking calls and relaying to WØSKQ. Other stations operating out of the flooded area were *WØs* WBH YMM GBF SZJ KXW LCM DKE PBY BBY WYS and QDZ. Amateurs throughout the state cooperated in the emergency, handling traffic both into and out of the affected area. — *WØWVO, SEC Minn.*

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On June 20 a huge tornado funnel passed through Fargo, N. Dak., leaving utter destruction and injury to many people. *WØs* TXJ JNP KZZ NGL and others went into action immediately afterward. A base of operations was set up at WØQWZ to handle the mobiles and to handle incoming and outgoing messages. Within an hour the group had mobiles in action at the local airport to provide lights for plane landings, and at other places to try to locate missing people. Power lines down over much of the city made travel

Activity at the C.D. headquarters station in Tulsa, Okla., on May 18, during the Arkansas River flood in which the town of Bixby was isolated and all communications were by ham radio. Sitting at the far operating position is K5DVF; at the lower position is K5DGA; and at lower right are W5ZBI (EC) and W5KYA. Others in the picture are unidentified c.d. workers.

very difficult and circuitous. Among the many other amateurs taking part were *W0s* ECX SEO and QPT. In St. Paul, WØPDN assisted the Pioneer Press in getting news dispatches out of the area by amateur radio (via WØQWZ), which information was used by the paper the next morning, plus a short plug for the amateurs. — *W0CAQ, SEC N. Dak.*

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Amateurs in Keswick, Ont., assisted in a storm on July 3, an aftermath of Hurricane Audrey, when all communications, both telephone and hydro, were cut off, virtually isolating the community. VE3BUT and VE3DSM of Toronto volunteered to assist and were sent to the stricken area in their mobiles. Unable to make direct contact with the Toronto station, VE3RH, relay was provided by VE3GJ in Orillia, later relieved by VE3YS in Newmarket and several others. The two mobile units handled all emergency communications into and out of Keswick during the 72-hour blackout, then continued to handle personal emergency messages until resumed communications could get back to normal. The VE amateurs received good publicity and much praise for this work.

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While driving near Boise, Idaho, on July 11, W7NVO discovered a fire and immediately put out a "Mayday" call for assistance on his mobile. He was answered by W7YUX, who called fire equipment to the scene to quench the blaze.

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On July 12, while participating in Operation Alert, W4RHZ, operating mobile in Newport, Ky., with K4KFO accompanying him, came upon an automobile abandoned on passenger railroad tracks. The car was so situated on the curbing that it could not be moved. W4RHZ immediately called net control W4BZ/4, who instructed W4BJN to alert the railroad dispatcher to set up a red block. Newport police were also called and a wrecker was dispatched to the scene to move the car.

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The Florida Mid-Day Traffic Net was alerted on April 2 to assist police in the search for a missing beauty queen from St. Petersburg. Fifteen stations relayed the message to police departments of other cities. After a four-hour period of announcements on the net, W4BNE, net control, was informed that the missing beauty had simply eloped with her boy friend and was not missing after all. The net then relayed cancellations to all the police departments notified. All stations received a thank-you from the St. Petersburg police chief. Those who took part: *W4s* DVT EHW DWI/EDT EKU NAK JCS TAS, *K4s* IRZ EBZ GOX ANJ. — *K4BNE.*

The Cuyahoga County, Ohio, AREC received a tornado alert at 0900 on June 18. Stations began collecting immediately on Cleveland's emergency frequencies on 10 and 6 meters. Throughout the alert a total of 45 stations in 27 communities checked in, giving excellent communications over the area. Many communiques were handled regarding the advance of the storm. Stations in the 6-meter net: *W8s* TFW TXC CTP NRI CWW LHX QLB UDL UKC FFA HZY, K8BXY. Stations in the 10-meter net: *W8s* AEU OPX BDZ NZC OHJ VBN OPC SKG MWE BUQ UEM OED ZJQ MAE QXS OJR INW FKB OKI BGO FFK WLM CYT RDP LVM BMX OYS JFD PVC, *K8s* ABA CFH EDJ AET. — *W8AEU, EC Cuyahoga Co., Ohio.*

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On June 11 the Dade County (Fla.) Red Cross Chapter called SEC W4IYT for help. The problem was to locate the son of a woman who was dying of leukemia in Miami. A message was originated and put out on the Florida Phone Traffic Net and the Tropical Phone Traffic Net. Two days later W4IYT was informed that the son had been located by a Wilmington amateur as a result of the efforts made by the two nets and was on his way to Miami. The following amateurs were known to have assisted in the search: K2EFA, W3CUL, *W4s* PL DVR PZT HNC FPC HCQ LMT, *K4s* ANJ ENW, W5BZS, each of whom received a message of appreciation from Miami Red Cross. — *W4IYT, SEC E. Fla.*

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On June 29 the Heart of America Radio Club Emergency Net was alerted for flood conditions along the Big Blue River. KØAEU was called at 0400 and in turn alerted mobile *W0s* UBR KMV and OLO who were placed at strategic check points to report conditions. WØRSW/m also checked in during the early part of the day. WØRVG, the club station, was manned by *K0s* AEU QIZ UBR and TFQ. Operation continued until 1800, when the danger was declared past. Other amateurs participating included *W0s* QMZ VNZ RDI/m QLW/m EQI/m SSG HTY/m ZMR UHB JEC, KØDZR.

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Sixteen SECs filed June activities reports, representing 5285 AREC members. This is down two reports from last June, but up almost a thousand AREC members. We welcome Northern Texas Section to the new total of 32 sections heard from this year. Other sections reporting: Ga., E. Fla., Minn., Iowa, Ky., NYC-LI, Colo., W.N.Y., Wis., San Joaquin Valley, Santa Clara Valley, Maritime, Alabama, Conn., Mont.

This brings us to the midway point in 1957 and we note that the following sections have reported each month so

far: Ga., W.N.Y., Conn., Minn., Colo., San Joaquin Valley, E. Fla., Santa Clara Valley, NYC-LI, Wis., Maritime. Here is the chart showing comparison of this mid-year with those of previous years back as far as 1953:

Year	*Total Reports*	*Diff. Sections*
1957	124	32
1956	113	30
1955	98	26
1954	77	21
1953	103	25

RACES News

On July 10 a simulated emergency called "Operation Chow" was conducted in Ewing Township to test c.d. forces in the evacuation and feeding of a large population, in Mercer County, N. J. All communications posts were manned within an hour after civil defense was alerted, due to an efficient telephone alerting system. Communications were passed with municipalities in a matter of minutes, with county communications acting as liaison between the municipalities. Mobile stations were manned on two and six meters. A new type of message, called an "information message," was tried out during this drill and found to be effective in reducing paper work. Two 2-meter nets, a 6-meter net and an 80-meter c.w. link to state headquarters were in operation. The whole operation, the first of its kind ever attempted at county level, was considered a success by county officials.

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How about a little more RACES news, fellas? Want this column to fold up?

TRAFFIC TOPICS

For the information of all who think that we are anti-c.w. or anti-phone in our ARRL traffic policies: we are neither. We are, however, *pro*-traffic, and we don't care much how it is handled as long as it is handled well. It is characteristic of practically every traffic net that it considers itself the best doggoned net that ever came down the spout, and that we ought to go hog wild in giving it publicity; this regardless of whether it's a c.w. or phone net, or any other kind. We can't come anywhere near to giving each net the publicity it thinks it deserves; there just isn't enough *QST* space. So we treat all nets as much alike as possible. Section-level nets find their best outlet for publicity in their SCM's column. Other nets of wider coverage can have their activities mentioned in this column briefly if they send in the information. But it just isn't practical to mention in detail all new nets that are formed, print recruiting propaganda, list member rosters and the like. About all we can do is summarize traffic totals and occasionally make mention of methods used by this or that net which appear to have a general application — this regardless of whether they operate on phone or c.w.

How about the National Traffic System, you ask? NTS is not a c.w. organization, as so many traffic men, especially those operating on phone, think. What's more, it never has been. The difference between NTS and most ARRL-sponsored activities is that it makes no distinction between c.w. and phone. It is designed for a purpose, and that purpose is to handle traffic on a systematized basis, utilizing those traffic men who believe in its principles and will abide by its methods. As far as mode is concerned, it tries to utilize the best mode to suit the need, impartially and unprejudicially. We would like to have more phone stations participate, particularly at section level where the need for greater coverage is paramount, but this participation, just as in the case of c.w. stations, must be within the NTS framework. In NTS, the only place where we want or need nets with all possible comers is at the section level. Participation in NTS nets at regional and area and Transcontinental Corps levels is on the basis of assignment of volunteers. So far, at all but the section level c.w. has carried the full load. This is because c.w. stations have volunteered for these assignments and phone stations, generally speaking, have not, and also because c.w. bands are better suited for this type of representative activity over medium and long distances. However, it is far from unthinkable that it could be done by phone. There is just one basic requirement that

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for July traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	157	1591	1402	179	3329
W3WIQ	103	948	1102	47	2200
W7BA	17	1066	1018	16	2147
W2KEB	89	996	754	194	2033
W0BDR	25	963	931	21	1960
W4PL	7	883	841	15	1746
W0SCA	7	711	708	3	1429
W0CPI	7	644	594	50	1295
W0PZO	15	578	528	18	1139
W0LGG	21	544	471	57	1093
W9NZZ	235	387	0	385	1007
W8UPH	16	454	388	55	913
W8ELW	7	461	426	12	906
W9JYO	549	178	158	12	897
W6GYH	602	144	123	20	889
W9CXY	4	431	387	44	866
W0CZ	16	399	383	16	814
W9EQO	5	379	364	0	748
W1ARR	92	334	296	24	746
W7PGY	24	361	308	48	741
W3ZSX	197	312	178	30	717
K2ECY	57	278	300	70	705
W5RCF	17	322	279	31	649
W9BLL	8	323	315	8	649
K4EZL	161	234	190	25	610
W0GAR	4	301	299	6	610
K9EDI	75	205	243	71	594
W9ZYK	16	276	270	22	584
W9EHZ	4	280	242	23	549
K7WAT	72	247	196	29	544
K6DYX	2	266	246	13	527
W1UEQ	4	259	232	31	526
W3WHK	63	236	118	97	514
K2PHF	82	233	145	51	511
W2KFV	30	263	137	77	507
W9IA	35	234	234	0	503
Late Reports:					
W3CUL (May)	164	1158	941	193	2456
W8ELW (June)	9	367	358	8	742

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
K7FAE	65	1564	1446	69	3144
K9USN	541	292	277	4	1104
K5WAB	46	525	479	46	1096
KGIDT	289	148	5	143	585
Late Reports:					
W6IAB (June)	63	1229	1064	275	2631
KH6AJF (May)	84	269	228	38	619

BPL for 100 or more *originations-plus-deliveries*

K6GZ	278	K2OIY	118	W3TN	102
K9GDF	271	W8CSK	117	W4HKK	101
K2TNJ	168	W9TT	115	Late Reports:	
K2RIC	145	W3EPL	112	W6ZJB (June)	174
KH6AJF	141	K2NMM	111	W9ETM (June)	160
K5DGI	140	W9EHH	109	W7TLC (June)	132
W3CVE	135	W9DGA	108	W8FWQ (June)	115
W8FWQ	135	K0CLS	104	W3CVE (June)	112
W9EXL	119	W0KJZ	103		

More-Than-One-Operator Stations

K3WBJ	127	Late Reports:	
K5FAA	105	KH6AJF (Mar.)	152
		KH6AJF (Apr.)	108

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W5UXE.

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.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

C.W.		*PHONE*	
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.

makes it difficult for some phone stations to participate at these levels: the requirement for liaison with other NTS nets in order to effect the proper traffic flow, in the right direction at the right time. This means that phone stations participating at regional level or above are going to have to have, or acquire, some code proficiency because some of the liaisoning nets will undoubtedly be c.w. nets, and some of the c.w. stations are going to have to use phone because some of them will be phone nets.

The suggested solution to this dilemma is obvious: set up two National Traffic Systems, one on c.w. and one on phone. Horrors! The present structure is difficult to maintain; to split it into two duplicating systems is enough to cause screaming nightmares. Besides, is not this further separation of facilities for a common purpose, inimical to the traffic handling game as a whole? Are we so small that we cannot be compatible because we don't all operate by the same mode? Cannot the necessary connections between phone and c.w. facilities, both set up to handle traffic, be completed by those who are equally at home by both modes? We think they can. In fact, in some sections they have. The greatest need is the *desire* to do it.

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Miscellaneous July reports. Eastern States Net reports 27 sessions, 60 stations participating, traffic total of 1022. Early Bird Transcontinental Net reports 31 sessions, 341 messages. Interstate S.S.B. Net reports 683 messages handled by 38 stations, average session time of one hour fifty-five minutes. North Texas-Oklahoma Net reports 31 sessions, 931 check-ins, traffic total of 284. Transcontinental Phone Net reports the following totals: First Call Area — 1247; Second Call Area — 1190; Fourth, Ninth and Tenth Call Areas — 1002; total — 3439.

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National Traffic System. Since this copy is going in about a week early in order that the writer can catch some vacation, we want to thank all net reporters for their efforts to get reports to us early, by request. Those not included in the summary below are *not necessarily* late, but we'll include them in a "late" summary next month, "late" in this case meaning beyond the arbitrarily-moved-up deadline. No stigma attached. July reports:

Net	*Sessions*	*Traffic*	*Rate*[1]	*Average*	*Representation %*
EAN	23	867	.683	37.7	93.5
CAN	31	1141	....	37.0	100
PAN	29	908	.386	31.3	100
1RN	26	277	....	10.6	75 6[2]
2RN	49	381	.282	7.8	95.2
3RN	46	274	.290	6.0	72.5
4RN	23	147	....	6.4	46.6
RN5	54	596	.370	11.1	70.1
RN6	22	296	....	13.5	18.8[2]
8RN	31	161	....	5.2	71.0
9RN	56	981	.388	17.5	77.7
TEN	93	1928	.566	20.7	57.0
ECN	18	76	....	4.1	72.2[2]
Sections[3]	414	2910		7.0	
TCC East	54[4]	113			
TCC Central		1820			
TCC Pacific	140[4]	873			
Summary	915	13749	EAN	12.0 CAN/PAN	
Record	915	13749	....	15.2 100	

[1] New method of calculating rate: Total traffic divided by total time in session.

[2] Regional net representation based on one session per night. Others are based on two or more sessions.

[3] Section nets reporting: CN & CPN (Conn.); Iowa 75 Phone; TLCN (Iowa); KYN & KPN (Ky.); NTX (N. Tex.); S. Dak 75 Phone & S. Dak. 40 Phone; SCN (Calif.); GSN (Ga.); QKS, QKS SS & QKN (Kans.); NJN (N. J.); Minn. Noon Phone; MSN (Minn.)

[4] TCC functions reported, not counted as net sessions.

CAN is holding up fine through the QRN and heat. PAN certificate has been issued to WØKQD; Nevada and Utah still sorely needed. 2RN certificates have been issued to K2KSP and W2RXL. NYS showing is not so good in the absence of W2BXP; W3UE says UQ2KAA reported into 3RN, but had no traffic. W4AKC reports for 4RN again. W5RCF, acting RN5 manager, says he thinks the boys back east don't know *nuthin'* about QRN. W6ZRJ says he can't supply figures for the new "rate" column. WØKVJ and KØCVD have earned their TEN certificates; Lydia says that TEN has six active YL operators and wonders if any other regional can say the same, or better.

Transcontinental Corps: WØBDR has taken over TCC-Central from WØSCA as director. Russ is well qualified for the job and we know will make a go of it.

Area	*Functions*	*% Successful*	*Traffic*	*Out-of Net Traffic*
Eastern	52	86.5	808	113
Pacific	140	82.9	1746	873

The TCC roster: Eastern Area — *W1s* ARR AW BDI EMG NJM TYQ, *W2s* HDW ZRC, *W3s* COK WG, W8ELW, *W9s* CXY DO. Central Area — *W9s* CXY DO, *WØs* BDR KJZ LGG SCA. Pacific Area — W6s ABD GIW VZT PLG EOT BPT HC IPW ZRJ, *K6s* CME DYX GZ ORT, *W7s* GMC UJL ZBO, WØKQD.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

RTTY SWEEPSTAKES ANNOUNCEMENT

Merrill L. Swan, W6AEE, announces that the RTTY Society of Southern California will sponsor another RTTY SS the first week end in November. The contest will be held over a thirty-hour period starting at 6:00 P.M. EST November 1 and ending 12:00 midnight EST November 2. Stations will exchange messages consisting of message number, originating 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 sent and receipted for entirely by RTTY, and one point for a message received and acknowledged by RTTY. For final score, multiply the total message points by the number of different ARRL Sections (see page 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. Logs should be mailed to Merrill L. Swan, W6AEE, 372 West Warren Way, Arcadia, California.

RESULTS, JULY CD PARTIES

Here are the highest claimed scores registered by ARRL officials and appointees during the CD Parties of July 20-21 and 27-28. Figures after each call indicate score, number of contacts, and number of ARRL sections worked. Final and complete results will appear in the October CD Bulletin.

C.W.

W6JVA.....202,041-353-63
W3VOS.....171,240-529-64
W6YMD.....157,140-291-60
K6DDO.....150,474-268-62
W1WEF.....135,000-428-62
W1EOB.....133,760-411-64
K6IYJ.....121,186-226-59
W1RAN.....117,115-391-59
W8MSR.....111,900-366-60
W1ARR.....104,920-337-61
K4DTI.....104,135-350-59
W4KFC.....102,795-330-61
W3NF.....99,470-336-58
K2DXV.....99,415-332-59
W4PNK.....95,200-340-56
K2EIU.....94,770-345-54
W1FEA.....94,620-327-57
K6BWD.....88,715-177-55
W4WHK.....87,920-309-56
K4DAS.....85,120-300-56
K4HOU.....84,645-291-57
KL7CDF.....75,492-152-54
W9SDK.....75,320-262-56
K8BPX.....72,105-253-57
K5DGI.....71,550-260-54
W9YYG.....71,340-241-58
K6ORT.....68,958-138-54
W1ACR.....68,000-272-50
K2OMT.....67,440-278-48
K2BHQ.....67,330-254-52
W9MAK.....66,250-244-53
K4EZL.....65,190-241-53
K0CNC.....62,640-212-58
W6YCF.....62,373-132-51
W7ZUD.....62,379-139-49
W2DRV.....60,760-241-49
W8UPH.....60,210-218-54
W2CWO.....60,155-227-53
W4TFX.....59,925-250-47
W4ZM.....59,925-230-51
K4DWF.....58,500-225-52
K4AJG.....57,250-225-50
K2DDK.....55,000-215-50
W1GVK.....53,200-190-56
W8UYR.....52,800-240-44
K4DVR.....52,020-200-51
VE7AC.....50,040-123-45
W8CSK.....50,760-184-54
WØIA.....50,490-180-54

PHONE

W2VCZ.....23,250-147-31
K2EIU.....15,720-125-24
W2KFR.....13,125-105-25
W9SZR.....12,900- 80-30
W1BIS.....12,740- 91-28
W3BNR.....12,600-105-24
W1HKN.....12,375- 99-25
W1FYF/1.....11,615-101-23
W1ARR.....11,500- 93-23
W4TFX.....11,385- 94-23
W1JYH.....11,235-100-21
W3NF.....10,625- 78-25
W1GVK.....9500- 95-20
W3MSR.....9240- 77-22
W2JGV.....7700- 66-22
K2OIL/2.....5570- 59-18
W8PBX.....5535- 49-23
W1SMO.....5510- 52-19
W2CWD.....5120- 64-16

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on October 16 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 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 October 2 at 2100 PDST on 3590 and 7128 kc.

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

Code-Practice transmissions are made from W1AW each evening at 2130 EDST. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and buzzer or audio oscillator and attempt to send along with W1AW.

Date	Subject of Practice Text from August *QST*
Oct. 1:	*N.B.S. Equatorial Region* . . . , p. 11
Oct. 4:	*The Norberg Crud-O-Ject*, p. 16
Oct. 7:	*The Alert Alarm*, p. 18
Oct. 10:	*The A.R.R.L. . . . Mobile Transmitter*, p. 20
Oct. 15:	*A Simple Halo for ⅔-Meter Mobile Use*, p. 29
Oct. 17:	*Controlling Your Station With One Switch*, p. 35
Oct. 23:	*Linear Amplifiers and Power Ratings*, p. 42
Oct. 25:	*African Field Day*, p. 48

W1AW OPERATING NOTE

The W1AW operating schedule, as shown on page 86, May *QST*, and page 81, September *QST*, will be maintained through October 26. The W1AW fall schedule, which becomes effective October 27 with the return to EST, will appear in next month's issue.

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.

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

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

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

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

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

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

We, the undersigned full members of the.....
.....ARRL Section of the.....
Division, hereby nominate.....
as candidate 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.

— F. E. Handy, Communications Manager

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon*	Oct. 10, 1957	W. R. Williamson	Mar. 17, 1949
San Joaquin Valley	Oct. 10, 1957	Ralph Saroyan	June 15, 1957
North Dakota	Oct. 10, 1957	Elmer T. Gabel	June 15, 1957
East Bay	Oct. 10, 1957	Roger L. Wixson	Oct. 14, 1957
Alabama	Oct. 10, 1957	Joe A. Shannon	Dec. 14, 1957
Ohio	Oct. 10, 1957	Wilson E. Weckel	Dec. 14, 1957
Illinois	Oct. 10, 1957	George T. Schreiber	Dec. 15, 1957
Western Florida	Oct. 10, 1957	Edward J. Collins	Dec. 15, 1957

A.R.R.L. ACTIVITIES CALENDAR

Oct. 2: CP Qualifying Run — W6OWP
Oct. 12–13: Simulated Emergency Test
Oct. 16: CP Qualifying Run — W1AW
Oct. 19–20: CD QSO Party (c.w.)
Oct. 26–27: CD QSO Party (phone)
Nov. 7: CP Qualifying Run — W6OWP
Nov. 9–10, 16–17: Sweepstakes
Nov. 14: CP Qualifying Run — W1AW
Dec. 4: CP Qualifying Run — W6OWP
Dec. 20: CP Qualifying Run — W1AW
Jan. 2: CP Qualifying Run — W6OWP
Jan. 4–5: V.H.F. Sweepstakes
Jan. 11–12: CD QSO Party (c.w.)
Jan. 18–19: CD QSO Party (phone)
Jan. 20: CP Qualifying Run — W1AW
Feb. 1–16: Novice Round-up
Feb. 5: CP Qualifying Run — W6OWP
Feb. 7–9: DX Competition (phone)
Feb. 14: Frequency Measuring Test
Feb. 18: CP Qualifying Run — W1AW
Feb. 21–23: DX Competition (c.w.)
Mar. 6: CP Qualifying Run — W6OWP
Mar. 7–9: DX Competition (phone)
Mar. 19: CP Qualifying Run — W1AW
Mar. 21–23: DX Competition (c.w.)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Sept. 28–29: W/VE Contest, Montreal Amateur Radio Club (page 84, last month's issue).

Oct. 5–6: Connecticut QSO Party, Connecticut Wireless Association (page 144, this issue).

Oct. 5–6: VK/ZL DX Contest (phone), NZART and WIA (page 72, last month's issue).

Oct. 12–13: Michigan QSO Party, (page 130, this issue).

Oct. 12–13: VK/ZL DX Contest (c.w.), NZART and WIA (page 72, last month's issue).

Nov. 1–2: RTTY Sweepstakes, RTTY Society of Southern California, (page 101, this issue).

Nov. 6–7: YLRL Anniversary Party (phone), YLRL, (page 80, this issue).

Nov. 13–14: YLRL Anniversary Party (c.w.), YLRL, (page 80, this issue).

Nov. 23–24: 21/28 Mc. Telephony Contest, RSGB (details next month).

Quebec*	Oct. 10, 1957	Gordon A. Lynn	Dec. 15, 1957
South Carolina	Oct. 10, 1957	Bryson L. McGraw	Dec. 30, 1957
Alaska	Nov. 11, 1957	Dave A. Fulton	Jan. 15, 1958
Eastern New York	Nov. 11, 1957	George W. Tracy	Jan. 27, 1958
Virginia	Dec. 10, 1957	John Carl Morgan	Feb. 11, 1958
North Carolina	Dec. 10, 1957	B. Riley Fowler	Feb. 15, 1958
Maritime*	Dec. 10, 1957	D. E. Weeks	Feb. 15, 1958
Georgia	Jan. 10, 1958	William E. Kennedy	Mar. 18, 1958

* In Canadian Sections nominating petitions for Section Manager 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.

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.

Saskatchewan	Lionel O'Byrne, VE5LU	June 10, 1957
Eastern Pennsylvania	Richard B. Mesirov, W3JNQ	June 15, 1957
Oklahoma	Richard L. Hawkins, W5FEC	Aug. 9, 1957
Maine	John Fearon, W1LKP	Aug. 9, 1957
Manitoba	James A. Elliott, VE4IF	Aug. 9, 1957
West Virginia	Albert H. Hix, W8PQQ	Sept. 18, 1957
Indiana	Arthur G. Evans, W9TQC	Oct. 14, 1957

In the San Francisco Section of the Pacific Division, Mr. Fred H. Laubscher, W6OPL, and Mrs. Cynthia DeLauney, W6PHT, were nominated. Mr. Laubscher received 159 votes and Mrs. DeLauney received 156 votes. Mr. Laubscher's term of office began Aug. 14, 1957.

In the Southern New Jersey Section of the Atlantic Division, Mr. Herbert C. Brooks, K2BG, and Mr. Edward G. Raser, W2ZI, were nominated. Mr. Brooks received 178 votes and Mr. Raser received 124 votes. Mr. Brooks' term of office began Aug. 26, 1957.

"Reminiscing. . . . The period of Amateur Radio most talked about is that between the Leyden Jar and the Chemical Rectifier . . . money in abundance did not necessarily make for good stations in those days . . . home building taking considerable skill was necessary. The popularity of 'phone operation and the influx of many (beginning) operators . . . it seems best to state the case of code. It is possible, and more often done than not, for the new amateur to purchase all of his equipment ready-made including the antenna. The only effort necessary on his part is to hang up the antenna, cut some coax (and) he is now in business; he can communicate immediately on 'phone and gab with the best of them. Nothing remarkable or startling has been accomplished.

Supposing this same individual includes a key with his purchase of factory-made equipment and attempts to communicate by code. He immediately discovers that he is not at all proficient at this means of communication . . . and wonders why he gets no answers. He becomes aware of the fact that this will take some doing on his part before he can bat it off and take it with the best of the code operators. Often newly-licensed hams go back 'phone operation and remain there.

If however, our Mr. New Ham perseveres in code work, it will one day dawn on him that he has become master of a most accurate means of communication. His DX horizons have greatly increased along with reliability of schedules. And of the utmost importance: he has found a new and fascinating hobby! . . . Code is still an important means of communication as well as (specialty within) ham radio. The 'phone man who forgets what little he knew of code after obtaining his ticket cannot possibly know these things for he has never been there."

— WØDZG in Podunk News.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....272	W8NBK.....265	W3KT.....263
W6AM.....272	W8BRA.....265	W5ASG.....262
W8HGW.....271	W6RW.....265	W8KIA.....262
W6ENV.....270	W3GHD.....265	W7AMX.....262
W9NDA.....269	ZL2GX.....264	KV4AA.....262
W6MX.....268	W6CUQ.....264	W3JTC.....262
PY2CK.....266	W6TT.....263	W6EBG.....262
W6DZZ.....266	G2PL.....263	W3JNN.....262
W6SYG.....266		W3BES.....262

Radiotelephone

PY2CK.....263	W8GZ.....249	W8BF.....241
VQ4ERR.....251	CN8MM.....247	W6AM.....241
W1FH.....251	W9NDA.....243	CX2CO.....239
W8HGW.....251	W3JNN.....243	W1NWO.....234
ZS6BW.....249	W9RBI.....243	WØAIW.....231

From July 15, 1957 to August 15, 1957 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

G3FXB.....187	W4TK.....109	W9YMG.....102
W3NA.....175	CR6CK.....108	W3GEN.....101
W2BHV.....151	G3BHW.....106	W4VCB/3.....101
G3CG.....138	G3JEQ.....105	W3DDV.....100
KV4BK.....127	VE3YV.....105	W3RZL.....100
CE3HL.....126	W9BPW.....105	W3UVT.....100
ON4KR.....121	SM5EC.....105	W4YGZ.....100
F3DM.....117	K6KJR.....104	W5BQS.....100
W9HTY.....116	K2QXG.....104	K6OWQ.....100
W9KMN.....115	OH9PF.....103	W8QVU.....100
11WP.....114	W6ZZC.....103	W9OMZ.....100
WØJMB.....113	SP3PL.....103	WØDFI.....100
OH2LA.....112	T12BX.....102	WØDRG.....100
W6SEO.....110	W3WQN.....102	DL3KN.....100
4X4FV.....110	JA2AT.....102	G5JL.....100
	JA2BL.....102	

Radiotelephone

G3FXB.....157	W3MJF.....110	KG6AGO.....102
W8GAN.....130	W9ZUL.....110	W3BIW.....101
CE3HL.....122	I1ZFF.....109	W4EFX.....101
V82DB.....121	HR1EZ.....106	W7FNC.....101
F8SC.....117	CX6BM.....105	HK1DZ.....101
PY7VE.....119	WØZSZ.....105	W1VAN.....100
4X4CX.....115	W8KDJ.....104	W3UMU.....100
W8CJ.....113	4X4FV.....104	K6EVR.....100
W5YKK.....111	W2HTI.....102	F7AX.....100
	DL9OV.....102	

ENDORSEMENTS

WØELA.....243	G3HLS.....230	W8KPL.....220
W6YY.....238	W7NKW.....223	G4ZU.....220
W2HMJ.....232	W6BVM.....222	K2GFQ.....211
W5BGP.....232	OK1FF.....222	W5DMR.....210
W8EMS.....232	W4EPA.....220	W7ASG.....210
W3FGB.....204	K2OEA.....160	W8JXY.....131
W6DBP.....200	W2NUT.....160	G3VA.....131
W7RT.....200	W3SOH.....160	W3DBX.....130
G6BB.....200	W4JII.....160	W3NKM.....130
ON4PA.....200	W6MUF.....160	W4JUJ.....130
SM5CO.....200	W7AUS.....159	W6TKX.....130
K4PTL.....192	W8PHZ.....156	W9PNE.....130
SM3AKM.....192	W3SWV.....154	VE3IR.....130
W5KBU.....191	K4BVQ.....152	W6ZVQ.....125
W6YMD.....190	K2AAA.....151	WØDSP.....123
YV5AE.....190	W6NJU.....151	W1YQC.....121
W8DSU.....183	W8IRN.....151	W3RPG.....121
W2LAX.....181	W1KXU.....150	W5MY.....121
W3MDE.....181	W2DEC.....150	W6PLK.....121
W8CQ.....181	W2SSC.....150	W1DHQ.....120
W8HMI.....180	W5UUK.....150	W5OFN.....120
G3EMD.....180	W0GUV.....150	W6MJP.....120
I1ZFD.....180	G2AJB.....145	W7RFE.....120
YV5BZ.....180	W7HKT.....142	PAØVO.....120
W3KZQ.....179	W9JYW.....142	SM5VN.....120
OH3RA.....179	G4FN.....142	K4EHA.....119
W1RB.....173	I1IZ.....141	K4EJO.....119
DL6MK.....172	W1RWS.....140	K4GSS.....119
W1JMI.....170	W3WGH.....140	W7UDG.....117
W2MUM.....170	W9ROU.....140	W8AYS.....113
W6GMF.....170	WØDST.....140	K9CLO.....112
W6ULS.....170	SM5CCF.....140	WØOAQ.....112
W9RKP.....170	W5DQK.....138	W4BFR.....111
W2AYJ.....168	W3EOB.....136	W4QT.....111
JA6AO.....165	W4JZQ.....134	W1YYR.....110
W1AUR.....162	W8ERA.....133	W3HXA.....110
W3NCF.....161	W7QON.....132	W9RYN.....110
W7BGH.....161	W8LY.....132	W9ROK.....110
W1DX.....160	G2BVN.....132	VE5TK.....110
W1WLW.....160	PAØNIC.....132	

Radiotelephone

W6YY.....215	F9RM.....171	K2AAA.....138
TI2RC.....207	WØVSK.....170	WØSYK.....136
G3FNN.....199	W5DMR.....166	W5FRY.....133
TI2HP.....190	W1MMV.....165	W9YSX.....132
W5KBU.....189	W1AUR.....157	W6TXL.....130
W3UIP.....184	TI2LA.....156	W2BYP.....121
W5GXP.....181	W5HJA.....151	LU5DC.....121
W4EEE.....177	W8EMZ.....151	W2TEX.....111
G6BS.....174	W7EMP.....141	W4QT.....111
W3NA.....171	G3AIZ.....140	W9BEK.....110

W/VE/VO Call area and Continental Leaders

W2AGW.....261	VE3QD.....210	VE7ZM.....228
W4TM.....255	VE4XO.....118	VE8AW.....191
WØAIW.....252	VE5QZ.....140	VO6EP.....190
VE1HG.....164	VE6VK.....164	Z86BW.....253
VE2WW.....192		4X4RE.....222

Radiotelephone

W2BXA.....207	VE1CR.....122	VE7ZM.....185
W4HA.....212	VE2GQ.....130	ZL2GX.....230
W5BGP.....224	VE3KF.....163	OD5AB.....180
W7HIA.....189	VE5RU.....116	EA2CQ.....230
	VE6NX.....101	

• 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: NNT. PAM: TEJ. RM: YAZ. E. Pa. nets: 3610, 3850 and 3997 kc. The annual picnic of the E. Pa. C.W. and Phone Nets, sponsored by the Delaware-Lehigh ARC at Easton on July 28 was a huge success with more than 52 operators in attendance. PYF was chairman and was assisted by GOT and FKE. Section Net certificates were awarded to DJL EPL, GEU and NQB at that time. The Tamaqua ARC held its 3rd annual picnic in July with 68 operators plus their families in attendance. The Carbon and Lehigh Valley ARCs were present as guests. CMA, KJJ, LDV, ZRQ and ZXP organized the good time for all. New appointments for the month: EQA, NOH and WJD as OOs; KDF as ORS; EPL (who made the BPL on deliveries) as OPS; EBG, EPL and LEZ as OBSs. WHK applied for ORS appointment and made the BPL. The Harrisburg ARC tested its new 6-meter net by handling traffic for the Powder Puff Derby on July 7, 8, 9, 10. Nineteen operators worked on 75, 40 and 6 meters handling traffic between Harrisburg, Philadelphia and Akron, using the call ZEK/3. BNR transmits bulletins Mon. through Fri. at 1045 EST on 3850 kc. RL now is on s.s.b. EU is QRL remodeling his farm. The Montgomery County RACES 1957 Operation Alert took place on July 8, 9, 10, 11 with 64 operators participating; 23 separate c.d. organizations reported in! The Schuylkill County RACES participated in the same Alert and gained valuable experience, with 32 of 36 messages relayed to the country seat by 2 meters. Many thanks to all who offered good wishes on the new job as SCM. Traffic: (July) W3CUL 3329, ZSX 717, WHK 514, TEJ 228, EPL 165, AMC 69, DJL 36, TSY 36, PYF 32, BNR 23, NQB 22, BFF 11, ZLC 11, PVY 2, JNQ 1. (May) W3CUL 2456.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM Delaware: Philip R. de Courcelle, 3DQZ. SEC: PKC. MDD meets on 3650 kc. M.-Sat. at 1915 EDT, MEPN on 3820 kc. M.-W.-F. at 1830, SS at 1300 EDT. New EC appointees: YOB for Kent and Queen Annes and PPY for St. Marys. The Foundation of Radio Amateur Clubs has selected Aug. 15, 16, and 17, 1958, for the ARRL National Convention. The officers of the Foundation are FMC, pres.; KFC, 1st vice-pres.; 3NL, 2nd vice-pres.; 4ZM, secy., and 3RE, treas. The Foundation named OMN chairman of the Annual Washington Area Hamfest to be held at the Gaithersburg Fair Grounds. G5BT was guest speaker on July 26 at the RCARA and gave a talk on how amateur radio activities are conducted in England. Because of the tight schedule on his first trip to the States, he was only able to visit the ham shacks of HCG, HN, MSR, OBR, RE and UCR. The BARCS held a gala dinner on July 15 at the Park Plaza Hotel, Baltimore, with many in attendance. We regret to report the accidental electrocution of BSA, WLZ's father, while at work. WV has been kept busy skedding MSK and MCG/VE4 at Churchill, Canada, and CDQ from EA6AF and EA5EL and others while Liz is vacationing in Europe. PQT, at Patuxent River NAS, is active in traffic nets under the guidance of MUK. K9AAU, former chief operator of PQT, has returned home to Chicago. IXX is heard again on the MEPN and is home after a stay in the hospital which started the day of the MEPN Picnic. The members of St. Bernadetts Parish Boy Scouts had communications daily from their Allegany State Park, N. Y., two-week encampment to Takoma Park, furnished by WN3LHL on 40-meter c.w. to NJT and others. Doug is one of the Scouts and this was his first try at traffic. FAL is back at Argentia, Newfoundland, operating on 15-meter phone and c.w. after a short trip to Patuxent River NAS. JH mobiled through Canada and New York during his July vacation. AME and BSY have joined the 6-meter ranks in the Washington Area. WXF now is mobile. At last the XYL of CKR has received her license, KN3AUX. KN3AUX is not the XYL of UCR as reported in another publication. EKO is representing Delaware in MDD almost every night. JEW is back on 2 meters. ASD is building new 2-meter gear and is sporting a 48-element beam. SQV has acquired an HT-30 and now is up to 59 countries on 14-Mc. s.s.b. Good DX is being worked from FNI's all-band mobile. DQZ's NC-300 was hit by lightning, but it has been repaired and Ray is back on the air. 4EKO, formerly at Aberdeen, now is in the Army at the Signal Labs., Ft. Monmouth, N. J. GOJ was married on Field Day and is living in Baltimore. PRL is taking frequent trips to Venezuela and has been missed on the MEPN. K2MAX, chief operator of W3USA, reports the station is maintaining a 24-hour watch on ham and MARS, and UOS and ITSM are part of the staff of eight. Traffic: (July) W3UE 438, CVE 343, PQT 289, PZW 282, K3WBJ 198, W3ZGN 156, TN 142, PQ 136, WY 100, UCR 84, JZY 62, AHQ 50, BUD 43, COK 38, RV 32, OYX 23, FAP 8, KA 6. (June) W3CVE 344, ECP 31, COK 16, ULI 12, GRO 2.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. Many thanks to those who supported me in the recent election. I solicit the help of everyone for the good of the section. We regret to add CNI to Silent Keys. Mac was well known in the Camden Area. Additional Field Day reports were received from K2LBZ/2, Mays Landing, and K2PSR/2, Lambertville. High traffic totals are being maintained by HDW, RG, BZJ and K2JGU despite summer QRN. N.J.C.D. Headquarters has a new 170-ft. tower. KØHEX/2 is located at Ocean View. K2DSL is back on NJN. K2MUE, Riverside, has moved to W9-Land. HPV, Pennsgrove, is building a new rig. K2CPR/FP8AA has returned from vacation on St. Pierre. Jack worked 1020 stations in 50 countries during his month's stay. K2KEW reports that his XYL has dropped the "N" and is now K2ULP. 5VCI/2 is now Technical Editor of SJRA's *Harmonics*. Watch *QST* for SJRA's contact certificate rules. K2MBD is doing a fine job at Camden County C.D. Hq. K2KTS continues to do a fine job with his code class. Operation Alert provided plenty of traffic-handling experience. At State Hq: ZI is chief and BZJ asst. chief, supported by K2DSL, SUG, ISZ, 3BCJ and K2CLD. Mercer County RACES did a fine job maintaining communications during a large scale evacuation. Many thanks to K2IIW for a fine job of reporting Mercer Co. activities. We expect to appoint ECs for Camden and Gloucester Counties next month. Atlantic County activities seem to be increasing. Contact K2PQS, So. Counties Amateur Radio Assn. secretary, for information on club meetings. Traffic: W2HDW 209, RG 196, K2JGU 138, W2BZJ 78, KØHEX/2 30, K2SOL 25, W2ZI 23, K2DSL 18, MUE 16, HPV 4.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. NYS C.W. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYS phone on 3925 kc. at 1800, TAR on 3570 kc. at 1700, 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 kc. at 1600. Using ICE's camp as a base, members of the Antique Wireless Association recently visited the old Marconi station at Kingston, Ontario. K2RHQ has been operating portable from Scout Camp. K2IYP has slowed down a bit because of a recent illness but, as you can see, she's still near the top in the traffic list. The newly-formed Marathon Amateur Radio Club participated in this year's Field Day activities. New officers are K2ORH, pres.; KN2UOH, vice-pres.; K2SYQ, secy.; K2VKZ, treas.; KN2ZBL, pub. chmn. BKC had a siege of illness but expects to get back on the air with a new 600-watt 4-250A rig. The RARA held a family picnic, pot-luck style, with much success. The Erie County Emergency Net also held an FB pic-

(Continued on page 118)

CYRUS T. READ, W9AA, passed away in Chicago *August 9, 1957. We at Hallicrafters, along with his numerous friends the world over, deeply feel his loss. Cy had a long association, not only with amateur radio, dating back to 1916, but with us here in the development of better amateur equipment. The subject of his last article was one particularly close to his heart; we feel after reading it that you will agree with Cy—amateur radio can lead to a brilliant life-time career . . . It did for him.* —Bill Halligan, Jr.

AMATEUR EXPERIENCE

HAVE you ever considered how many leading engineers and scientists got their start in amateur radio? Not only that but how many of those same men have maintained their interest throughout the years? Here at Hallicrafters, as was pointed out once before, we have a large number of active hams both in the factory and in the lab.

ONE of the most outstanding groups of amateurs and ex-amateurs I have been privileged to know was assembled during the war at a time when I was serving as Assistant Secretary at the American Radio Relay League. At New London, Connecticut, a short distance from Headquarters, there were apparently a number of top secret research projects, staffed by an impressive group of college professors, Ph.D's, and other individuals. I was told that the atmosphere of the whole place was quite formal, everyone being addressed as Doctor or Professor. Finally someone started a quiet investigation and found that a large number of these gentlemen were or had been ham operators. The formality thereupon diminished and finally they decided to hold a regular Hamfest. Being the only available speaker at Headquarters I was sent down to represent the League. It was a fine Hamfest and we all had a wonderful time, proving that hams are still hams underneath, no matter how much higher education may be piled on top.

