

# QST

June 1959

50 Cents

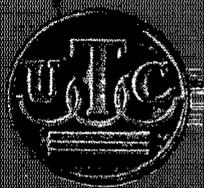
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# UTC NEW EXPANDED DO-T AND DI-T SERIES

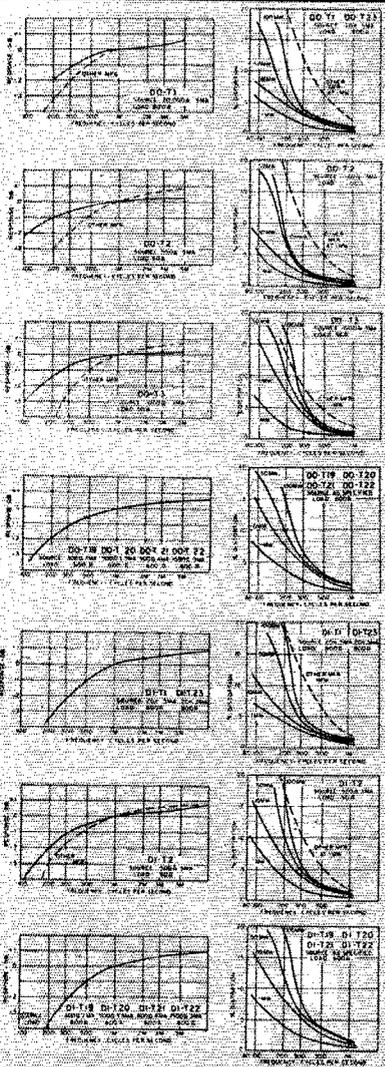
Revolutionary Transistor Transformers  
Mechanically Related to MIL-T-27A Specifications

**DO-T**  
DO-T 1000

**DI-T**  
DI-T 1000

DO-T and DI-T Transistor Transformers provide maximum power handling capacity and reliability in a minimum size. Components are fabricated with the available products of similar size and are interchangeable. Grounding and wiring are simple. All components are tested under the same conditions as the expanded range of units covered by MIL-T-27A.

DO-T and DI-T Transistor Transformers provide maximum power handling capacity and reliability in a minimum size. Components are fabricated with the available products of similar size and are interchangeable. Grounding and wiring are simple. All components are tested under the same conditions as the expanded range of units covered by MIL-T-27A.