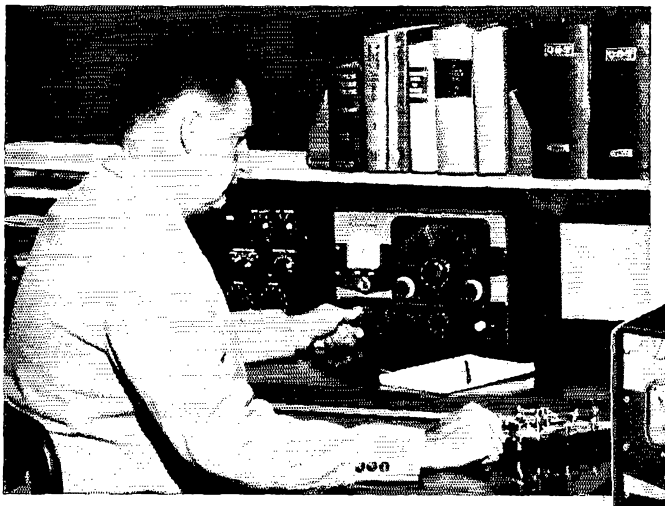
THERE was a time when parents regarded amateur radio as nothing more than a short-lived hobby, and did not really encourage their youngsters to follow it. Let us hope that this short-sighted attitude no longer exists. Amateur radio is a wonderful way to get started in any scientific field, and families who have sons or daughters who are interested in that direction should certainly give them all the encouragement posssible; it may lead to a brilliant life-time career.

Very 73,
CY READ, W9AA

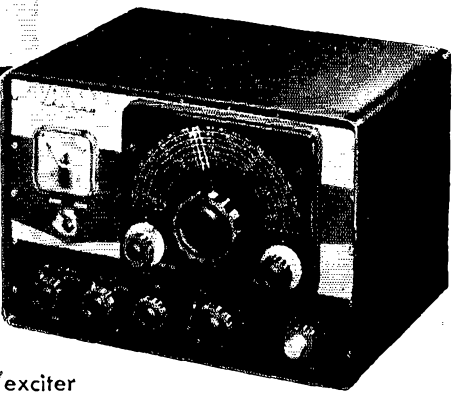
Bill Halligan Jr. W. J. Halligan W9AC for hallicrafters

ADVERTISEMENT NO. 33 of a series.

NEW! THE VIKING "NAVIGATOR" ...an outstanding CW TRANSMITTER/EXCITER!



- Bandswitching 160 through 10 meters
- Flexible, highly stable VFO
- Electronic time sequence keying



This splendid new 40 watt CW transmitter/exciter is designed for the discriminating CW operator who desires a compact, flexible CW transmitter with enough RF power to excite most high powered final amplifiers on CW or AM. Highly stable, built-in VFO is temperature compensated and voltage regulated—unit may also be operated by crystal control. Electronic time sequence keying applies wave shaping to the keyed amplifier stages for perfect "make" and "break" on your keyed signal. Signal clicks and chirps are eliminated, yet the "break-in" advantages of a keyed VFO are retained. The system operates so fast that a breaking station may be heard between transmitted dots! Fully TVI suppressed and filtered—wide range pi-network output will match transmission line impedances from 40 to 600 ohms. Completely self-contained with built-in power supply.

Cat. No. 240-126-1 Viking "Navigator" Kit with tubes, less crystals and key Amateur Net **$149.50**

Cat. No. 240-126-2 Viking "Navigator" wired and tested with tubes, less crystals and key..... **$199.50** Amateur Net

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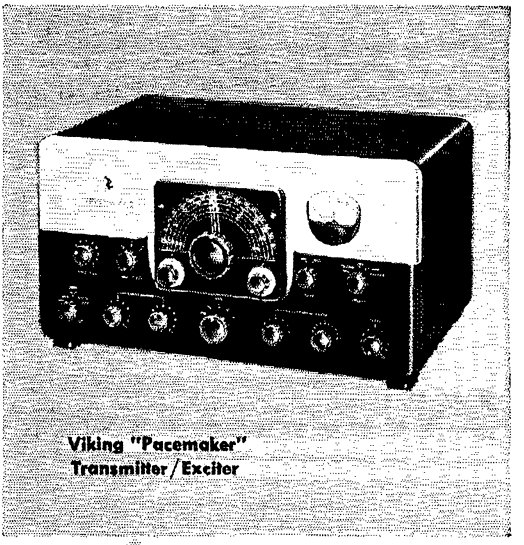

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Drive it with the Viking "PACEMAKER"

The hottest linear amplifier on the market, the Viking "Thunderbolt" delivers solid communication power—over 2000 watts P.E.P.* input; 1000 watts CW; 750 watts AM linear; in a completely self-contained desk-top package. Continuous coverage 3.5 to 30 megacycles—instant bandswitching. The "Thunderbolt" may be driven by the Viking "Navigator," "Ranger," "Pacemaker," or other unit of comparable output. Drive requirements: approximately 10 watts in Class AB_2 linear, 20 watts Class C continuous wave. When used with the "Pacemaker" or similar exciter, the non-inductive input circuit requires no grid tuning. Wide range pi-network output will match transmission line impedances from 40 to 600 ohms. Two meters provide constant visual check—plate current meter also reads watts input, and the second meter reads grid current or plate voltage. Completely self-contained with all power supplies. For 115 VAC—230 VAC, 50-60 cycle, single phase.

Cat. No. 240-353-1 Viking "Thunderbolt" Kit with tubes.... Amateur Net† **$450.00**

Cat. No. 240-353-2 Viking "Thunderbolt" wired and tested with tubes.....**$525.00** Amateur Net†

†*Prices subject to revision. November 1957 delivery anticipated.*

Here to stay! The "Pacemaker" is an outstanding power bargain when used alone or as an exciter for the "Thunderbolt" linear amplifier. 90 watts input CW and SSB (P.E.P.) . . . 35 watts AM! Bandswitching 80, 40, 20, 15 and 10 meters.

YOUR BEST BUY—AND HERE'S WHY!

1. EXCLUSIVE—Unique circuitry uses only 1 mixer for improved spurious signal rejection greater than 50 db. Eliminates great multiplicity of sum and difference spurious products inherent in systems utilizing 2 or 3 mixers.

2. BALANCED RANGE AUDIO—Does not sacrifice low frequency response as is usually necessary in filter-type equipment.

3. BUILT-IN VFO—Highly stable, temperature compensated and voltage regulated. Complete coverage of all bands without crystal switching or re-tuning.

4. FRONT PANEL CARRIER BALANCE—Provides optimum carrier rejection.

5. NO FIXED IMPEDANCE OUTPUT CIRCUIT—Wide range pi-network output assures proper load impedance to final amplifier.

6. INDIVIDUAL CRYSTAL CONTROL—of sideband generating frequency for each band.

Cat. No. 240-301 Viking "Pacemaker" wired and tested with tubes and crystals, less key and microphone. Amateur Net **$495.00**

***** *The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics. The Johnson Viking "Thunderbolt" Linear Amplifier produces these higher powers and is the only equipment available to amateurs which can reach the maximum legal limit of "Talk-Power".*

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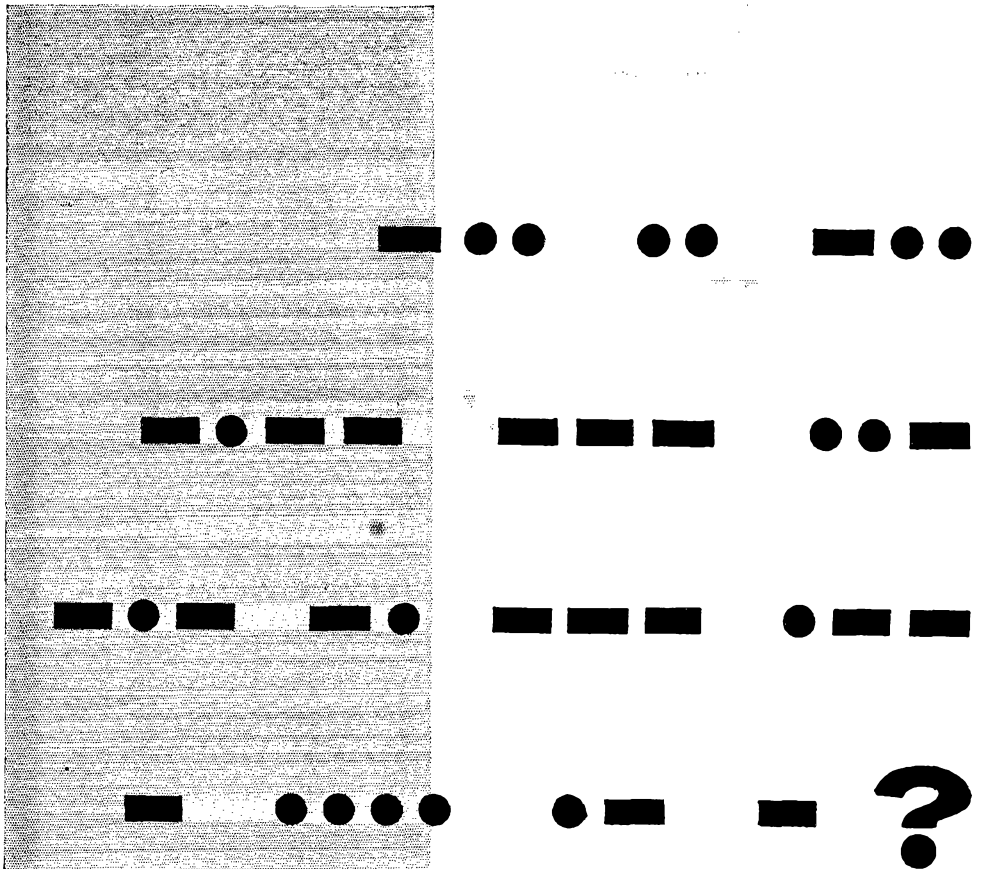

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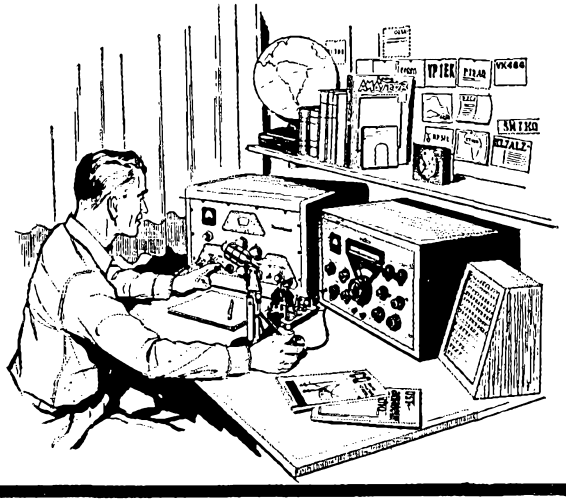

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DX-100

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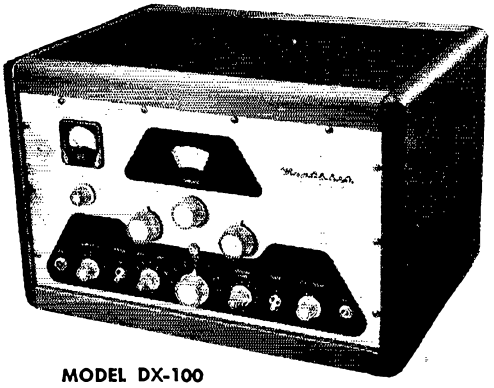
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*



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$18.95 dwn., $15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

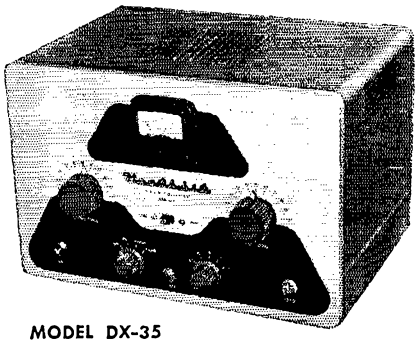
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

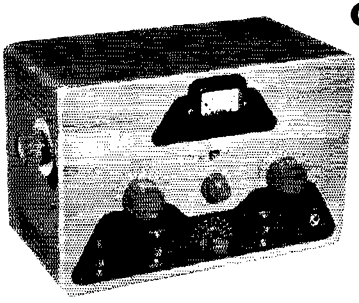
$56.95 Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT



MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.

Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

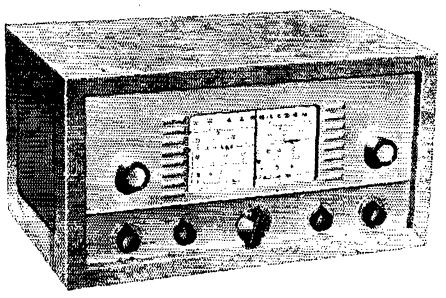
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. 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—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax
(less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. $.50 dwn., $.42 mo. $4.95

Ⓐ HEATHKIT VFO KIT MODEL VF-1

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 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

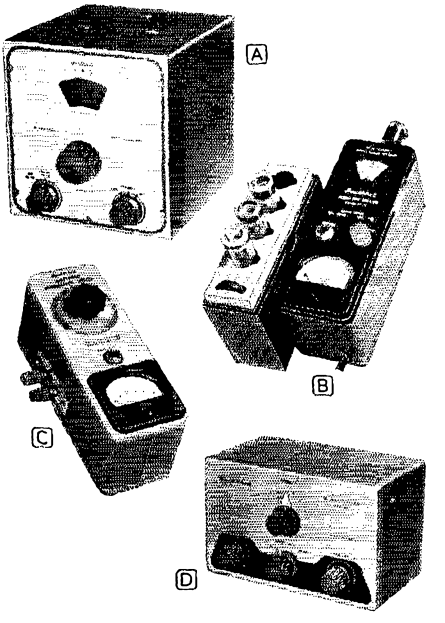
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC 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. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**



HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

hallicrafters

SINGLE SIDEBAND MONTH IS HERE!

WIN a complete SSB station consisting of SX-101 receiver

Hear Single Sideband in action at your own distributor's . . . and enter the easiest, most exciting contest in ham history!

To give licensed hams a real opportunity to know the advantages of SSB, Hallicrafters has designated October as *Single Sideband Month.*

During October, leading distributors from coast to coast will be demonstrating Single Sideband on a specially installed, *complete SSB station* on their premises. (Participating distributors listed below.)

Each distributor will conduct a *local contest,* selecting a winner from among his own customers.

Each local winner will receive an award of a famous, *Hallicrafters SX-101 receiver worth $395.00!*

But that's not all—from among the more than 90 local winners, a grand prize winner will be selected to receive, in addition to his SX-101, a *Hallicrafters HT-32 Transmitter* and *HT-33 Kilowatt Amplifier!*

HERE'S HOW YOU ENTER—

1 Go to the distributor nearest you who is listed below—any time during the month of October. Hear his informative and interesting *special SSB demonstration.*

2 Fill out the entry card which your distributor will supply you, *including call letters and completion of, in twenty-five words or less, the statement:*

"Hallicrafters SSB equipment is superior because . . ."

3 Turn in card to distributor *—do not mail to Hallicrafters.* Distributors will judge entries and select winners *locally.* 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 a *Hallicrafters SX-101 Receiver* from his distributor. Decision of the distributors' judges shall be final.

5 Local winners' names and entry statements then will be forwarded to the Hallicrafters Company, where a panel of judges will select one as *Grand Winner.* This lucky ham will receive, in addition to the SX-101 awarded to him locally, a companion *Hallicrafters HT-32 Transmitter* and *HT-33 Amplifier.* Judges' decision 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.

HT-32 transmitter HT-33 kilowatt amplifier

or one of more than 90 SX-101's

VISIT ONE OF THESE DISTRIBUTORS IN OCTOBER!

CALIFORNIA
Berkeley: Electronics Suppliers
Burbank: Valley Electronic Supply Co.
Culver City: White Enterprises
Inglewood: Universal Distributors, Inc.
Long Beach: Larry Lynde Electronics
Los Angeles:
Henry Radio
Radio Products Sales Co., Inc.
Oakland: Elmar Electronics
Palo Alto: Zack Radio Supply Co.
Sacramento: Market Radio Stores
San Diego:
Western Radio & Television Supply
San Francisco:
Northern Cal. Amateur Supply
San Francisco Radio & Supply Co.
Television Radio Supply Co.
Zack Radio Supply Co.
San Jose: Frank Quement

COLORADO
Denver: Radio Products Sales Co.

CONNECTICUT
Hartford: Hatry of Hartford, Inc.
New Haven: Radio Shack Corporation

DELAWARE
Wilmington: Almo Radio Co.

DISTRICT OF COLUMBIA
Washington, D. C.:
Electronic Wholesalers, Inc.

FLORIDA
Miami: Electronic Supply Co.
Tampa: Kinkade Radio Supply

GEORGIA
Atlanta: Specialty Distributing Co.

IDAHO
Idaho Falls: Schwendiman's

ILLINOIS
Chicago:
Allied Radio Corp.
Green Mill Radio Supply Co.
Newark Electric Co.
Premier's Ham Shack
Peoria: Selectronics Supplies, Inc.

INDIANA
Fort Wayne: Warren Radio Co.
Frankfort: M. H. Dossett Co.
Indianapolis:
Graham Electronics Supply, 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

LOUISIANA
Shreveport: Kolemay Sales Co., Inc.,

MARYLAND
Silver Springs: Emco Wholesalers

MASSACHUSETTS
Boston: DeMambro Radio Supply Co.
Worcester: Radio Electronic Sales Co.

MICHIGAN
Detroit:
M. N. Duffy & Co.
Reno Radio
Grand Rapids: Radio Parts Co.

MINNESOTA
Minneapolis:
Lew Bonn Co.
Electronic Center, Inc.
Northwest Radio & Electronic Supply Co.

MISSOURI
Kansas City:
Associated Electronic Supply Co.
Radiolab
St. Louis: Walter Ashe Radio Co.

MONTANA
Great Falls: Modern Equipment Co.

NEW HAMPSHIRE
Concord: Evans Radio

NEW JERSEY
Bloomfield: Variety Electronics Corp.
Newark: Hudson Radio & Television Corp.
Passaic: Nidisco-Passaic, Inc.
Trenton: Almo Radio Co.

NEW YORK
Albany:
Fort Orange Radio Distributing Co., Inc.
Amsterdam: Adirondack Radio Supply
Bluepoint, L. I.: Standard Parts Corp.
Buffalo: Genesee Radio Parts Co.
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
Cincinnati: Steinbergs, Inc.
Cleveland:
Pioneer Electronic Supply Corp.
Columbus: Universal Service
Toledo: Selectronic Supplies, Inc.

OREGON
Portland:
Portland Radio Supply Co.
United Radio Supply, Inc.

PENNSYLVANIA
Allentown: A. A. Peters, Inc.
Philadelphia:
Almo Radio Co.
Radio Electric Service Co., Inc.
Pittsburgh: Tydings Co.
Reading: George D. Barbey Co.

SOUTH DAKOTA
Watertown: Burghardt Radio Supply

TENNESSEE
Chattanooga:
Curle Radio Supply & Sound Service
Knoxville: Bondurant Brothers Co.
Memphis: W & W Distributing Co.

TEXAS
Amarillo: R. & R. Electronic Co.
Austin: Hargis-Austin, Inc.
Houston:
Busacker Electronics Systems
R. C. & L. F. Hall, Inc.
Lubbock: R. & R. Parts & Supply Co.
San Antonio: Modern Electronics Co.
Waco: Hargis Co., Inc.
Wichita Falls: Mooney Radio Supply Co.

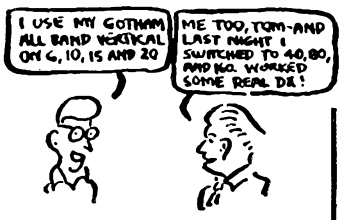
VIRGINIA
Arlington: Key Electronics
Norfolk: Radio Equipment Co.

WASHINGTON
Seattle:
Amateur Radio Supply Co.
Seattle Radio Supply
Tacoma: C & G Radio Supply

WISCONSIN
Fond du Lac: Harris Radio Corp.
Manitowoc: Harris Radio Corp.
Milwaukee: Amateur Electronic Supply

"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.

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. No trick fittings or castings needed.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.

NO GUY WIRES

Our design eliminates unsightly guy wires. You save time, trouble, space and money by avoiding guy wires.

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.

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.....

GOTHAM 1805 PURDY AVENUE MIAMI BEACH 39, FLA.

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 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.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

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

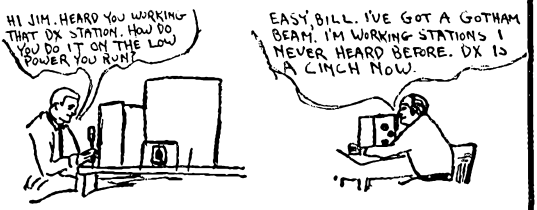
Each Two Bander has twin 12' booms, and full-size half-wave elements. ⅞" and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy. No traps, coils, baluns or stubs are used. All dimensions furnished, all machining done for you. Satisfaction guaranteed. Send for free literature.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WØDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.



Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TRIBANDER
☐ 6-10-15 $39.95 ☐ 10-15-20 $49.95

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

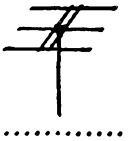
15 METER BEAMS
☐ Std. 2-El Gamma match 19.95 ☐ T match 22.95
☐ Deluxe 2-El Gamma match 29.95 ☐ T match 32.95
☐ Std. 3-El Gamma match 26.95 ☐ T match 29.95
☐ Deluxe 3-El Gamma match 36.95 ☐ T match 39.95

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

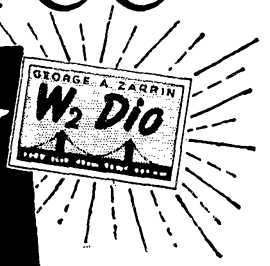
Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.



☐ 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.....

A QSL PIN free



from HARVEY'S

with every RCA transmitting tube

you buy during October and November

Here's an unusual opportunity to have your QSL card made into a lapel pin. You'll be proud to show your call letters to other hams in such an eye-catching way. Best of all, it's FREE, when you purchase an RCA transmitting tube for your gear . . . whether you drop in at HARVEY'S, just off Times Square, or send in your order by mail. All you have to do is bring or send in your QSL card when ordering. HARVEY'S will do the rest . . . and soon you'll be sprouting your new identification pin . . . *an exact color reproduction of your QSL card.*

And, you can count on HARVEY'S service and RCA tubes for double dependability. HARVEY'S line of RCA tubes is so complete that any power tube requirement is filled right from stock. This is important to hams who depend on tubes for continued operation of their rigs.

Whether you phone, order by mail, or drop in, you can depend on HARVEY that you receive exactly what you ordered, and that it will function and perform to your complete satisfaction. You also receive the friendly reliable service you'd expect from fellow hams . . . with years of experience . . . catering to the needs of hams the world over.

Order your RCA transmitting tubes from HARVEY . . . and get your free QSL pin, now!

OUR 30th YEAR

Write, Wire or Phone for Prompt HARVEY Service!

Established 1927

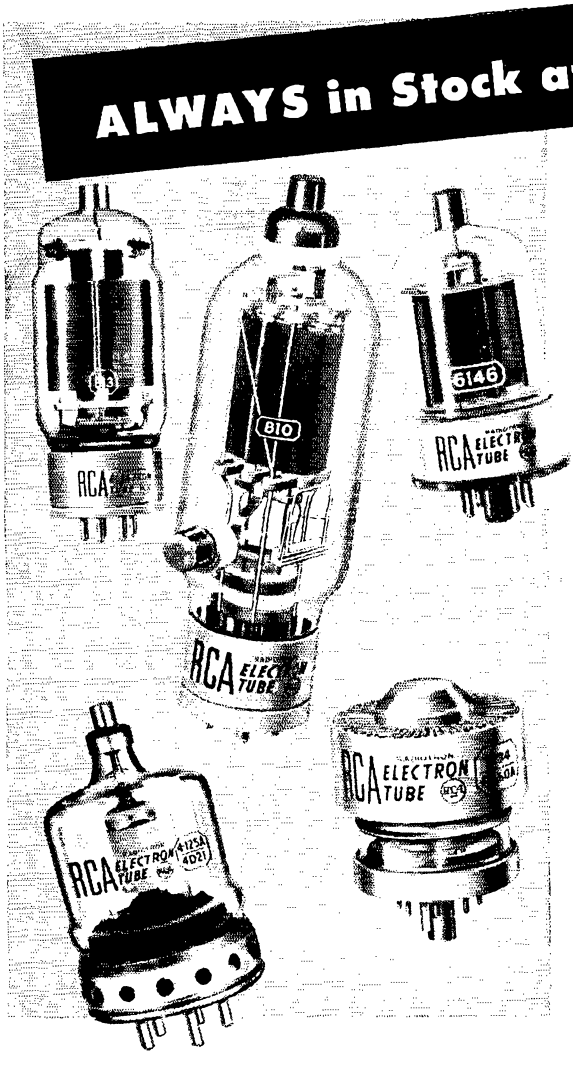
HARVEY

RADIO COMPANY, INC.

103 W. 43rd St., New York 36, N.Y. • JU 2-1500

WHEN YOU BUY RCA Transmitting Tubes

ALWAYS in Stock at HARVEY'S



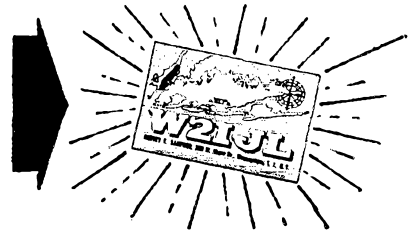
As you prepare your rig for Fall-Winter operations, you can be sure that whatever your replacement needs, HARVEY'S will have the exact RCA tube in stock . . . for immediate delivery.

Hams the world over have come to rely on HARVEY'S to have every RCA tube they need to keep their rigs, whatever the type, in continuous operation.

They know that they can count on RCA tubes to withstand severe punishment. They know, too, that RCA and HARVEY are synonomous with the best in service.

Whether your on SSB, reaching for DX, a vital link in net or CD communications, or just a novice, you can count on RCA tubes for every replacement need, and

You Can Count On
HARVEY ***to have it***
In Stock For
IMMEDIATE DELIVERY



When you buy an RCA transmitting tube from HARVEY during October and November, don't forget to send or bring in your QSL card . . . so you can receive your FREE QSL pin.

(Continued from page 104)

nic. K2HCS reports that the mobile group in the Niagara Frontier Area really has been active this past summer. Included were transmitter hunts and a combination picnic-auction. OZR renewed as OPS. The following EC appointments were renewed: QY for Monroe County and City of Rochester, CBA for Orleans County and VEY for Wayne County. The following received net certificates for NYSTPEN: K2BUI, K2HJC, K2KNU, K2PLO, K2RMG, WFY, WZQ and YIY. K2QPC was appointed OES. Anyone desiring appointment such as OO, OES, OPS, ORS, OBS, etc., should contact the SCM for details. The Air Force MARS State-Wide Two-Meter Net now is underway. ZOL has successfully headed up a program in Syracuse whereby youngsters received their training for ham tickets under the auspices of the Air Force MARS Youth Program. K2HUK is heading up a similar program in the Buffalo Area. ORI upped his tally to 32 states on 144 Mc. During recent tropospheric openings many of the gang in Erie County worked 400 to 500 miles using Gonset Communicators. Many stations were active during Operation Alert 1957. ZHU, EC for Oswego County, reports that 14 amateurs participated, including 10 AREC members operating under K2AVG, Erie County C.D., using the station call K2ELE, had 100 individual units in operation and maintained contact via 144 Mc. with other area counties and cities. Traffic: (July) W2ZRC 237, K2IYP 101, GWN 72, RYH 39, W2ZHU 39, K2BBJ 12. (June) W2DXV 277, ZRC 184, FEB 20, K2BBJ 13.

WESTERN PENNSYLVANIA—SCM, John F. Wojtkiewicz, W3GJY—SEC: OMA. RMs: UHN, NUG, GEG and NRE. PAMs: AER and TOC. The WPA Traffic Net meets nightly except Sat. and Sun. on 3585 kc. The Steel City ARC reports its FD venture was a success with MPO, ZGI, GKY, NRQ, NKM, TOB, SDV, TSR, TQK, UHM, ANX, ZPZ, WHY, JQJ, LOR and ZDW taking part. LKM sorrowfully found out that 807s will not replace 810s. MPK bought a new car. ZPZ is the proud possessor of a new DX-35 won at the PIE Hamfest. UUH works up into the Far North with a bent indoor folded dipole on 15 meters. ZGI won a scholarship to M.I.T. FML is piling up new states on 6 meters. AAN also is active on 6 meters. RER, reporting for the Allegheny-Kiski ARC, says 2550 points were amassed by the club during the FD activity. The club station, RVC, took part in the c.d. air raid alert and provided good communication between Northern Westmoreland County and county control at Greensburg. The club's c.d. net meets each Tue. at 2100 on 2036 kc. The Conemaugh Valley ARC participated in Operation Alert with much success. Net control was at Cresson Sanitorium and stations were set up on 29.470 Mc. and 3910 kc. with UIY's and K2RQK's gear being used as well as ZIO's transceiver and PHH's mobile. LNQ was state control on 3502 kc. UIY, MIM, IYY, ZIO, PHH, WRE and K2RQK/3 were stationed at net control. KFG turned in as relief operator at OKI's QTH and QYK relieved LSE. During "Operation Escape" many mobiles took part. A joint operation venture was made with Blair County C.D. In Blair County among the actives were CHN, VPF, MRI and UBP as mobiles. TIF made WAS. PHH turned in the winning design for the club emblem. New club members are NDO, OKI and WN3IJA. YOZ operates from Pittsburgh with a three-element 2-meter beam. RSB is active on the West Able C.D. Net Sun. at 9 A.M. on 3997 kc. and the West Charley Net at 8:30 A.M. on 29490 kc. and has installed an electric wench to raise and lower his tower. RTB has reached 136 confirmed on c.w., GJY has 107. OEW enjoyed his visit to KP4AIO. KN3BCY is the proud possessor of a new harmonic. The Indiana County ARC Net (RACES) meets on 29.6 Mc. Tue. at 2100 EDT. YEW, secy. of the Mercer County Radio Assn., reports the club will purchase permanent Field Day equipment for future outings. LMM finally collared ZC5AL and CE8AC. UHN put up a new Telrex 10-over-20 beam. KN3BAF is using a Globe Scout 680 and an SX-99. ZJA joined MARS. Technician Class license holders in the State now are entitled to have their calls on their auto license plates by virtue of legislation signed by Gov. Leader. New Novices in the Pittsburgh Area are KN3AXZ, AZP and BCY. Novice HSW passed his General Class exam. NYD and OVM got the DX-100 going at TOC's shack. VWL, NYD and TOC did fine work in the C.D. Alert Test. New officers of the Breeze Shooters Net for the 1957-58 tenure are OPF, pres.; VEK, secy.; IMB, checker; SUJ, MCE and TVW, directors. RSB was awarded a briefcase for his fine work as secretary. YDA has gone mobile. UJP has a 152-A, is on 6 meters and worked his first air-mobile. The Indiana ARC was ably represented during C.D. Alert under direction of County Radio Officer VKD with YCG and ADK assisting at the mike. The

(Continued on page 120)

Reliability

for QSO . . . . for contest

Along about now you're probably thinking about settling down to a good winter season of QSO's and contests. It's good to know the rig is ready to go at a moment's notice—but that calls for smart preventive maintenance.

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County Net meets Tue. at 9 P.M. on 29.6 Mc. DMB works 40-meter c.w. when he is free from studies. ELZ can be heard in the wee hours of the morning gunning for DX. VKD is almost ready to go to press with his *Ham Register*. ZOX works 7-Mc. phone. YOK is QRL building a new home. Traffic: W3WIQ 2200, LMM 135, GJY 60, RSB 14, UHN 12, YCG 10, HXF 8, TOC 5.

TROPHY ANNOUNCED

Amateurs in the Atlantic Division are invited to compete for the Frederick A. Leonard (W3AZG) Memorial Award, honoring the memory of the afore-mentioned amateur. The 21½-inch trophy will be awarded to the highest scoring Atlantic Division station (phone or c.w.) using 150 watts or less during the November ARRL Sweepstakes. Last year a similar trophy was won by W3JNQ who by his personal request has eliminated himself from this year's competition, as has the donor, W3GJY. Final Sweepstakes tabulations as published in *QST* will determine the winner.

CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Asst. SCM: Grace V. Ryden, 9GME. EC: HOA, Cook County EC: HPG. RM: MAK. Section nets: ILN, 3151 kc. Mon. through Sat. IEN 3940 kc. With vacations on, news is short, but the Chicago gang is unanimous, almost, in reporting water in basements and equipment because of July storms. ILN handled 165 messages in 21 sessions while the North Central Phone Net handled 594. No report was received from IEN. New members of the ILN are K9DYT, K9IFB and W9PWV. BON writes he has discovered you don't need power on 6 meters. New calls heard in the section are Novices (all KN9s) ICV, IKX, IKR, IKG, IKH, IMX, IUK, IVJ, ILP, IKS, IMV and KN8GOV/9. Welcome, fellows. BA reports the St. Clair Amateur Radio Club held its first annual dinner and a good time was had by all. K9BIY put up a three-element beam and is very active on 10 meters. JMY split his piggy bank and sports a new 75A-3. TT plans to attend the U. of I. this fall to complete his E.E. degree. RSY and RSZ (father and son) vacationed with a Gonset on 6 meters and had a ball, while TCX still has fun with a three-quarter-watt mobile. When you read this, SCV will be off on a European tour. ULS, who has operated from Ft. Sheridan, will move to Ft. Monmouth in the East. ADC and K9HIH did yeoman work with their Gonsets when the Chicago airport building was flooded. LXL is out of the hospital and feeling much better. JQQ held down the fort at home while his XYL went fishing in Wisconsin. That's a switch. The Hamfesters Radio Club has a new duplicating machine and as a consequence it makes *Ham Gab* much easier to read. The club again has embarked on a code practice course under the direction of K9AXD. K9DYT has been on less than a year and already has 41 states confirmed. GDI still is fighting his quad but has it working well on 20 meters at least. Now comes 15 and 10 meters. LTI writes of the doings of the Prairie Amateur Radio Club. Wish we had space to reproduce. The Glenbrook High School Electronic Club elected officers but all we know is that OHO is president. Who are the other officers? Officers elected for the newly-formed Six Meter Club of Chicago are K9GIS, NYO, K9AZE and OVL. UBI plans to go to 600 watts soon. NIU writes that he had a swell time at the APCO Convention in Dayton and was interested in the ham display they had there for the chaps who make their living from police radio. Traffic: K9USN 1104, K9EDI 594, W9EXL 397, IDA 368, MAK 313, FAW 189, YYG 46, K9DYI 14, W9VBV 10, UBI 7, SKR 4.

INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA, TQC and TT. PAMs: CMT, KOY, SWD and UXK. New appointment: K9AZK as ORS. FD messages were received late from MYI, TWA, EZS, AYU, TIL and K9CLL. New stations on 6 meters are K9DFK, ADN IEU and ISD. New calls are KN9JBW, IHO, ICM ISA, IRZ, IRT, IQB, IJT and IXD, who is Butch, the XYL of SWD, and *BISON* editor. K9JAA is new in Seymour. YFD made DXCC. K9ELE is RCC. About 500 were present at the IRCC Picnic at Indianapolis, staged by the combined clubs of Indianapolis. The Michiana ARC won the FD Plaque again. QYQ, our SEC, from Orleans, was awarded the Plaque

(*Continued on page 122*)

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as Indiana's Outstanding Amateur. This was a very popular choice as Frank has done a wonderful job in organizing AREC and RACES throughout the State. SWD reports IFN Evening traffic as 407 and Morning as 115, total 522. QIN, as reported by TQC, had 317 and TT gives RFN as 80 and UTL as 961. KOY reports Interstate S.S.B. as 683. Those making BPL were NZZ, JYO, EQO, ZYK, EHZ, TT and DGA. ETM made it for June with Bird Expedition traffic. It seems Indiana is handling traffic from near both poles. The Evansville group furnished communications for the Water Carnival on the Ohio River. Some 10-meter rigs were used but most was on 50.58 Mc. The TARS code class has had about 25 members and expects to graduate several Novices. This work was sparked by OG, DGA and AIN. New Technician Class licensees at Evansville are K9JAR and ITN. K9GBB, Meg, is active with a Ranger and an SX-99. KN9GAW is on with a 6146 running 50 watts and an RME-4350 using a 40-meter dipole. Please send in your traffic reports and news items to reach us not later than the 5th of the month. Don't hesitate to send in your traffic count even if it is small. Traffic: (July) W9NZZ 1007, JYO 897, EQO 748, ZYK 584, EHZ 549, TT 388, TQC 375, JOZ 358, KOY 295, SVL 244, K9BBO 224, W9VAY 216, AB 155, DGA 110, ETM 102, NTA 88, SWD 63, EJW 60, QYQ 60, RTH 52, BKJ 44, WUH 42, CC 36, DOK 32, WHL 25, GJS 24, JBQ 24, WAU 19, PQZ 18, QR 18, HRW 15, CMT 14, WBA 13, BDP 11, IMU 10, EJC 9, HXR 9, BUQ 8, CDW 8, FYM 8, K9HGF 8, W9LSG 8, DZC 6, VPJ 5, HUF 4, SYM 4, DWK 3, SNQ 3, K9ELE 2, CFG 1, EDG 1. (June) W9ETM 221, DGA 14, SYM 8.

WISCONSIN—SCM, George Woida, W9KQB—SEC: EIZ. PAMs: NRP and AJU. RMs: KJJ and K9AEQ. Nets: WIN, 3535 kc. 7:00 P.M. CDT daily; BEN, 3950 kc. 6:00 P.M. CDT daily. YRO earned DXCC with 102 countries on phone. CXY has his multi-band antenna atop the new 60-ft. tower. KJJ changed to a 6146 final in his AT-1. K9CAH/9 had a chipmunk in his rig while at Scout Camp. K9AEQ is on with a new Ranger. VAK is sailboating and building tape recorders. K9GDF made his first BPL with 260 originations; CXY received his 22nd BPL. The Oshkosh Club meets the 2nd and 4th Tue. of the month and has its net on 1815 kc. Sun. at 8:00 P.M. LAG and his XYL, K9CCS, operate from home, cottage and store and mobile from the new station wagon. UMJ worked Ohio and Canada on 2 meters and IMQ had an 83-mile contact into Michigan. GAB has a new tunable i.f. receiver for his converters and wants 144-Mc. schedules. The Milwaukee Club will celebrate its 40th year of existence this year. Congratulations. The Mancorad Club Net now meets at 11:00 A.M. Sun. on 3965 kc. OTL claims no battery trouble with his 2-watt mobile after 4 years of active operation. Hi. RQK got his 75-meter folded dipole up to 65 feet in the air for a big help to his signal. SZR ran his DX worked to 100 with a 4X4 contact. MPO is collecting certificates with his racing pigeons while the summer static is heavy. EIZ has a new daughter as of August and KQB became a grandpop for the first time. YAR is back on c.w. after several years of inactivity from Kiel. UIV is on 160-meter mobile with much success. SDK had a 75,320 score in the July CD Party on c.w. EZC vacationed at OT's cottages at St. Germain and reported a real time. WIN in need of traffic outlets in the Fox River Valley Area. Traffic: (July) W9CXY 866, K9GDF 351, AEQ 160, W9KJJ 103, KQB 81, OT 14, OTL 14, SZR 4, GFL 2, SDK 2. (June) W9SAA 48, SIZ 13, JEF 1.

DAKOTA DIVISION

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. The S.D. 80-Meter Phone Net reports 22 sessions with QNI 271, high 20, low 7, average 12.3; traffic 43, high 7, low 0, average 2. The S.D. 40-Meter Phone Net reports 27 sessions with QNI 381, high 25, low 1, average 14; traffic 27, high 6, low 0, average 1. KØNZ is a new call in Sioux Falls. KØIAW and his wife received their first harmonic, a daughter, July 13. NDK was in Vermillion for Summer Science Institute and helped operate DKJ during the recent RACES exercise. We have a report from General Arndt, Civil Defense Director, that the recent RACES exercise was a success. MMQ injured his right hand by driving a TV ground rod through it. The following South Dakota members are checking into the Western Nebraska Net: HOJ, KØHSW, OFP, RWX, KØBMQ and KØAIE. A new operator at MARS station KØFBJ, at Ellsworth AFB, Rapid City, is KØKKA. A new beam antenna is being manufactured in Yankton, S. D., designed by AST, from Salina, Kans. The 40-20-meter beam measures only 27 inches. The following hams vacationed: ZJF, Black Hills, Badlands and Yellow-

(*Continued on page 124*)

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Interviewer's Comments

Seems alert and intelligent. I was impressed with his electronic experience and his apparent technical competence. Pleasing personality. Recommend we hire him for assignment to the Hawk missile program and arrange for him to work in engineering or production for initial training. Note that he has an EE degree.

Date Hired	Start to work	Dept.	Job Code	Classification	Acct. Code
7/10/57	8/1/57	G.S.D.	776-mm9	Field Engineer	GSD-23-1

Reporting to G. E. Dodge Signature of person hiring O. L. Dewey

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stone; GQH, Yellowstone and Grand Tetons; BJV, didn't tell where he was going; EUJ, scraping and painting the house; OOZ, operating portable at Lake Madison; KXZ, in the East; KØBMM-KØBMS, mobiling in W7-Land; FJZ, a tour through the East Coast where he visited some of his old Navy haunts after 45 years and also the *Mayflower II*; YKY and family in the Denver Area; YOB and family in Denver; A0VME in the Black Hills; FLD and family in Chicago. KØIAY visited the Black Hills Amateur Radio Club. OH now has a kilowatt single sideband. NPV has a brand-new 1957 Oldsmobile and is trying to figure out how to mount mobile equipment. IWE has new Ford Station wagon. New Novices at Rapid City are KNØKKS and KNØKXR, who has a new Viking Adventurer. KØBMQ now has a DX-35 and a 135-ft. doublet. QEK-K/CDO have moved into another house in Pierre and are fixing up their shack. SCT has an emergency power plant 'ready' to go and a 2-meter receiver. YKY is filling in while FLP is on vacation, so does not have all of the traffic reports. Traffic: WØSCT 325, YKY 22, FJZ 7, BMQ 3.