DO-T No.	MIL Type	Application	Imp.	D.C. Ma. in Pri.	Sec.	Pri. Res. DO-T	Pri. Res. DI-T	Level Mhw.	DI-T No.
DO-T1	TF4RX13YY	Interstage	20,000 30,000	5 3	800 1700	850	815	50	DI-T1
DO-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	65	100	DI-T2
DO-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	110	100	DI-T3
DO-T4	TF4RX17YY	Output	600	3	3.2	60		100	
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	110	100	DI-T5
DO-T6	TF4RX13YY	Output	10,000	1	3.2	790		100	
DO-T7	TF4RX16YY	Input	200,000	0	1000	8500		25	
DO-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC, 1 Hy. @ 5 Ma. DC				630			
DO-T9	TF4RX13YY	Output or driver	10,000 12,000	1 1	500 CT 600 CT	800	870	100	DI-T9
DO-T10	TF4RX13YY	Driver	10,000 12,000	1 1	1200 CT 1500 CT	800	870	100	DI-T10
DO-T11	TF4RX13YY	Driver	10,000 12,000	1 1	2000 CT 2500 CT	800	870	100	DI-T11
DO-T12	TF4RX17YY	Single or PP output	150 CT 200 CT	10 10	12 16	11		500	
DO-T13	TF4RX17YY	Single or PP output	300 CT 400 CT	7 7	12 16	20		500	
DO-T14	TF4RX17YY	Single or PP output	600 CT 800 CT	5 5	12 16	43		500	
DO-T15	TF4RX17YY	Single or PP output	800 CT 1070 CT	4 4	12 16	51		500	
DO-T16	TF4RX13YY	Single or PP output	1000 CT 1330 CT	3.5 3.5	12 16	71		500	
DO-T17	TF4RX13YY	Single or PP output	1500 CT 2000 CT	3 3	12 16	108		500	
DO-T18	TF4RX13YY	Single or PP output	7500 CT 10,000 CT	1 1	12 16	505		500	
DO-T19	TF4RX17YY	Output to line	300 CT	7	600	19	20	500	DI-T19
DO-T20	TF4RX17YY	Output or line to line	500 CT	5.5	600	31	32	500	DI-T20
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	53	500	DI-T21
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	87	500	DI-T22
DO-T23	TF4RX13YY	Interstage	20,000 CT 30,000 CT	.5 .5	800 CT 1200 CT	850	815	100	DI-T23
DO-T24	TF4RX16YY	Input (usable for chopper service)	200,000 CT	0	1000 CT	8500		25	
DO-T25	TF4RX13YY	Interstage	10,000 CT 12,000 CT	1 1	1500 CT 1800 CT	800	870	100	DI-T25
DO-T26	TF4RX20YY	Reactor 6 Hy. @ 2 Ma. DC, 1.5 Hy. @ 5 Ma. DC				2100			
DO-T27	TF4RX20YY	Reactor 4.5 Hy. @ 2 Ma. DC, 1.2 Hy. @ 4 Ma. DC					2300		DI-T26
DO-T27	TF4RX20YY	Reactor 1.25 Hy. @ 2 Ma. DC, 5 Hy. @ 11 Ma. DC				100			
DO-T27	TF4RX20YY	Reactor .9 Hy. @ 2 Ma. DC, .5 Hy. @ 6 Ma. DC					105		DI-T27
DO-T28	TF4RX20YY	Reactor .3 Hy. @ 4 Ma. DC, 15 Hy. @ 20 Ma. DC				25			
DO-T28	TF4RX20YY	Reactor .1 Hy. @ 4 Ma. DC, .08 Hy. @ 10 Ma. DC					25		DI-T28
DO-T29	TF4RX17YY	Single or PP output	120 CT 150 CT	10 10	3.2 4	10		500	
DO-T30	TF4RX17YY	Single or PP output	320 CT 400 CT	7 7	3.2 4	20		500	
DO-T31	TF4RX17YY	Single or PP output	640 CT 800 CT	5 5	3.2 4	43		500	
DO-T32	TF4RX17YY	Single or PP output	800 CT 1,000 CT	4 4	3.2 4	51		500	
DO-T33	TF4RX13YY	Single or PP output	1,060 CT 1,330 CT	3.5 3.5	3.2 4	71		500	
DO-T34	TF4RX13YY	Single or PP output	1,600 CT 2,000 CT	3 3	3.2 4	109		500	
DO-T35	TF4RX13YY	Single or PP output	8,000 CT 10,000 CT	1 1	3.2 4	505		500	
DO-T36	TF4RX13YY	isol. or Interstage	10,000 CT	1	10000 CT	950	970	500	DI-T36

DO-TSM Drawn Hipermalloy shield and cover for DO-T's, provides 25 to 30 db shielding, for DI-T's DI-TSM (DCMA shown is for single ended usage under 5% distortion—100MW—1KC) for push pull, DCMA can be any balanced value taken by SW transistors (under 5% distortion—500MW—1KC)  
\*DO-T units have been designed for transistor application only... not for vacuum tube service. Pats. Pend.

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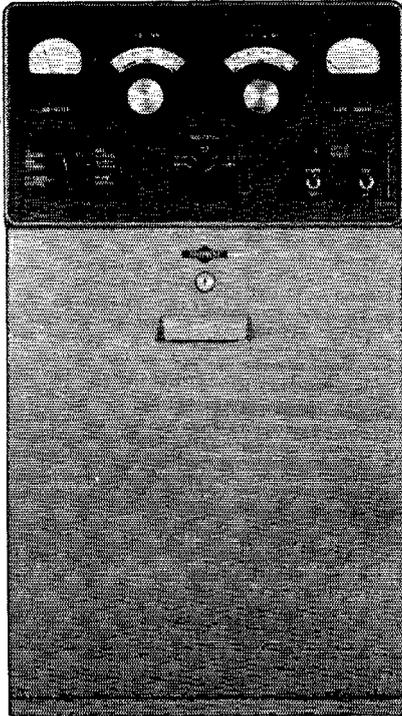
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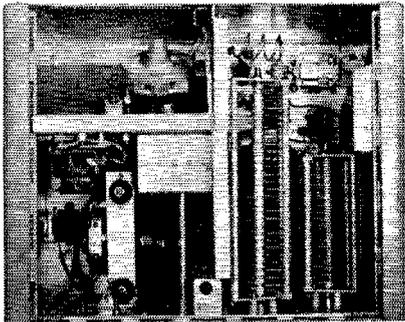
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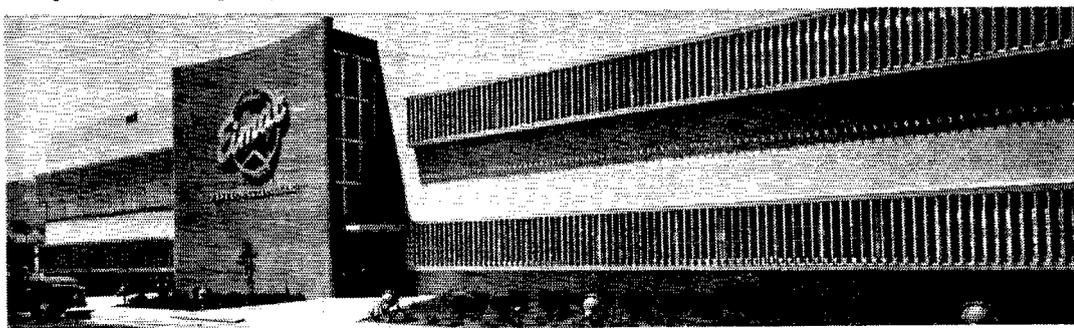
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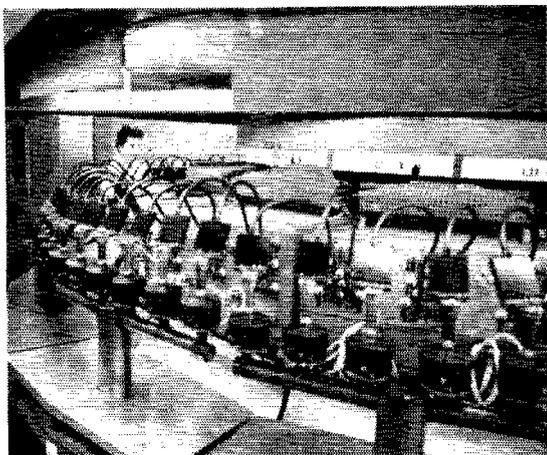
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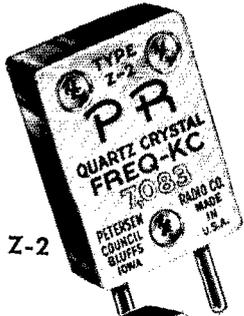
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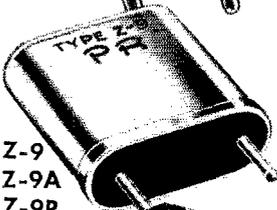
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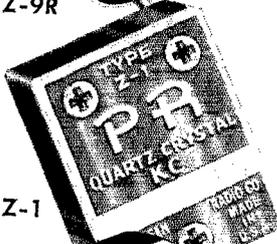
Z-2