MINNESOTA—SCM, Robert Nelson, WØKLG—Asst. SCM: Bob Schoening, ØTKX. SEC: GTX. RMs: DQL and RLQ. PAMs: LUX and JIE. New OO and ORS appointments went to KØGCN; OO and OES appointments went to VYL. WMA keeps many phone-patch schedules with Greenland. QNA and QNF are instructors at the Minneapolis Radio Club code classes each Wed. WDW schedules KØHMJ at camp many-point. 2-meter DX has been plentiful at UBD. KØGKI built a new 20-meter beam between AREC/RACES activities. KØDHH and KØDHI have a new DX-100 and along with KØHNU operated portable at the Boy Scout camp with a 1000-ft. antenna. KNØIYO passed his Technician Class exam. RQJ publishes a neat C.W. Net newsletter. KLG visited several western hams during his vacation. The Minneapolis Radio Club 29.4-Mc. Phone net has changed to Tue. at 8 P.M. Old-Timer CO richly deserved the appointment as M.C. at the Chicago National Convention dinner! QVR has been giving his new mobile a workout. TJI will be watching from Japan for Minnesota signals. QDP operated portable from Montana this summer. URQ and KJZ attended the Rocky Mountain Division Convention. 3HTF and family now live near Minneapolis. DHY has a new Valiant. BHA has a new Elmac. KØHNL is new on 75 meters at LeSueur. NUI reports the formation of the Hector Area Radio Club with 20 members. Traffic: (July) WØKJZ 395, GTX 163, QNF 110, KLG 109, DQL 79, RQJ 68, KØGCN 52, BTE 47, WØOJG 25, UMX 25, WMA 25, HEN 22, NNG 22, BUO 16, KØEPT 16, GUJ 16, WØQVQ 13, QVR 13, LUX 10, IRJ 9, LIG 9, KNR 7, KØGKI 2, WØUCV 2. (June) WØKFN 57, KØBUD 42, GKI 1.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: DAG. PAM: DYL. RM: CAF. The Pine Bluff Radio Club recently held its second week-end picnic and its own Field Day. The members take along some radio gear, emergency power, antennas, etc., and have a grand time operating under emergency conditions. We think that is a very good thing to do and encourage other clubs to try it. The amateurs at Harrison have an emergency communications bus rigged up and are ready in case an emergency should arise. The OZK C.W. Net is progressing rapidly with more new members joining in. DUV has moved from Osceola and now resides at Wilson. New hams in the section are KN5LEH, College Heights; KN5LNN, Russellville; KN5LEL, LNI, KRY and KVW, of Van Buren. FPA has a new rotor for his three-element beam. New ECs are K5HYD and GCF. Several certificates are now due for endorsement. Be sure to mail them in. We are all very glad to see K5ANF back on the air. John did not have a rig for awhile which was the reason for his absence. UED has up a new antenna. KAN has a new 6-band converter for his mobile. KRO is now mobile with an AF-67. Traffic: W5DAG 47, WSM 27, KRO 12, MWV 12, APA 6, HYD 6, ZXS 4.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—A dance on Oct. 12 will precede the Greater New Orleans and Jefferson Parish Radio Clubs' Hamfest to be held on Oct. 13 with refreshments, prizes, games, a hidden transmitter hunt, a fish pond, an auction, new equipment display and a picnic lunch at Audubon Park, Shelter House #7 Area. ZNI now has an HT-32 driving four 837s in grounded grid. QQK is a new Official Observer. MXQ is chairman of the coming New Orleans hamfest. JPV expects to have all-band mobile working in the next few weeks. NDV reports a low traffic count. K5DDH recently returned from a trip through W6-, W7- and WØ-Land. He now is planning to put up his 15-meter beam. EA reports activity in

(Continued on page 126)

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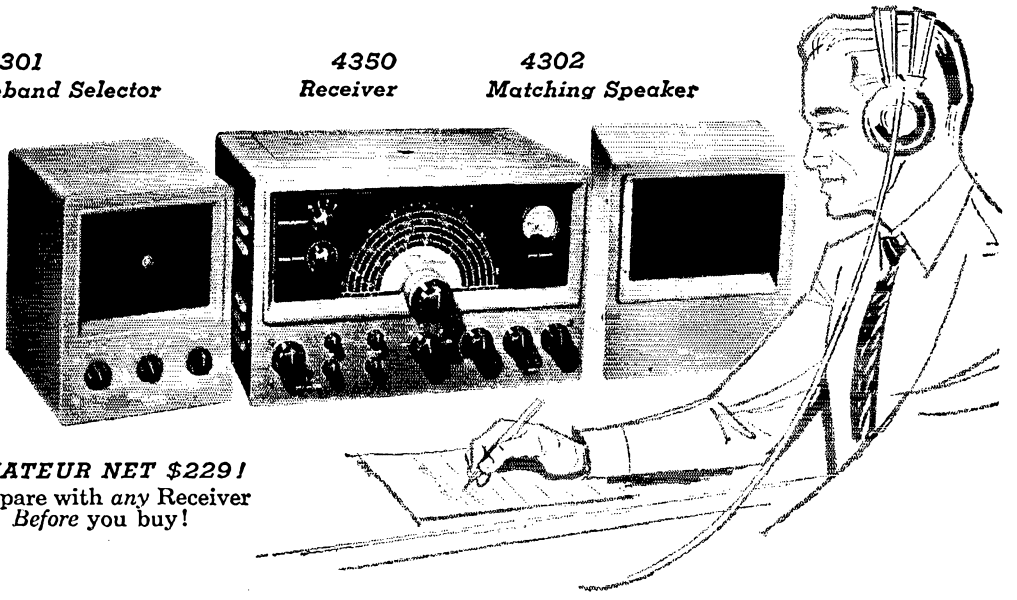

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the Audrey disaster to the extent of picking up news for the TV and BC station in Monroe. TVW, OES and OPS, has been very active on v.h.f. and u.h.f., and reports that he is getting a new NC-183 and building an s.s.b. exciter for 75 meters. He recently was appointed editor for a proposed newsletter to be published by the GNORC. According to the last report received from MWE, he was busy handling traffic. We would like to hear that EB is back home and well again. K5GDI worked three new ones on 20 meters, ZD3, ZK1 and ZC5. He has DXCC now with 133 worked and 115 confirmed. He made 105,000 points in the April CD Party. K5DMA has modified his DX-100 with heath's recommendation in order to get away from a chirpy c.w. signal. AZM has the AREC net Sat. at 1300 on 7255 kc. BSR and SKW are putting finishing touches on a c.d. communications plan for Area 3. Send your reports in early. Traffic: K5FAA 354, W5CEZ 194, K5DGI 150, W5MWE 92, YVW 70, JPV 20, MXQ 17, EA 14, NDV 8, K5DDH 2.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5EHH—Many Mississippi amateurs participated in handling welfare messages during Hurricane Audrey. Appointments of the month are FSE, Lee County; K5GRL, Pontotoc County; K5GRV, Itawomba County as ECs; FPI, Hattiesburg, as RM. The CAP and the Cleveland Amateur Club are planning to obtain a truck to be fitted with emergency communication gear. The Jackson Hamfest was well attended with amateurs from several states present. K5AYP won the main prize. New officers of the Tupelo Amateur Club are AMZ, pres.; EHX, vice-pres.; K5CHT, secy.-treas. Traffic: W5JHS 53, EHH 12, GG 8, K5EXG 4.

TENNESSEE—SCM, Harry C. Simpson, W4SCF—SEC: RRV. PAM: PQP. RM: IV. Congratulations to PL, our perennial BPLer, and newcomer 5RCF, who made BPL three consecutive months to earn the nice BPL medallion! PL, who hastens to assure us he has not gone s.s.b., has a new slicer which works wonders on c.w.! RM IV reminds all members of the Tennessee C.W. Net which meets on 3635 kc. at 7 P.M. CST. LPW reports he is now on s.s.b. PAM PQP says the new Nashville c.d. bus is working fine, and he would like to have a Memphis station meet the phone net sometime! The Davidson County Emergency Net has opened again. Nice bulletins were received from Oak Ridge and Memphis. Summer gremlins got to Chattanooga, for a *blank* bulletin was received from the fine Frye ARC! KYO reports that JPH has a modulator that works well without a rectifier tube in its power supply, and TYX had a Knoxville QSO using only his co-ax connector as an antenna! UZZ reports Jackson members AYQ, SNX, UAW, TBS, TM, SBF, SZI, PKE, AWW, IOS, UBA and FSP operated UZZ/4 during Operation Alert. UZZ also is the new EC for Jackson-Madison County. Memphis operators of EM during the Alert were ASL, BAQ, BWB, BXJ, CCH, CLQ, CPM, CRP, CTA, DCH, DJO, ERB, GPZ, GRB, IQX, LVS, SCF, TIL, WBK, YMG and ZIA. Mobiles and fixed stations included ADM, ASL, BOM, CLQ, CPM, CTA, GPZ, LVG, STI, TIL, YMB, BDK, CPO, EPZ, FEB, DQH, GAQ, HHK, JXG, ODR and UDI. All net managers are reminded to register their nets with Headquarters immediately. The deadline is Nov. 1. Ask Headquarters for Form CD-85. K4JPP is a new operator at WBF. GEN is rebuilding a BC-610. GFL has a new final. YRM now has 38 confirmed on 6 meters. UWA and his XYL JNI send 73 to all Tennessee friends. They are leaving the State for two years. YMB, operating mobile on 2 meters, worked DQH for a distance of 51.5 miles! TDZ reports IKK is a newcomer from Rome, Ga., and has his kw. working on 6 meters atop Signal Mountain with a seven-element beam! EWC, HSX, HUT and SCF are working on a new RTTY project, with a friendly assist from SJJ and ACL. Traffic: (July) W4PL 1746, W5RCF 649, W4VJ 93, PQP 75, UVL 60, YRM 56, IV 48, SCF 42, BMC 29, GFL 17, TDZ 16, PAH 14, UVS 13, HKU 6, ZBQ 6, IGW 5, HSX 4, HUT 4, LPW 3, BAQ 2, GEN 1, KTN 1, KYO 1, UWA 1, WBF 1, WQT 1. (June) W4PQP 62.

GREAT LAKES DIVISION

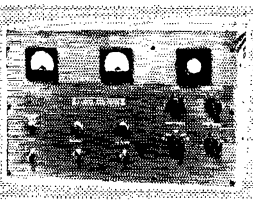
KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. PAMs: VJV and SUD. RM: QCD. PAM VJV reports that KPN had the best month since the start of KPN some three years ago. Thirty-one sessions were held with an average of 5.1 messages handled per session. The ten most active stations were K4JPP, K4ICN, KJP, K4GAG, SZB, UVJ, AZQ, K4ECJ, SBI and K4BPX. SBI also had the highest session of the month. RM QCD reports that KYN also had a good month; 31 sessions were held with an average per session of 8.25 messages. The most active stations were K4KIO, ZDB, JSH, K4JPP, SUD, K4CSH, BAZ, CDA, MWX and KKW. MGT is our

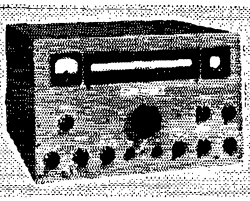
(*Continued on page 130*)

For your most exciting visit to a radio distributor, take a few hours and look over the new ELDICO line

We were tempted to start this ad with an invitation to join the hams with outstanding signals who always seem to work them from the "top of the pile." But truly, this new ELDICO line is so full of features that the excitement will start when you first fondle the dials on your distributor's shelf . . . and it will be yours to enjoy every time you throw the switch to command your operating frequency.

Two superb transmitters offer features found nowhere else in comparable units. ELDICO's SSB-100F basic exciter/transmitter and SSB-1000 kw power amplifier are designed for outstanding performance on *all modes* of transmission — SSB, CW, and AM — with every operating provision for amateurs concentrating in any of these phases of ham radio. With the basic SSB-100F, you have an ideal medium-power rig or exciter. At any time, you can add the kw linear SSB-1000 or any other PA. Military type construction . . . integral 1" oscilloscopes in exciter and PA . . . full break-in keying . . . just look over the specs, then drop in on your ELDICO distributor to examine for yourself why ELDICO is the fastest-growing name in transmitters for military and amateur service. And don't forget: this promises to be one of the hot operating seasons for all times . . . make it an ELDICO season!





ELDICO SSB-1000

Low Drive Requirement: 3 watts P.E.P. will drive to full kilowatt. Pi-network Output: Single knob bandswitch. High-efficiency silver-plated Pi-network output circuit. Matches wide range of antenna impedances.
High Harmonic Attenuation: High-Q plate and grid circuits and Pi-network output circuit provide maximum harmonic-attenuation.
Power Rating: DC Input C.W. 1000 watts, A.M. 700 watts
Peak Envelope Power:
Input SSB-1000 watts
Output SSB-625 watts
Frequency Range: 10 thru 80 meters.
Tube Lineup: 9 tubes; two 866, two OA2, one OB2, one 6AU6 one 1CP1, two 4 x 250B.

ELDICO SSB-100F

Type of Emission: C.W. — A.M. — SSB
Power Ratings: DC average input SSB-100 watts; A.M. input (two tone test)—60 watts. Peak envelope power input SSB-144 watts. Peak envelope power output SSB-100 watts.
Keying: Grid block, full break-in.
Harmonics and Spurious Responses: Spurious mixer products—50 db or more down. Third order distortion products—35 db or more down. TV interference suppression—40 db or more second harmonic, 60 db or more higher harmonics.
Unwanted Sideband and Carrier Suppression: 50 db minimum attenuation, through low frequency crystal lattice filter.
Frequency Stability: Control Oscillator—(800 to 1300 kc) ± 100 cycles after two minute warm up period. Output frequency—within 300 cycles after five minutes warm up period. Dial accuracy ± 2 kc after calibration.
Tube Lineup: 22 tubes, including two rectifiers, two voltage regulators, one oscilloscope and one 5894 power amplifier.

ELDICO ELECTRONICS

Write W2BFY for additional details if your distributor can't assist you.

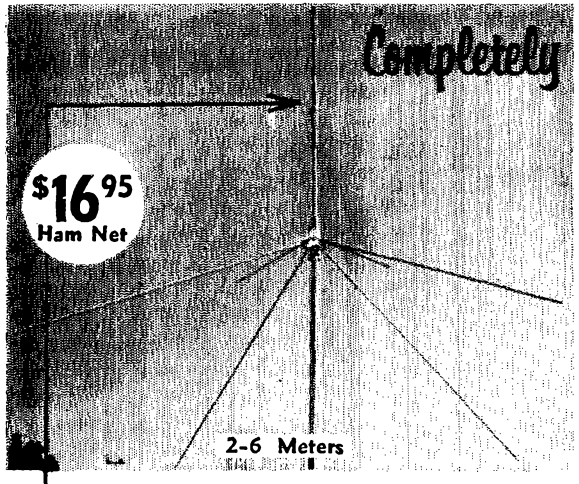
29-01 BORDEN AVENUE, LONG ISLAND CITY, NEW YORK

A Division of Radio Engineering Laboratories, Inc.

Completely New! A SELF-SUPPORTING Trap Vertical Series

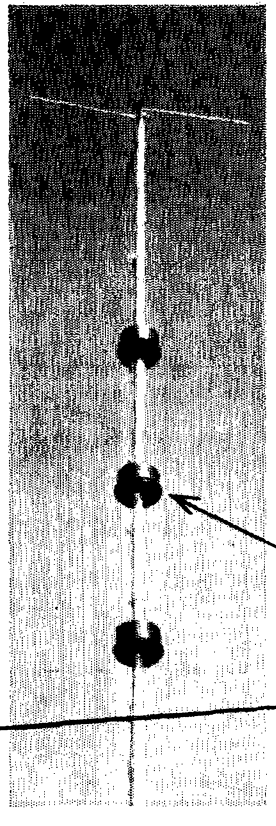
FACTORY PRE-TUNED & PRE-ADJUSTED for Quick, Easy Assembly

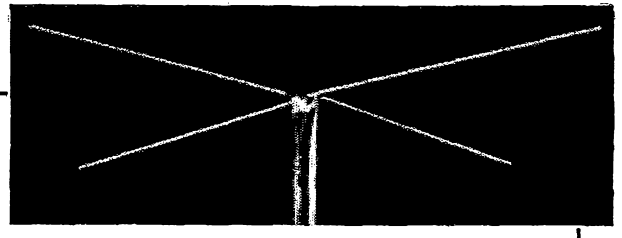
FROM hy-gain



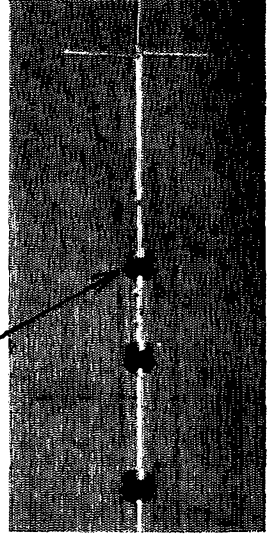
MODEL 26-AV

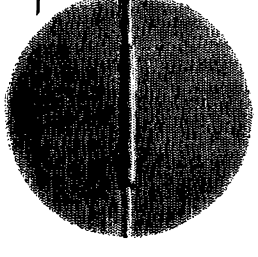
Here's hy-gain's recently designed Automatic Vertical for the 2 and 6-meter bands, with the startling new "sleeve decoupling" principle. Complete with ground plane at only $16.95. Over-all height of Vertical and length of ground plane is 5 ft. Less than 2:1 SWR on both bands. 52 ohm coaxial feed. Complete instructions.

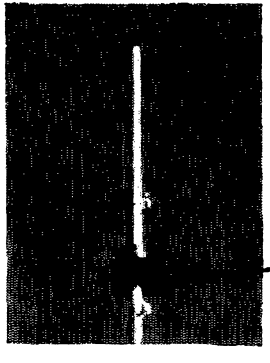


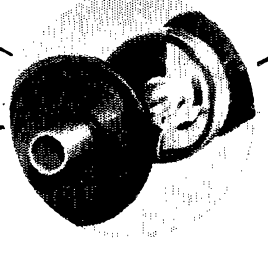


The new "Capacity Hat," a unique feature with hy-gain, electrically lengthens the vertical and increases radiating efficiency. Included with both the Models 14-AV and 18-AV.

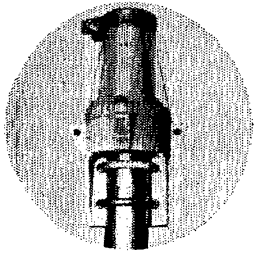








Radically new Decoupling Sleeve automatically isolates the various sections of the Model 26-AV Vertical, developing quarter-wave resonance on each band. Complete ground plane is also dual resonant for both bands. Totally unaffected by the weather; extremely efficient at high frequencies.



A new feature of all four Automatic verticals, this Base Insulator and Mount makes possible the self-support of the beams. Heavy duty cast aluminum mounting bracket is adjustable for various sizes of masts, with weather-protected internal coaxial fitting. Insulator is fiber glass impregnated nylon. All electrical connections factory sealed. Entire unit is completely weather-sealed.

MODEL 12-AV

The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15 and 20-meter bands. Sensational Insu-Traps isolate various sections of the vertical, developing quarter-wave resonance on each band. 52 ohm coaxial feed. Less than 2:1 SWR on all bands. Over-all height: 14 ft. No "guesswork assembly" with hy-gain's step-by-step instructions.

Model 12-RMK: Combination Radial and Guy Wire Mounting Kit, designed to mount the 12-AV Vertical. Complete with 5' 1½" steel mast, pre-cut radials which also act as mast guy wires, all hardware and base mount: $8.95.

MODEL 14-AV

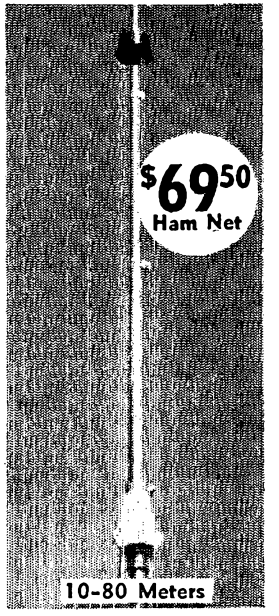
The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15, 20 and 40-meter bands. Sensational Insu-Traps isolate various sections of the vertical, developing quarter-wave resonance on all bands. Includes the hy-gain "Capacity Hat." Over-all height: 21 ft. 52 coaxial feed. Less than 2:1 SWR on all bands.

Model 14-RMK: Combination Radial and Guy Wire Mounting Kit, designed to mount the 14-AV Vertical. Complete with 5' 1¼" steel mast, pre-cut radials which also act as mast guy wires, all hardware and base mount. Detailed instructions for easy assembly: $9.95.

Exclusive new Insu-Trap concept in parallel resonant trap circuits obsoletes old fashioned open-type coils. Effectively isolates various sections of the 12-AV, 14-AV and 18-AV so that an electrical resonant length exists on bands 80-10M. The only adjustable, completely weatherproof trap. Adjustable capacitor color coded for Fone or CW. Hi-Q coils wound on high impact styron forms, also acting as low power factor dielectric for capacitors. No air dielectric involved. Assembly completely enclosed in weatherproof polyethylene cover.

MODEL 18-AV

The hy-gain Automatic Trap Vertical for automatic coverage of the 10, 15, 20, 40 and 80-meter bands. Sensational Insu-Traps are used to isolate the various sections of the vertical, developing three-quarter wave resonance on the 10 and 15-meter bands, and one-quarter wave resonance on the 20, 40 and 80-meter bands. 52 ohm coaxial feed. Less than 2:1 SWR on all bands. Complete with side mount kit; may be side-mounted at 18 foot height; completely self-supporting above 18 ft. Over-all height: 88 ft. Complete instructions for all conceivable ground or building mountings.



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hy-gain ANTENNA PRODUCTS

1828 N STREET LINCOLN, NEBRASKA

most active OO with OMW running a close second. K4HTO/W4JUI, is a father-son combo very active on 6 meters. Listen for them! New OPS: K4IMW. New ORS: 1AY. KN4QPB is a new ham in Paintsville. The following hams visited W4JOU in Hazard: K4ICN, K4BPX, K4GAG, BAX, K4ECJ, K4IBF, K4MNF, K4EMH/4, and KN4KZB. K4KIN is stationed at Norfolk, Va. *ATTENTION NOVICES! MWX is now holding Kentucky Novice Net (KNN) every Tue. night at 8:30 CST ON 3735 kc. Here's your chance to get started in a slow-speed traffic net.* K4KIO is doing well with 9 watts on 40 meters. NIZ sends May, June and July reports together. RHZ did very well with the local C.D. Alert. K4OCH is the club call of the Warren County Radio Club, also the c.d. station on 6 meters. K4JGN is QRL the school band. KKG has too much grass to keep cut. Hi! KZF is active in the ARRL IGY-PRP program for 6 meters. K4HTO worked Guatemala on 6 meters. OMW is putting up a tri-band beam for 10, 15 and 20 meters. Traffic: W4KKW 161, K4KIO 133, W4JSH 119, QCD 109, RPF 86, K4HBF 70, OCH 61, W4NIZ 56, RHZ 36, SZL 14, K4AIS 13, W4MWX 13, HJI 12, BZY 11, K4JGN 11, KIN 8, W4KKG 8, KZF 2, K4HTO 1, W4OMW 1.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—Please note that this report contains July and June traffic totals as well as those late May receipts, which were omitted in last month's report because of a July vacation which is now history. ELW and FWQ qualified for BPL certificates in June and July to help swell our traffic totals. Because of a change of policy relative to the appointment of Assistant SCMs it has been necessary to terminate such appointments for AQA and SCW, who have been active in that capacity for several years. Many thanks to them for their valuable help. The section is the beneficiary of their efforts. The second meeting of the Area RACES Officers was called by the State RACES Officer for the purpose of furthering the RACES organization in Michigan. This group is to be known as the MICHIGAN AMATEUR RADIO EMERGENCY COMMUNICATIONS CLUB, or MARECC, and will serve as the staff of the State RACES Officer. During that meeting on July 27 and 28 much was accomplished in line with rewriting the existing Michigan RACES Plan. Two important changes that can be announced at this time are the deletion of any assignment(s) in the 160-meter band and the assignment of 29.610 Mc. as the state-wide mobile frequency. (All mobile operation in RACES will be on that single frequency in order to provide depth of communications for mutual support.) The latter will probably evoke criticism, but the decision was based on sound reasoning and experience. Though our participation in OPAL 1957 was limited, it did indicate our potential with proper organization and training. Thanks to all stations that participated. My thanks to all for the various picnic invitations. My schedule has not seemed to allow attendance at any of them this year. Traffic: (July) W8ELW 906, FWQ 181, ILP 155, GKT 150, QQO 144, NUL 98, YAN 52, RVZ 49, FX 42, FGB 31, NAW 26, HKT 23, OGY 22, NOH 16, DAP 15, WXO 14, AUD 13, DSE 12, QIX 8, UCN 3. (June) W8ELW 742, FWQ 178, NOH 110, NAW 104, ILP 103, DAP 100, NUL 92, OCC 71, YAN 57, FX 32, PXA 25, RVZ 19, TBP 19, AUD 14, WXO 14, OGY 13, QIX 8, FGB 5, HSG 5, SCW 5, EGI 4, OCU 4, HKT 3, DSE 2. (May) W8GKT 165, FGB 51, RTN 28, TBP 23, SCW 14, TIN 2, SJF 1.

1957 MICHIGAN QSO PARTY

October 12-13

Amateurs everywhere are invited to participate in a Michigan QSO Party, jointly sponsored by the Michigan Emergency Net and the Buzzard's Roost Net to assist those working for the Michigan Wolverine Award. (Rules for obtaining this certificate appeared on page 51 of last July *QST*.)

The party will begin at 12:00 P.M. EST October 12 and continue until 12:00 A.M. EST October 13. Michigan stations will indicate their counties, but amateurs elsewhere are not required to transmit any specific information.

Logs should be sent to the Grand Rapids Amateur Radio Association, P. O. Box 333, Grand Rapids, Michigan.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and FYO. PAMs: FNN, HPP, HUX and HZJ. RO spent his vacation on a lake freighter to Duluth and return. K8s DHJ, DVJ and AQU received their Gen-

(Continued on page 134)

JAMMED PACKED WITH ACTION!

Ask the man that has one.
More features than all other converters combined!
Write for complete information . . . **PRICE only $149.00**

The HAMMARLUND HC-10
SSB/CW AM/MCW CONVERTER

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HQ-110

The newest! Dual conversion on 6, 10, 15, 20 and 40, single on 80 and 160. Crystal oscillator, and calibrator. Q Multiplier. Automatic Auto-response audio system. Top Ham Value! You can be enjoying this FB new receiver while paying only

$17 a month.

With control clock, $10 more. Matching speaker — $14.95.

(Even less, if your trade-in and down payment is more than $25 and the low carrying cost!)

HQ-100

Excellent performance, at lowest price! Covers .54 to 30 MC, with calibrated bandspread of Ham bands. Has Q multiplier, Auto-response, etc. It's yours for only

$12 a month,

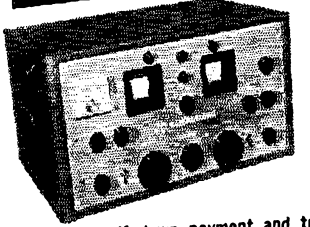
with down payment of $25 and low carrying cost.

With control clock, add only $10. Matching speaker — $14.95. Crystal calibrator — $15.95.

FOR QUICKEST DELIVERY—

send me your order right now! A deposit of only $5 (returnable any time you say) will start fast action. If you have a trade-in, tell me all about it so I can give you the very highest allowance. Mention the approximate terms you would like, and give employment and credit references.

Prompt, safe shipment to most anywhere in the world. or, you can "Come and get it!" and take it safely home with you.



HQ-150

Here's all the FB features of the famous HQ-140-XA, PLUS Q Multiplier, crystal calibrator, clear-sight S meter, etc. You can get the pleasure of operating it now, while paying only

$22 a month!

(Even less, if down payment and trade-in comes to more than $30 and low carrying cost.)

Matching speaker — $14.50.

ALL ROADS LEAD TO HAM HEADQUARTERS, U.S.A.!

because here, in the World's largest trading center, you can get more for your money. Our tremendous volume gives you the benefit of truly lowest overhead per transaction. You get the greatest values, the latest improved equipment, the lowest prices, the easiest terms, the "hottest" trade-in deals, all with the friendliest personal and helpful Service.

Hurry on in! With the new highways, it really isn't much of a drive, from even Maine, Ohio, or Virginia! Easy parking. Bring along your old gear, for my tip-top allowance. I guarantee you'll go home delighted.

73, Bil Harrison, W2AVA

From South and West: Thru New Jersey, leave Holland Tunnel in "Downtown" exit lane, continue straight down for 12 blocks.

From North: Thruway exit 7, Saw Mill River Parkway, (or George Washington Bridge), down Henry Hudson Parkway and West Side Highway. Exit at Chambers St., left on Chambers 3 blocks to West Broadway, right 4 blocks.

From New England: Merritt Parkway, to West Side New York via Henry Hudson and West Side Highways. (See "From North")

From Long Island: Via Brooklyn-Battery Tunnel, right on West St., 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

Via Tri-Boro, Queensboro, or Midtown Tunnel: East River (F.D.R.) Drive downtown, and around thru underpass tunnel to Brooklyn Tunnel entrance, but continue straight up West St. 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

All New York SUBWAYS can bring you to Ham Headquarters, U.S.A.! —

IRT, Lexington Ave. Express to Fulton Street station, up Broadway to Barclay St., left 2 blocks.

IRT, 7th Ave. Express to Chambers Street station, down West Broadway 4 blocks.

IND: Take A, AA, CC, or D train to Hudson Terminal (Chambers St.), one block west on Barclay St.

BMT 4th Ave. line to City Hall Station, walk two blocks west on Barclay St.

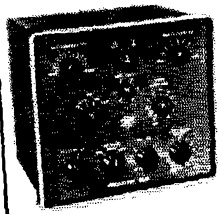
It's even easy by TRAIN!—

Penn Station: Take IRT Subway Express downtown 2 stops to Chambers St.

Grand Central Station: Take IRT Express downtown 3 stops to Fulton St.

Hudson Terminal: Fulton St. exit, left 1 block to Greenwich St., right 1½ blocks.

Barclay St. Ferry: 2 blocks east to Greenwich St.



HC-10

Want to turn your present receiver into the sharpest, slickest, SSB/CW/AM/MCW job, one which can hold its own with the very best of them? Just plug this new HC-10 Converter into the 450 to 500 KC IF output tube socket, and connect your speaker!

It has T-slot filter, vernier passband tuning, noise limiter/squelch, linear product detector, stable BFO, adjustable decay AVC, IF amplifier, internal power supply, etc. to add every modern feature to your receiver. Uses 10 tubes.

TRY ONE, and you'll be convinced! It's well worth the $149 investment. Especially when you can get it for only $24.92 down, and 12 monthly payments of $11, which includes all carrying cost.

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is the greatest! Come, pick your choice from the hundreds of like-new trade-ins, all money-saving bargain price tagged! Easy terms, trades.

eral Class tickets. IUC and his XYL took a trip into Northern Michigan. The Toledo Mobile RC is looking for a meeting place. Suggest you contact your local Red Cross chapter, for it is you mobile boys they want to tie in with if ever you have a local emergency. OQR, SUP, MQQ and NBD have their 2nd-class commercial tickets. DN has a new Gonset 6-meter Communicator. TPD is now mobile with a new Elmac AF-67. RZM is Toledo's ham of the month and his XYL is RZN. The Dayton ARC's VHFest was attended by 119 hams plus their families. There were 108 prizes. SVI and RVH are building 420-Mc. gear. There are about 75 stations on 6 meters in the Dayton Area. RKR moved to Minnesota and TPL to California. INQ, NAF, K8s BOW and BOZ attended the V.H.F. Picnic in Columbus. AQ vacationed in Maine. OJZ has a new Viking II. TTJ has a new mobile rig on 10 meters. UZN has an SX-101 and a new Johnson 500. WTO has a new Gotham V-80 vertical. KN8HBA is a new ham in Hamilton. BIM has a new Johnson 500. QZH has his General Class ticket and a 600 Lipco. TND has a Cesco phone patch. VAD, who now lives in W2-Land, visited Canton. MWL has a new Drake phone patch. WJB has a new 20-meter beam. K8AKU has a new D104 mike. QVK is back on the air after being off for five years. Massillon's new ham is KN8GZT. VYU was in boot camp at Great Lakes for two weeks. Your SCM attended the Hocking Valley RC's Picnic, where more than one hundred amateurs and their families were present, with LG's XYL, PRT, GCN, VDA and BPI winning the five major prizes. OUU is experimenting with antennas. KN8CLP has a new SX-101. TCT spent one week of his vacation in the hospital for a complete check-up and built a 220-Mc. converter. LMB vacationed in Michigan. Columbus ARA's *Curascope* tells us that IBX and K8ANX have new Viking Valiants; VOW worked an FP8 and a KG6 for two new ones on 15-meter phone; AV received a famed FS7RT QSL; those taking part in Operation Alert were FYW, ZQX, ZCK, VHO, GKQ, ZCQ, RTF, ABM, MRC, QDH, VFI, IJ, KVZ, VFO, IKB, K8CUN, AND KN8GMS; states confirmed on 6 meters are NVI with 38, EOU with 24 and HOF with 20; WRN has 23 confirmed on 2 meters; 9JGL and son, K9AGU, have moved to Columbus. K8CRY and son, K8CTD, have their General Class tickets and a Viking Valiant. UPH and CSK made the BPL in July. New appointments are FNN as PAM, HPP as OPS and OUU as OO. TZO and his XYL, K8BOF, have a new son. The South East ARC's new amateurs are KN8s GEK, GGU, GGV, GGW, GGX, GGY, GHR, GIH, GJE, GJI, GJJ, GJK, GKC and GKD. PBZ's XYL is KN8JI and his daughter is KN8GGU. The South East ARC meets the 2nd Tue. of each month. We hope this finds UWM fully recovered from his operation. DOG, in seven years, is responsible for fifty General Class licensees. K8CFA is a psychiatrist. CTZ spent his vacation in Florida. K8AEC worked KC4USK on 40-meter s.s.b. The Marietta ARC is working on a club transmitter. MGC installed a W3DZZ tri-band beam for 10, 15 and 20 meters. The Cuyahoga County AREC has a storm warning network tying six individual nets on 10 meters and five nets on 6 meters with a portable station at the Weather Bureau. On July 22 a storm alerted QLB, NRI, AEU, VJA, LHX, PTT, BEN, PVC, TXZ, TFW, GHT, DGK, HXL, CPZ, AAG, BFT, VFU, OXS, OED, IEH, AJH, UGB, CFH, OPX, NND, SLF and K4IWM/M8. PLQ took part in the V.H.F. and Field Day contests. Traffic: (July) W8UPH 913, CSK 329, K8AEC 278, W8CGF 168, K8BPX 133, W8DAE 99, WTO 81, HZJ 68, AL 44, VDA 40, SZU 37, K8DDG 34, W8VYU 24, TBX 16, RO 16, LZE 14, QIE 12, VWX 11, GQD 6, STR 5, MGC 4, AQ 2. (June) W8VDA 64, SYD 13, WTO 13, PLQ 7, KN8BUT 1.

HUDSON DIVISION

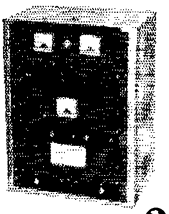
EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC. RM: BXP. PAMs: IJG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, SRPN on 3980 kc. at 1130, IPN on 3970 kc. at 1530, MHT on 3716 kc. Sat. at 1300. New appointments: ERO as OO, K2UYK as ORS. The SRPN and IPN picnic was held at Warners Lake July 20 with over 30 members attending. Ditto for the NYSPTEN picnic at Green Lakes State Park, Syracuse on Aug. 3. K2DEM was a radio counselor during the summer at Furnace Woods Camp at Peekskill, also handling traffic. ANB reports his RTTY receiver is working fine but more work is necessary on the transmitter. Those heard from Overlook Mountain during the June V.H.F. Party included: JFB, LWI, K2HBN, UKE and VYV. LWI has a new three-element beam for 6 meters and is working on a p.p. 4-65A amplifier for 2 meters. The Capitol District boys had a 6-meter mobile get-together on Mt. Graylock in July which included 1VVD, K2BSB, CBA, IUX, LVZ, OXU, RYG, TDB

(Continued on page 136)

Adirondack Radio, Amsterdam, N. Y.; A & F Electro Mart, Milwaukee, Wisc.; A G Radio Parts, Elkins Park, Pa.; Alco Electronics, Lawrence, Mass.; Amateur Radio Equipment, Wichita, Kans.; Amateur Radio Supply, Seattle, Wash.; Arcby Electronics, Louisville, Ky.; Bluff City Distributing, Memphis, Tenn.; Bob & Jack's Store for Hams, Des Moines, Ia.; Ham Buerger, Philadelphia, Pa.; Burghardt Radio Supply, Watertown, So. Dak.; Burstein-Applebee, Kansas City, Mo.; Busacker Electronics, Houston, Tex.; C & G Radio, Tacoma, Wash.; Chester Electronic, Kenosha, Wisc.; James W. Clary Co., Birmingham, Ala.; Crabtree Wholesale Radio, Dallas, Tex.; Curie Radio, Chattanooga, Tenn., & Huntsville, Ala.; Custom Electronics, Dayton, Ohio; Demambro Radio, Boston, Mass.; Denison Radio, Denison, Tex.; Ebinger Electronics, St. Louis, Mo.; Electronic Distributors, Muskegon, Mich.; Electronic Equipment & Engr., Corpus Christi, Tex.; Electronic Supply, Melbourne & Miami, Fla.; Electronic Supply, Battle Creek, Mich.; Electronic Wholesalers, Washington, D. C.; Elliott & Hanson, Rochester, Minn.; Elmar Electronics, Oakland, Calif.; Evans Radio, Concord, N. H.; Farnsworth Radio & TV Waterloo, Ia., Freck Radio & Supply, Asheville, No. Car.; Green Mill Radio, Chicago, Ill.; H & H Electronic, Rockford, Ill.; Harrison Radio, New York, N. Y.; Harris Radio, Fon Du Lac, Wisc.; Henry Radio, Butler, Mo., & Los Angeles, Calif.; Industry Services, Arlington, Va.; J & M Radio & TV Supplies, Rockford, Ill.; Ken-Els Radio, Cedar Rapids & Fort Dodge, Ia.; Klaus Radio & Electric, Peoria, Ill.; Meyers Electronics, Bluefield, W. Va.; Northwest Electronics, Spokane, Wash.; Payette Radio, Montreal, Can.; Peard Electronic, Jacksonville, Fla.; A. A. Peters Electronic, Allentown, Pa.; Pioneer Electronic, Cleveland, Ohio; Portland Radio, Portland, Ore.; Premier TV Radio, Chicago, Ill.; Prestwood Electronics; Augusta, Ga.; Radio Distributing, Harrisburg, Pa.; Radio Equipment, Norfolk, Va.; Radiolab, Kansas City, Mo.; Radio, Tulsa, Okla.; Radio Parts, Milwaukee, Wisc.; Radio Supply, Richmond, Va.; Radio & Television Clinic, Baltimore, Md.; Radio Trade Supply, Des Moines, Ia.; Reno Radio, Detroit, Mich.; Rogers Radio, Denver, Colo.; Roswell Electronic, Cambridge, Mass.; Sacramento Amateur Radio & TV, Sacramento, Calif.; San Francisco Radio & Supply, San Francisco, Calif.; Southern Radio, New Orleans, La.; Southwest Wholesale Radio, Phoenix, Ariz.; Tydings Co., Pittsburg, Pa.; Uncle George's Radio Ham Shack, Silver Spring, Md.; Universal Service, Columbus, Ohio; Valley Electronic, Burbank & Van Nuys, Calif.; W & W Distributing, Memphis, Tenn.; Walker-Jimieson, Gary, Ind.; Young & Young, Lawrence, Mass.; Yukon Radio, Anchorage, Alaska; X-Ray Electronic, Springfield, Mo.; World Radio Laboratories, Council Bluffs, Ia.

Now, increased safety factor through use of the 4-400A Final Tube

Globe King 500B



A bandswitching transmitter for 540 watts on fone and CW; 540 watts on SSB (P.E.P.), with 10W external exciter.

Outperforming any rig in its price and wattage range, the King bandswitches 10-160M in a 31x22x14¾" handsome cabinet, especially designed for TVI-suppression. The Transmitter is relay controlled; includes a built-in antenna relay; built-in VFO; and separate power supply for modulator section, allowing better overall voltage regulation. Commercial-type compression circuit keeps modulation at high level. King features grid-block keying for signal clarity. Pi-network matches most antennas, 52-600 ohms. Provisions for crystal operation.

Cat. No. 145AF001—Wired & Tested.....$725.00

All WRL Electronics Transmitters operate on most CAP and MARS frequencies.

Globe Scout 680

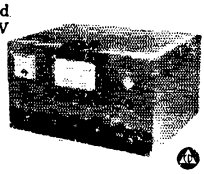
65 watts CW; 50 watts on fone, plate modulated.

A compact, self-contained, bandswitching transmitter for operation of the 6 through 80 meter bands, with built-in power supply. High level modulation is maintained. TVI-suppressed cabinet. Pi-network output on 10-80M; link-coupled on 6M, matching into low impedance beams. New type, shielded meter. Globe Scout 66 is identical, except bandswitching 10-160M. Size: 8x14x8".

Model 680
Cat. No. 145AF007—Kit.....$89.95
Cat. No. 145AF006—Wired & Tested...$109.95
Model 66
Cat. No. 145AF005—Wired only.....$99.95

Globe Champion 300

A bandswitching, 10-160M, Transmitter for 350 watts CW, 275 watts fone, and 300 watts SSB (P.E.P.), with any 10W external exciter.



The single-switch bandswitching Champion is extensively TVI-suppressed, filtered and bypassed. High level Class "B" modulation is sustained without usual clipping distortion through use of a new commercial type compression circuit. Pi-network output circuit, 48-700 ohms, built-in VFO, push-to-talk, antenna changeover relay, and improved Time Sequence keying are all features. 1000 volt plate capacity of Final tubes offer 33⅓% safety factor. Only 12x21⅜x17" in size, self-contained.

Cat. No. 145AF011—Kit.....$375.00
Cat. No. 145AF010—Wired & Tested $449.00

FCDA Certified on factory wired and tested models for crystal controlled operation.

Globe Chief 90

A completely bandswitching, 90 watt transmitter for 10-160M.

Here's a compact, 8x14x8", sturdy rig with well-filtered, built-in power supply. Pi-network matches most antennas from 52-600 ohms. Modified grid-block keying is employed for maximum safety. Has provisions for VFO input and operation. Kit form includes complete manual and all tubes and parts. Meter and cabinet carefully shielded for reduction of unwanted TVI.