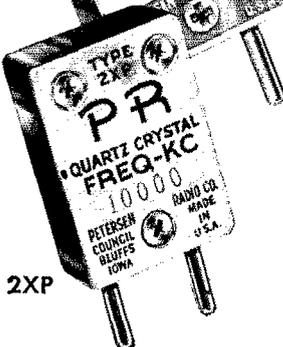
Z-3



Z-9  
Z-9A  
Z-9R



Z-1



2XP

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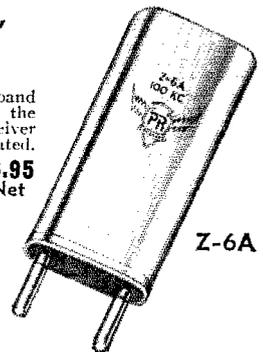
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New Mexico	K5DAA	Allan S. Hargett	1001 Birch Lane
Wyoming	W7AMU	L. D. Branson	342 South Elk
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Eastern Florida	W4KQJ	John F. Porter	Box 7295, Ludlum Branch
Western Florida	W4RKH	Frank M. Butler, Jr.	28 South Elliott Rd.
Georgia	W4CFJ	William E. Kennedy	1687 Fairway Hill Drive, S.E.
West Indies (Cuba-P.R.-V.I.)	KP4DJ	William Werner	563 Ramon Lovet
Canal Zone	KZ5RV	Ralph E. Harvey	Box 15
<b>SOUTHWESTERN DIVISION</b>			
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Arizona	W7O1P	Cameron A. Allen	1020 East Maryland Ave.
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Santa Barbara	K6CVR	Robert A. Hemke	728 W. Mission
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Oklahoma	W5FEC	Richard L. Hawkins	1408 Bell Ave.
Southern Texas	W5QEM	Roy K. Eggleston	1109 Vernon Drive
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Ontario	VE3NG	Richard W. Roberts	170 Norton Ave.
Quebec	VE2DR	C. W. Skarstedt	62 St. Johns Rd.
Alberta	VE6VM	Gordon W. Hollingshead	108 Hudson Rd.
British Columbia	VE7JT	Peter M. McIntyre	981 West 26th Ave.
Yukon	VE1F	James A. Elliott	190 Oakdean Blvd.
Manitoba	VE5LU	Lionel O'Byrne	
Saskatchewan	VE5LU	Lionel O'Byrne	
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			Donora
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			Manitowoc
			Bismarck
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			Sacramento
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			Rock Hill
			Fredricksburg
			Forest Hills, Charleston 4
			Denver 20
			Salt Lake City
			Carlsbad
			Casper
			Montgomery
			Miami 55
			Fort Walton Beach
			Atlanta 17
			Urb. Truman
			Rio Piedras, P. R.
			Balboa Heights
			Rialto
			Phoenix
			San Diego 7
			Santa Barbara
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\*Official appointed to act temporarily in the absence of a regular official.

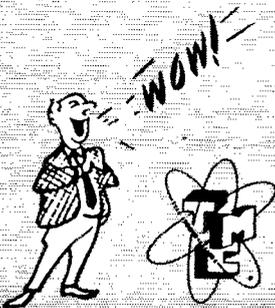
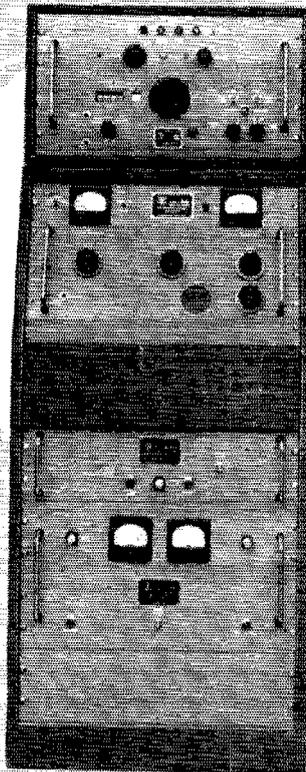
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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. 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.

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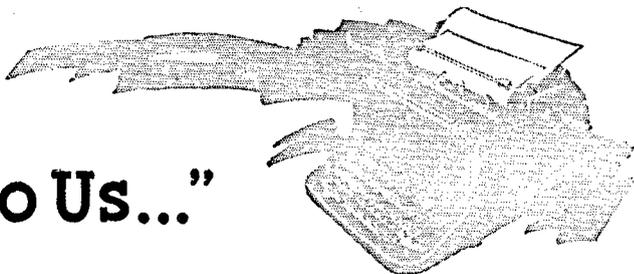
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# "It Seems to Us..."



## FIELD DAY

Eleven thousand three hundred and sixteen amateurs can skip this editorial and turn directly to their favorite department. These hams, participants in last year's Field Day, are fully aware of the fun, excitement, comradeship, operating pleasure and training of the Big Event and, we bet, already have their spot picked out for *this* year. By this time, they have lined up transmitters, tents, receivers, battery packs or putt-putts, Coleman stoves, masts, tables, chairs and portable ice-boxes. They know who has the mid-watch on 80, who's furnishing the two-meter beam and how many mikes are available. They've un-kinked the antenna wire, appointed the cooks, issued publicity releases and notified Grandma that she may expect a houseful of young'uns the week end of June 27-28. This year, by gum, they're out to beat the Podunk Hollow Radio Club, come wind, high water, or a worn-out ionosphere.

But the other one hundred and seventy-eight thousand of you, stick around, because we want to tell you what you've missed — and how *you* can get in on the fun.