Cat. No. 145AF013—Kit.....$54.95
Cat. No. 145AF012—Wired & Tested.....$67.50

Guaranteed
FOR ONE FULL YEAR

SEE YOUR NEAREST DISTRIBUTOR
MOST OF THEM CAN OFFER TIME-PAYMENTS TO SUIT YOUR BUDGET

WRL Electronics
34th & BROADWAY
COUNCIL BLUFFS, IOWA

and YWH. Nearly 15 mobiles were present. This group monitors 50.7 Mc. for contacts or use during an emergency, so call in when you can. K2PRB now is modulating his AT-1 and building a BFO for his CD-2 to grab some 2-meter c.w. stations. 813s in p.p. are now being used by ZBS in his s.s.b. rig. Among those receiving their General Class tickets are K2YTD and UPD. An emergency call from West Morocco for a special medicine was handled by KFA and flown back by commercial airline. Another mercy mission successfully handled by amateur radio. Congratulations. Traffic: W2EFU 203, PHX 157, K2HPQ 94, W2ATA 86, K2DEM/2 72, LKI 58, EIU 35, MBF 32, UYK 31, W2GDD 14, K2RKY 10, KN2YTD 10, W2ANB 5, TYC 2.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO. PAM: OBW. RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. NYC-LI AREC, 3908 kc. Sun. at 1400 EST. BPL cards go to W2s KEB and KFV and K2s ECY and PHF as the traffic nets continue their fine work. The NYC-LIPN handled 374 messages. Attendance on the NYC-LI AREC Net continues to be very good with many messages being handled. The Nassau County 10-Meter AREC Net has introduced a visiting program for alternate net nights. The mobiles visit the various home stations. K2PHF increased power with a Globe King transmitter. BO had to discontinue his mobile operation temporarily while recovering from a back injury. K2DEM/2, at camp in Peekskill, handled traffic on 75 meters with a Viking II and an HQ-129X. JGV is active on 144 Mc. with a Communicator and stacked co-plane antenna. IAG operated 75-meter mobile while on vacation. K2EQH is net control for the newly-formed V.H.F. MARS Net. LGK built a transistorized Conelrad monitor. K2AAW vacationed in Virginia. WAC on s.s.b. has been completed by K2OIL. IVS is enjoying mobile operations, especially after contacts with KZ5 and YV5 from the car. TUK now runs a Phasemaster II and P-400-GG linear amplifier into a two-element Gonset Bantam beam and keeps daily skeds on 14-Mc. s.s.b. with his dad, GG/4. JCA is awaiting the arrival of a new HT-32 rig. K2AZT is increasing his 50-Mc. mobile power from 7 to 50 watts. SEU is a new station heard on 6 meters. K2QFV is using v.o.x. on 50 Mc. and is now building a 4-125A final for that band. A new 75A-4 and a two-element beam for 20 meters have been added to the station of K2MYW. K2MEM has a new NC-109 receiver which helps his traffic total to climb. GZD is mobile with 120 watts and a tri-Band converter. WN2HQN is active from Islip with an AT-1 and NC-98. Several of the Amateur U.H.F. Club of Jamaica members are active on 420 Mc. K2s TTA and VMY have a new Viking Valiant and SX-101. A new station in Huntington is WN2HPJ. K2DDK had to take down his v.h.f. antenna but he still is active on the h.f. bands with a DX-100. 9FDI/2 is using a Harvey-Wells T-90 for his mobile rig. AEV sports a new Viking Ranger. K2TNM dropped the "N" and added a new Globe Scout and Matchbox. It is with deep regret that I report the death of K2MFD, ex-president of the Nassau RC and a personal friend of your SCM. Len will be missed by his many amateur friends. BTP and OBW made a trip to Bermuda in the M/S *Stormy Petrel* and worked on 10 and 15 meters as BTP/MM. K2PWH is now building a frequency meter suitable for use on 6 meters. K2BSU is now on 50 Mc. with a Telcratt converter and low-power rig. As an indication of mobile activity on 10 meters, your SCM kept count of the mobiles worked and the figures are interesting. In eleven weeks of mobiling on 10 meters, 100 different local mobiles were contacted. Has anyone surveyed the local mobile concentration on other bands? As the fall operating season approaches, you are invited to take part in the many ARRL nets and activities. Your SCM would like to visit your club. Please write and arrange a date. Traffic: (July) W2KEB 2033, K2ECY 705, PHF 511, W2KFV 507, BO 164, K2LUM 108, W2AEE 73, K2DEM/2 72, W2JGV 68, K2KQG 65, PMI 55, KSP 53, SEK 35, W2HAC 16, K2EQH 13, W2IAG 13, LGK 12, PF 11, OME 10, DRD 9, K2MEM 8, TSE 8, AAW 7, OIL/2 6, W2IVS 4, TUK 4, EC 3, K2DDK 2, W2JCA 1. (June) K2MYW 7.

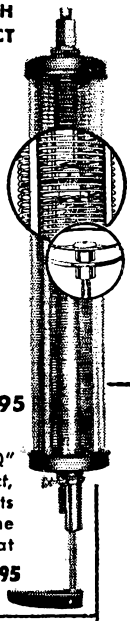
NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: IIN. PAM: VDE. RMs: BRC, NKD, CGG. K2SOH has been elected president of the Avenel Radio Club. VDE is organizing an AREC net in Jersey City. Section Net certificates were issued to NCZ, CJI, NHJ, OUS, HIA, HKY, CBT and K2HHH for their work in NJFN. VDE has been appointed EC for Jersey City. K2CSC is active on RTTY. K2AJV reports booming activity on FNJ. K2MFX is a new RACES station in Monmouth County. In checking we find that GVU has been mentioned in *QST* at least once per year since 1923. This is a fine record of activity. K2MMM made the BPL for the second month running. EWZ is an old reliable on

(Continued on page 140)

go mobile with *Master Mobile*

NEW! . . SILVER-PLATED ROLLER WITH POSITIVE ACTION, STAY-PUT CONTACT

ANTENNA COILS



MASTER DELUXE ALL-BANDER
No. 750

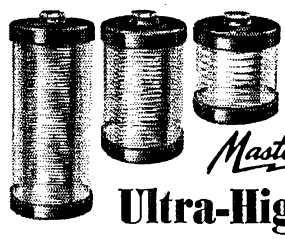
HY "Q" construction with wider spacing of turns for high frequency bands. Use as center or base loaded antenna with 60" whip.

- Covers 10 thru 75 and all intermediate frequencies.
- Silverplated single turn contact, positive spring.
- Eccentric cam contact, easy selection of turn.
- Automatic lock prevents damage to coil.

Amateur net. **$14.95**

No. 333
MASTER MIGHTY MIDGET

. . . engineered to provide the highest "Q" consistent with good design. Compact, extremely rugged, yet lightweight, its operation assures precision tuning with the new adjustable silver-plated roller that stays put! Perfect for 40-20-15-11-10 meters. "Get 5 Bands Plus on 1 Coil." **$9.95**



- Ruggedized construction
- Greater efficiency
- Precision made
- 2¾" Diameter

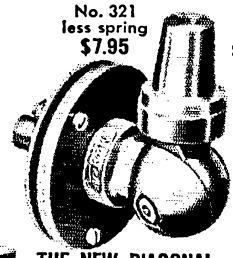
Master

Ultra-High "Q" COILS

For 80-40-20 & 15 Meters

After many years of experimentation, here is the coil with the highest "Q" ever obtained. Tested and found to have a "Q" of well over 515. Use with 36" base section, 60" whip. **$5.25 ea.**

BODY MOUNT
No. 321
less spring
$7.95

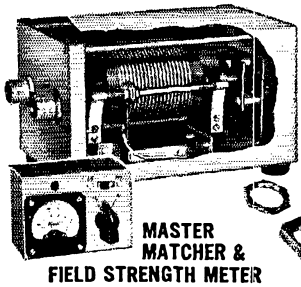


BODY MOUNT
Heavy duty Stainless Steel Coax. Conn.
$15.95

Other Mounts from **$8.75 up**

THE NEW DIAGONAL SWIVEL BALL-JOINT LOCKS IN ALL POSITIONS

W6EFX—Says!
"I would not be without a Master Matcher on my mobile rig . . . I can QSY on any band at the same time peak my antenna to the operating frequency for *maximum output.* It makes a mobile like a home station!"
W. B.



MASTER MATCHER & FIELD STRENGTH METER
Automatically tunes the entire band from the driver's seat! 6 or 12 volt models **$24.95**

MICRO-Z-MATCH
Matches Trans. Line
Complete with Kit **$7.95**

Leaders in the Design and Manufacturing of

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AT LEADING RADIO JOBBERS EVERYWHERE

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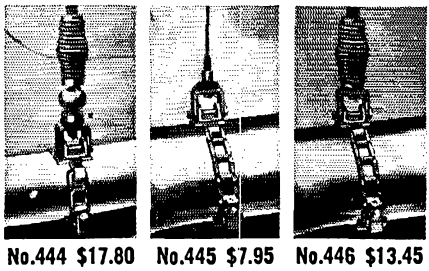
BUMPER MOUNTS
WITH NEW X-HEAVY DUTY CHAINS



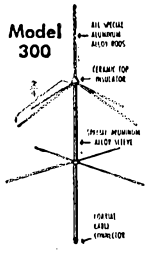
No.444 $17.80 **No.445 $7.95** **No.446 $13.45**

Adjustable to any bumper. No holes to drill, easy to attach. High-polished Chrome Plated ⅜"-24 thread, to fit all antennas. Precision engineered.

GROUND PLANE ANTENNA

Outperforms any type mobile vertical dipole, "Drooping" type.

Model 300



Gives a low angle of radiation for general coverage. Ideal for CD, defense nets, Amateur, Broad Band. Matches 52 ohm coax cable. Adjustable radials. For medium or low-powered trans.

Net $12.95

NEW NOISE-FREE

E-Z-OFF
ANTENNA CONNECTOR

Connect or remove your loading coils, whips or mounts in a jiffy. No wrenches, pliers or screwdrivers needed. High-grade stainless steel throughout.

- **Precision made**
- ***Maximum efficiency***
- **Positive lock—will not corrode**

AMATEUR NET **$2.95**

inside OR outside...

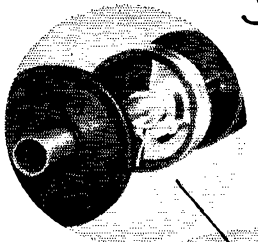
THE VERY FINEST!
TESTED AND PROVEN
IN THE WORLD'S HAM SHACKS!

the hy-gain 3-Element Tri-Bander

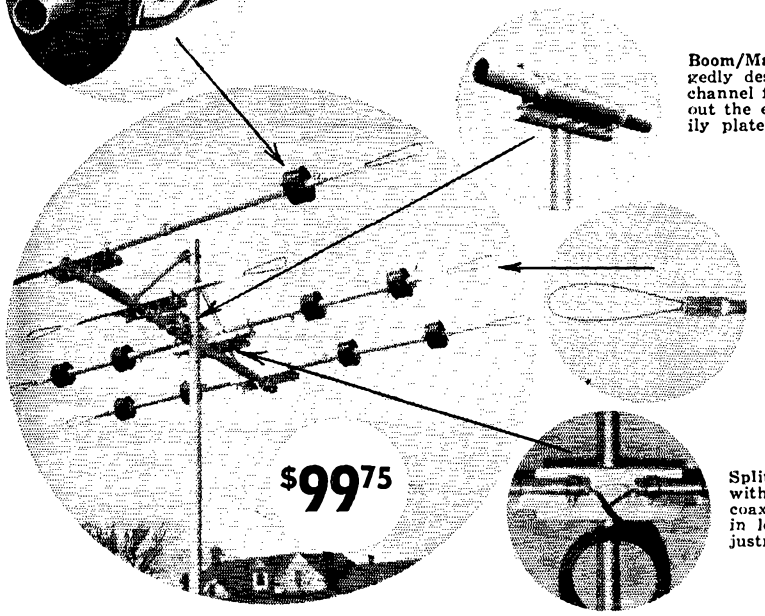
ONE FEEDLINE - THREE BANDS (10, 15 & 20M)

There Are More hy-gain Tri-Banders In Use Than All Other 3-Band Beams Combined!

3 Active Elements on Each Band!



Exclusive New Insu-Trap;- a new concept in parallel resonant trap circuits obsoletes old fashioned open-type coils. The only adjustable, completely weatherproof trap. Adjustable capacitor color coded for Fone or CW. Hi-Q coils wound on high impact styron forms which also act as low power factor dielectric for adjustable capacitors. No air dielectric involved. Trap assembly completely enclosed in weatherproof polyethylene cover with 2 grams of silica gel to absorb condensation.



Boom/Mast and Element Clamp;- ruggedly designed 12 Ga. galvanized steel channel for positive grip. Used throughout the entire Tri-Bander Series. Heavily plated and serrated 5/16" U-Bolts.

The "Carpet Beater" Ends;- employed on all Tri-Banders, specially designed of aluminum wire to reduce fatigue caused by vibration, increase the broad band characters of the beam, and to reduce element sag to a minimum.

Split Insulated Dipole;- fed directly with RG-8U ohm coaxial cable and coaxial line balancing choke results in low SWR on all bands. No adjustment necessary.

All specifications furnished from experimentally derived data. These figures will maintain in most installations if antenna is relatively in the clear.

	Model No.	Gain in DB Over Dipole	F/B Ratio In DB	SWR	Max. Power	Horizontal Beam Width	Boom Length	Boom Diameter	Element Diameter	Element Wall	Element Alloy	Longest Element	Approx. Net Wt.
3 Element	152T-3	8 Aver.*	25 Aver.	Less Than 1.5:1	1 Kw	59°	216"	1½" Hot Dip Galv. Steel	1⅛", 1", ⅞", ¾"	.058, .049, .035	6061ST6 Ant. 41	31', 9"	58#

* Additional Director Element for Increased Gain and F/B Ratio on 10M, Net $14.95.

The standard of comparison for three band antenna systems, the hy-gain Tri-Bander is factory pre-tuned, pre-matched and pre-adjusted and may be erected in an extremely short time with no test equipment and no further adjustment necessary. Guaranteed to outperform stacked arrays, because interaction and detuning effects have been eliminated. All hardware hot dip galvanized steel for maximum weather *ability*. Injection molded polyethylene, styron and cycolac plastic used throughout. Complete assembly and installation instructions furnished.

AND THESE OTHER 3 GREAT HY-GAIN TRI-BANDERS . . . IN STOCK AT LEADING AMATEUR RADIO DISTRIBUTORS EVERYWHERE!

1-ELEMENT TRI-BANDER **$39.95**

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Write for Complete, Detailed Brochure!

hy-gain antenna products

1828 N STREET **LINCOLN, NEBRASKA**

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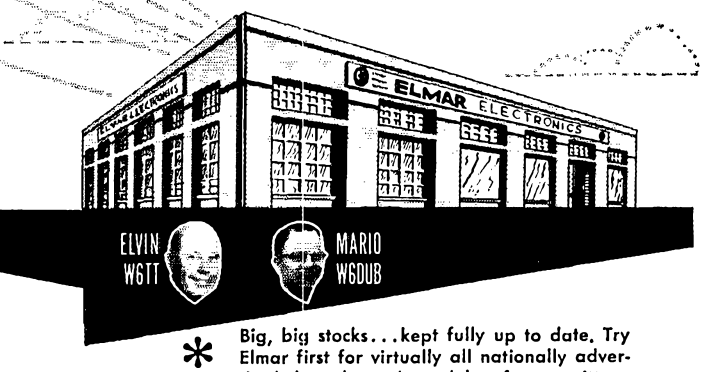


Speaking of Elmar's king-sized store and of the newest and finest things in electronics . . .

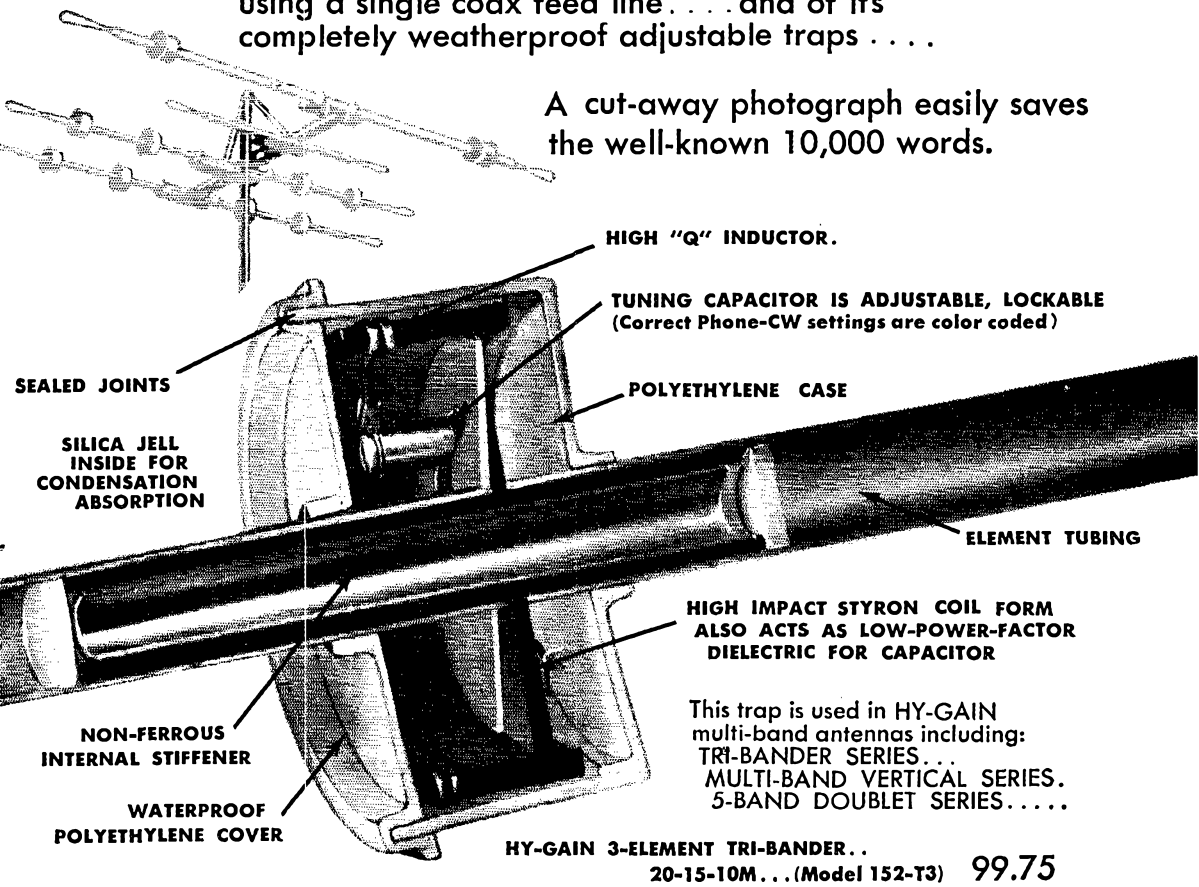
practically everything *

* Big, big stocks . . . kept fully up to date. Try Elmar first for virtually all nationally advertised brands and models of transmitters, exciters, receivers, tubes, parts and accessories. Also rotators, towers and antennas including the entire Hy-Gain line.

WHAT'S INSIDE ?

Speaking of HY-GAIN'S latest, highly effective 3-element beam for 10, 15 and 20 meter operation using a single coax feed line . . . . and of its completely weatherproof adjustable traps . . . .

A cut-away photograph easily saves the well-known 10,000 words.



This trap is used in HY-GAIN multi-band antennas including:
TRI-BANDER SERIES . . .
MULTI-BAND VERTICAL SERIES.
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HY-GAIN 3-ELEMENT TRI-BANDER . .
20-15-10M . . . (Model 152-T3) 99.75
Slightly higher west of the Rockies

ELMAR ELECTRONICS

140 - 11th Street, Oakland 7, California.

FNJ. K2JOM is active on 40-meter c.w. K2MFF needs Cape May, Hunterdon and Salem Counties for his WANJ. Please drop him a line and arrange a sked. KN2VAB is going up for his General Class license soon. WN2BVE is running a DX-35 on 40, 80 and 15 meters. The GSARA's monthly paper is complete with pictures this month. We extend a word of praise for FZY on the excellent job he did for the GSARA Field Day operation. RXL is planning to increase activity. K2GIF is active in MARS. K2RGS is back from a trip to the West Coast. Bob installed a new mobile rig for the long trip but was bothered by ignition interference. KN2VIV is working toward his General Class license. K2VAB has received an RCC certificate and will be on the air soon with a new DX-100. New members on FNJ are K2KSH, RRH, TWK, UQY, VNU and W2RW. The traffic total for July on FNJ was 434. KN2YFE passed the General Class exam and has a DX-35 on the air working all bands. Bouquets are in order for K2MFF, who has been holding down several 2RN skeds as well as acting as NCS when the regular NCS doesn't show. K2BHQ continues to do an excellent job on both 2RN and NJN, and recently has taken on the job as second regional representative to EAN. Our RM, BRC, reports active QNA runs between 28 and 34 stations per month. The first seven months of the current year shows a total of 197 sessions held with 2785 QNIs and 2040 messages handled. This is an average of 14.2 stations per session with a traffic count of 10.4 messages per session. New calls on NJN during July were TLJ, SUG, ING, K2TNJ and SOX. K2EB has been a great asset to the Morris County RACES organization, and has been appointed Assistant County RO. The FNJ has a very interesting biography of K2MFF in the July issue of its net bulletin. K2AJV is suffering quite a financial loss in bearing the expenses of publication of the FNJ monthly bulletin. How about the net members giving him a lift? BZJ, ZI and SUG are doing a fine job at RACES state control as staff operators and instructors for our county nets. BTG is working good DX. YLS is active in Monmouth County RACES. K2DHE has a fine turnout each Mon. evening for the Monmouth County RACES Net drill. K2ICE has had little time for operating because of the summer business rush at his downtown parking lot. OUS is limbering up the bug key on 144-Mc. m.c.w. CQB is heard on 2 meters. IIN is kept busy on frequency allocations problems connected with RACES operation in the Delaware Valley Area. WN2MRV sends in his first report. Four stations made BPL this month. The section traffic count for July was 2302 messages handled. Traffic: (July) K2RIC 262, TNJ 253, MFF 248, MMM 232, W2MLW 199, K2OIY 187, AJV 150, BHQ 127, W2RXL 106, K2GIF 80, OAM 60, QYI 57, MFX 54, W2BRC 41, VDE 39, EWZ 37, K2BWQ 33, W2WOJ 23, DRV 22, KFR 21, K2EMJ 18, W2OXL 5, K2JOM 4, W2CVW 2, K2UQY 2. (May) K2RGS 11.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—Operation Alert, under the direction of EHH, State Radio Officer, received statewide cooperation. Four clubs, Des Moines, Cedar Rapids, Burlington and Sioux City, organized links with civil defense. Many individual Iowa amateurs also participated. We think that EHH and the other Iowa amateurs are to be congratulated on a nice job. EFG received an EC appointment. Following are renewals: TGQ as EC, GXQ as OBS and LCX as ORS. SLC is now on the air with a Johnson 500 rig. KØBKL has an SX-106 and is waiting for a Globe Scout to get on 6 meters. The Des Moines Club Annual Picnic was well attended by amateurs from all over the State. WLR, PCQ and KØCLI journeyed from Waterloo to Cedar Rapids in a raft on the Cedar River with a kw. rig and worked over 200 contacts. KNØKOP is a new ham at Burlington. YUA is building a new "Big Bertha" transmitter. EHH and KØCLS made BPL for the first time with originations and deliveries. LGG had a nice write-up in the local newspaper about her amateur activities. LCX has a new NC-300. Traffic: (July) WØBDR 1960, SCA 1429, PZO 1139, LGG 1093, CZ 814, LCX 432, BJP 422, QVA 253, EHH 242, KØCLS 198, WØGXQ 179, BLH 153, LJW 116, JDV 87, UTD 53, IUY 52, KØEIZ 50, WØKVJ 40, NGS 26, NYX 26, KØGOQ 24, CER 18, CFB 18, GBD 18, BRE 17, WØPTL 15, KØGXC 14, WØSLC 14, FMZ 13, UHO 10, KØCYF 7, WØHNE 7, ADB 6, REM 6, JPJ 5, NYT 5, COD 4, FDM 4, GQ 4, UTX 4, K9GGT/Ø 2, KØGHH 2, WØVWF 2. (June) WØPTL 10.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH. PAM: LEW. RM: QGG. Wichita now has a Red Cross Disaster Communications truck which is equipped with transmitter, receiver, 60-ft. telescoping mast, one large power supply and two smaller power supplies, PA system, and various kinds of flood lights. In the

(Continued on page 142)

WHY USE MAKESHIFT TUBES FOR GROUNDED-GRID OPERATION? THESE RUGGED POWER TRIODES ARE DESIGNED FOR IT!

No need to fiddle with makeshifts. These Penta power triodes were designed specifically for the job. And only Penta makes them. Either tube will boost a 100-watt class transmitter up to a kilowatt. Either tube can be used for both SSB, CW service. There's no neutralization!

PL-6569—250-watts plate dissipation, hi mu (45). With a power gain of 10 or more, this tube gives you more than 800 watts output with only 75 watts drive. Low plate-to-filament capacitance (0.10 uuf) gives you high stability.

PL-6580—400-watt plate dissipation, hi mu (45). More conservative than the PL-6569. Useful in linear amplification of AM signals where carrier efficiency is low, and extra plate dissipation is needed.

FREE DATA FILE 301—gives ratings, operating conditions, suggested circuits plus single-sideband data. Write today for your personal copy.

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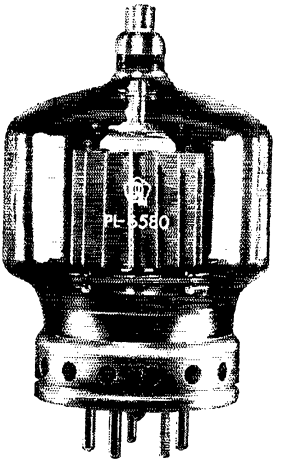
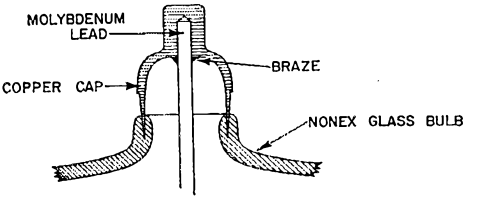




EXTRA-RUGGED PLATE CAP—Penta has designed both these tubes with a one-piece low-loss copper plate and cap seal. It can't break off. And there are no set screws or separate pieces to come loose.

TRADE MARK REG. U. S. PAT. OFF.

event of a disaster this unit will move into the disaster area and communicate with the base station, SOE. EXG has been appointed Assistant to Director of Communications for Wichita-Sedgwick County C.D. HAW, of Hamlin, has graduated from college and now is back home with his old call and a new RME 4300. KØBAU, Acting State C.D. Director, reports this year's Operations Alert was most successful and he wishes to thank all those who helped make it a success. News is rather scarce this month but thanks to you traffic reporters. Traffic: (July) WØBLI 649, QGG 300, TOL 272, NIY 224, FNS 176, KØBIX 169, BXF 161, WØABJ 60, KNØHSF 41, WØFHT 23, KNØHVD 18, WØUOL 18, LEW 14, MXG 14, ICV 11, WMV 11, FDJ 10, KØHVR 6, ETB 5, WØTNA 5, ASY 4, KNØKDV 3, WØDEL 2, UAT 2, WXE 1. (June) KØBIX 158, WØMXG 32, KNØHVG 29, WØIHN 17, FDJ 12, DEL 10, WMV 8, MEF 6, KØETB 4, WØUAT 2.

MISSOURI—SCM, James W. Hoover, WØGEP—According to information published in *Midwest CLIXS* the top Missouri traffic men over the last ten years are QXO (1947 through 1952) and CPI (1953 through 1956). QXO was the top traffic man in the Midwest Division in 1947 and 1949. The Kansas City gang was called out to supply communications on June 29 when flooding conditions occurred on the Big Blue River. Eighteen stations participated. OUD has her new 120-watt transmitter on and is getting better signal reports. KØGWL dropped the "N" from his Novice call upon receipt of his General Class license. KNØJPJ has received MARS authorization. EEE and WFF have qualified for Traffikers 1000 certificates. KOI and his XYL, PSP, are back on 10 meters after having receiver trouble. QHL has a new 75A-4 receiver. KØBWQ is vacationing in Canada. KØCML has just erected 10- and 20-meter beams. KØHQQ and KØIHY recently installed 75-meter mobile equipment. KØDEX has a new kilowatt amplifier. KØDRY is moving to Fayetteville, Ark. NNM has a 1.5-kilowatt gasoline-driven generator available for emergency use. ECE has completed 20 years with the Cape Girardeau Police Department. Recently-appointed Emergency Coordinators include BYJ, CQW, CWT, DWX, MMZ, NNM, PSP, TXP and VJD. Traffic: (July) WØCPI 1295, GAR 610, OMM 136, VPQ 131, GBJ 121, KIK 121, OUD 119, EBE 36, KA 30, LQC 30, CKQ 28, WFF 24, BUL 22, HUI 20, EEE 17, RTW 17, IIR 16, OVV 16, YVM 15, KØIFM 11, WØECE 10, WYJ 8, GEP 3, VFP 3, KØHQQ 2, IHY 1, KNØJPJ 1. (June) WØUXT 45, EEE 37, ECE 13, KA 11, KØCHZ 9, WØIJS 3. (May) WØIJS 10, KA 4. (Apr.) WØIJS 11. (Mar.) WØIJS 22. (Jan.) WØYVM 25.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—SEC: JDJ. PAM: MAO. DDT has accepted appointment as Route Manager and on Aug. 1 took over net control for the Nebraska C.W. Net, which meets at 1900 on 3525 kc. daily. KNØLCJ is a new Novice at Seward. KØDGW, of Benedict, has been elected net manager for the Morning Phone Net which meets at 0730 CST daily and in July had QNI 398 and QTC 130 with a duration of 957 minutes and has 27 active members on roll call. UOV is a new member. New officers of the Grand Island Radio Club are KØHJY, pres., and KNØJGY, secy.-treas. The club meets the third Thurs. of the month at KMMJ studios. JDJ, our SEC, attended the hamfest at Scotts Bluff. More than 75 amateurs participated in the recent c.d. alert with 430 messages handled via RACES network. There are no reports from the other Nebraska nets for the month of July at this writing so will have to send this in without them. Please get your reports in before the 5th of the month, please. Traffic: WØZWG 82, DDT 55, NIK 51, LJO 15, UJK 14, ZWF 10, VGH 9.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR. RM: KYQ. PAM: YBH. Traffic Nets: MCN, Mon.-Fri. 0645 on 3640 kc.; CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2200 on 3640 kc.; CTN, Sun. 0900 on 3640 kc. Congratulations to YBH for another fine CPN bulletin. EJH, RLD, IYR, IOI, FRN, IM, KN1BKL and BYC provided communications during the Barnum Festival in Bridgeport. APA has QSOed four of the Antarctica stations. FRN and son, KN1BKL, are active on 6 meters. KN1BJI has joined the AREC in Bridgeport. KYQ reports CN held 27 sessions during July handling 261 pieces of traffic. Average QNI was 12. The second session of CN also met 27 times handling 29 messages. KN1BEN has dropped the "N." WHL attended the Graveyard Net Picnic in Virginia during Field Day. HCZ is busy working new states on 6 meters. CPN met 31 times, handling 215 messages with an average daily attendance of 27 stations. High QNI: YBH, 31; TVU, 29; ZHM, 29; DHP, 27. RFC is busy working

(Continued on page 144)

WE TRADE HIGHER!

Howdoody...

I'm Jack S., head eevaluator of trade-ins at the Walter Ashe Radio Co. Now, I don't eevaluate heads! So don't go sendin' in no shrunken, head-hunters handiwork, 'spectin' cash allowance on new merchandise. What I mean is....I'm in charge of the Dept.

The picture shows me gettin' down to the office bright and early....well, early! My chauffeur drives me down in a long white limousine, with an assistant chauffeur at his side. They both help me off with my coat....it's a little tricky....and stand at attention while I eevaluate old store-bought eelectronic stuff people want to trade in on fine new merchandise. (Nothin' older than 1945.)

The Boss says I'm doin' a bang-up job! My department took a whoppin' loss last month.....which is the way the Boss wants it. He fired my predesse....predicess....predasess...the guy what had the job before me for showing a $1.89 profit in a three-month period. Heck, my salary alone loses him that much in a day's time! He says I got real job security if I can stay as moronic as I am!

Write when you get work, or when you decide to trade!

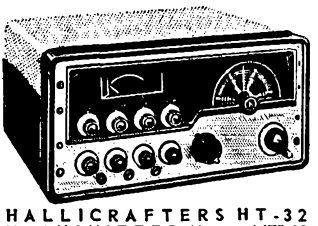
Jack S.

IT'S EASY TO DO BUSINESS WITH WALTER ASHE!

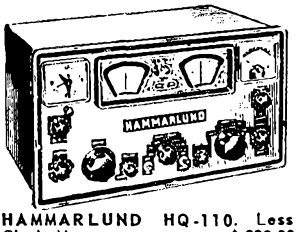
1. Just tell us what factory-built gear (made since 1945) you have to trade, and what new gear you wish to purchase. You'll get our top dollar quote by return mail.

2. When the deal is made, you ship your equipment to us by prepaid express or, if express is not available, by prepaid truck. We check it at once and, in most cases, your new gear is on its way to you within 24 hours after we receive your trade-in.

3. We will ship your new gear to you via express in most instances. Where express is not available, or not practical, we will ship by truck.



HALLICRAFTERS HT-32 TRANSMITTER. Net.....$675.00



HAMMARLUND HQ-110. Less Clock. Net.....$ 229.00

JOHNSON VALIANT KIT. Net..$ 349.50
Wired..... 439.50

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for.....
(show make and model of new equipment desired) Q-10-57
[ ] Send new FREE Walter Ashe catalog.
Name.....
Address.....
City.....Zone.....State.....

DX. AMY is vacationing. KN1CJJ and KN1CSY are new Novices in Southington. JSQ, OKY, RRS, VP, WGJ and WPR attended the monthly meeting of the Newington gang at the Nutmegger House. FVV has moved to Hartford. IUC spent his vacation seeing the West. MQT is busy building a half-gallon. FCE has a new 20-meter beam up. K1CXY and K1CUB are new hams in Winsted. FYF spent his vacation on Cape Cod. KN1CMW is a new Novice in Wethersfield. RAN has added 3 new countries for a total of 169/149. NUB and LIG are emitting potent signals on 10 meters. EJH is on 6 meters. SUZ has worked 44 states on 6 meters using only 35 watts. CUT operates 2-meter mobile each weekday morning around 8 EDST. Section Net certificates were issued to EKJ, VQH, FHP, ECH, FDO, FDJ and IRX for their activities on CPN. New appointments: FEA and MQT as ORS, ECH as OO, MQT as OBS. Appointments renewed: APA, BIH, VKZ and YYM as ORS, APA, DHP and YYM as OPS, VIY as EC for Trumbull. OO reports were received from DHP and BVB. CUT and FVV submitted OES reports. MCN handled 62 pieces of traffic in 23 sessions. High QNI: DIY, 22; IBE, 21; EFW, 19. Traffic: (July) W1AW 234, YBH 215, KYQ 211, GVK 102, TYQ 101, HID 100, RGB 70, ULY 59, CUH 42, BVB 39, DHP 36, FHP 36, ECH 35, LV 35, MQT 28, VIY 23, AMY 19, RFJ 19, FYF 18, APA 10, EBW 6, EJH 6, FCE 5, K1BFJ 4, W1GEA 2. (June) W1KYQ 171, YNC 10.

C.W.A. TENTH ANNUAL CONNECTICUT QSO PARTY OCTOBER 5-6, 1957

All Connecticut amateurs are cordially invited to take part in the Tenth Annual Connecticut QSO Party sponsored by the Connecticut Wireless Assn., Inc.

Rules (1) The party will begin at 5:00 P.M. EDST October 5 and end at 11:00 P.M. EDST October 6. (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 Richard M. Smith, W1FTX, RFD 2, Box 247, Winsted, 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—Acting SCM, Charles L. Chapman, W1WTG—Maine now has a new SCM John Fearon, W1LKP, RFD 1, Wells Beach, Maine. We are all behind you, John, for the next two years. The best of luck. All the fellers and gals in Maine thank VYA for the splendid job he did during the past two years. We now have several new hams in for a Maine vacation. MYM is back at Wayne. An SWL in Naples always catches the Sea Gull Net. SCM has a new harmonic. BDL is in Alaska. IUV is back after visiting W6-Land. The next report will come from LKP.

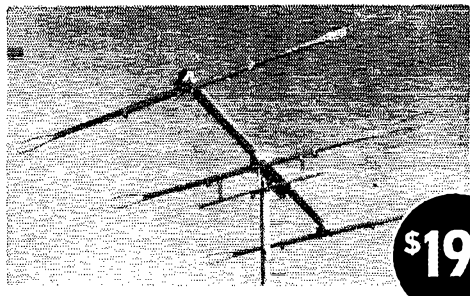
EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: DIY as OBS, OPS and ORS. Appointments endorsed: AWA North Reading, ISU Holbrook, LQQ Hamilton, BWH Attleboro, TRC Maynard, FEC Middleboro, LLY Arlington, PJ Everett as ECs (in many cases most of these also are the Radio Officers for their towns); AWA, BPW and LQQ as OBSs; WK, BPW and BGW as OOs; LQQ as OPS; EAE as ORS. We are sorry to have to announce the death of QBV, the father of K1BOR. KN1ACF is on 2 meters. TOW is on 40-meter phone.

(Continued on page 146)

the beam to buy . . . FROM "the place to buy!"

THE hy-gain

10M
3 ELEMENT

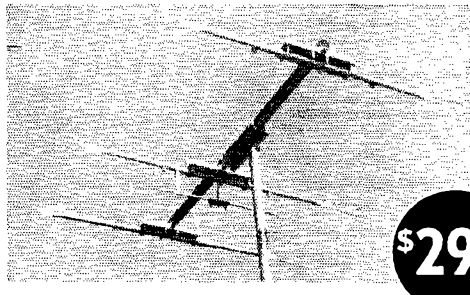


$19.95

Weighing only 18 lbs., this Spanner is small enough to be rotated by any TV rotator. Elements adjustable for maximum gain over entire ten meter band . . . Factory pre-tuned, pre-adjusted and pre-matched. Easy to assemble in short order. No further adjustments necessary.

THE hy-gain

15M
3 ELEMENT

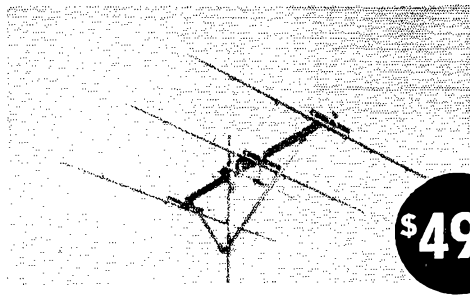


$29.95

Still small enough to be rotated with the heavy duty TV rotators, this ruggedly-built antenna is also adjustable over the entire fifteen meter band. T or Gamma match for any line balanced or coaxial 52 to 450 ohms. Extremely simple to put up and into operation.

THE hy-gain

20M
3 ELEMENT



$49.95

This heavy duty, full-sized twenty meter array is really built to take it. The elements are adjustable over the entire twenty meter band and they are telescoped three times to minimize element sag. Combination T or Gamma match for any line balanced or coax 52 to 450 ohms.

AMATEUR BAND	MODEL NUMBER	DESCRIPTION	AV. GAIN IN DB OVER DIPOLE	AV. F/B RATIO IN DB	HORIZONTAL BEAM WIDTH	BOOM LENGTH	BOOM DIAMETER	ELEMENT DIAMETER	ELEMENT WALL	ELEMENT ALLOY	MAX. MAST DIAMETER	LONGEST ELEMENT	APPROX. NET WT.
10 M	103	3 Elem.	8.5	24	59°	104"	1 ½"	⅞"&¾"	.049 and .035	6061ST6 Ant. 41	1 ½"	17' 10"	19#
15 M	153	3 Elem.	8.5	24	59°	142"	1 ½"	⅞"&¾"	.049 and .035	6061ST6 Ant. 41	1 ½"	23' 10"	30#
20 M	203	3 Elem.	8.5	24	59°	212"	1 ½"	1, ⅞, ¾"	.058 .049 .035	6061ST6 Ant. 41	1 ½"	35' 9"	48#

Here are low cost beams of excellent construction, offering superior performance. Each incorporates the specially designed "carpet beater" ends of aluminum wire to reduce fatigue and increase broad band characteristics, new Boom/Mast Clamp for positive grip, and high impact cycolac insulators. Guaranteed for one full year.

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3415 WEST BROADWAY *PHONE 2-0277* **COUNCIL BLUFFS, IOWA**

Heard on 75 meters: BSO, OUM and VE2AHK/1 mobile. FGY and FGZ are father and son and have a DX-100. FJJ/1 was in New Hampshire for two weeks. EAE is on 2 meters on the Cape with 2-meter Halo. BPW made 100 countries and is publishing a weekly *CQ Mass. Bulletin*. ETH/1, on all bands, got hit by lightning. He and SMO were on in the CD Parties. ISU is back from vacation. KN1CLO is active on 40 meters. NF has 100 countries and took a 2-meter Gonset up on the Empire State Bldg. and worked many W2s. AVY/6 writes from Los Angeles and says he feels pretty good. CHA now is in Scarboro, Me. The Framingham Club did better on Field Day this year. KCR has the quad working better. ØTOS/1 is in the Air Force at Otis A.F.B. SMO visited JFS. IKK gets on 75 meters quite a lot. IBE has a new pole and antenna for 40 meters. Ex-1TON is now K6YRK in El Monte, Calif. QLT/5, in Port Aransas, Tex., says he hopes to come back. TRC says they have a Gonset for 6 meters in his town. KQJ still is on 6-meters but is going on 220 Mc. with BYY and CAS and will be on 10 meters later. QOI has a new tower for his beams. EKG spoke on "Matching Transmission Lines" at the Braintree Club. The club had a picnic, MPT was chairman. DIY has an AT-1 transmitter and an HQ-140X receiver. VIN says they have RACES and are going to get set up now in Carlisle. CXJ has his boat in the water again. PIW vacationed in Maine. RM is back from W6-Land. MJA went to Florida. LMU went on a Windjammer Cruise. UG is busy with his boat. SXD went to New York. CGU is building a 1-kw. power plant. KVX sold his boat. NHS has a new car. HTU, FEC and FZU are on 6 meters. IYD is getting interested. FZJ has been endorsed as EC for Medfield. VVA is mobile on all bands. TEO moved to Winthrop. AGB moved away from Winthrop. DEL is in the Navy. OIR took a trip down South. KN1AIQ went on a trip and was mobile on 2 meters. The Winthrop C.D. Net was on once a month during the summer. The Sector 1-E Net has new crystals for each town for 29,490 kc. The Eastern Mass. Net is on 3660 kc. each night at 7. NCSs are: Mon. UE, Tue. AUQ, Wed. EAE, Thurs. BPW, Fri. EMG. You are invited to join them any time. RK is Radio Officer for Reading. JZQ is Radio Officer for Sector 1-E. UE says he is very busy with guests. Traffic: (July) W1EMG 399, IBE 256, FJJ 187, WØTOS/1 86, W1EAE 63, AUQ 62, BPW 20, CZW 14, TY 14, ATX 12, TZ 10, UKO 10, ETH 6, DIY 4, AHP 2, BY 2, DTB 2, SMO 2. (June) WØTOS 1 47, W1AOG 17, KBS 12, SMO 7.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—SEC, RRX, RM: BVR, PAM: MNG. Don't forget the WMCW Net that meets on 3560 kc. daily Mon. through Sat. at 1900 EDST. We need net representation from Worcester. The WM Phone Net on 3870 kc. at 1800 EDST Wed. has expanded operations and now meets on Mon., Wed. and Fri. at the same time. We need a good phone traffic net in Western Mass., so how about supporting this one, fellows? In October the Hoosac Valley Club will start theory classes for those seeking General Class licenses. The Central Mass. Assn. combined its August meeting with an outing in Sutton. The Hampden County Assn. rolled up a score of 4560 points for its Field Day total. The Pioneer Valley Club reports a total of 2615 points for its first Field Day try. UEQ won a BPL citation for his July traffic total. ORS endorsement goes to ZUU, who is active again on WMN. OPS endorsement goes to DPY, ZEO, EC for North Adams, has been appointed C.D. Radio Officer there. A new Novice in Southwick is KN1CER. Williamstown has a new Technician Class licensee, K1CQK. K1BDP, recently licensed in Shrewsbury, is active with a new Globe Scout. AUC, JGX and JLA are new Technician Class licensees in the Worcester Area. ZEO lost an antenna Bridge during a thunderstorm because of a close hit. HRD, in North Adams, now holds General and Technician Class licenses. RB reports 170 countries confirmed out of 198 worked. His latest are VR6TC and 3A2BG. His kw. and 75A-4 are really snagging them on 20 meters. AJX is building an 813 rig and has received his 1st-class commercial radiotelephone license. HRV enjoyed some nice mobile QSOs on 10 meters during a short trip to the Boston Area. Mobile activity on 10 meters in the Springfield Area is heavy during the early morning and late afternoon on 29 Mc. with sometimes 5 or 6 mobiles on the frequency. Traffic: (July) W1UEQ 526, DWA 47, FZY 31, AJX 25, MNG 24, DGL 21, LDE 13, AGM 5, BVR 5, ZEO 4, HRV 3 (June) W1WEF 118.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ—SEC: BXU. RMs: CRW and COC. PAM: CDX. The NH/RACES Net meets Sun. at 1300 on 3850 kc.; the GSPN Mon. through Fri. at 1900 on 3842 kc. and on Sun. at 0900; and the NHN, traffic net, Mon. through Sat. at 1900 on 3685 kc. This net needs regulars in the Manchester, Nashua, Keene and Portsmouth Areas. Please check in and help keep the traffic

(Continued on page 148)

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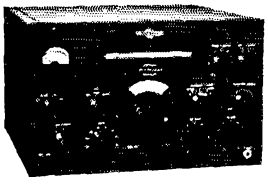

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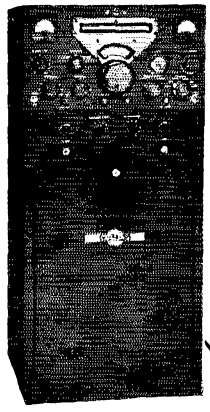

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moving. KN1CHF captured top honors by taking first prize for his home-built Novice transmitter in the Ford Industrial Arts Award. SEC BXU reports that all ten New Hampshire counties participated in RACES Alert during the mid-July National C.D. Test. RACES/AREC cleared 176 pieces of traffic which was the highest total in comparison with other communication services. The Concord Brasspounders, OC, kicked off its Field Day activities with the first CQ being called by Mayor Charles Davie. ARR is using a Viking I and reports FB results after raising the Windom another 20 feet. The U. of N. H., ASZ, will be on with a kw in October. CCE is running 900 watts on s.s.b. K1APQ has a new Johnson 500 in operation. Mid-summer visitors at K1BCS were 2LWJ, WN2MXZ and WN1MIO. Certificates endorsed: ARR and EVN as OPSs. FUA is a new OO. Repeat memo to new natns: Please send me your QTH. Traffic: (July) W1ARR 746, QGU 116, K1BCS 131, W1HOU 69, IIQ 27, KVG 18, BYS 4, EVN 2. (June) W1NPY/JTB 7.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ, PAM: YNE, RMs: BBN and BTV. K1BWX is a new OES. A new certificate is now being offered to anyone who qualifies. It is "Worked All Bristol, R. I. on Six Meters." For further information contact MUZ. PPN, who recently received DXCC, has his 20-meter three-element beam on a new 40-ft. tower. At the annual meeting of the NAARO on June 28, the following officers were elected: LWA, pres.; ICJ, vice-pres.; KN1AZH, secy.; Doc Harris, treas.; and YLH, QBZ and WQU, Board of Governors. UHE is building a high-power transmitter for 50 Mc. CMH made a good number of contacts in the c.w. portion of the recent CD Party. MUZ would like to make skeds for low-power c.w. contacts around a 250-mile radius on 50.7 Mc. Successful and regular contacts are being made with WIN/MM aboard the U. S. CGC *Spar* through the cooperation of TGD, MUL, FVZ and PGZ. K1BWX is building a receiver and transmitter for 220 Mc. Ex-MSD is now K2TYO and operates a Viking II from Fishkill, N. Y. GR has been endorsed as Class I OO. OGT and VXC now have a 2-meter beam. Traffic: WICMH 51, TGD 32, YRC 18, HKN 10, HLY 10, WED 6.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: SIO. RM: BNV. PAM: SEO. FMK has been appointed an OES. OPS and ORS endorsements go to VZE. Complaints are coming in on zero-beating the NCS or using crystal. Those using v.f.o. should be sure to QNZ. We are always looking for Vermont amateurs on the various traffic nets in the State. KCI is leaving Vermont for New Hampshire and still plans to report in Vermont nets. K1CUF (FMK's XYL) is going to operate 50 and 220 Mc. FMK, EXZ and FTF had a 3-way phone contact on 40 Mc. which covers the State pretty good. Speedy recoveries are wished for APZ and WOA. A new club called the Wind Hams Radio Club has been organized in Bellows Falls. Officers are AD, pres.; TXY, vice-pres.; Reynolds Anoe, secy.; K1BQB, treas.; WN1IMK, act. chairman. Membership at present numbers 10 and the club invites others to join. New in Bellows Falls is KN1CYZ. KN1BSU is operating from Joe's Pond with a 3717 Lettine 240 and an SX-25 receiver. FMK worked 34 states on 50 Mc. K1AJL has passed from Novice to General Class license. When the plane crashed on Glastonbury Mountain, ZJL kept active as Communications Officer of Springfield Squadron CAP. JMI, from Connecticut, operated portable on 14-Mc. c.w. from a tent in Orange. ZEW likes working in Massachusetts and is happy over his Globe King, a V2A electrovoice mike and an NC-300. The new RACES State Radio Officer is UCU. Operating portable on 50 Mc. at Camp Killooteet in Hancock is K2DCY. Visitors this month at MMN and OAK were GQJ, JMI, OHI, PSG and XYL KN1ACM, K2DLL and VE2AOK. Traffic: (July) W1BXT 112, OAK 72, AVP 70, ELJ 37, ZJL 4. (June) W1ZJL 3.

NORTHWESTERN DIVISION

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—Thanks to all for making the Silver Jubilee Big Springs Hamfest such a success. The C.D. Alert was good, but 10 meters had to be used when 75 was washed out. There are new Novice and Conditional Class tickets all over the State. Quite a few complaints have been coming in about sloppy and inefficient net procedure. Let's clean it up. Check the booklet, "Operating an Amateur Radio Station," if you are not sure. The SCM can send you a copy. Also c.d. colored decal stickers are now available for RACES members. See RKI, OCR or MKS. Every town or club should have an OO. We also need an OBS around Boise and Wallace. See your SCM. RKI visited the shacks of BDL, NOB, VQC, GMC, RSP and ASA. GGV got his ticket just in time for the hamfest. VQC is working DX. LQU has a new linear. BDL finds a long wire works FB on his mobile. Thanks for the many reports. Keep them

(Continued on page 150)

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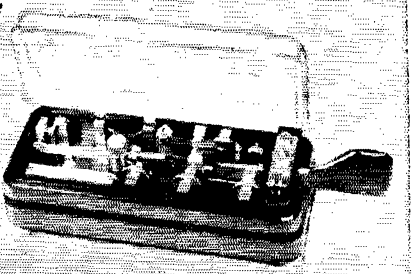

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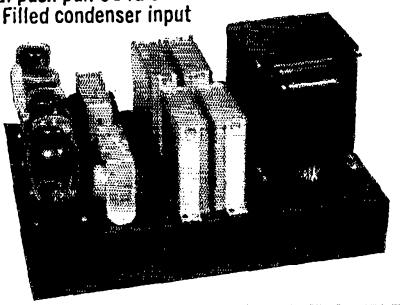

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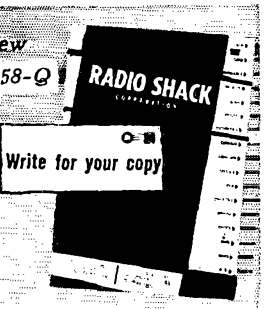

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MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: EOI. RM: KGJ. The Old Faithful Radio Club of Livingston held its annual picnic on July 14 near Clydepark. The Hellgate Radio Club supplied communications for the Luther League Convention in Missoula, July 16 through July 21, which was attended by about 10,000 young folks from all over the nation. Stations were set up at entry points and the mobiles aided traffic officers by escorting convoys. The 22nd Annual Glacier-Waterton International Peace Park Hamfest, held July 20 and 21 at Apgar in Glacier Park, was attended by 150 licensed hams and their families. CRD's XYL won the NC-109. About 50 Montana hams and their families attended the 25th Anniversary of the Wyoming-Idaho-Montana-Utah Hamfest at Big Springs, Idaho, August 2, 3, and 4. Officers for next year are YHC, pres.; YHB, secy.; and JPD, vice-president. HFZ got his General Class license. PXR moved back to Billings from New Mexico. WRK moved from Kalispell to Lewistown. Traffic: W7OOG 11, OIP 6, NPV 5, YHS 4, YPN 4, TGM 2.

OREGON—SCM, Hubert R. McNally, W7JDX—OLU has moved to Empire. KTL is now K8DDB at Pt. Pleasant, W. Va. AJN, net mgr. of OSN, has been appointed RM for Oregon and will handle all c.w. matters. HJU has resigned as EC and HCE has been appointed for Washington County. UQI is the new EC for Clackamas County. PQJ is going strong as OO. JKU resigns as OPS after many years and says he is going to take things easier. SO has opened a radio store in Albany. KTG now is in San Diego, Calif., with Convair-Astronautics Co. VPH is a new OO in Medford. KL has resumed as EC in Lane County. AIH, ISP and UZU will continue as ECs. QYS has returned home after a month in Alaska and will resume SEC duties. The Teenage Amateur Radio Club has been formed in Coos Bay with the station call HUD. The OARS Net is going strong on 29.2-kc. We regret the passing of SCE, Lester Brewer, 24, after a long illness. The OEN Picnic at Tillamook and the Baker Radio Club Picnic at Barker were both swell affairs, only your SCM had better learn to curb his appetite at these affairs! Your SCM would like to have permanent schedule around 3830 kc. the first Sat. of each month at about 1900 PST. It's swell for LO contacts and any other business we might want to conduct. OSN on 3585 kc. had a good month with BRATS to OMO, YKT and ZPH. Traffic: (July) W7APF 120, YKT 70, OLU 51, JDX 36, LT 32, AJN 28, BVH 28, OMO 25, ZFH 25. (June) W7TLC 225, LT 77, OLU 25, HJU 14.

WASHINGTON—SCM, Victor S. Gish, W7FIX—The Washington Section Net (WSN) meets on 3575 kc. at 1900 PST Mon. through Fri. YJE reports running a Class B linear on 6 meters and worked ACD on 50 Mc. The Valley Amateur Radio Club (Puyallup) had about 60 persons at its Field Day set-up between Graham and Eatonville. SLB transferred to KL7. FQD dropped the "N." KN7AFU is a new Novice using an AF-67. MCU, QPX, SLB and OIV visited CG Loran Station at Pt. Grenville. PUA is batching it in Bremerton where he is apprentice engineer for Civil Service. QLC left for Guam and is working for Philco Corporation. The Spokane Amateur Radio Club had an excellent turnout for Field Day and operated 80 through 10 meters. The Clarkston gang is going high power. PSL and HDT have p.p. 813s. UJA has p.p. 4E27s. HDT says he told the XYL, "No more building until the big rig is squirting out some r.f." OE returned home from W6 on July 3 and has been busy on WSN and C&E frequencies. He sold the Ranger and now is using a Globe Chief. VOG is rebuilding. DWC and UGK are using Johnson 6&2s on 50 Mc. CYQ rebuilt the DX-35 for 6 meters. The County-Line V.H.F. Society was formed during the summer in the northern part of King County and the southern part of Snohomish County. Membership is by invitation only. Contact any member on 6 meters. K7FAE skeds K5FJC, K6FDG, K6FCY, WØPZO, K6FCT, KR6KS, KM6AX, W3WIQ, K7FBL, W1ARR and KØFEJ. Dave, ex-KØYGB, now is K7ANS. HNT got a 25-w.p.m. CP Award. K7FAE also is DXing—ZK2, FG7, FP8, HC1, KAØ, FE8, YJ1 and CR9, all on 20 meters. AMC is laying oak floors; that's hamming? PGY made his 52nd BPL without a break—just about 60,000 messages handled. YEM reports AREC activity from Walla Walla. FRU tried out the new Ford on a Montana trip. WAH now has MTHC for RN7 and WSN and NCSed RN7 21 nights in July. APS is QRL painting. AIB's new 5-band trapped antenna and new receiving antenna are very successful. The new shack is just about complete. ER was off the air most of the summer but expects to be more active now. LVB painted the house. BMK is overhauling the mobile rig. AVM has fully recovered from surgery and reports the Aberdeen gang is going 50-Mc. mobile. FZB fixed WN7GMJ's rig. BDK is working on 1296-Mc. gear to work PUA. WAH asks "Do I have to sign /7 when I use my rig six blocks from home QTH?" Answer, "You sure do." K6COP

(Continued on page 152)

and K6PLW and family dropped in on the SCM on Aug. 6. Traffic: K7FAE 3144, W7BA 2147, PGY 741, K7WAT 544, W7VAZ 421. FRU 202, WAH 186, APS 100. AMC 63, AIB 56, ER 22, FZQ 21, USO 16, JEY 12, LVB 10, BMK 4, YJE 4.

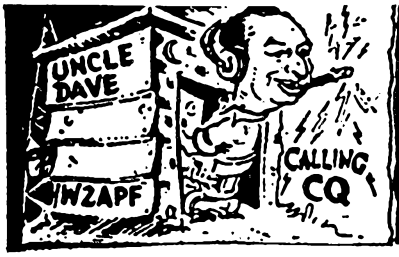
PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—The Honolulu Amateur Radio Club Convention was a great success with over 300 attending the dinner and evening events. WH6CAJ, Anacleto Heloca, has volunteered to send reports on ham activity from Kona on the Island of Hawaii. From Guam, via KG6AGS, the new Assistant SCM, comes news of the Second Far East Pacific Division ARRL Convention to be held Nov. 8 through 11. KH6AIK/KG6 has been transferred to duty in the States. KG6FAE is handling a heavy traffic load from servicemen on Guam to their families back home. KG6IG, on Chi Chi Jima, schedules Guam. KH6IJ is sporting a new mobile rig, new from the wheels up. Nose also has switched to s.s.b. with a new HT-32. KH6DE also has announced he will be on s.s.b. Traffic: (July) KH6AJF 295. (May) KH6AJF 619. (Apr.) KH6AJF 189. (Mar.) KH6AJF 349.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—SEC: NVO. RM: ZRJ. PAMs: OFJ and WGO. A new EC is DEF, of Redwood City, covering the area of Redwood City, Atherton and Menlo Park. OII is acting NCS of the American Legion Net on Mon. nights. K6DYX took a vacation by traveling in Oregon for a week. K6GZ still makes BPL on originations of traffic he files on amateur nets after getting it from his MARS skeds. VZT is cleaning up key clicks on his 14-Mc. rig. WN6LKV is studying for his General Class ticket. ZLO reports that the Monterey Bay Radio Club expects to have a booth at the County Fair. Traffic will be handled from the booth. Some thirty amateurs in the Redwood City Area have formed a club to further c.d. activity in their locality. They have received the cooperation of the City Council and are installing equipment, have applied for a station license and are formulating a RACES plan. PBC is experimenting with various converter circuits for 50 Mc. as well as 144- and 220-Mc. converters. HJP is operating KR6RX using s.s.b. on 14 Mc. MMG is rebuilding the c.w. rig installing time sequence keying. QRN is causing some trouble with reception of signals on the TCC skeds of the NTS. There is need for more stations with medium power both on this coast as well as in the Midwest and Eastern Areas. If you would like to put in a night or two a week in this interesting ham activity, contact your SCM for further details. Traffic: K6DYX 527, GZ 423, W6VZT 366, BPT 337, JCG 300, FON 74, YBV 60, OII 22, K6HGV 14, W6ZLO 10, PBC 2.

EAST BAY—SCM, Roger L. Wixson, W6FDJ—On Fri., Sept. 27, at the Oakland Red Cross Bldg., 906 Fallon St., Oakland, there will be a meeting of all appointees in the East Bay section. It will start at 8 P.M. sharp. The purpose of this meeting will be to reorganize ARRL activities in this section. A formal notice will be sent each appointee prior to the meeting. Refreshments will be served following the meeting. Around the clubs in the East Bay: At a recent East Bay Radio Club meeting (meets 2nd Fri.) K6PNC arranged movies showing the European Road Races. The Oakland Radio Club (meets 1st Fri.) did not meet during July or August. For September K6UWD will give a talk and demonstration on remote control as applied to model airplanes. This should prove to be a wonderful program. The Mt. Diablo Club (meets 3rd Fri.) had as its meeting for the month a transmitter hunt. It looks like this club had a good Field Day with a total of 7281 points. The SARO (meets 1st Mon.) met at Bob's of Burlingame. The speaker for the evening was VE2AGF/W6, whose topic was "Operation Pole Vault." This subject had to do with the installation of a communication link extending from the Northeastern U. S. into the North Polar regions. Tommy showed many beautiful color slides showing various stages of development of the subject. From the SEC: Wayne reports that the Six Shooters are on target with 6 meters. The boys will provide communications again this year for the Napa Parade. Wayne is doing a fine job with AREC, with 35 members checking in between Napa and Solano Counties. A recent c.d. drill was held with EZZ, LSC, YSD, CAN, QPY, BBU, RZR, BYQ, HUY, NOP and NDR. The ACACIA Club met at BF's and from what I understand the steaks were fine. Port is past master of Piedmont Lodge and played a large part in getting the ACACIA Club started. The meeting which was to have been held at K6DX's place was postponed because so many were vacationing. The NCARTS is really booming! VPC is keeping the keys as hot as usual and tells me that the Teletype Net has gotten underway. They call the net QBFN (Quick Brown Fox Net). K6GZ is

(Continued on page 154)



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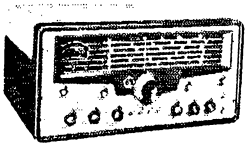

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2000 Watts P.E.P. Input
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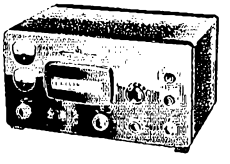

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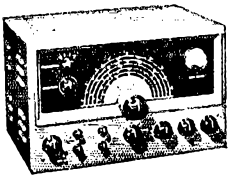

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6 VOLT GENERATOR	22.50		
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net control with K6GES as alternate. Weekly skeds with ØBP and daily skeds on 3620 kc. 6:30 to 7:00 P.M. Mon. through Fri. are in progress. The NCARTS's last meeting was held in honor of 9GRW at Fisherman's Wharf, San Francisco. Well, gang, things are picking up again and I hope that I can stay home long enough to get out some good SCM reports and visit more clubs. Traffic: K6GK 441, W6VPC 56.

SAN FRANCISCO—SCM, Walter A. Buckley, W6GGC—About 25 of the Marin amateurs turned out to help the fire and police departments recently when one whole block of stores on the main street of San Rafael were destroyed by fire. Amateurs set up a loudspeaker system and helped control the traffic jam. They also rendered much help by means of mobile communications. The Tamalpais Amateur Radio Club had to cancel its picnic which was scheduled for July 20 because of the fire hazard through lack of rains. Many of his old airwave "pals" will be sorry to hear of the death of DEK. Dr. Al Havens belonged to most of the local radio clubs and was well liked by all who knew him. GQA reports that although he never looks for DX he interrupted a traffic-handling session to work an F8 who was calling CQ on the frequency. MIY acted as hidden transmitter station for the 29ers hunt. We are sorry to state that the San Francisco Section is losing QMO to the Santa Clara Section. She expects to be in her new QTH by the time this reaches the press. Jeri has been very faithful with reports each month as ORS and OPS. Lots of DX at the new location, Jeri and Chuck. K6LCF was guest speaker at the San Francisco Radio Club's monthly meeting and spoke on Low Power Compact Mobile Transceivers. It was enjoyed by all who attended the meeting. NIM has kept in touch with the gang from Pusan, Korea, and expects to be back at City College of San Francisco by now. YIK also has kept in touch from Norwich, Conn. At a club meeting of the Young Ladies Radio Club of San Francisco BDE gave the report that "Swoop" is well on its way. Both the group at the Long Beach Pacific Division Convention and the Chicago National Convention included the program on the activities for the ladies attending conventions. BDE, Esther Given and K6HIW, Kay MacGillwray, worked hard in a program similar to the *Wouff Hong* for the National Convention which was held July, 1956, in San Francisco and are very happy that other convention committees elsewhere are continuing with the "Swoop." Traffic: W6QMO 80, GCV 35, JWF 18, GGC 16, GHI 10, GQA 6.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—The amateur fraternity suffered a great loss in July with the passing of HIR. Dick was president of the RAMS in Sacramento, a good c.w. operator, an interesting rag-chewer on phone and a fine "all 'round ham." We need more fellows like HIR to spark our enthusiasm. Congratulations to the new officers of the Yuba-Sutter Club: K6HVM, pres.; K6AAW, vice-pres.; and RXX, secy. Are you interested in single sideband? K6BIJ says all you need is a good final with a garbage disposal unit for a modulator and you have an FB s.s.b. rig! A tip of your SCM's hat to K6QIF, the EC for Sacramento County, and all the fellows who participated in the c.d. drill, Operation Alert. PIV did an outstanding job as NCS on 147.12 Mc. Participating were 10 mobile units, 12 emergency radio units and numerous fixed stations. A total of 18 messages was handled on 2 and 75 meters. The Amateur Radio Emergency Corps (AREC) is sponsored by ARRL and is our oldest organized emergency service. All amateurs are eligible whether League members or not. Let's all get busy and push AREC in our clubs. Application forms are available from the SCM or ARRL. Chico still is in need of an EC. How about it, fellows? Do you know any good traffic men? Tell them a traffic round table meets every Sun. at 9 A.M. on 3820 kc., phone or c.w. All the nets say they have a difficult time disposing of traffic for our section. Look for CMA with the Central Valley Net on 3525 kc. M-F at 1900. Traffic: K6SXA 141, RPQ 43, KN6YBV 22, W6ZF 20.

SAN JOAQUIN VALLEY—SCM, Ralph Sarovan, W6JPU—The Emergency Coordinator for Tulare County is ARE. All ARRL appointees are ugently requested to get in their reports. They are important for our records. EBL has a new Hi-Gain beam on 10, 15 and 20 meters. BAN, DVK, K6LLF, PSQ, KN6SVN, K6SVM, SDR, K6PFB and ONK helped out on the nation-wide c.d. test in Selma. K6JGH, KOK, K6IRQ, K6OEM, JMP and MGN handled c.d. in Fresno City. KMN has moved down to Bakersfield. K6BGO is recuperating from an operation and says he is as good as ever. 7YDM is a new call heard in Fresno. K6YVE now has his General Class license. Sam Sirinian, a ham-to-be, loaned his 100-ft. crank-up tower to use during the nationwide c.d. drill. UTU is heard on 75-meter s.s.b. HIA won a new Buick. PPO is heard on 20-meter s.s.b. JPS worked 11 states on 6 meters with 2 watts and a nondescript antenna. JJV is conducting

(Continued on page 156)

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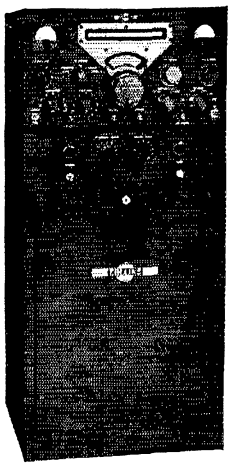
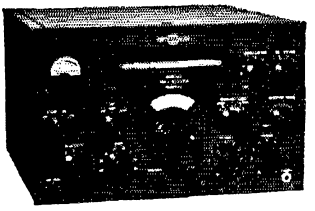
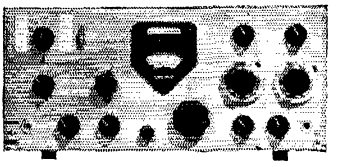


KWS-1



75A-4



KWM-1

KWS-1

POWER AMPLIFIER INPUT — 1 kw peak envelope power SSB, 1 kw CW operation. Equivalent to 1 kw on AM when using narrow bandwidth receiver.
R-F OUTPUT IMPEDANCE — 52 ohms.
FREQUENCY BANDS — 80, 40, 20, 15, 11, 10 meters.
EMISSION — SSB, AM carrier plus one sideband, CW.
HARMONIC AND SPURIOUS RADIATION — (Other than 3rd order distortion products.) Intra-channel radiation is at least 50 db down. All spurious radiation at least 40 db down at output of exciter. Second harmonic at least 40 db down; all other harmonics at least 60 db down.
DISTORTION — SSB, 3rd order products approximately 35 db down at 1 kw PEP.
FREQUENCY STABILITY — After 15 minutes warmup, within 300 cps of starting frequency. Dial accuracy: 350 cps after calibration.
AUDIO CHARACTERISTICS — Response: ±3 db, 200 to 3,000 cps. Noise and hum: 40 db or more below reference output level. Input: .01 volts for rated power output.
MICROPHONE INPUT — Will match high impedance dynamic or crystal.
WEIGHT — 210 pounds.
SIZE — (Both Units) — 40½" high, 17¼" wide, 15½" deep.
RACK MOUNTING — Angle brackets kits available for RF Unit and power supply.
Net Price ---------- $2,095.00

75A-4

FREQUENCY BANDS — 160, 80, 40, 20, 15, 11, 10 meters.
SIZE — 10½" high, 17¼" wide, 15½" deep.
WEIGHT — 35 pounds.
RACK MOUNTING — Angle mounting kit available.
NUMBER OF TUBES — 22, including rectifiers.
SENSITIVITY — 1.0 microvolt for 6 db signal-to-noise ratio with 3 kc bandwidth.
AVC CHARACTERISTICS — Audio rise less than 3 db for inputs of 5 to 200,000 uv.
IMAGE AND IF REJECTION — Image ratio at center of each band 50 db or better. IF rejection at center of each band 70 db or better.
AUDIO CHARACTERISTICS — Output — .75 watts with a 3.0 uv signal, 30% modulated. Output impedance — 500 ohms, 4 ohms. Response of audio circuits — ±3 db 100 cps to 5,000 cps. Distortion — Less than 10%.
MUTING — Provisions for muting the Receiver during key-down operation are provided. A muting voltage of +20 volts must be supplied by transmitter.
FREQUENCY STABILITY (at 14 mc) — Temperature — Less than 1200 cycles drift from 0 to ±60° C. Warmup drift — Less than 300 cycles after 15 minutes operation. Line voltage — Less than 100 cycles for ±10% change. Dial acuracy — 350 cycles after calibration.
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KWM-1

Use it for mobile. Use it for fixed station. No modification necessary in this 14-30 mc 175 watt PEP input transceiver. It's new, revolutionary, and we have it for immediate delivery!

Utilization of common components in both transmitting and receiving functions results in a saving of both space and cost and, in the case of frequency-determining components, assures exact coincidence of transmitted and received signals. Frequency stability and readability is comparable to that of the KWS-1/75A-4. The panel meter serves as an S-meter during receive and multimeter during transmit. Break-in CW using VOX circuits is built-in, as is a side tone for monitoring CW. Ten 100 kc bands are available anywhere in the 14-30 mc range. Size: 6¼" H x 14" W x 10" D.

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KWM-1 Transceiver	$770.00
516E-1 12 vdc Power Supply	248.00
516E-1 115 vac Power Supply	103.00
312B-2 Speaker Console with directional wattmeter	146.00
312B-1 Speaker in cabinet	25.00
351D-1 Mobile Mounting Tray	TBA

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code sessions each week. CET has a new Elmac mobiling. The Coalinga Radio Club meets the 2nd and 4th Wed. of each month. K6HII is painting her kitchen between c.d. drills and nets. The Turlock Radio Club used its handy-talkies on 2 meters for communications during a controlled burn at Coulterville. K6GOX is waiting for F2. YHI has a Pacemaker. VPV has a 75-A3. WN6NKZ is working out FB on 40-meter c.w. K6HTM is on 75-meter s.s.b. with a homemade filter rig. NDP is stationed at Scott Airforce Base. BNP is with MATS operating out of Northern Calif. UBK is putting up a rhombic antenna. Traffic: W6ADB 52, EBL 8.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM: DRC. In the summertime amateur radio takes a slump and leaves very few to carry on the work of handling the traffic that piles up. You are urged to meet the nets as much as possible and accept traffic destined for your area. A change has been made in the emergency set-up in the State. The NCS of the Tar Heel Emergency Net will be NCS in any emergency instead of the Greensboro Club station. The net will function as always. The Net Manager, YPZ, may at his discretion request that the NCS be moved temporarily if conditions warrant the change. The club station in Greensboro has been designated as an Area Station and will work on the RACES frequency. We seriously need a dependable outlet in Camp Lejeune and High Point. How about it, fellows? Even the NCN (c.w.) has trouble moving traffic into those areas. K4DNW has stopped the letters requesting the SCM to get someone on 4RN. Paul is doing quite well with this assignment. His traffic count was 315 this month. K4CDZ also is taking his part of traffic on 4RN. I did not receive a report from him. Each of these boys are ORS and are doing a very fine job. Several counties report funds available to purchase equipment for RACES. HKB has been appointed District MARS Director by the State MARS Director, RRH. DRC had to give up the job after a very successful term because of his health.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—For the first time an XYL club has been formed in our State with the XYL of PED, pres.; the XYL of DNX, vice-pres.; the mother of 1RW, secy.; and the XYL of 1MY, social chairman. PED, one of our fine ORSs, makes four net skeds daily. HJK reports the start of a 2-meter net in the Rock Hill Area. FAV, with a crazy receiver that works only when standing on its end, has beaten many local experts. ASA is very proud of his much-remodeled Super Pro. Thanks to K4EAR for the personal visit and fine spirit toward ham radio. MVX is laying it on the line to many service clubs with fine talks on amateur radio. K4PJE was very busy with plans for the gang's beach excursion. K4ADD now is in Arlington, Va., and looking for the gang on 40 meters from South Carolina. VPN has a nice signal here although only using a mobile antenna for his fixed station. RCY was here visiting many old friends. Finding themselves short of operators during Field Day, K4DLN (Jan) the XYL of GOJ, took time out to produce a new jr. operator. We are all happy to welcome both K4AND (Bob) and his XYL, K4ALM, to Columbia. Congrats to Maj. R. C. O'Connor and his fine gang at K4FFU/4 for their fine showing on Field Day. GQE and K4CTX work nightly into Aiken with AIB and others. GQE is one of our fine s.s.b. stations on 2 meters and contributes much to our hobby. CAL and the Aiken gang did a nice job in the July 12th Test. Join the ARRL; do it today. Traffic: W4AKC 144, K4HJK 38, W4PED 31.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: PAK. PAMs: ONV and K4ASU. RMs: IA, LW and K4KNP. The SVARC produced its biggest Dickey Ridge Hamfest with some 350 hams and their families present. The Bristol ARC has a new call, K4QUW. K4MBL made General Class and is operating mostly at the Mine Depot Club station, YIA, at Yorktown. ZCL's XYL now is KN4RBU. Welcome to K2CQW, now an announcer at WNNT, Warsaw, and K2GWW, keeping things hot at MCS station PFC at Quantico. We are sorry to lose BMH, now K8EEJ in W. Va., K4DBC, who moved to Illinois, and K4OQR, heading back for Iowa and KØAZJ. K4EZL finally made the BPL Medallion. CWB spent several hours monitoring 75 meters during the Powder Puff Derby. Two VN stalwarts, IF and ZM, admit to giving s.s.b. a whirl. ZM and APM say DST is that part of the State snafus net participation. K4JKK bemoans that "something" always seems to come up at 1900, VN time, while K4BUI lists the "somethings" as summer job, senior life saving and "the women"! KMS is about to tackle 2 and 6 meters with a new converter. JUR has a new s.s.b. rig in the car. JUJ played host to fellow "contest man" and ex-Ohio SCM 8AJW. BRF and his

(Continued on page 158)

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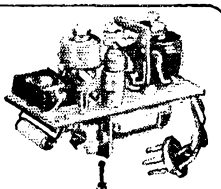

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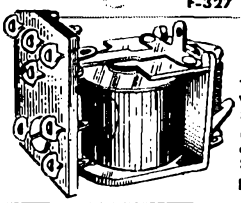

The Mighty Mite of the R/C field. Weighs less than ½ oz.! Only ¾"H x 17/32"W x 1-1/16"L. Highly sensitive—extremely rugged. Pulls at 1.4 Ma—drops out 1.2 Ma D.C. S.P.D.T. 5000 ohm coil.

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Cannon ECI—Single Headset ....Net **1.13**

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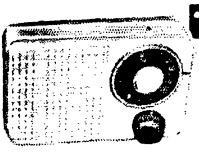

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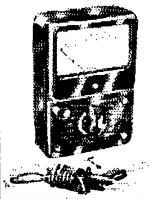

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XYL IKA took turns visiting their Georgia home and maintaining a radio sked both trips. K4EUU complains her BF, CXQ, won't climb a tree to put up her antenna. By the time you read this, the "Va. Free For All" will be history. However, all are urged to submit logs, no matter how small your participation. Traffic: (July) K4EZL 610, W4IA 345, QDY 245, K4JLO 70, W4BZE 69, K4DSD 53, W4CFV 52, KX 44, FLX 41, K4MEV 29, KNP 28, JKK 24, W4AAD 21, RHA 21, K4ELG 19, W4APM 18, K4BUI 18, W4FKP 16, LW 14, CVO 10, THM 8, CWB 6, K4EAQ 3, W4JUJ 3, TFX 2, K4ATF 1. (June) W4FKP 23, RHA 19, THM 3.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: KXD. PAM: FGL. RMs: DFC, GBF, HZA and PBO. TGF has a new Wonderbar antenna. GIU has a new Ranger and Wonderbar antenna. 3GWN/8 went home to Philadelphia after the school season was over. NIY has a new TCS RTTY transceiver on the air. SWL is with CAA in Elkins. He is on 75-meter d.s.b. with a 400-watt linear. GIU and AXU operated v.h.f. in the contest lately on a high peak near Elkins. EUJ is building a new 2/6 converter. OIV is on phone with 20 watts doing a fine job. KN8DZU passed the General Class exam. KN8GBN is a new ham in Hurricane. HZA traded a Viking II for a 32V-2. SSA is in the process of moving. His antenna blew down in a recent storm. K8CNB is very active with traffic work. K8CSG visited 4AAI and 4YEJ in Virginia recently. PQQ attended the Chattanooga, Tenn., Hamfest and visited 4QT. The Black Diamond Radio Club is a new one recently activated for hams in Beckley, Williamson, Bluefield, Hinton, etc. For details on the meeting time, etc., contact GGC. K8DDB has a trap antenna going and is working on the tower and beam. He took part in the recent CD Party. AVW has a new HT-32. NYH renewed OPS and ORS appointments. ESH worked lots of 6-meter long-distance U. S. stations recently. VYR is a new ORS and is doing a fine traffic job. The Parkersburg Club had a fine picnic recently. PQQ, GBF and PZT attended the National Convention in Chicago. FNI is very active and is operating the WVN regularly handling lots of traffic. Traffic: W8KXD 97, HZA 38, BWK 37, FNI 33, VYR 23, NYH 17, K8CSG 10, CNB 5, W8PQQ 3.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. PAM: IUF. OBS: KØBTU. OO: OTR. OES: KØCLJ. DRY and WPY attended summer camp at Palmer Lake. NIT, VLS, NCB, SKB, WNØIYY and Betsy, at Beaver Creek Camp, maintained daily schedules with KQD, YFL, NVU, KØBOH, CEN and others. Has Don revealed the mysterious converterless converter? The Larimer County Radio Club held its annual picnic at the Fort Collins Mountain Park in Cache La Poudre Canyon. TX and CKV report some mighty good swapping material went by the board. One session of the Breakfast Club included PGX, DDM, BET, EOQ, DGP, DXF, HPF, W5POI and 7YWW. We understand DDM had a birthday, finally making it to 39. The Pueblo Amateur Radio Club recently received a new mobile emergency unit with all the trimmings through the efforts of DLZ, LVS and KØDZI and local c.d. officials. We wish to welcome FRW to Loveland from Syracuse. KØDCW has moved back to Denver from Montrose. 7SNP, Virginia, from Boulder City, Nev., will be a student this fall at Colorado State, Ft. Collins. LVS, CYK, GGS and TWA all have new home-built transmitters. TDG was a recent patient at Saint Luke's. WUN spent the summer at Deckers. The Colorado Weather Net returned to 3945 kc. meeting Mon. through Sat. at 0800. Traffic: WØIA 503, KQD 467, KØDXF 107, WØQOT 102, KØDCW 61, DCC 51, WØNIT 46.

UTAH—Acting SCM, Col. John H. Sampson, jr., W7OCX—SEC: GPN. PAM: DTB. Working in pairs with one pair each night for five nights, valuable radio communications between the stock pens and the announcers' booth was furnished the Ogden Rodeo by EIF, GPN, QDS, CGW, ABI, SST, BBN, NHL, SAZ and LLH. OSJ is completing work on an all-band s.s.b. rig. CGW has started work on a similar set-up. QNV visited his son in Yellowstone Park and reports good fishing. GPN also vacationed in Yellowstone and Big Springs. Traffic: W7OCX 2.

NEW MEXICO—SCM, Ray Birch, W5OZ—SEC: K5DAA. PAM: DVA. Operation Alert '57 instigated quite a bit of activity in this area. Thirty hours of operation are credited to those participating. 10-meter mobiles were LFH, YDE, DHZ, JMP, EYR, UAF, ADX, ADY, ZHN, NSN, WBG, TST, LKX and FVY. At C.D. Headquarters were UOZ, PDY, CQH and UWA. 2 meters played an important part in the test, with ZHN, FPB, FAG, FJE, PLK, PIZ, MWY, LFH, GLJ, IVZ, ADS, GGE, KN5KSH and JUL on the

(Continued on page 160)

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Albuquerque to Santa Fe link. Others active were WNU, K5DAA, DAB and GYZ. The Albuquerque and Farmington newspapers gave CIN, NSV, LYT and VDT a nice write-up in connection with the part they played in the test. The Totah Amateur Radio Club had a swell time at its 4th picnic held at Pine River Dam. Among the eyeball to eyeball QSOs were DAI, POI, DCM, SGC, SB, CIN and WPGN. SUY is laid up with a broken heel. SB and WKW are both tuning new receivers. New calls in Gallup are K5LFE, LOV and LOU. GEM has a new call, GB. Traffic: K5GYZ 26, W5CIN 10, K5DAA 10, W5TBP 7, GB 3.

WYOMING—SCM, James A. Masterson, W7PSO—SEC: MNW. RM: BHH. The Pony Express Net meets Sun. at 0830 on 3920 kc. with PSO and MWS alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DXV and NMW alternating as NCS. The following RACES stations participated in the nation-wide emergency alert held in July: MNW, MWS, YWW, YJG, HCA, KUB, HRM, WNI, BLW, OBC, LKQ, SZZ, PSO, BHH, AMU, NNX and HYW. MBL and LVU are building 2-meter transceivers. NVX has a new s.s.b. v.f.o. 5TKR/7, who is mobile on 6 meters in the Casper Area, has been conducting ground-wave experiments with UFB on 6 meters. NNX has a new 60-ft. tower. Several Wyoming amateurs, including AMU, IDO, OSH, BKI, DW and ILL, recently got together for an informal hamfest at Pinedale with AEC as host. KN7AHH and N7AHI are new calls in Casper. Traffic: W7MNW 25, PSO 20, NMW 13, LKQ 10, YWW 7.

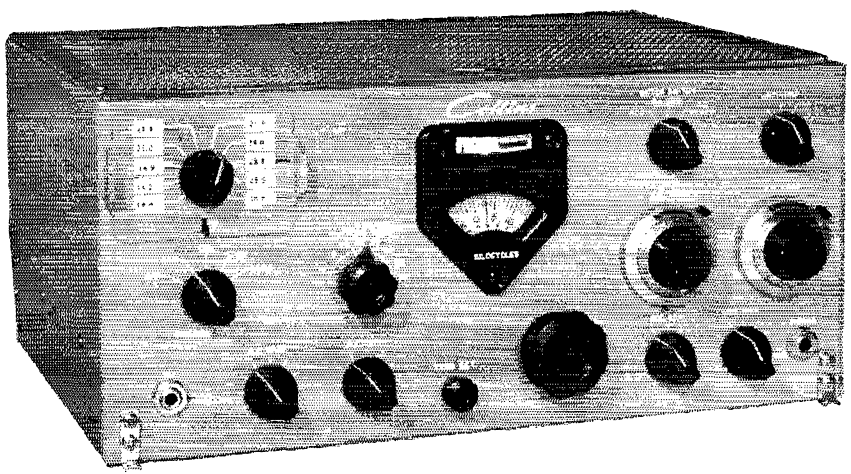
SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4MI—SEC: TKL. RM: KIX. PAM: K4AOZ. Welcome to K4HFX in Adamsville. Velma is active in YL nets, both phone and c.w. New Tuscaloosa Club officers are K4HNJ, pres.; K4AJG, vice-pres.; JLU, secy-treas. HKK is the new director of the Alabama MARS Net #2. ZSQ reports Jefferson County AREC booming with plans for portable gear to take care of any emergency. K4EEH handled communications and traffic during the fishing rodeo on Dauphin Island. K4KJZ reports two new Novices in Alex City, KN4QMM and KN4QMP. HOB possesses a brand-new General Class ticket and has acquired a Viking II to go with it. DS now has beams for 10, 15 and 20 meters. K4IAC is having trouble keeping his antenna mast in the air. CIU has a product detector with AVC going and reports good results. The roster of AENO, the 6-meter net, has shown a steady gain since its organization. All of which speaks well for the PAM, RM and the four section net managers. The steadily increasing proficiency in our nets is the result of their work. All have done excellent jobs in raising the overall net efficiency. Traffic: (July) W4RLG 345, K4AOZ 211, W4HKK 162, K4EOG 97, KZQ 93, FEH 87, W4USM 58, KIX 46, YRO 43, ZSQ 38, K4KJZ 37, W4ZSH 37, K4BTO 32, W4DGH 27, K4LOE 27, HJM 24, W4ZUP 23, CEF 19, K4KJP 19, W4WHW 14, DS 13, MI 13, WOG 13, K4EOH 11, W4TKL 11, K4KJD 10, W4NIQ 10, RTQ 10, BFX 8, K4DDC 8, IAC 8, W4TOI 8, CIU 5, CRY 5, K4IOX 2. (June) W4HKK 92, K4LOE 28, EOH 16, W4ZSQ 14, UHA 9.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: LAP. PAMs: TAS and JQ Section nets: FPTN, 3945 kc. at 0700 Mon. through Sat.; FMTN, 7230 kc. 12 noon Mon. through Sat.; TPTN, 3945 kc. 1730 daily; FEPN, 3910 kc. 1900 Tue. FSN and FN will resume operations Oct. 1. Is anyone interested in getting the old Gator Net going on 40 meters again? New officers of the West Palm Beach Radio Club are TJ, pres.; ACO, vice-pres.; DWK, secy.; UHB, treas.; and K4AWD, station engineer. The club now has a new 300-watt transmitter and is NCS for the new Sailfish Net, Lakeland: The LARS Field Day station was set up at Nichols with a Valiant and an NC-98. The Silver Springs Radio Club now is conducting training classes for prospective hams. K4KKZ has a new KWS-1 and a 75A-4 and also is set up for RTTY. He would like a contact in the Miami Area. DDW has a new 813 rig on 75 and 40 meters. K4IXG has a new 50-ft. crank-up tower and on July 9 worked four South Carolina stations on 2 meters. K4EEK made WAC with the final card from ZE2JV. The JOCO No. 4 drill held July 28 was successful. The U. S. Coast Guard and many AREC members participated. DRD and EHW drove the communications truck and set up for drill near Lake Okeechobee. Over 60 contacts were made. Among the mobiles were IYT, GGQ, ENN and KQW. Miami: SJZ has a new RME-4350. K4QKI is on the air with a new Ranger. ZCD is equipped with a new mobile set-up. St. Petersburg: C.d. and AREC drills are combined now. Work is in progress on the new RACES plan. GAC is o.d. and club station with K4QPW as trustee. Let's help *Florida Skip* grow by keeping up our support. Pass your

(Continued on page 162)

RADIO SUPPLY COMPANY has the new *Collins* KWM-1 SSB Mobile Transceiver NOW!



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WESTERN FLORIDA—SCM, Edward J. Collins, W4MS/W4RE—SEC: HIZ. EC: MFY. RMs: AXP Escambia, BVE Okaloosa. EQR has 45 states on 6 meters. K4KIF works everything he hears on 6 meters. There are now 18 stations on 6 meters in the Pensacola Area. PQW is tinkering with s.s.b. gear. DAO/DEF joins MUX in keeping the Red Cross gear going. FHQ has a Viking KW and really packs a wallop. ZFL has an FB fist on 20-meter c.w. AXP is a grandpop for the fourth time. PAA still hunts Dog Xray. K4IYQ has one of the best-sounding 6-meter mobiles we have heard. K4HYL is building a kw. final. UUF wants a kw. on 6 meters. K4IVD works 6 meters en route to work and back. K4ECP has a DX-35 on 6 meters. K4EHI is moving back to Pensacola. MS has 42 confirmed on 6 meters. K4AGM has 34 out of 35 confirmed on 6 meters. GMS put up a new beam and then put the old one back. JPD has trap antennas all over the place. K4JPU has a converter for 6 meters in the car and is building a transmitter. CNK returns to the air on 6 meters after a long layoff. K4GJI has 6-meter gear about ready to go. K4PJC pumps out an FB signal on 6 meters with a Harvey-Wells. K4PMP is building up gear. K4ADY is away in the Army. It is rumored that BGG has a DX-100. K4DDD is antennaing. CCY is compressing the kw. rig. UCY still confines his activity to 10 meters. RE expects to blossom out on 6 meters with a Ranger 6N2 unit. SPP shows the gang how to get out with low power. K4IJK wants a Viking 500. QK still meets the Hurricane Net on frequency. VR holds to 7-Mc. c.w. HBK works DX while the rest of us sleep. ZPN keeps 7 Mc. hot. K4PSB is shopping for gear. K4QAT is getting hot to go. K4OWW is ready for 6 meters. W4OOW runs low power on 10 meters. K4OXB stays vertically polarized. K4APE continues to do an FB job as OO. I would appreciate hearing from those interested in OO, ORS, OPS, OBS and OES appointments. AXF has been supervising the construction of a new radio room for her OM.

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 EST on Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Fri. at 1900 EST on 3595 kc., PIM as NC; the 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., UUH as NC; the Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., VHW as NC. We amateurs in Georgia sure hated to list our good friend Parks in Silent Keys. The Georgia Cracker Radio Club held its annual picnic in Dublin July 28. New officers elected were CFJ, pres.; K4DNH, 1st vice-pres.; K4INN, 2nd vice-pres.; EHM, 3rd vice-pres. PDP has had too much yard work to do this summer so his ham activity has been low. BYJ enjoyed a wonderful vacation at Lake Marion, S. C. K4DKM is half way through his second Navy school in Memphis. FGH is preparing a 250th to christen his 17-foot cabin cruiser. BQF left for the Navy Aug. 19. K4KIV, at Albany, is doing an FB job at K4MCL. The Fitzgerald Amateur Radio elected K4LBC, pres.; K4KZP, vice-pres.; Max Hair, secy.; KN4KZO, treas. The club invites all hams and those interested in ham work to meet with them at radio station WBHB in Fitzgerald. The Augusta Hamfest was the best we have seen in a long time. Hats off to the committee that did such a swell job in putting it on. RACES and its fine officers did an excellent job in its 1957 Alert evacuation Many hams throughout the State showed that when they were needed they could be counted on. Traffic: K4LVE 300, W4BQF 293, K4MCL 214, W4PIM 127, ETD 44, PBK 43, K4KIV 26, HOU 24, APC 22, W4BXV 21, K4CSL 8.

WEST INDIES—SCM, William Werner, KP4DJ. SEC: AAA, AAA, in a new QTH, reports slow return of the AREC registration forms he sent during June. Those who joined AREC during June-July are AAK, AAM, ABN, ABW, ACQ, ACY, ADK, AEF, AEI, AIA, AJI, LK, MP, NY, PW, QM, RC, RE, RK, WT, YD, ZK and FAE. ECs WT at Mayaguez and WR at Aguadilla now have a supply of AREC registration forms for stations in their districts. USN transferred UY to New London, Conn. Navy Radio Club station KP4UH at Sabana Seca soon will be on s.s.b. AAB reports activities on 6 meters, with two new stations in Arecibo and one in Bayamon. ADH uses a Globe Scout 680 on 6 meters from Puerto Nuevo. CA has a new Hylite 6-meter beam and ABN and ADH copying. RM finally got on 3925 kc. with a Globe King. RD has

(Continued on page 164)

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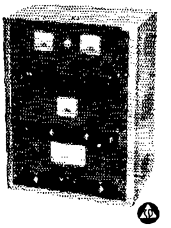

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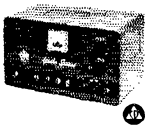

65 watts CW; 50 watts on fone, plate modulated.

A compact, self-contained, bandswitching transmitter for operation of the 6 through 80 meter bands, with built-in power supply. High level modulation is maintained. TVI-suppressed cabinet. Pi-network output on 10-80M; link-coupled on 6M, matching into low impedance beams. New type, shielded meter. Globe Scout 66 is identical, except bandswitching 10-160M. Size: 8x14x8".

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Model 66
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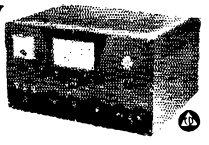
Globe Champion 300



A bandswitching, 10-160M, Transmitter for 350 watts CW, 275 watts fone, and 300 watts SSB (P.E.P.), with any 10W external exciter.

The single-switch bandswitching Champion is extensively TVI-suppressed, filtered and bypassed. High level Class "B" modulation is sustained without usual clipping distortion through use of a new commercial type compression circuit. Pi-network output circuit, 48-700 ohms, built-in VFO, push-to-talk, antenna changeover relay, and improved Time Sequence keying are all features. 1000 volt plate capacity of Final tubes offer 33⅓% safety factor. Only 12x21⅜x17" in size, self-contained.

Cat. No. 145AF011 — Kit.....**$375.00**
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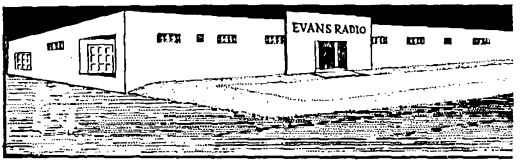
FCDA Certified on factory wired and tested models for crystal controlled operation.

Globe Chief 90

A completely bandswitching, 90 watt transmitter for 10-160M.

Here's a compact, 8x14x8", sturdy rig with well-filtered, built-in power supply. Pi-network matches most antennas from 52-600 ohms. Modified grid-block keying is employed for maximum safety. Has provisions for VFO input and operation. Kit form includes complete manual and all tubes and parts. Meter and cabinet carefully shielded for reduction of unwanted TVI.

Cat. No. 145AF013 — Kit.....**$54.95**
Cat. No. 145AF012 — Wired & Tested.**$67.50**



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a new Elmac AF67 on 3925 kc. AED is assembling a DX-35. HG uses a DX-100 and 67-ft. multiband antennas with 450-ohm line and Matchbox tuner. Mayaguez District Net frequencies are 3980 and 7210 kc. AZ is erecting two 60-ft. steel towers to support a five-element 20-meter Telrex beam and a 15-meter three-element beam. ABA is building an a.c. power supply for ART-13. AZ is MARS AC4CT. ACQ is AC4ACQ and AAM is AH2AR. The Mayaguez District Emergency Net meets Tue. at 7 P.M. on 3980 kc. with KP4WT as NCS. The San Juan District Emergency Net meets Tue. at 6:30 P.M. on 3885 kc. with KP4AAM as NCS. Officers of the Mayaguez ARC are WT, pres.; GH, vice-pres.; HG, secy.; MR, treas. The club put on a 30-minute TV show on WORA-TV in conjunction with civil defense, simulating emergency communications between various towns and stations. Stations participating were WT Mayaguez, QC/mobile at Cabo Rojo, PZ Ensenada, ADY Yauco, HG/KP4 at power company offices. The Mayaguez ARC held Field Day activities at La Playa Tres Hermanos in Añasco Bay. Two gasoline-powered generators were supplied by the local c.d. office and the Mayor of Mayaguez. KD received a Virginia Jamestown Festival certificate and has 28 more QSLs for a sticker. KD skeds K4LWX and KN4LEA in Arlington to talk to son, also skeds ex-KP4JF, now W4DRV, in Norfolk, on 15-meter phone. Late Flash: KD's son is now KN4PUJ. KD QSOed VQ6LQ for DXCC-222. Ex-PA0OA visited KD. AHO Aibonito and AJI Guayama report to the 3925-kc. Net using 5-watt BC-474s. The morning session of the Antilles Weather Net uses 7245 kc. at 7 A.M. The 5:30-P.M. session still is on 3815 kc. AED transferred to teach at Colegio Ponceno, Ponce, on Aug. 15. AAA's Master Mobile antenna was stolen while he was parked in Rio Piedras. RK has a new QTH on the Trujillo Alto Road. US has a summertime job with the Communications Authority. ABA installed a Conelrad Alarm system that takes his transmitter off the air when the b.c. station goes off, as per January *QST*. The local San Juan c.d. office and Mayoress may provide emergency power plants to selected amateurs where the State C.D. could not. YD reported a police car over a cliff to KP4DC at Police Headquarters during the 3925-kc. Net drill on July 3 before the police net had received the information. AAA and DJ operated at NCS KP4DC in Police Headquarters during the C.D. Alert on July 12 handling traffic on both 3925 kc. and the CAP frequency, 3115 kc. Stations reported as standing by were WT, WR, HG, HZ, ABX, NW, RE, GP and KV4AA, who volunteered to QSP to c.d. headquarters in Thomasville, Ga. GP has a 5-kw. emergency power plant. KP4AHL, on Vieques Island, is on low power. WV4BW, St. Thomas, is on 40 meters using a DX20. Traffic: (July) CO3RC/CO2UG 7. (May) CO3RC/CO2UG 7.

CANAL ZONE—SCM, P. A. White, KZ5WA—The Canal Zone lost a very well-liked active amateur in July when KZ5PP suffered a fatal heart attack and joined the Silent Keys. JJ has been spending his evenings working Novices on c.w. He worked K1ADL also ex-KZ5LW, on c.w. in July from Framingham, Mass. AU is active on 21-Mc. s.s.b. with his KWS-1 making lots of solid "QRM-less" QSOs. RU has moved to a new QTH on Santa Claus Lane in Balboa. DP/M and QA/M check in regularly on the Mon. night 28.9-Mc. Emergency Net drill. KJ is back in circulation operating mobile. EH operates a.m. from his fort Kobbee, C.Z., QTH and s.s.b. from his Stateside QTH. EP was last heard working his mobile rig, W2HVB/M, in South Carolina en route to New York. KA and RM, Kay and Roger, are visiting his folks in Miami, K4AEE, on the last leg of their vacation. BE is getting out well with his 813 grounded-grid final. WU is having great success on all bands including 80 meters, using 200 watts to a three-wire "V" antenna with relay switching cap at the apex of the "V." FL and ML, Frank and Martha, are enjoying the visit home of son LF, who is here from Cornell for the summer. WA became a grandfather again when the stork brought a son to daughter Jean and her OM K5CJE, at No. Little Rock, Ark. The news was given by W5WUX, Evelyn. Traffic: KZ5HA 108, YR 86, WA 24, RV 9, EL 3.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: LIP. RMs: BHG and W6GJP. PAMs: K6BWD and ORS. GYH made BPL for the 17th consecutive month. Congrats, Cavi. New appointments for this month: K6DDI and WII as OBSs; BES as OO; KN6VBQ as OES. HAL is sporting a new 75A-4. K6JSN is maintaining a sked with Peru. AAI has a new RME-4350 with 4301 sideband selector. K6PLW has a new 600-watter on c.w. Novices, remember your net, the Frugle Net, on 3711 kc. at 2000 PDT. Check in with HJY. K6LVR, of Redlands, is a new member of the SCN. K6EA is QRL fixing up the house, as is your

(Continued on page 166)

SCM! BES has a new quad on 20 meters and a kw. s.s.b. rig under construction. RKU is taking it easy in the hospital. Our best for a speedy recovery, Wally. K6OZJ reports nice daily 6-meter openings. SRE is spending the summer on the beach at Alamitos. K6COP is on vacation and sporting a new NC-300. K6GTG has been on "location" for quite a spell. K6EPY is Alternate NCS on the 246 Net. WT is home from a nice 6-state vacation trip. Support your section traffic net, the Southern California Net (SCN) on 3600 kc., at 1930 PDT nightly. Traffic: (July) W6GYH 889, K6OZJ 436, MON 409, OQD 295, LVR 182, W6HJY 172, BHG 146, QLM 120, K6PLW 114, QZZ 114, QMK 112, W6INH 49, K6COP 48, GUZ 48, HVC 48, EPY 46, W6USY 41, K6EA 32, DDO 17, W6BUK 14, MEP 12, AM 8, CMN 6, YSK 6, K6IYJ 5, HOV 4. (June) W6ZJB 234, HJY 162, K6QZZ 84, W6WT 27.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM AEN, 3865 kc.: ASI. PAM Grand Canyon Net, 7210 kc.: LUJ. The GC Net enjoys a large check-in of W6s and W5s in New Mexico and Texas. The Phoenix V.H.F. Club Net on 50 Mc. took part in Operation Alert. AOU was NC with FFF, JBZ, JBX and AGG. RUX has a new GPR-90 and 48-ft. tower. The Arizona Amateur Radio Club has taken the tower situation in Maricopa County to court. Listen on 3865 kc. at 1930 MST for late details. UVR, Tucson, has a system for protecting the modulation transformer from surge voltages when you cut the carrier. Quite a bit of interest is being shown in the Worked All Arizona Award. Traffic: W7FKK 285.

SAN DIEGO—SCM, Don Stansifer, W6LRU—The July column was written by your SCM in the High Sierras of Eastern California while vacationing with the family, and enjoying the out-of-doors. K6BHM has joined the Coast Guard, and sold his DX-100 to K5E before departing for four years. K6CTQ is now stationed at the Miramar NAS. CAE vacationed at Lake Tahoe. IAB now has a new KWS-1 on 15 meters. FVA, EC for the Northern County Area, reports 24 active stations checking into the 75-Meter AREC Net. WNN visited ex-San Diegoan VOP, who is now 7ECZ while on vacation in British Columbia and W7-Land. New officers of the Convair Club include K6IAF, pres.; and K6QXN, secy. Coronado Club members using their mobiles for the 4th of July Parade communications included DGO, JVA, KSI, K6LDI and 7DBY/6. The regular quarterly meeting of the San Diego Council of Amateur Radio Organizations in late July included quite a discussion on the recent FCC decision allowing increases in receiver radiation. The August meeting of the San Diego DX Club was held at the home of CAE. CGQ is back in San Diego and looking for a good DX location on Pt. Loma. Traffic: (July) W6EOT 399, WNN 2. (June) W6IAB 2631.

SANTA BARBARA—SCM, Mrs. Dorothy E. Wilson, W6REF—Asst. SCM: Bill Farwell, 6QIW. SEC: K6CVR. K6BF is vacationing in Quebec, Canada, where he expects to visit friends of many QSOs. LBL is building an all-band rig for DX hunting. He works JAs on 75 meters. KZO combined things by getting married and also going mobile in August. K6CVR and his XYL had a new jr. operator July 24. K6KPU and W6QIW are active in the American Legion Net. W6KSW and REF are active in the Mission Trail Net. JPP is a new OPS and ORS. K6IVB has the rig installed in a new QTH. This is all the news that was available this month. Our thanks to those who did report. Without reports we cannot send anything in for printing. So, please, next month send me whatever news you have to ltte. I, 75 Vista del Mar, Ventura, Calif. Yes, REF has moved the QTH from Oxnard to Ventura. Traffic: W6QIW 66, REF 25, K6KPU 8, W6PWK 4.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM: Bruce Craig, W5JQD. SEC: BNG. PAMs: AEX and IWQ. RM: AHC. It sure was a pleasure to see so many of you fellows from this section in San Antonio. Our Southern Texas friends sure put on a fine convention. Seems as if each convention becomes more enjoyable than the past one. We look forward to seeing and meeting more hams from this section next year in Oklahoma City! We here in Dallas hope to have the convention here another time! OPS and ORS appointments have been issued to K5HTH. Our congratulations to GBW, who got married! We sure appreciate the reports received from OOs and OESs this month and will look for repeats and an increase next month. The South Plains ARC now sponsors code and theory at the Naval Reserve Bldg. KPJ and QPI are headin' up this project. New officers of the Pampa ARC are IJO, pres.; IWQ, vice-pres.; JHA, secy.-treas. HZF, UXY and DFB keep regular skeds with KA2RB, ex-5EPO. KN5LLN is new on the air from Amarillo. LOH is the proud owner of a new Valiant! Novices: KN5KNR, of Huntsville, has

(Continued on page 168)

advised of a new Novice emergency net on 7175 kc. No date was given, so listen! The Panhandle ARC announces new officers as GEE, pres.; EKP, vice-pres.; HTH, treas.; 1RP, secy. Teen-agers, monitor 3920 kc. all day. You will find a lot of buddies on this frequency. Wonder how many of you who heard John Huntoon's talk in "Santone" have absorbed what he said! Traffic: K5WAB 1096, BKH 206, W5ACK 135, K5EMR 88, W5AHC 76, BOO 72, OCV 54, K5HTH 22, W5ASA 19, TFP 15, AWT 8, K5HAY 8.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC—Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAMs: EJK and MFX. RM: JXM. EJK is our new PAM for 40 meters replacing KY, who resigned because of increased business activity. Thanks, Bob, for an FB job. Oklahoma hams owe a vote of thanks to CCV and his cohorts for getting the license plate bill passed in its improved form. We must support them by applying for the call letter plates when they are available. Oklahoma hams were successful in their efforts at San Antonio to bring the next convention to Oklahoma City. 5CEP/KR6CE, Okinawa, is looking for an Oklahoma phone patch on 20 meters under the call KR6SS-KR6AF. K5KFS received RCC and CP-15 certificates. Bertha, JCY, received DXCC, the 1st XYL in Oklahoma and 2nd in the West Gulf Division. EHC was elected Oklahoma representative for 14th MARS. NLZ is on 220 Mc. KL7BVV now is K5KPX. KN5KRI moved to Dodge City, Kans. K5KTW is a new ham in Lawton. PWN has a new three-element three-band beam and a 40-ft. pole. ATL moved to Bartlesville. MMD and K5AOV are working DX. K5EJC has a new jr. operator. K5GJF/5 was with the 45th Division handling traffic during the summer encampment. A new Novice is KN5LDP. NXQ is back after three years in Japan. Traffic: (July) W5ESB 260, DRZ 229, K5EGS 228, W5QVV 151, K5CAY 105, CBA 90, CVU 58, W5FEC 37, MGK 36, K5DVE 24, W5BBA 16, PNG 13, CCK 12, MFX 9, VAX 8, EHC 7. (June) W5DRZ 108, BBA 58.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. RM: FCX. The new officers of the El Paso Amateur Club are KOK, pres.; JSJ, vice-pres.; RUO, treas.; and KN5KOM, secy. The board of trustees is composed of KBP, HYG and BQU. New hams from the 1957 code class are KN5KOK, KYZ, KVF, KVH and KVJ. Congratulations, K5HJU and HTR have dropped the "N" from their calls. SMG is out of the Army and putting Laredo on the map on all bands. K5KYO is a new ham in Laredo. QOC vacationed in Northwest U.S.A. K5JGU, ex-WØUQS, is active at Falfurrias, and is the new EC for that area. EXU is in the Army. FNH Kerrville, PBU McAllen and K5RJB Orange are new ECs. How about you amateurs in these districts contacting these ECs and lining up with the AREC? Those from Corpus Christi attending the ARRL Convention in San Antonio were AQK, BKG, HQR, YCV, LOW, MSA, QFA, QKF, QEM, K5COZ, CPA, IBK and GJX. HQR and YCV are vacationing in Arkansas and Mississippi. DSY is in Illinois. DTJ has been on the sick list. ZIE is EC at Leakey, UIO EC at Lufkin, and GMM EC at Huntsville. QEM, K5COZ and CPA are vacationing in the mountains of Colorado. GHL has a new 250-watt amplifier on 6 meters. There are 30 stations on 6 meters in Houston. FCX is the RM at Old Ocean. Traffic: W5EGD 218, FCX 122, DTJ 90, MN 77, K5AJP 56, KN5KWC 5.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 1OC. SEC: FH. A "Worked Atlantic Provinces" Award (WAP) has been announced by the NBARA. This award will be open to all amateurs. Further details will appear in a later issue of *QST*. PF and ABT have taken up residence in the Nation's Capitol after 8 years in the Maritimes. Good luck to you, Ed and Doreen, and we look forward to working you when you get settled in Ottawa. Active s.s.b. stations in the Halifax Area now include LY, LZ, SI, TA and WL. 1B, WL, ZR and PQ (Halifax) have been working EF (Musquodoboit) and W1QCC/VE1 (Pictou) on 50 Mc. ground-wave in between band openings. The NBARA held its annual Meeting at Kingsclear and reelected the following officers: EE, pres.; ABZ, 1st vice-pres.; UL, 2nd vice-pres.; UT, secy.-treas. Many ARRL appointments for the Maritime section are now open. Please drop a line or send a message to this office for further details. Traffic: VE1FQ 168, W2ZRX/-VO1 74, VE1FH 32, UT 22, DB 11, OM 11, ME 10, GA 8.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Norquebont Radio Club had a very successful hamfest in Timmins. Among those seen there were PH, BOV, NG (SCM), DSX, BWH, EAW, DMI, DSJ and DQL. At the present time the big news is the Ontario Provincial ARRL Convention to be held at Toronto, Oct. 18 and 19 at the King Edward Hotel.

(Continued on page 170)

Details can be had from Bill McCullough, BCR, or through the SCM. SG has moved to Bolton. AUU was on vacation. DH now is in Ottawa. ALO is active again on 7 Mc. BPR spent his holidays in W-Land with v.h.f. boys. AAS and AUU were at Algonquin Park. CAB was at a lightnouse and worked AAS consistently on 75 meters. EGG wishes to join the c.w. net. DQX is busy with the summer edition of Metro's *Modulator*. AJR subs for DPO on QMN during his vacation. AHU is portable at the Gaza Strip. His home QTH is Barrie, Ont. He QSLs 100 per cent and works 14 Mc. The Sarnia group is looking for a new name for the club. KN8BGG reports big DX-TV from a station in Halifax, N. S. GB/mm has a yacht at Sarnia. AML, DYJ and DFU were in the SS Contest recently. KN8CIG is vice-pres. of the Sarnia Club. CE is expecting a new HQ-110. AES is OPS and has a new antenna on 75 meters. BJR vacationed in Connecticut. DU vacationed on the West Coast and returned home to find a new 75A-4, won at the North Bay Hamfest. BSW reports a new antenna on 20 and 40 meters. NO is active on 75 and 20 meters. DTO is heard on 75 meters. His low-power rig gets out OK. DAR is on 20-meter mobile and his fixed rig is on 75 meters. DUU is heard on all bands. NF works the Ontario Phone Net. DVM, DZA, ARF, NG and ELC all work from Lake Mazinaw on 75 meters. Traffic: (July) VE3NO 100, BUR 90, AUU 63, NG 57, DPO 50, OD 20, RW 20, AML 18, AJR 17, EAU 16, DUU 12, AES 6, CE 3, DH 3. (June) VE3EAU 13.

QUEBEC—SCM, Gordon A. Lynn, VE2GL—APH has been transferred from the Province and the duties of QSL Manager have been taken over by YA, Geo. C. Goode, 188 Lakeview Ave., Montreal 33, Que. He reports a lot of cards on hand for many VE2s for whom he does not have stamped addressed envelopes. All VE2s who are active should get an envelope or envelopes to him quickly. ATL continues active on various nets. AGN also continues active in traffic and is building a new rig with a 4-125A in the final. ATS, AWD, AWK, EG, JB, NU, UB, RU, AAH, ADB, AFV, AIV, ALA, AM, AOB and AOL are all active on the Quebec Traffic Phone Net. AAR, AIB, AIK, AOL, AWU and KB are all operating mobile. AWA is back on 80-meter c.w. FF has been on 2 meters for 2 years, has a 19 set converter and an 829 with 100 watts on 2 meters. IU has a 75A-4 and a KWS-1. GK operated from Lake Louise during the summer. TT is on 2 meters. ABE is on from Mon Repos Beach. ABN, AEN, AWR and AFJ are on 80-meter c.w. AJR, at Hull, and AJS, at Quebec, are on 75-meter phone. ALB is on from St. Gabriel de Brandon and ALD from St. Jerome. AOK is on 2 and AOM on 6 meters. ASW has a 10-meter beam. ATE is on from Contrecoeur. AWK has a DX-100 and an AR-77. UF is on 40 meters with flea power. VI is active on the c.w. traffic nets. ANK is mobile on 3.8 Mc. AUH is running down harmonics. YU took the beam down for an overhaul and spent a 3-week holiday in G-Land. Traffic: (July) VE2AGN 197, DR 90. (June) VE2ATL 110, AGN 64, DR 48, EC 43, AWK 8.

ALBERTA—SCM, Sydney T. Jones, VE6MJ—The Calgary Club is to be congratulated on a very successful hamfest. Approximately 170 guests sat down to a nice banquet, highlighted by practical jokes pulled by the Edmonton gang. An excellent demonstration of radio-teletype was put on by EH and DZ from Edmonton. Following the hamfest on Sunday afternoon, Aug. 4, DZ and IC worked NX mobile-to-mobile from Calgary to Banff with good signals an air-line distance of about seventy miles on 144 Mc. Nice going, boys. BL is the new EC for the Grande Prairie Area. WG, formerly of Calgary, is located in Edmonton and is active on 40- and 80-meter c.w. CA and his XYL, BC, were Edmonton visitors following the hamfest in Calgary. EA is building a cottage at Sandy Lake. HM still is handling gobs of traffic for the boys in the north and is working on an RTTY set-up. Traffic: (July) VE6HM 297, TT 11, BL 6, MJ 5, PV 5, OD 3. (June) VE6HM 245.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—To many in British Columbia it will be interesting to know when and where the various clubs meet and the persons charged with running the club for the season. This month the active Royal City Amateur Radio Association is on the spot with the Vancouver DX Club next month, with ALR as your columnist. At the helm of the RCARC are KD, pres.; ADF, vice-pres.; and FY, secy.-treas., with 30 licensed members out of 33 members, also two doctors licensed as amateurs (any other club as well protected medically?). The club meets the second Thurs. of each month at 8 P.M. at 1825 Douglas Hwy., New Westminster. In order to relinquish the title of radio widow, the XYL of ADF got a call of her own, ADR. The members of the club are 100 per cent behind c.d. and have 4 Gonset Communicators and 2 gas generators ready for use. Two of the members, PS and YM, are active on 2 meters each Tue. and Sun. at 9 P.M. As each

(Continued on page 172)

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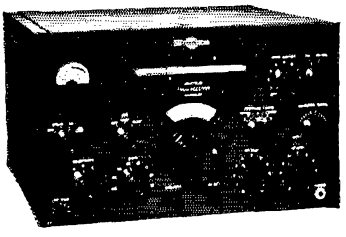

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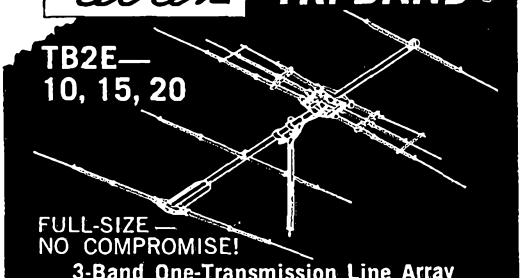

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month progresses a club will appear in print. Please forward details on the officers, meeting times and meeting places. For reporting credit attached to B.C.: KG1DT, operators K2MRF and W7YJP, working from Fletcher's Ice Island, made BPL. Traffic: KG1DT 585.

MANITOBA—Acting SCM, James Elliott, VE4IF—DS has been very busy with IGY work. Get back on the air soon, Jack. Congrats to BB on the arrival of a fine son. Bob has been doing a fine job on mobile. PE is back on with 75-meter mobile c.w. and hopes the band will smarten up soon. HL is back on the air. Glad to see you, John. KL and LO have moved to a new QTH. SA has been plugging hard on the air for the ARLM Hamfest. IF, GE and PE attended the Calgary Hamfest. Despite very bad conditions, the Manitoba Phone Net has been doing a good job. Keep it up, gang. Affiliation of the Amateur Radio League of Manitoba with the ARRL is progressing and final approval is expected soon. Traffic: VE4GE 12, AY 11, JY 8, AN 4.

Six Elements on 6

(Continued from page 20)

band device. We checked the range over which a satisfactory s.w.r. could be maintained without readjustment of the gamma match. It was not very wide. Adjusting for zero reflected power (1-to-1 s.w.r.) at 50.3 Mc. the beam showed under 1.7 to 1 from 50.0 to 50.6 Mc. The s.w.r. went up sharply above 50.7 Mc., being well over 2 to 1 at 51 Mc. By adjusting for minimum s.w.r. at 50.6 Mc., the array could be made to work from 50 to above 51 Mc. without going much over 2 to 1, probably an acceptable figure, even with coax feed.

Checks on the air show no large difference in performance over the first megacycle, either receiving or transmitting. Front-to-back ratio averaged about 18 db. over the first megacycle, and the nulls on the sides are deep and wide — the mark of an effective array. We've made no attempt to measure beam width accurately, but this we know: the 6-element job has to be much more carefully aimed than smaller arrays we've used in the past. This sharpness would have been thought a nuisance years ago, but it comes in handy now, when we want to knock down the strength of a local who may be 20 degrees or so off the line to the station we're trying to work. It is often possible to move the beam a bit off the exact line to the desired signal, and thereby put the local in one of those deep nulls, where he won't smear the DX we're trying to copy.

In ionospheric-scatter tests to date, the new array has shown itself to be at least the equal of the old 3-over-3 in every case, and indications are that it is slightly better. The boys locally like it — except when it is aimed directly *at* them!

Dimensions given below are for use in the first megacycle of the band. Subtract 2 inches from each dimension for each megacycle higher in frequency, if you want to use the array at optimum efficiency higher in the band. All figures in inches. Reflector — 116. Driven element — 110½. First director — 105½. Second director — 104. Third director — 102¾. Fourth director — 101½. Reflector to driven element — 36. Directors are spaced 36, 42, 59 and 70 inches. If you want a longer array, space each additional director 70 or more inches from the last one, and make each one inches progressively shorter.

A Simple Conelrad Alarm

(*Continued from page 43*)

lamp glowing (with a filament transformer for lamp supply) or any number of alarm indicators including interlocks in the plate supply of the transmitter.

To monitor the station aurally, connect a pair of high-impedance phones across the relay. This device can also be used at an airport control tower, for instance, to monitor a homing beacon or other navigational aid, providing positive indication of the signal being radiated. The tuned circuit should, of course, be resonated to the frequency of the transmitter concerned.

Improved A.V.C.

(*Continued from page 46*)

signal that you would think the meter was stuck.

I have spent considerable time and thought trying to improve the circuit still more, but it works so well for me now that I can't find a way to make it better. Possible improvements might be a self-adjusting noise clipper to prevent noise pulses from disabling the a.v.c., although this happens only rarely, as mentioned above. Some users might prefer to bypass the cathode resistor of the a.v.c. amplifier with a large electrolytic capacitor, to increase the gain of that stage. This necessitates raising the threshold bias if the audio output of the detector is to remain the same level as before. The additional gain should give a still flatter a.v.c. action, but I can notice no practical difference.

In my i.f. strip I feed manual gain-control bias to the a.v.c. bus through a diode and it works fine that way, but the a.v.c. works so well even on weak signals that I never use manual gain control.

QST—Volume V

(*Continued from page 73*)

carried away telephone poles, wires, and trees, eliminating the possibility of repairs. . . ."[136]

Quinn Brothers, holders of 9ZL's old Special License, with the help of Mr. H. Bishop (9DV), assembled and connected the component parts of a half-kilowatt spark transmitter at Neenah, Wisconsin. They then tuned this set onto 600 meters and contacted WMW, the station of the Pere Marquette Railroad, at Manitowoc, Wisconsin, and began to handle traffic. The source of power was an a.c. generator located at one of the big paper mills in Neenah. The installation of the station at that spot required about 6 hours of work. (19, June 1922.)

Spark-coil stations (for the most part) fed traffic to 9ZL from points such as Oshkosh, Appleton, and Green Bay. (20, June 1922.)

". . . Many extremely important messages were handled and invaluable service rendered,

[136] 19, June 1912.

particularly to the Northwestern Railroad Company, which had had several wrecks and was in great need of wrecking equipment. By radio this was secured and rushed to the scenes of the various accidents.

"The condition outlined above obtained for a week in which time 9ZL handled 250 messages. A steady watch was kept at all times by the two Quinn Brothers and Mr. H. Bishop, all three of whom [were] ex-commercial operators. The messages handled related only to matters of extreme importance such as railroad messages, death messages, and supply orders for the stricken districts. . . ." (20, June 1922.)

An item in "Strays," at 52, July 1922, reads:

"Mr. J. F. Carpenter, who was our hero of the storm relay routes described in April, was called upon again to give help in the case of another storm bringing down the wires of the Northern States Power Co. On a few minutes' notice he grabbed a five watt c.w. set and drove with the General Supt. to St. Croix Falls, Wisconsin, where communication was established back to 9XI in a few minutes and important messages handled over the 60 mile gap. Hot stuff! The station is still being maintained and more c.w. sets are being put in the other main plants now."

SUMMARY REMARKS:

He who studies Volume V will encounter many difficulties. They arise from several sources: poor editorial arrangement, inaccuracies, and exasperating lack of names, essential details, and dates. But the wealth and importance of the subject matter will impress the thoughtful reader and will bring him sure reward for his pains.

I repeat: *It was* (*and still is*) one of the most important Volumes of QST ever published.

How's DX?

(*Continued from page 89*)

hears that OH3TH needs only North Dakota to sew up a neat 10-watt 21-Mc. WAS . . . . . TF2WBU comments on TF2WBT's return to the U. S., and on TF2WBZ's working a near-DXCC in ten short weeks.

South America — Via W1UED of ARRL Hq.: Chile's Radio Club Rancagua offers all amateurs its Bernardo O'Higgins certification, a diploma based on QSOs with club-member CE4s (10 required for W, K, VE/VO applicants). Contacts must date after April of this year and you can check with RCR, Casilla 20, Rancagua, Chile, for full specs on this sheepskin . . . . . W2OHF and XYL enthusiastically commend the hospitality of OA4s AI FM FT FU, HC1s FS LE NA RY and respective spouses upon return from a summer tour *del Sur* . . . . . VP8BW heads back toward the U.K. aboard *John Biscoe*, leaving VP8CC in full charge of Deception Island VP8 hamming. "During my stay there I raised about 50 countries, all continents, and almost all states. Got on the air on the 14th of August and worked up to the end of December. Following that I spent February and March in the South Orkneys where I managed to add a few more to my score from Signy Island. It was a bitter blow not to be able to complete WAS or DXCC but maybe I'll be going south again some time!" . . . . . HK7LX worked 560 stations, 57 countries and all states but Colo., the Dakotas, Del., Me., and Wyo. in his first two months on 10 and 20 phone . . . . . According to OVARA, volcanic eruptions discourage South Sandwich outpost activity at this time.

Hereabouts — Being so regularly maligned at DX points it's good for our North American DX morale to get a boost now and then. ON4KT feels that "Ham spirit must have

(*Continued on page 178*)

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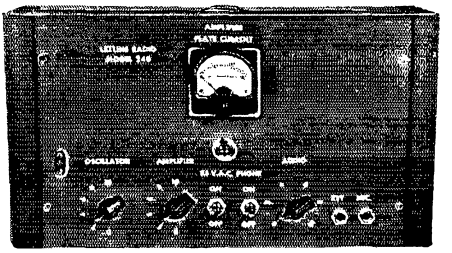

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originated Stateside because the spontaneous friendly helping-hand outlook of the W/K boys is unique in this world." . . . . . W2HMJ chuckles, "CO2SW finally got himself a beam and will be more active now that he is modernized." . . . . . W1JMI gave QSOs to 152 Vermont-hungry hams in 21 countries while camped in the "east forty" of W1s MMN and OAK . . . . . W6ITH now has piled up about a thousand contacts from each of his PJ2MC and FS7RT locations. Yet he reports that pile-ups still are almost as big as they ever were. Reg welcomes all ideas on additional DXpeditionary objectives, especially areas which would be in the brand-new category . . . . . For 14-Mc. Utah-hunters W7QDJ/6 suggests old schoolmates W7s MWR and QDS. . . . . W0QGI, then W9FQC, nostalgically reminisces of prewar days when he regularly worked FB8AB of Madagascar using only p.p. 45s and a 2-tube blooper receiver . . . . . K2DGT says farewell to DX work at Treasure Island's K6NCG installation and heads for DX climes aboard a Navy carrier. Another "How's" contributor of long standing, W2ZVS, drew his USAF wings in Texas and now departs for Europe . . . . . Overseas stations needing Arkansas will find K5s EJQ GOE HSM IIX and W5WXP perking with beams on 10-meter phone . . . . . W4HKJ wonders how many DXers have completed RST599 or RS59 "DXCCs." It's a trick, all right, but Jeeves feels that the shiniest medals should be struck for lads who manage to work DX while generating the *least* QRM. Does anyone have an RST339 "DXCC"? . . . . . From HH2OT via W6RLP: "In June a tornado struck us here, tearing the roof off the house and thoroughly drenching everything. The rig was damaged and my antenna system destroyed." . . . . . Club items from here and there, first WVDXC: VP2VB revisited the British Virgins in midsummer to dispense a flock of Leeward Islands QSOs on several bands, c.w. and s.s.b. Danny has hopes of fitting out a vessel to replace his ill-fated *Yasme*. . . . WGDXC's new slate of officers has W5ADZ, pres.; W5CEW, v.p.; W5VHR, sec.-treas.; W5s FXN FEL JUF NW UX, policy committeemen; W5s GNG and KBU co-editors of the *DX Bulletin*. . . . OVARA chafes at the DXpeditionary bit once again and busily interrogates DXers concerning future targets. Meanwhile, W8s JIN BTI FGX and W4KVX lead the *Ether Waves* band-countries listing with 1224, 1010, 992 and 702, respectively. . . . The W9 Central Division Century Club (W9DXCC) with W9FDX chairman, produced and directed the lively DX program at this year's ARRL National Convention in Chicago. W1WPO, Ws 2ICE 8PQQ 9RKP 0ELA, VP2VB and YA1AM topped the billing.

Ten Years Ago in "How's DX?" — October, 1947, sees summer static subsiding, our 80- and 40-meter bands reviving, and long-distance signal strengths increasing generally . . . . On 20 c.w. the transpolar barrage of Russian signals steps up pace with UAs 9CB 0KQA, UA3BD/UC2, many UB5s, UG6WD, UH8AF, UI8AA, UJ8s AC AD, UO5AD, UQ2AB, UR2KAA and RAEM widely worked. Other delicacies reported: Cs 1ZC 7MK, EK1AJ, EPs 2DS 3D, ET1s IR JJ, FG8D, FQ3AT, FT4AN, HP4Q, HS1SS, I1AHC/I6, I6USA, Js 4AAV 5AAH 8AAF 9AAM 9SIR, KP6AB, KS4AC, OI2KAA, PKs 1RI 2ML 5LK 6HA 6NC 6WS, PX1V, TA1BB, VR5s IP PL, VS7s DR FS, VU7JU, W2WMV/C9, YO2F, ZC6DD and ZM6AF. On 14-Mc. phone the vocal focus is on CR4HT, EK1AS, FF3GW, FP8AA, J2s AAU CAL JCQ, KA1FH, KG6AV/VK9, LX1SI, MB9AD, MD5AL, OK4IDT, OX3GG, VP3LF, W3JRF/KG6, ZC6AH and ZD6DT . . . . The 10-meter phone mob swarms all over J9KC, KJ6AA, PK1MF, SU1WS, VR6AA, ZK1AA and ZS4L of Basutoland . . . . . W4BPD's formidable all-band antenna farm is described, a maze of copperwork typical of many springing up throughout our postwar DX world . . . . . The "1st All-European DX Test" is scheduled for late next month, an affair possibly inspired by the resounding success of this year's 13th ARRL DX Competition.

1957 Field Day

(*Continued from page 69*)

W3SAY/3	Nittany Valley ARC..	160-	B- 8-	960
W0ILO/0	Red River ARC.....	160-	B-10-	960
W4LLO/4	Key West ARC.....	81-	A- 8-	954
W0ELJ/0	Grand Island AR Soc.	149-	B-11-	894
W8TFY/8	Portsmouth RC.....	119-	B-10-	864
W5ABF/5	Mineral Wells ARC...	114-	B-13-	834
W3TMO/3	Abington ARC.....	131-	AB- 8-	813
W7CDA/7	Pocatello ARC.....	238-	BC- —	813
K9CQA/9	Hoosier Hills Ham Club.....	133-	B- —	798
K2ORH/2	Marathon ARC.....	122-	AB- 9-	792
W9FQ/9	(noneclub group).....	60-	A- 3-	783
W9BOM/9	Kenosha R Communications Soc.....	175-	BC-17-	714
VO1CU/1	Newfoundland RC....	115-	B- 5-	690
W6KJF/6	Far West RC.....	88-	B- 5-	678
W3VPR/3	Anne Arundel RC....	314-	B- —	628
W3HZW/3	Kent County ARC...	100-	B- 9-	600
VE3AXK/3	Kingston ARC.....	84-	AB-14-	543
W8OKW/8	Tri-County MARS Assn.....	85-	B-11-	510

(*Continued on page 180*)

W9HGC/9	CAA RC	111-	AB- 6-		422
VE6NC/6	Northern Alberta RC	119-	AB- 8-		398
W7OZJ/7	(nonclub group)	51-	AB- 5-		345
W6PMW/6	Roosevelt High School ARC	42-	B- 9-		252
K2VSU/2	Davis High School RC	118-	AB- -		250
W3AIW/3	Carbon ARC	106-	AB-23-		238
VE7VP/7	Point Grey ARC	37-	B- 6-		222
K2UDP/2	Central Queens RC	100-	AB- 3-		209
KL7RN/KL7	The Perkins	147-	BC- 6-		172
W3MOZ/3	Shamokin Area ARC	24-	B- 8-		144
K9CHU/9	(nonclub group)	56-	B-15-		112
	Four Transmitters Operated Simultaneously				
W9ZAB/9	York RC	1271-	A-14-		11,664
W6PD/6	Foothill Mobile Net	1232-	A-30-		11,313
W6JU/6	Crescenta Valley RC	1146-	A-21-		10,548
W2OR/2	Pompton Valley RC	1395-	AB-35-		10,365
W8MRM/8	Motor City RC	1095-	AB-25-		8208
K2BC/2	Windblowers VHF Soc.	885-	A-18-		8208
W9OFR/9	Joliet AR Soc.	859-	AB-18-		7395
W1SKT/1	Narragansett Assn. of AR Operators	942-	AB- -		7227
W6JBT/6	Citrus Belt ARC	727-	A-12-		6831
W2CWW/2	Staten Island AR Assn.	768-	AB-20-		6456
W5PDO/5	Los Alamos ARC	770-	AB-20-		6030
W6MWO/6	Young Ladies RC of Los Angeles	739-	AB-15-		5364
VE3AIS/3	Oakville ARC	555-	A-12-		5229
W2WUX/2	Utica ARC	549-	A-20-		5166
W1NEM/1	Hartford County AR Assn.	546-	A-40-		5139
VE3BXT/3	Scarboro ARC	561-	A- -		5049
W3KWH/3	Steel City ARC	791-	B-25-		4908
W8TO/8	Columbus AR Assn.	981-	ABC-36-		4753
W2EFU/2	Schenectady AR Assn.	754-	AB-67-		4728
W9IGV/9	Huntington ARC	518-	A-11-		4662
W1OSA/1	Pittsfield RC	702-	AB-15-		4647
K6PVN/6	Rio Hondo RC	467-	A-16-		4428
K6CXI/6	Hamilton High School ARC	449-	A-15-		4041
WØGVI/Ø	Kansas City ARC	663-	B-21-		3978
W8KP/8	Amateur MARS Communications Club	465-	AB-30-		3921
K5INH/5	Temple ARC, Waco ARC	650-	B- -		3900
WØERG/Ø	Sioux City ARC	583-	ABC-20-		3798
VE3B8Q/3	Quinte ARC	567-	AB-23-		3783
K8DDH/8	Teen Age R Assn.	561-	AB-10-		3759
K6CUK/6	El Segundo Civil Defense R Group	491-	AB-12-		3717
W1WFB/1	Milford ARC	577-	AB-12-		3645
W3KIK/3	Windsor ARC	599-	B-20-		3594
W2ZQ/2	Delaware Valley R Assn.	562-	B-22		3462
W9IKN/9	Elgin AR Soc.	384-	A-21-		3456
W6SD/6	San Fernando Valley RC	473-	AB-15-		3369
KØGEU/Ø	Montrose County ARC	407-	AB-17-		3369
VE6NQ/6	Calgary AR Assn.	482-	B-6		3042
VE3DRT/3	Skywide ARC	301-	A-15-		2934
W6AEX/6	Soc. of AR Operators	427-	AB-26-		2922
W8ID/8	Seneca RC	460-	B-20-		2910
W6HTB/6	North Bay AR Assn.	458-	AB-13-		2832
K6QGO/6	(nonclub group)	383-	AB- 4-		2799
W9LL/9	Midway RC	452-	AB-20-		2778
W4CBM/4	Danville ARC	519-	BC-20-		2640
W2QWC/2	Salem County RC	409-	ABC-26-		2625
VE1ND/1	Fredericton RAC	252-	A-10-		2493
W1BIM/1	Central Massachusetts AR Assn.	414-	B- 6-		2484
W1ORS/1	Stamford ARC	308-	AB-16-		2319
W8HLD/8	Catalpa AR Soc.	362-	AB-25-		2244
W9IP/9	Indianapolis RC	327-	AB-10-		2181
W6HQL/6	Coronado RC	308-	AB-14-		2118
W7ACX/7	Skagit ARC	326-	B-12-		2106
K6IHF/6	(nonclub group)	254-	AB- 6-		2073
WØHL/Ø	Wheat Belt RC	303-	B-26-		1968
W1QKA/1	Nashua Mike & Key Club	268-	AB- 5-		1911
W8STD/8	20/9 ARC	316-	B-12-		1896
VE3MRC/3	Metro ARC	189-	AB-14-		1881
K2YNT/2	Metuchen Y RC	212-	A-16-		1878
W2AFU/2	Ocean County AR Assn.	308-	B-18-		1848
W7LAB/7	Ogden ARC	281-	B-23-		1836
W8UMI/8	Detroit Metropolitan RC	257-	AB- 8-		1794
K2YOU/2	Ulster County Mike & Key Club	262-	AB-15-		1746
W7WBK/7	Yellowstone RC	289-	B- 4-		1734
W9UPN/9	Chicagoland Mobile RC	231-	AB-10-		1611
W1OEO/1	(nonclub group)	216-	AB- -		1578
W5WX/5	Panhandle ARC	246-	B-25-		1476
W2SEX/2	AR Assn. of the Tonawandas	205-	AB-25-		1467
W4VTF/4	Catawba Valley ARC	231-	B-17-		1386
VE7BQ/7	Totem ARC	192-	AB- 6-		1330
W5IU/5	Kerrville RC	217-	AB-11-		1329
K5IDL/5	Alamogordo ARC	182-	AB- 8-		1326
W9MLJ/9	Y-Rad Club	206-	B-21-		1236
W2OFQ/2	Rome RC	131-	AB-15-		975
W9DUA/9	Sangamon Valley RC	246-	BC- -		951
W8WNK/8	(nonclub group)	155-	B-14-		930
K9CJU/9	RA Megacycle Soc.	154-	B- -		924
K2IBC/2	Avenel RC	121-	AB- 6-		864
W9AVE/9	(nonclub group)	71-	AB- 7-		693
W1TKZ/1	Wellesley AR Soc.	49-	A- 7-		684
KØAZV/Ø	Kirkwood High School ARC	108-	A-11-		648
W7QF/7	Tektronix Employees' ARC	81-	AB-16-		486
W9SAA/9	Falls ARC	51-	B-12-		306
K2RLG/2	Jersey City Dept. of Parks RC	118-	AB- -		292

(*Continued on page 182*)

Five Transmitters Operated Simultaneously

W2JIO/2	Fordham RC	1499-	A-35-	13,716
W6NWG/6	Palomar RC	1176-	A-25-	10,584
W2KOJ/2	Watchung Valley RC	1134-	A-35-	10,431
K6EBN/6	Westchester AR Assn.	1120-	A-35-	10,080
W2YKQ/2	Lake Success RC	1049-	AB-22-	8643
W6LUC/6	Santa Barbara ARC	1028-	AB-29-	8268
W6RFW/6	Four H Minus One Club	889-	AB-25-	7404
W3AFM/3	Chesapeake ARC	756-	AB-20-	6999
W9BW/9	Chicago Suburban R Assn.	690-	A-25-	6471
K6YJL/6	RA Mobile Soc.	648-	A-19-	6075
W2JZ/1	Westchester AR Assn.	893-	AB-15-	5688
W6AGO/6	Paso Robles RC	885-	B- 8-	5460
W7AW/7	West Seattle ARC	596-	AB-33-	5145
W6PMK/6	North Peninsula Electronics Club	548-	A-15-	5112
W3NKF/8	Naval Research Lab ARC	526-	A-11-	4959
K4CYP/4	Wayne County AR Assn.	779-	B-15-	4848
K6SIR/6	Ramona RC	560-	AB-29-	4671
K2AAN/2	Babylon RC	697-	AB-20-	4362
K2ERQ/2	IBM AR Assn.	705-	B-30-	4230
K6QEH/6	HEA ARC	507-	AB-14-	3993
VE3ZM/3	Guelph ARC	431-	A-14-	3879
K6FAV/6	McClellan AR Soc.	615-	AB-47-	3804
W6RNA/6	The Corona Gang	419-	A- 5-	3771
W8RNF/8	Lake Geauga ARC	617-	B-24-	3702
W2OW/2	Binghamton AR Assn.	582-	AB-25-	3615
W4THM/4	Bristol ARC	772-	BC-20-	3406
K6QEM/6	Collins RC	463-	AB- 9-	3399
VE1AEP/1	Sydney ARC	348-	A-15-	3366
W4JP/4	Blue Grass RC	356-	A-10-	3204
W8KGG/8	Huron Valley AR Assn.	482-	AB-25-	3147
W1GES/1	North Shore R Assn.	444-	AB-14-	3144
VE3DC/3	Hamilton ARC	316-	A-21-	3105
W5IJO/5	(nonclub group)	317-	A- 8-	3078
VE6NQ/6	Calgary AR Assn.	482-	B-	3042
W5ABD/5	Westside ARC	470-	B-21-	2970
W3CTC/3	Delaware Valley ARC	429-	AB-12-	2910
W6MPI/6	Cathay RC	404-	AB- 7-	2793
W5US/5	Wichita Falls ARC	461-	B- 5-	2766
W2DYM/2	Amateur UHF Club of Jamaica	301-	A-12-	2709
K9GXU/9	St. Clair ARC	409-	AB-14-	2633
W4MOE/4	Asheville ARC	393-	AB- -	2532
W1TKA/2	Stamford ARC	296-	AB-16-	2514
W9IAW/9	Twin City RC	343-	AB-20-	2466
K1BCI/1	CQ RC	311-	AB-23-	2106
K6ER/6	(nonclub group)	308-	AB- -	2067
K5AXA/5	San Angelo ARC	252-	AB-25-	1818
W1RFP/1	Thayer School of Engineering RC	235-	B- -	1410
W8FGY/8	Van Wert ARC	215-	AB-14-	1395
K9HDH/9	Elkhart ARC	167-	AB-14-	1224
W3MIE/3	Crawford County R Assn.	118-	B-15-	708
W8QCL/8	Wood County ARC	111-	B- 9-	686
VE3HX/3	Brantford ARC	282-	B-18-	564

Six Transmitters Operated Simultaneously

K2AA/2	South Jersey R Assn.	1539-	A-35-	14,121
W2VDJ/2	Lakeland AR Assn.	1375-	A-17-	12,600
W2GTD/2	Ridgewood RC	1185-	A-20-	10,890
W3TYU/3	Northeast RC	1431-	B-32-	8586
K9AVE/9	Illinois Valley R Assn.	752-	A-12-	6786
W8ACW/8	Genesee County RC	875-	B-36-	5400
K6CSU/6	Band Spanners RC	788-	AB-20-	5190
K6HR/6	Sylvania ARC	546-	A-20-	5139
W1SS/1	Bedford ARC	761-	AB-12-	5040
W2GLQ/2	Nutley AR Soc.	543-	A-28-	4887
W1NY/1	Hampton County R Assn.	735-	AB-20-	4866
K6AGF/6	Tri-County AR Assn.	633-	ABC-15-	4707
W2US/2	Suffolk County RC	602-	B-20-	3612
W3BN/3	Reading RC	545-	B-25-	3432
W7NBR/7	Spokane RAC	571-	B-17-	3426
W6GHJ/6	Mountain View ARC	470-	AB-10-	3408
W2FA/2	Western Westchester RC	348-	A-14-	3132
VE3AVU/3	North Shore RC	429-	ABC-14-	2751
W1EJN/1	Pioneer Valley ARC	325-	AB-30-	2629
W2BVL/2	Nassau RC, Five Towns RC	420-	AB-30-	2592
W5NRJ/5	Garland ARC	296-	AB-12-	2034
K2TAZ/2	Northern Nassau ARC	262-	AB-15-	1805
W4MQN/4	Atlanta RC	225-	AB-27-	1788
W9B8A/9	Mississippi Valley RC	255-	AB-23-	1539
K8BYI/8	Southeastern Michigan AR Assn.	197-	AB-17-	1422
W4NPT/4	FAETDLANT ARC	138-	AB-13-	837
W3USC/3	Washington County ARC	70-	ABC-12-	426

Seven Transmitters Operated Simultaneously

W7HZ/7	Valley ARC	1424-	A-59-	13,059
W1GLA/1	Framingham RC	748-	AB-18-	8537
W1JLI/1	Sub. Sig. ARC	697-	A-30-	6525
VE3JJ/3	West Side RC of Toronto	634-	A-26-	5931
W8UFF/8	Ft. Hamilton AR Assn.	645-	A-14-	5805
VE3DCE/3	Niagara Peninsula RC	769-	AB-30-	5256
W6HXN/6	Turlock ARC	735-	AB-18-	4740
W4HFH/4	Alexandria RC	557-	AB-10-	3507
W2GM/2	Albany AR Assn.	420-	AB- -	2784
K8FDU/8	Gentile RC	352-	AB-35-	2418

Eight Transmitters Operated Simultaneously

W7DK/7	RC of Tacoma	1159-	A-25-	10,656
W6TOI/6	Downey ARC	1224-	AB-20-	7992
W6CX/6	Mt. Diablo ARC	784-	A-31-	7281
K6QZJ/6	Riverside County AR Assn.	659-	A-30-	6156

(Continued on page 184)

FREED

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FOR IMMEDIATE DELIVERY FROM STOCK

POWER TRANSFORMERS

Cat. No.	Hi Volt	DC Volts	DC Amps	Filament V 1	Amp.	Filament V 2	Amp.	Case Size
MGP1	400/200 ct	185	.070	6.3/5	2	6.3	3	HA
MGP2	650 ct	260	.070	6.3/5	2	6.3	4	JB
MGP3	650 ct	245	.150	6.3	5	5.	3	KB
MGP4	800 ct	318	.175	5.	3	6.3	8	LB
MGP5	900 ct	345	.250	5.	3	6.3	8	MB
MGP6	700 ct	255	.250					KB
MGP7	1100 ct	419	.250					LB
MGP8	1600 ct	640	.250					NB

PULSE TRANSFORMERS

Cat.No.	Block'g. Osc.	Int. Coupl'g.	Low. Pow. Out.	Pulse Voltage Kilovolts	Pulse Duration Microseconds	Duty Rate	No. of Wdgs.	Test Volt. KVRMS	Char. Imp. Ohms
MPT1	√	√		0.25 0.25 0.25	0.2-1.0	.004	3	0.7	250
MPT2	√	√		0.25 0.25	0.2-1.0	.004	2	0.7	250
MPT3	√	√		0.5 0.5 0.5	0.2-1.5	.002	3	1.0	250
MPT4	√	√		0.5 0.5	0.2-1.5	.002	2	1.0	250
MPT5	√	√		0.5 0.5 0.5	0.5-2.0	.002	3	1.0	500
MPT6	√	√		0.5 0.5	0.5-2.0	.002	2	1.0	500
MPT7	√	√	√	0.7 0.7 0.7	0.5-1.5	.002	3	1.5	200
MPT8	√	√	√	0.7 0.7	0.5-1.5	.002	2	1.5	200
MPT9	√	√	√	1.0 1.0 1.0	0.7-3.5	.002	3	2.0	200
MPT10	√	√	√	1.0 1.0	0.7-3.5	.002	2	2.0	200
MPT11	√	√	√	1.0 1.0 1.0	1.0-5.0	.002	3	2.0	500
MPT12	√	√	√	0.15 0.15 0.2 0.3	0.2-1.0	.004	4	0.7	700

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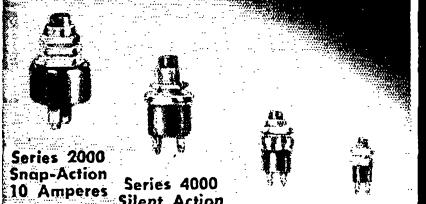

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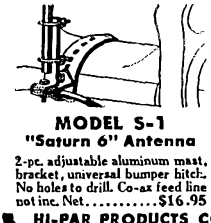

W3BTN/3	North Penn ARC	716-	AB-23-	4746
K5DWC/5	Alamo City Junior ARC	650-	AB-20-	4197
W4VTA/4	Confederate Signal Corps RC	632-	AB-14-	4131
W6UCS/6	Monterey Bay RC	451-	ABC-30-	3630
W9ITV/9	Peoria Area ARC	317-	A-35-	3078
K8DAC/8	Saginaw Valley AR Assn.	389-	B-50-	2484
W7KYC/7	Portland ARC	347-	ABC-23-	2177
W5HMF/5	Ole Capitol Mobile Club	254-	AB-18-	1794

Nine Transmitters Operated Simultaneously

W2GSA/2	Garden State AR Assn.	2466-	AB-40-	22,089
W6UW/6	Santa Clara County ARC	1584-	AB-31-	13,650
W7NCW/7	Lower Columbia AR Assn.	876-	AB-21-	6678
W0CKF/0	Minneapolis RC	521-	AB-28-	3945
W8FO/8	Toledo RC	524-	B-28-	3144

Ten Transmitters Operated Simultaneously

W1OC/1	Concord Brasspounders	2204-	A-24-	20,070
W4FU/8	Ohio Valley AR Assn.	1596-	A-27-	14,364
W3RCN/3	Rock Creek AR Assn.	1119-	A-80-	10,296
W3GV/3	R Assn. of Erie	583-	ABC-35-	4320

Eleven Transmitters Operated Simultaneously

W2LI/2	Tri-County R Assn.	2678-	A-35-	24,327
W9RK/9	Northwest ARC	1660-	AB-37-	14,994
W5SC/5	San Antonio RC	1698-	AB-24-	13,566
K6DTA/6	West Valley RC	1455-	A-50-	13,320
K6RXC/6	West Valley ARC	1084-	AB-21-	6930
VE3BRR/3	Nortown ARC	799-	AB-50-	5145

Thirteen Transmitters Operated Simultaneously

K6EA/6	Associated RA of Long Beach	1070-	A-52-	9873

CLASS B

Grouped in this listing are the scores of portable stations manned by one or two operators. Where two persons participated, the call of the assisting operator is given below that of the amateur whose call was used. Figures following the call listings indicate number of contacts, power and final score.

One Transmitter

W3EIS/3	660-	A-9261
W4YHD		
W2FBA/2	448-	A-6386
W2JBQ		
W3MSR/8	428-	A-4086
W1RAN/4	244-	A-3632
K4OQR		
K9OJB/9[1]	354-	B-3411
K5EZV/5	338-	A-3042
K5ABV		
K2DGT/6	455-	B-2730
W7CJZ/7	174-	A-2687
W7GNL		
W7WOQ/7	252-	A-2493
W7CNH		
W9ESQ/9	273-	A-2457
W9GNA/9	273-	A-2457
W9VBV		
W8OEQ/8	234-	A-2331
W8HXB		
W8MZA/8	160-	AB-2246
W8EOP		
W9LNQ/9	342-	B-2208
K6OPL/6	309-	B-1854
W6GQB		
K2PRP/2	201-	A-1809
K2OEG		
W7ZUD/7	299-	B-1794
W7DMR		
W5ELK/5	105-	A-1755
K5GBU		
W1EKO/1	266-	AB-1746
W1YQA		
VE2ARC/2[2]	192-	A-1728
W3BLW/3	251-	B-1656
W3ZJY		
K5CYH/2	183-	A-1647
W3JHV/2	153-	A-1602
W8SYD/6	118-	A-1593
K6HUH		
W9OEY/9	90-	A-1553
W9OHU		
W5GF8/5	172-	A-1548
K5EMJ		
W6TIX/6	248-	B-1488
K6BVV		
W7KCN/7	210-	B-1410
W7RFX		
K5EMA/5	235-	B-1410
W5TBP		
W4JZC/4	196-	B-1326
W4IYK		
W0RJX/0	221-	B-1326
W0MEL		
K2TJM/2	71-	A-1296
KN2YTD		
K4KTD/4	144-	A-1296
W4UWA		
W9FET/9[2]	137-	A-1233
W6PFE/6	91-	A-1229
W0WIE/0	66-	A-1229
K4BZJ/4	201-	B-1206
K4INR		
K6GOI/6	133-	A-1197
W6AWP		
W4GSP/4	185-	A-1097
K2PSR/2	150-	AB-1080
K2PGC		
W2DDN/2	79-	A-1067
W2LPV		
W1SMO/1	90-	A-1035
K2HMG/2	85-	A- 990
K2QVV		
W4AGI/4[3]	109-	A- 981
VE7SE/7	46-	A- 959
W6TOD/6	159-	B- 954
W2GVH/2	80-	A- 945
W2WZQ		
K6QKW/6	155-	B- 930
W5CMS/0	102-	A- 918
K0HDN		
W4RHZ/4	35-	A- 810
W4ZOU		
K9CAH/9	135-	B- 810
K9DGE		
W4QVV/4	108-	B- 798
K4IIX		
W3NWA/3	34-	A- 797
K5FHO/5[4]	132-	B- 792
W7FSP/7	105-	B- 780
W7FTD		
W7GUS/7	35-	A- 765
W7JHX		
K0ESW/0	31-	A- 756
K0EOR		
W0QDZ/0	57-	A- 738
W0ZMU		
VE2JY/2	80-	A- 720
VE3BON		
W8CZK/8	50-	A- 675
W5YKE/5	82-	B- 642
W8SYI		
W3ZIG/3	52-	A- 603
W3BOT/3	75-	B- 600
WN3JEE		
K2SFC/2	98-	B- 588
K2PAI		
K2KDW/2	276-	B- 552
W7NXZ/7	66-	B- 546
WN7HFZ		
W8PEQ/8	60-	A- 540
K8CZG		
W1CHA/1	11-	A- 486
W1ZQM/1	80-	B- 480
K1BVF		
W5CIN/5[07]	80-	B- 480
W7GVV/7	50-	A- 450
W2AOD/2	31-	A- 419
K2IOC		
W2UJS/2	42	A- 378
W8ZGA/8	42-	A- 378
W1YOR/1	60-	B- 360
W7RGS/7	55-	B- 330
W7ZXC/7	36-	A- 329

(Continued on page 186)

K5GFM/5	.71-	A-	294
K5HHJ			
K2IYC/2	.123-	AB-	263
VE6ED/6	.108-	B-	262
VE6EJ			
W6BTP/6	.76-	A-	228
K6KND			
W3TRW/3	.16-	A-	216
W3UAI			
W5SQR/1	.66-	A-	198
WN1NHE/1	.22-	A-	198
K4DVR/4	.76-	B-	152
KN4PFY			
VE2AGN/2	.25-	A-	150
VE2ATL			
W3YNC/3	.24-	B-	144
W5POI/5@7	.24-	B-	144
K2UUT/3	.68-	B-	136
KN2ZLN			
W6IAH/6	.9-	A-	122
W6EA			
W2ZAL/2	.13-	A-	117
KN9EAG/9	.13-	A-	117
W5GIF/5	.17-	B-	102
W2HF/2	.45-	B-	90
W2TYC/2	.43-	B-	86
W9IBZ/9	.41-	B-	82
K8DQN			
K5HWY/5	.32-	B-	74
K1ACL/1	.21-	A-	63
K6COP/6	.4-	A-	54
KN8ESG/8	.9-	B-	54
VE1AEB/1	.9-	B-	54
K6ICS/6	.6-	B-	36
KNØJMX/Ø	.14-	B-	28
KNØJMU			
KN5JLU/507	.2-	A-	18
VE2ATL/2	.4-	B-	10

Two Transmitters

W7PKA/7	.228-	B-	2277
W7GHT			
K6SXA/6	.193-	A-	1980
K6URM			
W5KGI/5	.224-	B-	1344
K5DGI			
W2PPY/2	.175-	ABC-	1071
W2GBX			
W1TVB/1	.144-	AB-	1050
W1NXX			
K5AXD/5	.99-	A-	891
W5HYN			
KØEPT/Ø	.92-	B-	702
W8PKU/8	.49-	AB-	339

CLASS C

Grouped in this tabulation are the scores of entrants in the mobile class. Figures following the call indicate number of contacts, power and final score.

K5EXZ/5[5]	281-	A-	4131
K2TOM/2[6]	239-	A-	3591
K6EPC/6[7]	206-	A-	3119
W8GHO/8	134-	A-	2849
W8PVC/8	120-	A-	2660
W8FKB/8	114-	A-	2579
W8QAV/8	69-	A-	1971
W3VXN/3	110-	A-	1917
W8AEU/8	84-	A-	1904
W8QXG/8	59-	A-	1836
K8ABA/8	54-	A-	1769
W8AGA/8	53-	A-	1755
W2PVZ/8	46-	A-	1661
W8BDZ/8	46-	A-	1661
W8CDB/8	46-	A-	1661
W8CVW/8	46-	A-	1661
W8LEX/8	46-	A-	1661
W8MWE/8	46-	A-	1661
W8NGY/8	46-	A-	1661
W8NYX/8	46-	A-	1661
W8OHA/8	46-	A-	1661
W8PM/8	46-	A-	1661
W8RDP/8	46-	A-	1661
W8UYJ/8	46-	A-	1661
W8WAG/8	46-	A-	1661
W8ZJQ/8	46-	A-	1661
K8AAG/8	46-	A-	1661
K8CEF/8	46-	A-	1661
W6EHA/6	118-	A-	1593
W6GTG/6	78-	A-	1391
W9TWA/9	55-	A-	1121
W3NIP/3	84-	B-	1071
W3HQJ/3	52-	A-	1040
KN1BSM/1	75-	A-	1013
W3SAA/3	44-	A-	945
W9MYI/9	40-	A-	891
W3AJO/3	39-	A-	864
W3FDJ/3	38-	A-	851
W3PWG/3	38-	A-	851
W3LNQ/3	36-	A-	824
W9EZS/9	35-	A-	810
W3PNY/3	32-	A-	770
W3YJM/3	30-	A-	743
W@OJY/@[8]	81-	A-	729
W5UBN/5[9]	213-	C-	720
W8NOW/6	79-	B-	711
W3IR8/3	25-	A-	675
K9CLL/9	23-	A-	662
W3WNC/3	22-	A-	635
W3UVL/3	21-	A-	621
W3UZF/3	21-	A-	621
W3DSG/3	40-	B-	612
W9TIL/9	19-	A-	608
K2DEV/2[10]	19-	A-	594
W4YOK/4	40-	B-	585
W3BBB/3	18-	A-	581
K4IKF/4[10]	41-	A-	554
W9AYU/9	15-	A-	540
W3CNO/3	34-	B-	531
W3QQH/3	14-	A-	527
W9PQZ/9	12-	A-	500
W3SAL/3	11-	A-	486
W3MHR/3	10-	A-	473
W3YFV/3	9-	A-	459
W8VZB/8	34-	A-	459
W3UMK/3	46-	AB-	432
W6ENR/6	30-	A-	405
W3PIT/3	4-	A-	392
W8LVM/8	4-	A-	392
W8QLB/8	2-	A-	365
W8TFU/8	2-	A-	365
W3DOU/3	14-	B-	351
W4TJS/4	26-	A-	351
W2MZB/2	58-	B-	348
W3QCV/3	13-	B-	342
W4SJJ/4	21-	A-	284
W6MHS/6	19-	A-	257
W3CPT/3	15-	A-	203
W9MHP/9@1	20-	B-	180
W9QYQ/9	13-	A-	176
W9UKT/9	19-	B-	171
W1GKJ/1	18-	B-	162
K4DNH/4	12-	A-	162
W4EDD/4	15-	B-	135
W9BA/9	10-	A-	135
K2OUD/2	9-	A-	122
K4AQX/4	9-	A-	122
W3FWI/3	12-	B-	108
K4BLX/4	8-	A-	108
K2IKS/2	10-	B-	90
W4FDK/4	6-	A-	81
K4CFN/4	6-	A-	81
K6SNQ/6	6-	A-	81
W1HRV/1	5-	A-	68
W2HF/2	4-	A-	54
W4UCC/4	4-	A-	54
W3FKI/3	8-	B-	48
K4AJI/4	5-	B-	45
K4CFO/4	3-	A-	41
W9YDP/9	2-	A-	27
W5IHL/5	2-	B-	18
W3YNC/3	1-	A-	14
K6JRR/7	1-	A-	9

CLASS D

Grouped in this tabulation are the scores of home stations operated from emergency power.

K2OFQ[12] 652, W1ONK 275, W8QLY[13] 178, K5FGJ[14] 138, KM6AX[15] 135, KG6AAY[16] 97, W2ZRX/VO1, W3LSS 56, W6RDF[9] 20, W3CVE 17.

CLASS E

Grouped in this tabulation are the scores of home stations operated from commercial power sources.

W4FGH[17] 520, K2MMX[18] 420, K6DDO 360, WØNI[19] 347, W2GSJ[2] 257, K2KMA[2] 213, W1JYH 207, W3YVJ[2] 206, W3YWT-3[2] 201, W3WFJ 200, W6PHO 185, W1FYF 175, W7WMY 175, K6OYE 175, W4KFC 166, W6MJP 165, K4HAV[2] 159, K6BFS 157, K5GNY 152, K5IPN 148, K2GZD 143, K2OMT 143, W1AW[2] 141, K5GAB[2] 138, W8TIZ 135, K2SIF 134, W3COU[20] 128, K6PLW 128,

(Continued on page 188)

W4FRO 124, WØYCA 121, W5DDL[2] 116, W5KGJ 116, K8WBZ 107, W7ULC 105, K5HIM 100, K6RGO 100, W4WSF 94, K2PIM 89, W7QLH 88, K5GOI[21] 87, K9BLY 86, K8EEG 85, K2SWI 83, KP4DII 83, KØARS 82, VE1EK 81, W8GBH 80, K4DKV 76, KØADI 76, W1DXS[1] 75, K2GTC 73, K4HCS 72, K4KIR 71, W8WRO 69, K2SOW 69, W4HKJ 67, W2ZRX, YO1 66, K2PGJ 65, W9EXL 64, K6DHE 64, VE3MI 62, W1BPW 61, W8UPH 61, K5DRC 61, K9CPF 60, K6UKX 59, W8KMF 57, KØGZP 57, K2JS8[2] 53, W8EXW 52, K9AVK 51, W6CTL 49, W6GQZ 47, K6TAN 44, K5GHP 43, W5EZJ 42, K2VVL 42, KN2VTW 42, W2CJM 40, W6PMU 40, W9JJN 39, K6OHV 39, KN6VXS 38, W6UJA 35, W7VAS 35, W7JC 34, WØBWJ 34, W3CVE 33, K5GIF 31, VE1DB 31, K4JMN 30, W1VPP 28, W3HUK 28, W6OJW 28, K2UCF 28, W5QPS 27, W5UWA 26, K6VZA 6 24, K1AKO 23, K9EWB/Ø 23, KN2VQM[2] 21, KN2YPT 19, W2ZAL 18, W4FLX 18, K8DKU 18, W3IKB[2] 17, W1EFW 16, K2RDP 16, W1HRV 14, W3ZJD 14, W8YPT 14, KL7CDF[2] 14, K2CTK 13, KN6VWE[2] 13, W5FET 12, K2EZ 12, K4GHM 12, K6JGN 12, KN6VDG 12, KØIFW 12, W1DTK 11, K5BKK 11, W6NKT 10, W9SDK 10, K2JJJ 10, KN5JCC 10, VE6MJ 10, KL7DR 9, W3NRE 8, W1RFJ 7, W7ESJ 7, W1LGO 6, W7CWN 6, W1NSG 5, W1ZMB 5, K6RFT 5, K9ATE 5, KØHVR 5, KN1BIM 5, W2VMX 4, W3RDZ 4, W6DKN 4, W6DWJ 4, WN2BVE 4, W3IDO 3, KN1BYL 3, KNØHQX 3, W1PID 2, K2DEM 2, VE1AEB 2, W8IVK 1, W9YBG 1, WN7JBV 1, K4JLO 1, KN2UOK 1.

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[1] W9s DIK NHE, oprs. [2] 2 oprs. [3] W4YE, K4CAX, oprs. [4] W7LUS, K5EBA, oprs. [5] W6HQN, 2nd opr. [6] 2 rigs, 6 oprs. [7] W6HBF, 2nd opr. [8] 17 oprs. [9] 3 oprs. [10] K4KES, 2nd opr. [11] W9RYQ, 2nd opr. [12] Frog Hollow ARC, 6 rigs, 9 oprs. [13] Mahoning Valley AR Assn., 2 rigs, 8 oprs. [14] MARS RC, 2 rigs. [15] 6 oprs. [16] 9 oprs. [17] 2 rigs, 2 oprs. [18] 5 rigs, 12 oprs. [19] 4 oprs. [20] 2 rigs, 4 oprs. [21] 5 oprs.

Correspondence

(Continued from page 94)

599X

2434 South 2nd St.
Abilene, Texas

Editor, *QST:*

Why don't hams give honest RST reports? It ain't just the new-crop (Novice ops). It's the oldies too. 90% will give out with an R5 if they can read the other station at all, the "S" is nearly always about 2-points above "honest" and the "T" . . . Oh me! The station on the other end thinks he isn't getting thru at all if he receives and RST 459, where if'n he will look that up on the RST-scale, he will find that he is putting in a pretty dog-gone nice sig. If we take all the sigs we can read, on the air, they would probably average 349–459 (not mentioning chirps, tails, key-thumps and just plain raw notes. Honestly, there are very few true RST 599X sigs on the bands (other than locals). Man, U gotta back-away from a 599; he'll block your receiver if you leave the vol where you set it to sweep the band! Oh well, we have a lotta fun anyway.

— *Franklin C. Burt/W5EGX-N8NAA*

LISTEN!

1708 Military
Omaha, Nebraska

Editor, *QST:*

I believe that I have found the source of the terrific QRM on the Novice bands: empty-headed operating. Listening on 7161 kc. for less than three minutes I heard five Novices calling CQ, three calling simultaneously. But not one of these CQs got a call back. It seems to me that if more Novices would listen before transmitting and call fewer CQs they would have many more solid, pleasant QSOs and with only a tiny fraction of the QRM.

— *Tom Fitzsimmons, KØOFF*

A CALL FOR THE WOUFF-HONG

Box 462
Washington, North Carolina

Editor, *QST:*

Thanks so much for the W1AW code practice. Without it I'd never have gotten my Gen'l, I guess. Use the Wouff-Hong on those guys who don't listen before they transmit and in doing so QRM the heck out of your code practice. The same goes for the guys who put a carrier on the air for tune-up and never sign name, call sign, or nuttin'.

— *Charles Cowell, Jr., K4KLJ*

Happenings of the month

(Continued from page 79)

more than doubled; from approximately 75,000 licensees to more than 150,000. New licenses are being issued at the rate of 10,000 per year, excluding Novice Class licensees. In view of the tremendous growth of the amateur service, a 270-kilocycle segment becomes of considerable importance in order to relieve congestion in the amateur service.

POINT IV

The Commission's proposal to assign the proposed services in the ISM band at 27 Mc. is not sound allocations engineering.

14. The Commission is overly optimistic in its feeling that the Citizens Radio Service will be able to operate successfully under conditions of severe interference such as often exists in the ISM band. Even if no ISM interference were present, the order of frequency is a poor one for the type of service proposed; it is well within that portion of the spectrum where marked sky-wave effects occur over a large part of the sunspot cycle and it is inconceivable that multiple assignments to a so-called short-range service can be made without the certainty of long-distance interference. The Commission should be well aware that widespread international amateur communications take place in this band, much of it with low power. The League feels that solely on the basis of the order of frequency the Commission's proposal represents an unworkable expedient.

15. With the increasing use of the band by the ISM services, the problem for the proposed service assignment will become that much more acute. In fact, the use of the band in many areas will probably become impossible, this being true especially in heavily populated areas where Citizen service assignments would, of course, be most numerous. The League is of the opinion it is only because of the comparatively slow development of the ISM services that amateurs have been able to utilize the band to the extent they have. Since ISM devices by their nature often create intolerable interference conditions for other services, amateur operation in some areas has been found difficult or impossible. The League believes that this will become increasingly apparent as the ISM services expand. This will, of course, be equally true for amateurs as for others. Amateurs, however, are widely scattered throughout the nation and also have considerable freedom in choice of operating time. Although an increasing number of amateurs will find it impossible to use the band while the ISM services operate, others may still be able to do so. This is a situation with which the proposed service cannot effectively cope.

AMERICAN RADIO RELAY LEAGUE, Inc.

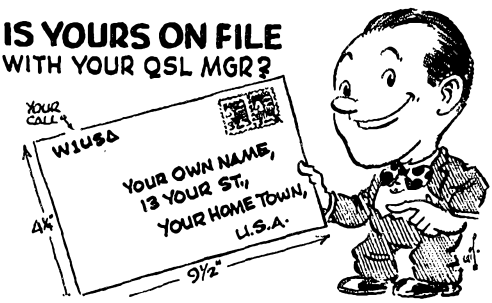
PAUL M. SEGAL
Its General Counsel

A. L. BUDLONG
General Manager
September 3, 1957

A.R.R.L. QSL BUREAU

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

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
W2, K2 — E. F. Huberman, W2JIL, Box 746, GPO Brooklyn 1, New York.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.



W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
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, 883 10th St. N., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Naumauu Dr., Honolulu, T. H.
KL7 — KL7CP, 310 — 10th Ave., Anchorage, Alaska.
KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

Strays

W 7 O(ak) H(arbor) W(ashington) LIVES in Oak Harbor, Wash.! — *W7OE.*

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 signature and address be printed plainly. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns 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, RT18/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. 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. Ulster 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, I-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel. LExington 2-6254.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

MULTI-BAND Antenna, 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems 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.

HALLICRAFTERS, Central Electronics ham gear — others. Swartzlander Radio Limited. Fremont, Ohio. Call Jerry, W8EPI or write.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Store: 60 Spring St., Newport, R. I.

SEND for this month's standout listings of Reconditioned Equipment. Also request our new "1957" Amateur Catalog. We feature all leading brands and promise you an attractive deal always regardless of your needs or budget. Check our offer first. We deal quickly, easily and always on a personal basis. Stan Burghardt, WØBJV, Burghardt Radio Supply, Watertown, S. Dak.

QSLS? SWLS? Finest and largest variety samples 25¢ (refunded). Callbooks (latest), $4.50. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Michigan.

QSLS. Taprint, Union, Mass.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Now printing for a third generation YL ham! Samples 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS-SWLS. Samples 10¢. Maigo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

WSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS. Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

QSLS, Sharp! 200 one color, glossy, $4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

QSLS Glossy, two colors, samples 10¢ (refunded). 200 cards $3.75. W1GKH Press, Candleview Ridge, Danbury 18, Conn.

QSLS. Reasonable, 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QSLS samples, dime. Gay Krenz, Fall Creek, Wis.

QSLS. Reasonable. Nice designs. Samples free. Stan, W2DJH, 19 Elm St., Warrensburg, N. Y.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

QSLS; Cartoons, colors, something different. Samples 15¢, Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS. Reasonable, nice designs. Samples free. Stan, W2DJH, 19 Elm, Warrensburg, N. Y.

QSLS, California only. Samples 10¢. Dauph, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS! Shack accessories! Brochure free. WAT, Box 128, Brecksville, Ohio.

QSLS of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Pa.

SEND $3.00 for 200 2-color QSLS-SWLS. Fast service. Samples 25¢. Bolles, W5OWC, Box 9007, Austin 17, Texas.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS. Cartoons, colors. Something different. Samples 15¢, Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS, SWL's, VHF's, XYL-OM's. (Sample assortment approximately 9¾¢.) 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!).

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.

QSLS. Samples, Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS-SWLS. Samples free. Backus, 703 Cumberland St., Richmond, Va.

QSLS-SWLS, 100 cards $2.50. Samples 10¢. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS-SWLS that bring returns! Samples 25¢ (deductible). C. Fritz, 1213 Briargate, Joliet, Ill.

RUBBER Stamps for Hams, sample impressions. W9UNY, C. W. Hamm, 542 North 93rd St., Milwaukee, Wis.

QSLS-SWLS. Samples, Bob Cushing, W1HOU, 43 Ashland St., Manchester, N. H.

QSL Special. Free sample. Nat Stinnette, W4AYV, Umatilla, Fla.

QSLS. Reasonable, nice designs. Samples free. Stan, W2DJH, 19 Elm St., Warrensburg, N. Y.

QSLS. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

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 take your choice from the hundreds of "Like New" bargains in the world-famous Harrison Trade-In Center! (88 photographs, p. 137, March *QST* and p. 133 April *QST*). Greater values, because tremendous turnover means lower overhead! Terms. Trades BCNU. Bill Harrison, W2AVA, 225 Greenwich St., New York City.

SHAW Electronic Supply has new and used ham gear. Clyde, W9KLF, Darling at Gale, Angola, Ind.

CODE Course Supreme, on magnetic recording tape. Results guaranteed. Novice tape, basic instruction, practice material to 8 WPM. $5.95; advanced tape — practice material 9 to 18 WPM, $4.95, Combined, $9.95. 7" dual track, 3¾ IPS. Tapedcode, Box 31-E, Langhorne, Penna.

CASH Paid for BC-342, BC-312, BC-610E/UP, BC-614E/UP, BC-939, BC-221, JB-70, BC-60; also TTY equipment and parts for TG-7, model 15, etc., RM-39 remote control, AN/TRC-7 transceiver, surplus test equipment. Freight paid. Amber Industrial Corp., 75 Varick St., N. Y. 13, N. Y. Tel. CAnal 6-7455.

HRO-60T with matching speaker; A, B, C & D coils, new condition, in original cartons and warranty card, $475; Globe King 500A used *less than five hours transmission, excellent condition, looks like new*, $500. F. W. Reilly, Lookout Mountain, Tenn.

FOR Sale: Johnson Viking II complete with all up-to-date modifications plus push-to-talk, matching VFO, and low-pass filter. Selling to go high power on VHF. $250.00 or best offer. PMR6 mobile receiver. Best offer. J. B. Harwell, Jr., Gurdon, Arkansas. W5JWL.

HAMMARLUND HQ140XA receiver. Like new condx. $175; also Hallicrafters S40B, very gud condx. $65. Gerst, 2674 West 25th St., Cleveland, O. Want: RME-45, Calomatic.

RECORDING & Brochure: Limited Edition. A tribute to Radio and Morse operators. "The Saga of Telegraphy" is a historical story of communications men and their progress since 1844. It highlights courageous deeds performed by them. Available in two parts: 33⅓ record, playing time 45 minutes, includes narration and code. Brochure is the written & illustrated story. Special price to amateurs: Brochure, $1.00; Recording, $3.00 or both for $3.75. J. R. Graham, W4RJX, P.O. Box 1556, Arlington 3, Va.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadcast, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. WAlker 5-7000.

SELL: HRO-M all coils and 100-watt converted to Ham band radiotelephone. Sacrifice both: $170. C. Van Demburgh, Byrdton, Va.

SIDEBAND and High Power operators: End antenna relay problems with our vacuum coaxial relay. Send for dope sheet. South Bay Electronics, 3125 Barney, Menlo Park, Calif.

FOR Sale: Collins 30K1 400 watt transmitter, like new condx. W8VYE, Orville Wood, Camden, Ohio. Tel. 243.

ETCHED-Circuit material, supplies, instructions, free catalog. Etched circuit, P.O. Box 2582, South Bend 14, Ind.

DELTA-TENNA ground planes, commercial quality 2 mtr., $19.95, 6 mtr., $24.95; 10 mtr., $29.95. Also cut to any commercial frequency 450–20 Mc. Western Gear, Dept. Q, 132 W. Colorado, Pasadena, Calif.

WANTED: Used receivers and transmitters. Will pay cash or trade. 10% down with up to 24 months to pay. *In stock:* New 75A4's KWS-1s, KWM-1 SSB mobile transceiver, Johnson, B&W National, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics, Mosley, Hi-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZQN, or Glen, WØZKD for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

SELL: 75A1, $225; W6SAI conversion, recently aligned, manual, excellent condition. W6VM, 737 Northampton, Palo Alto, Calif.

INSTRUCTION, General Theory Class beginning Oct. at Jamaica, L. I. Evening Community Center. Data on application. S. Schachet, W2HNG, 13530 232 St., Springfield Gardens 13, L. I., N. Y.

SSB transmitter for sale. Eldico 100A, P.E.P. 100 watts output. Full coverage ham bands. In perfect condition; $494 which is ⅓rd off new price. K2CIV, Tom Patterson, 50 Crescent Lane, Roslyn Heights, Long Island, N. Y.

WANTED: Highest prices paid for ART-13, ARC-1, BC788, BC610, BC348, ARC-3, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and C.O.D. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

WANTED: ARC-3, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788 and other surplus. Advise what you have and price. W4VHG, Box 5878, Bethesda, Md.

WANT For Cash: Instruction manual for HRO50T1, coils, 50XCU. Have Heath V6, tubes and small parts for sale or for trade, stamp brings list. M. J. Marshall, 455 Washington Ave., Dumont, N. J.

NEW Collinear type VHF beams. Write for information. .051 perforated aluminum sheet, 5/64" OD holes, ⅛" centers, $1.20 sq. ft. Radcliff's, Fostoria, Ohio.

COLLINS KW-1: This transmitter has had very few hours of use and can be considered as new. I am offering this for sale, factory crated, and F.o.b. Ithaca for $3000. Robert R. Sprole, Ithaca, N. Y.

NOVICE: Complete amateur station. Hallicrafters S-38 revr; T-21 ARC-5 40-meter xtal controlled xmittr running 30 watts. Filtered power supply. Excellent working condition, mostly new tubes. Best offer over $35. KN8GJM, Michael Treister, 2408 Dysart, Cleveland 18, Ohio.

SELL: Viking I, best offer over $100. C. Lindemann, W1MLM, NBC, 30 Rockefeller Plaza, N. Y. 20 N. Y.

WANTED: SX42 cabinet only. Bob Forman, Monmouth, Ill.

VIKING Adventurer and WRL screen mod., $55. W2QEJ, RR#2, Granite Spring Rd., Yorktown Heights, N. Y.

SALE: Telrex 10 meter 20 meter beams, used good condx, also Electrofab 15 meter beam, new, reasonable. C. Storch, 5 Winfield Terrace, Great Neck, L. I., N. Y.

FACTORY-Wired Viking II and Viking VFO for Sale. Has push-to-talk. Good condx. Price: $210. Donald Klein, W9ATU, 1206 Fremont, Belleville, Ill.

HAM Register. For the best information about those you hear on the bands. H-R, 37 South 6th, Indiana, Penna.

5Kw Generator, 115/230 volt, single phase, 60 cycle, brand new, $695. Stephen Grossman, W2YGA, Clinton Corners, N. Y.

FOR Sale: HT-30, $275; SX-100, $175.00, both like new. Will ship if you pay freight. Phone AVenue 2-1065. W9TWY, Albert Pontarelli, 4904 Oakdale Ave., Chicago 42, Ill.

SELL or swap: Heathkit AT-1 transmitter and Heathkit VFO, in excellent condx: $35.00. Want: DX35 or 2 or 6 meter rig. K2BYX, Schwartz, 2772 Ocean Ave., Brooklyn 29, N. Y. Tel NI 8-7261.

BRAND New SX-100, $200; Collins 30K1, TVI suppressed, $700. Pick up deal only. W2BBV, 49 Frum Ave., Yonkers, N. Y.

FOR Sale: Lampkin 105 frequency meter, in gud condx w/manual: $50.00. Morrow Electric Co-op, Mt. Gilead, Ohio.

SELLING Out radio and TV business because of sickness (sick of the business). 20 years' accumulation of junk. Write: Clare E. Ernst, Alger, Mich.

304TL's, new, $7/00, socket, transformer; BC-224E, $40. W4ATE, Brizendine, 1001 Merritt St., Old Hickory, Tenn.

FOR Sale: Viking I, Johnson TVI kit installed, B&W 52 ohm low-pass filter, Dow-Key 115VAC coaxial relay, Heathkit VFO, Astatic JT-30 mike; HRO50T receiver, complete with five coil sets and xtal calibr., less spkr., William Glebel, W9IWU, 3539 Green Street, Steger, Ill.

SELL: HQ140X, in exc. condx; Johnson Ranger, fair condx. $350 for both. Call SHeepshead 3-0721, N. Y. area after 6 p.m. weekdays. K2JCK.

SELL Or Swap: Beautiful BC696 — 75 meter fone/xmttr 50 watts, just add push-to-talk mike and antenna: $50; SCR522 5-el. beam, mike, pwr supp., converted, $30; Hammarlund freq. std., FSpl35C w/KVC 100Kc xtal, $10; B&W TR switch, $10; PE103 with cables, little used, $15. $100 for the entire lot. W2NXZ, Bayshore, L. I., N. Y.

SELL: Globe King 500A, exc. condx. $500. Or will swap for smaller xmttr plus cash, similar condx. Factory-built Ranger preferred. Raymond E. Disbrow, K2DFP, Box 161, Hazlet, N. J.

WANT Used NC300 or SX101. Also want to sell or trade RCA WV97A VTVM new condition, never used; also Delco motor model A2400 1/8 HP single phase 60 cycle 110 volts. W2HBV, 654 Freeman St., Orange, N. J.

VIKING 122, VFO, perfect, $27.50. C. G. Dickens, 945 Jefferson St., Hagerstown, Md.

COMPLETE 600 watt AM xmitter, 4-250A w/pair of 810's, husky RCA modulation xfrmr, Hunter Cyclemaster PTO exciter, in enclosed relay rack on casters, Pi output, price: $325.00. Will not ship. Come and get it. Also Ultra modulation unit for KW, unused, $65. Will ship it. Morton Jacobs, K0EPJ, 6416 Verona Rd., Prairie Village 15, Kans.

SALE: One Master Mobile all-band loading coil. One Rex Basset Helium filled 15 meter loading coil. Both as new, $10 each. N. K. Thompson, W1LWV, 99 Water St., Millinocket, Me.

TRADE: Canon II-S camera with telephoto and wide-angle lens; also various accessories for a Collins 75A3 or receiver of same calibre, and same type of xmitter. Write for full info to E. Ritchie, CT2, Nav. 214, Box 50, NCF, % F.P.O., N. Y., N. Y.

HQ-129X: $120. Won't ship. Chris Sorensen, 1127 Greenwood, Palo Alto, Calif.

HIGH Band Motorola, Link GE, 2-way FM equipment. $40 per unit up; 6V dynamtor dynamotors, 600V at 170 Ma., $7.50 each. Some low band GE and Link equipment. Dave Graves, W8LRT, Barnesville, Ohio.

FOR Sale: Excellent condition, National HRO-5 with spkr, pwr supply, and the original six bandspread and general coverage coils. Also an added coil for excellent 10-meter reception. Recent tune-up and replacement of condensers. Complete:$130. With xtal cal., $140. K9CAL, Don Meredith, 2416 Hansen, Racine, Wis.

SELL: SX-42, $95; AR-1, $12; A-9B, $28; A-7E, $14; Eico Model 320 Signal Generator, $10; F.o.b. Lantana or will deliver 50 miles from Palm Beach. Ted Beach, K4MKK, Box 746, Dantana, Fla.

PRESSURE from business, XYL, Jr. ops drastically curtail fixed operation. Going mobile. PRO310 for sale. New, March 1957. Practically unused. Asking $450. Will consider a deal offering Mobile TX. K2OCW. 55 Gaynor Pl., Glen Rock, N. J.

FOR Sale: Used NC-300 in perfect condition, $315. Will answer all inquiries. Alan Locketz, K9CEY, 105 South Losey Blvd., La Crosse, Wis.

SELL Bound QSTs 1939 thru 1950 (except 1940). In excellent condx. $20 F.o.b. Fairfax, Va. W4SXE, K. P. MacDowell, 605 Spring Lake Terr., Fairfax, Va.

FOR Sale: Stromberg-Carlson AU-32 amplifier $50.00; RAX-1 .2–1.5 Mc. receiver (Naval Aircraft, G-E built, Broadcast) converted to 110 AC, $40, both in excellent condx. Also will sell NC-108RB with rack, $80. Make offer. L. G. Barrett, 31 S. Park, Hanover, N. H.

FOR Sale: B&W 5100 and 51SB, $450; NC183, $158 or both units for $590. Both units in excellent condition. Richard Evans, K0DOJ, Britt, Ia.

WANTED: Ham magazines prior to 1916; Callbooks prior to 1922. Wm. B. Duck and Electro Import catalogs; Collier's mag showing Marconi's transmission in 1901. Have QST's to trade also. W7OHW, Rt #1, Box 204A, Oak Harbor, Washington.

HEAVY Duty American Bosch generators and regulators 12V 50A. Rebuilt guaranteed for 100 days. $75 prepaid. Fred Haight, 9875 Ozga, Romulus, Mich.

FOR Sale: 2-Meter Tecraft converter, factory-wired, 14–18 Mc. IF, like new, $30; RME-152A 2–6–10 meter converter; has 6BQ7A piggy-back for 6; Operating manual, $35. Millen 90281 pwr supp. Used vy little, $40. All items F.o.b. "Doc" L. M. Hagerthy, W1RYM, Scarboro, Me.

FOR Sale: Skylane Products cubical quad with 100 ft. coax each band, $50. Will not ship. K2QQQ, Bound Brook, N. J.

NRA Perfect Winchester 94 (30–30) Remington 722 (222) with KV scope Marlin 39A (22) for 75A2, HQ150 or cash. J. L. Huffman, 324 Miller St., Blacksburg, Va.

SELL Or trade: 32V3 and Hammarlund SP600JX. Together or separately. Mike Yarus, Box 2278, Johns Hopkins University, Baltimore, Md.

NATIONAL NC300 used only few hours in excellent condition with speaker and crystal calibrator: $300 F.o.b. Bristol, Conn., W1AYR, A. B. Nelson, 350 Fern Hill Road, Bristol, Conn.

HALLICRAFTERS S40B with S meter, $60. W1ZIH, Dave Drescher, Maple Road, Portland, Conn.

FOR Sale: VHF152, $25. J. J. Gillen, 912 So. 57th St., Phila. 43, Penna.

FOR Sale: B&W 5100 $250. In excellent condx with manuals. W5TOM, 1811 Ave. K, Galveston, Texas.

SALE: Complete, up-to-date, Vol. 1 through 10 RCA HB-3 tube Handbook, $9.00 postpaid. Richard C. Vail, 1110 Berry Lane, Richmond, Ind.

FOR Sale: 813 rig per Jan. 1954 QST, $145; Harvey-Wells Bandmaster Z Match ant. coupler, $55; 120 watt modulator complete with speech and power supply, $50; NC173 rcvr. with Q multiplier, $105; LW 2 meter trans. and converter complete with tubes, $39.00; 12 volt dynamotor 680 volts 210 mills, $8; power supply components for 813 rig, $50. All inquiries answered. Jules P. Bernd, W8QCH, 1201 Mills Ave., North Muskegon, Mich.

SELLING Out: SX28, PE103, Gonset Triband, 60 watt modulation transformer, RF ammeters. Want: Harmon-Kardon TA-10 and electric mill. Have stop watch & food mixer for trade. Robert Schramm, W9BYK, 5212 Madison St., Skokie, Ill.

FOR Sale: Hallicrafters SX-99. 4 months old. Never used in station operation. $115. Bob Devaney, 8832-7th Ave., Brooklyn, N. Y. Tel BE 8-1711.

FOR Sale: DX100, $165.00. Going single sideband. W1NRG.

NC300, used about three hours. Best offer over $300. K2QWG, R. C. Miller, Hillcrest Rd., Plainfield, N. J.

DX-35 in excellent condx., $50; Carter 6v in. 400 at 150 out., $11; 2 meter omni-directional quad, $5. John Birken, K2SF8, 65 Southgate Rd., Valley Stream, L. I., N. Y.

TRADE: Ham equipment for stamp collections. Will trade misc. amateur equipment and test instruments. All commercial equipment. From misc. accessories to complete KW station AM and SB. Write full details of collections. W3MTV, H. E. Ide, 1317 Moon Dr., Yardley, Penna.

FOR Sale: Latest version Collins KWS-1 with 4X250Bs, new condx, used approx. 20 hours: $1,600. Also have Collins 75A2 receiver (without mechanical filter) in excellent condx, $290. John, W7TKI/1, Apt. 2S, 210 Riverway, Boston 15, Mass. Phone: LO 6-3026.

TELEVISION Camera. A new surplus RCA ATJ with 450 line resolution to highest bidder. W8RMH, 1910 Long Point, Pontiac, Mich.

CHECK with Roswel Electronics for your amateur needs. See W1BTX, K1BFY or W1SAD for personalized attention. QTH is 306 Prospect St., Cambridge, Mass.

COLLINS KWI, factory converted to SSB with all new controls for switching to A.M. or SSB immediately. Excellent results have been had using a 20A or HT30 exciter. The finest ham transmitter ever built is now for sale: $3000. Period. A good chance to show the XYL Florida. Drive down, rent a U-Haul trailer truck and take the rig home in one piece all ready to operate. Lewis E. Springer, W4NMW, 705 Harrison St., Hollywood, Fla. Tel: 2-8074.

SELL: Collins 75A2A, factory modified, 800 and 3100 cycle filters. Crystal calibrator, speaker. Absolutely clean. Price: $345. Paul Elliott, W5GGV, Bishop, Texas.

FOR Sale: Mon-Key automatic key, $20. KN9IZF, Roger C. Parmenter, 1234 S. Knight Ave., Park Ridge, Ill.

FOR Sale: Homebilt VFO 2–80, less power supplies 150 reg. 300 V, $25. Dave Thomson, 3213 Osborne, Racine, Wis.

FOR Sale: G66-B, 3-way PS/Speaker, $220.00; G-77 and mod. power supply with cables and brackets, $240, like new condx, purchased March 1957; Shure 505C I-imp. mike, $12. First $435 takes all. M. H. Crain, W7YOF, 4219 N. 44th Place, Phoenix, Ariz.

SALE: Globe Scout 65B transmitter modified for use with Heathkit VF-1 and crystals. Transmitter VFO and Q multiplier, $100. Julius Countess, K2VYD, 64-04 217th St., Bayside 64, L. I., N. Y.

WANTED: Two Collins 310B exciters. Braulio Dueno, University of Puerto Rico, Mayaguez, P. R.

FOR Sale: HRO-60, like new condx, $350; Collins 32V1 TVI-suppressed, completely shielded, leads by-passed, low pass filter, 110 volt co-ax ant. relay, ant. tuner with R.F. meter plus spare 4D32, $250. Both for only $575. Bill Mueller, W1WQN, 10 Dover St., Pittsfield, Mass.

SALE: Heathkit AR-2 rcvr in cabinet, $20; Heathkit AT-1 transmitter with antenna changeover relay plus Heathkit AC-1 antenna coupler, $40. Walt Wernsing, KN2ZJF, 62 Hurley Ave., Wyckoff, N. J.

FOR Sale: Hallicrafters S-76 receiver, in new condition. Neatly built 120 watt band switching c.w. all-band transmitter. Both for $150. Fred Galla, W2LSN, 780 Garden St., New York 60, N. Y.

TELREX 20M-56-23S 4 element 20 meter beam for sale, perfect condition, $165. D. Mitchell, R1 Box 59, Winnebago, Ill.

FOR Sale: Hallicrafters SX-28, SX-25 receivers, Globe Scout 65 transmitter, Communications typewriter, RCH Scott receiver, NC183D, like new, K4BFY, Blackville, S. C.

SELL: Hallicrafters SP-44 Panadapter, $40; New Eldico 300 watt antenna tuner, $20; Millen R9er and 10 meter coil, $8. Harry Taubin, W2GCW, 731 Gerard Ave., Bronx 51, N. Y.

TRADE: PE-75 gas generator for good used receiver. W6KEK, 135 Santa Fe Ave., El Cerrito, Calif.

FOR Sale: TG-34A code keyer, 3-one hour tapes, in FB condx, $19.50 F.o.b. Webcor "Midge" 3-speed portable record player, perfect, $14.95. Bob Parrish, K5KEG, Box 2251, Corpus Christi, Texas.

DESPERATELY Need: Good used Gonset Mobile Converter. WIFGF, % ARRL.

SELL portable Soundscriber, 125 discs, $50, in excellent condx, cabineted Mallory TVI01 UHF converter $12. Prepaid. Gene Rider, 1810 Alamanda Drive, N. Miami, Fla.

BARGAINS: With New Guarantee: RME-84 $65.00; HT-20 xmtr. $249.00; Collins 32V3 $495.00; NC-125 $139.50; TBS-50C $69.00; TBS-50D $69.00; APS-50 p.s. $29.50; TBS VFO $35.00; Lysco 382 VFO $19.95; Lysco 600 $69.00; Eldico TR-75TV $25.00; B&W 5100 $299.00; Adventurer $34.50; Knight CW xmtr. $34.95; Gonset #3024 VFO $45.00; Sonar SRT-120P $129.00; Globe Trotter $29.50; Globe King 500A $495.00; Globe King 275 $199.00; Globe King 400B $275.00; Scout 65A $69.00; Scout 65B $75.00; Globe King 400C TVIed $299.00; HQ-129X $159.00. Free trial, terms, write Leo, W9GFQ for best deals. World Radio Laboratories, 3415 West Broadway, Co. Bluffs, Iowa.

RECEIVER, GPR-90 with GSB-1 SSB adapter and GPS speaker, all new and in original cases with unsigned factory warranties. Used 10 hours. Cost new $660.50, must sell for $525.00. Son going to college. Excellent equipment for the real DX'er. W4ALR, 4319 Lowe Road, Louisville 5, Ky.

SELL Viking II and VFO. Time sequence keying. Factory wired. Perfect condx: $250. Worked 178 countries. New York City vicinity deal only. W2EQS, O'Brien, 48 Prospect, Westwood, N. J. Tel: Westwood 5-2749.

SELL: Central Electronics 10B with QT-1, 80, 40, 20, 15 meter coils and 458VFO, $150; four 6AG7's GG linear 200 watts, $50. Bill Williams W9VQC, 372 No. Greenwood, Kankakee, Ill.

CANADIANS or others: Selling out transmitter, hundreds of quality parts, 813 rig January 1954 QST, complete with 1250V DC power supply in Hammond 56" steel cabinet, responsible for DXCC, EDXC, WAC on 4 bands, using only folded dipoles, also Mosley VP20A beams unused, extra meters, coils, tubes, condensers, transformers both power and modulation, etc. everything 25 or 60 cycle, QST 1936–54 inclusive. $250 the lot. Send for list. VE3ADV, F. Devenish, 1782 Keele St., Toronto, Can. Phone RO 2-1829.

F.B. Globe Chief xmtr. NC100 rcvr. $125 or VHF gear. What have u? Rocky, K2VCT, 837 Woodbine Dr., Cliffwood, N. J.

KWS-1 and 75A-4 with new tuning knobs and latest factory configuration. KWS-1 has new heat reducing tube shields. Both for $2000 or KWS-1 for $1500. F.o.b. San Bernardino, Calif. Write or wire Will Boyd, 2814 Serrano Road, San Bernardino, Calif.

FOR Sale: In exc. condx, Gen. Elec. 10B; 458VFO C.E. case; 600 watt linear amplifier 6-1625s, pi-net output, pwr supp, Bud cabinet, $200. F.o.b. shipping point. W9CLS, I. J. Sprawka, 612 So. Lincoln, Park Ridge, Ill.

SELL: SX96, Johnson Valiant, low pass, fo-ax relay, D104 mike, Heath GB1B, 3-el. 10-m. beam and 175 ft. 50 ohm co-ax, $500. No delivery. Elroy V. Friberg, W9AXG, Boyd, Minn.

WANTED: KW linear final for single 4-1000A, also 5000v. plate transformer. A. R. Bates, W4SK, Box 554, Eau Gallie, Fla.

FOR Sale or swap for what have you, 32V, 20A "Delco Plant" in gud condx. Robert Gotts, R.F.D. #2, Northville, Mich.

COLLINS KW-1: This transmitter has had very few hours of use and can be considered as new. I am offering this for sale, factory-erated, and F.O.B. Ithaca for $3000. Robert R. Sprole, Ithaca, N. Y.

FOR Sale: NC-173 recvr with speaker, AT-1 xmittr with QST modification in final; Heath Q-multiplier and coupler complete with antenna changeover relays, Bud code oscillator and key. In excellent condx. Complete station and a real buy at $190. George Duvall, Box 54, Algona, Iowa.

COLLINS 32V3 transmitter and push-to-talk D-104 mike, $490.00 plus shipping with Collins VFO and dial calibration. Excellent condition, like-new appearance. H. R. Riddle W8EDL, 3106 Sherbrooke, Toledo 6, Ohio.

SSB Transformers identical to those used in W2EWL exciter (see *QST* March 1956), brand new, 3 for $4; Elmac 32 KC vacuum condensers 12 $\mu\mu$fd and 50 $\mu\mu$fd, brand new, $5.50 ea., 2 for $10.50; brand new full-wave bridge selenium rectifiers 30 VAC to 24 VDC at 500 Ma., perfect for surplus tear, $1; 4 for $3.50; brand new Ohmeter xfrmrs, 1000 to 1 imped. ratio eliminates one voltage amp. stage, ideal for portable and/or mobile $1.95 ea., 2 for $3. All postpaid except condensers. No C.o.d. please. S. Tucker, W2HLT, 51-10 Little Neck Pkwy, Little Neck 62, N. Y.

FOR Sale: NC300, $300; Pacemaker $350; Telrex 5-el. 10M beam, $75. F.o.b. Westbury, N. Y. W2COR, 70 Palm Lane.

WANTED: Viking I transmitter. Give price. W2ZI.

WIREP's Viking Ranger for sale (new model with grid block keying): $175. NC-300 with matching speaker, $325.

TRADE: Cannon camera with 1.5 lens, telephoto, Graphic, flash Ansco cameras and other photo equipment. Want: Johnson or Hallicrafters equipment. I. J. Winston, K2YWA, 35 Van Orden Pl., Clifton, N. J.

FOR Sale: Transitron linear amplifier, 500w P.E.P., bandswitching 80–10, best offer over $100. W2ZDQ, George Fenning, 8 Tessen St., Teaneck, N. J.

SALE: Heathkit 0–10 oscilloscope, $55; new 4X250B tube, $25. Ralph Queen, 1113 Duquesne Dr., Tucson, Ariz.

WANTED: 15 meter coil set, HRO-50T. A. S. Cahn, 120 Lynn, Shreveport, La.

SACRIFICE Perfect HT-32, 75-A4, KW Matchbox, Johnson Matchstick, C.E. MM-1 modulation monitor, parts for G.G. final with B&W parts. Make your offer and will ship reasonable distance. W8AQA.

WANTED: N.Y. area only. Factory-wired Central Electronics 20A with QT-1 and VFO including 10 meters. Must be in perf. condx. Auguste Schwab, Jr., 560 Woodmere Blvd., Woodmere, L. I., N. Y.

FOR Sale: Late 75A3, calibrator and 3.1 Kc filter and Viking Pacemaker, both in excellent condx. Best offer, all letters will be answered K2HWP.

NEED Money for school! Meissner signal shifter all-band VFO, with phase modulator, $20; Marmax Rothman screen grid modulator, maximum for KW, and power supply, $20; Millen Mod. 90800 75-watt all-band transmitter, all-coils, $15; $10. W9QXR. 1422 Noyes, Evanston, Ill.

SELL: Kilowatt power supply, selective output, 1500 to 2300 volts, 500 Ma; also attractive list of construction parts. Stamp for list. W9RFL, 345 W. 9th St., Fremont, Nebr.

SYRACUSE VHF Round-Up: October 12, 2 PM at Martin's Restaurant in Liverpool, N. Y. By pre-registration only $4.50. Talks by Sam Harris and Ed Tilton; humorous after-dinner speaker, good food. Obtain tickets from W2IYR, 8 Holly Rd., North Syracuse, N. Y.

FAMOUS VHF "Lunenburg" antennas, 6 meter 5-el., $14.95; 2 meter 6 element, $6.95. 6 meter horizontally polarized mobile antenna. Wholesale Supply Co., Lunenburg, Mass.

WANTED: Old 500 to KW rack panel one rig. Age, TVI suppression no problem. Send specs. Tom Hardy, W5MZP, Hardy, Ark.

SELL: SX71 and speaker, 250 watt xmttr complete with xtals, less M.V. Instructograph with tapes. Lot for $200. No shipping. W3GXD, "Bud" Brown, 2326 N. Bodine St., Philadelphia 33, Penna.

SELL Pacemaker, used less than 2 months, same as new. Incorporates latest changes. $385. F.o.b. St. Albans, West Virginia. Robert L. Hall, W8ORD, 12 Mt. View Drive.

FOR Sale: RCA CR-88 Communications recvr (AR-88 with phasing control); excellent, unmodified, perfectly aligned with matching speaker. Best offer over $185 takes it. F.o.b. John Kane, 27 School Lane, Haddonneld, N. J.

GPR-90 and matching speaker, brand new, guarantee. Will accept reasonable offer. G. F. Guler, Trailer Haven, Melbourne, Fla. Telephone 1255-J.

FOR Sale: NC-188 complete; warranty still in effect. Best offer. W0MJW, 730 S. Clinton, Iowa City, Iowa.

SELL: SP600JX Hammarlund with speaker, in new condx w/instruction manual and performance data: $600.00 complete. James H. Cecil, 3743 Spring Grove Ave., Cincinnati 23, Ohio.

4 El-20, 3 el-15 full size on 2" square boom. Castings and elements by Radcliff. Tilt center. Instructions as used by W8QJR and W8KOE. Best offer $150 up. Frank Baker, McComb, Ohio.

MODIFIED 838C (66dxc) $30; grid modulator $12. W4GIM, 819 E. 5th, Lumberton, N. C.

SALE: Hammarlund ASP-794 similar SP400X, tunes 1250 Kc to 40 megs, excellent performance and condx. $175; Precision Mod. 912 tube checker, $20; new tubes: 813S, $5 — 254, $5 — HK257S, $10 — 4-65A, $5; other gear, transformers and miscellaneous parts. Send stamp for list. W3KA, 10406 Insley St., Silver Spring, Md.

FOR Sale: Complete phone and c.w. station with VFO and ant. coupler: NC-125, DX-35, VF-1, AC-1 all for $225. Details. Write John Lyon, W9LHG, 1208 South Vine St., Urbana, Ill.

SELL: Morrow 3BR, $20; Select-O-Ject, $8.00; 75-meter linear amplifier, 1625's, $10. Jim Zvolanek, W9WIO, 3827 W. 83rd Place, Chicago 29, Ill.

75A4 Manufactured June, used 2 weeks returned to Collins for calibration correction. Returned in factory sealed carton and never opened. Exactly like new. Make me an offer, $585 or more. Am going to get by with my 75A5 (75A3/slicer). W0BNF, Glen Byars, Box 105, Kearney, Nebr.

FOR Sale: Elmac A-54H, 12V, 500V, 250 Ma Carter dynamotor with mounting and relay controls. Gonset Super Six with clipper squelch. Heavy duty Mobile ant. mount with coax connector and complete Allband antn. 505C Shure mobile mike, $200. E. J. Wilmoth, W4HCU, 2790 Range Line Rd., Memphis 8, Tenn.

SELL: Viking Valiant, $300 plus shipping. Lee Gomel, W5BZW, 1125 Dakota SE, Albuquerque, New Mex.

SX-71, Hallicrafters receiver, brand new, never used, original carton with R-46 matching speaker, $200; new PE-103 dynamotor, long cables, $19; 1956 Callbooks, $2.50; PE-104 vibrator supply, input: 6/12 v.dc, output: 84/51/1.4 v. dc., new, $12; antique army transmitter 2J32 Magnetron, $12; soldering guns. Wen #250, $7; Weller #8100 $4; American Beauty #3138 iron and #475 stand, $7, priced F.o.b. Will ship Lackner, 2029 Bradley, Chi. 18, Ill.

NEED AT1 or DX35. Write K4IHD, Bill Dycus, 1424 Madison St., Paducah, Ky.

TRADE: Cannon camera 35 mm mod. IV-S2, 85 mm f-1.9 telephoto lens, flash unit, two lens hoods and gadget-bag, in new condx for ham receiver such as NC-300 or SX-101 or complete beam antenna system including tower and rotor. W5YGX, 1424 Ross St., Clovis, New Mexico.

SELL QST February 1921 through 1951, 31 year run, in binders, $95. Tennalab 10-meter beam 5L10RG, half price. No shipping! Write W2AEB.

FOR Sale: 75A4, brand new, with 3 Kc and 6 Kc filters: $595.00, in original carton. N. J. Ferro, W1QLF, 14 South Main St., Putnam, Conn.

FOR Sale: 600L Central Electronics linear amplifier, new. Will not ship but willing to deliver in Connecticut or to state line. First check for $385. A. M. Wilson, W1NPG, 71 Laurel St., Putnam, Conn.

FOR Sale: Tubes, Brand new 813's, $8; 810's, $7.50; 832A's, $3.50; 250TH's, $17.50; 4-250A, $25. Complete Motorola FM receiver FMR-13V, $125; Motorola FM xmittr FMT-25V, $100; Collins plate transformer 3500 C.T., 230 mils, $30; complete Collins power supply, 1200C.T. 280 mils chokes, filament and bias transformers, condensers, all wired, $35; all-band Elmac mobile, A54H xmittr with 6V supply, PMR-6A revr with PSR-6 supp, all-bander coil, whip, mount $225; Navy ATD xmittr, covering up to 540-9050 Kc, $20; Lear LH5B VNF Aircraft xmitter, $185; power supply for SCR-522, $12. All guaranteed. Can ship C.o.d. Bill Slep, W4FHY, Ellenton, Fla.

WANTED: Gonset 6-meter Communicator; Johnson 250 Matchbox, low pass filter; Mallory 12 Volt Vibropack; Tecraft, Tapeton 6 meter converter; Millen or Barker & Williamson grid dipper; Capitol radio, Cleveland Institute electronics course. Stan Anderson, 4730 Homer Ave., Washington 23, D. C.

SELL: Mosley 20 mtr. beam, VPA-20-2, CDR TR2 rotor assembly, 110 ft. RG8/U and 110 ft. 8 wire cable. All brand new, never used. Best offer over $80 takes all or will sell separately. Sam Sherman, W2DXV, 460 Georgia Ave., Brooklyn 7, N. Y.

SELL: Heath VFO, $15; 6-v. Mallory Vibrapack, 300 volt 200 mil $30; Tecraft 2-meter xtal converter, $20; 6 volt dynamotor 400 volt 300 mil, $12.95; 2-829 B tubes, $5.50 each. All in gud shape. W3ELV, % Kronenberg's Store, Carlisle, Penna.

WANTED: QST from January 1946 through July 1956; CQ from January 1946 through June 1955; 500 mile radius, also tube tester, Army I-177, all offers answered. A. M. Wickland, 308 Monroe St., Kalamazoo, Mich.

SELL: SX-99 voltage regulated, temperature compensated, recently reconditioned, $109.00. Globe Chief 90, like new condx. Best offer over $40. Lad Jelen, K8DEW, Rte. 4, Medina, Ohio.

SELL: Collins 75A2 with speaker and crystal calibrator. Recently realigned, $300. C. Lindemann, W1MLM, NBC-TV, 30 Rockefeller Plaza, NYC.

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B&W 5100B and 51SB-B, like new, $550; BC-348 with power supply, $40; Model 12 teletype less cover, $45. Send for list of many other items. W2CFT, Box 483, Lake Ronkonkoma, L. I., N. Y.

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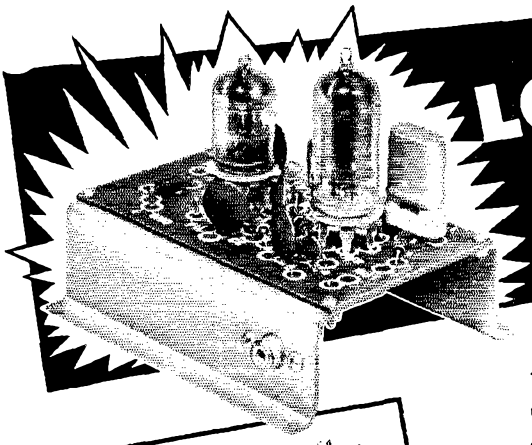

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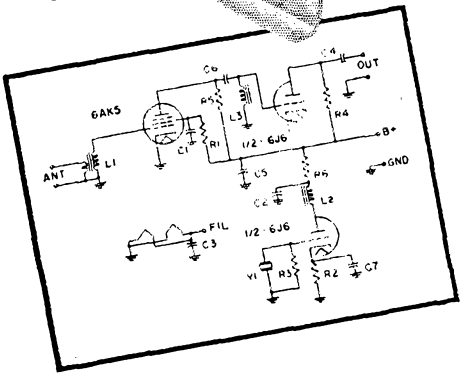

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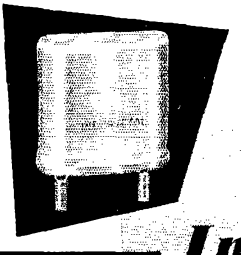

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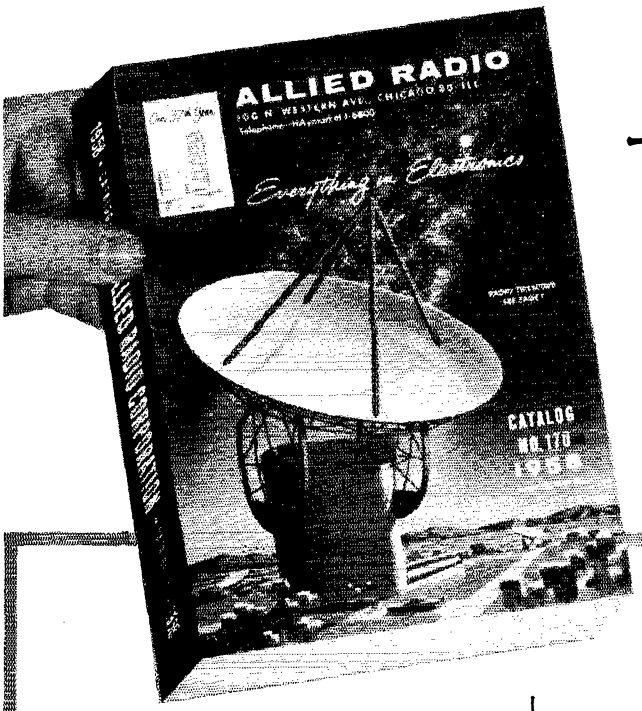

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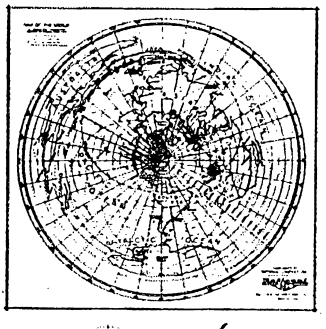

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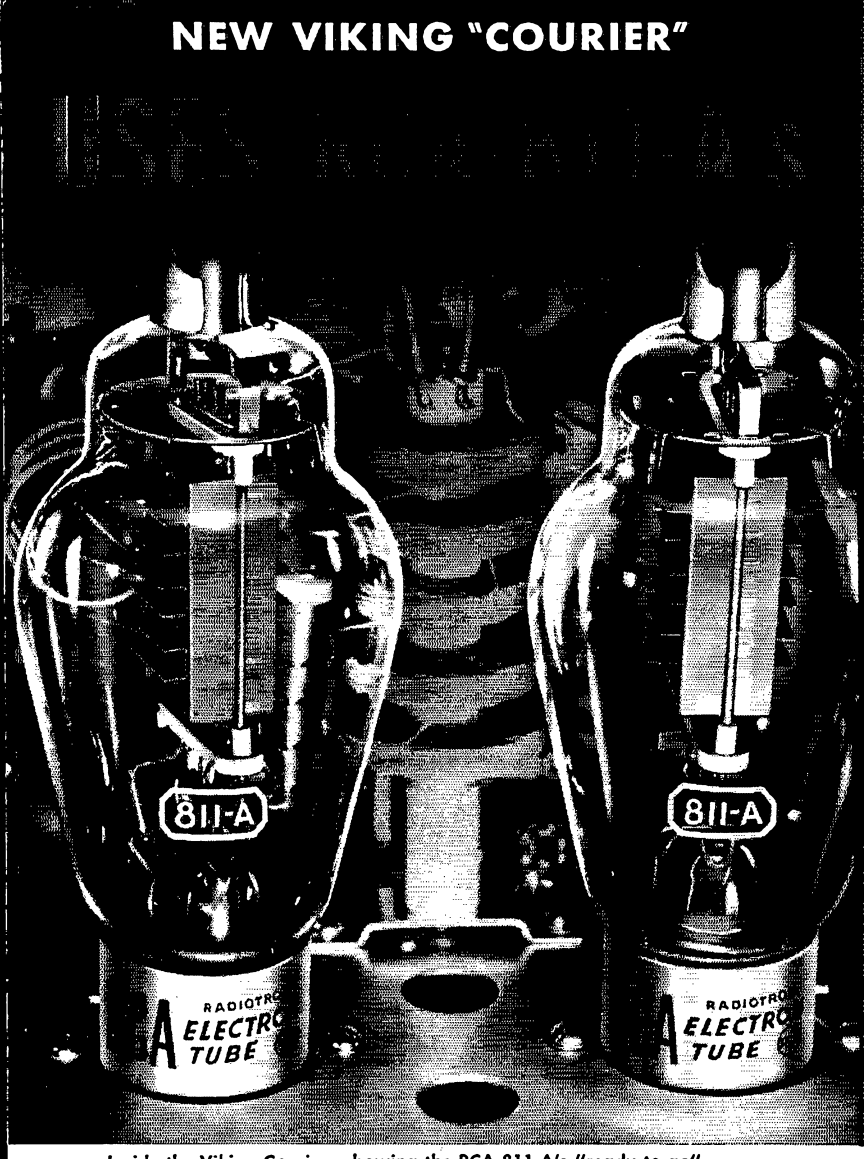

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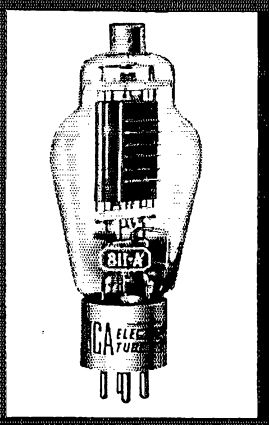

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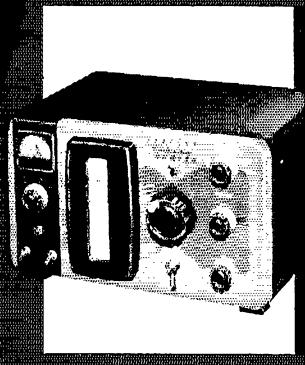

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