Who can take part? Any amateur — Novice, Technician, Conditional, General, Advanced or Extra — may go out on Field Day, alone, with a friend or with a group. The whole family can go along. The older junior ops often make fine log-keepers, while the XYL finds that cooking over a portable stove, charcoal burner or fireplace is not especially tough.

Regular mobile gear can be used with the whip antenna, or the car can be parked in a pleasant spot and a long wire run to a near-by tree. The two-meter transmitter-receiver often does fine in the more-populated areas. A Novice transmitter, perhaps gathering dust since the General Class ticket arrived, may fill in nicely, or the junk box may have enough parts for a 29-watt battery-powered rig. If a gasoline-powered generator is at hand, the regular station can be moved out for the week-end, with a long-wire, dipole, or vertical antenna. Some field teams even use beams or rhombics, but a fancy set-up is not at all necessary.

Your Field Day headquarters can be a tent, park pavillion, station-wagon — or even the open air, if you can count on dry weather. Many

individuals and two-man teams go out for the full twenty-four hours, as do the larger groups, but quite a few limit their activity to a shorter period, perhaps combined with some fishing, swimming or picnicking. Even if you're stuck at home you can compete with other fixed stations in trying to work as many portables as possible.

As you look through the rules, printed in full on page 64, you'll notice that they favor the low-power station in the field. This is in keeping with the serious purpose behind the fun of Field Day: emergency preparation. The station away from home which can successfully slice through the FD QRM with 29 watts can also handle messages from a charred forest, a flood-created island or abreast of a tornado's wreckage.

No matter what type of operation you do . . . alone, with a partner, with your family or a large group . . . whether you use c.w. or phone . . . if the weather is cold, hot, wet or windy . . . this weekend is sure to be remembered as the amateur event of the year. Where else can you get the excitement of a contest, the fun of a picnic, the comradeship of a hamfest and the satisfaction of public service, all in one package?

## CITIZENS BAND

The Citizens' Band isn't really our baby, but our correspondence shows that many hams are interested in — and some already have licenses for — the Class D band at 11 meters. In this connection, we feel a couple of items are worthy of mention.

First, an amateur license does not authorize you to make any adjustments or tests during or coincident with the installation, servicing or maintenance of Citizens' Band equipment which could result in improper operation; a second-class commercial ticket is required. It may seem a little odd that we can do anything which needs to be done on a 10-meter kilowatt and yet have to leave the 11-meter five-watters alone, but that's how the rules read! It is true that crystal-controlled rigs do not have to be type-approved, but they should be checked out under the supervision of a commercial op before being put into service.

Second, though the rules do not now specifically prevent licensed Citizens stations

(Continued on next page)

(Continued from page 9)

from calling CQ on 11, FCC had no intention of providing for amateur-type operation on the band. The rules specify "short distance radio communications." Also, the regs require that all communications be as brief as possible; the license itself points out that the band is a mammoth party line and licensees must respect the rights of others who want to use the 22 common channels. If licensees continue trying to work all states and carry on ragchews on the band, it is likely that FCC will tighten up the regs, to the detriment of all who want to use 26.96-27.23 Mc. under the present flexible rules. One further caution: Citizens stations may work only each other; contact with amateurs, here or overseas, is not permitted.

### OUR COVER

Our cover this month is a gentle reminder of the coming Field Day, and it shows part of the set-up at California's Aerojet Radio Club (K6CLZ). Check back on the report of last year's Field Day by reading the story on page 46 of December *QST*, read the rules in this issue on page 64, and then get *ready!*



(See page 47)

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

- June 19-21 — ARRL National Convention, Galveston, Texas
- July 4-5 — Pacific Division, San Jose, Calif.
- July 21-26 — Southwestern Division, Pasadena, California
- August 15-16 — Pacific Div., Honolulu
- August 22-23 — Central-Midwest Divisions, St. Louis, Mo.
- September 5-7 — Maritime Provinces Convention, Halifax.
- September 5-6 — N.E. Division, Hartford
- October 3-4 — Roanoke Division, Richmond, Va.



Helpful ham Edward Trombley, WBCAM, of Saginaw, Mich., (left) received the 1958 Cosmo Calkins Memorial Award at the Grand Rapids ARRL convention. Currin L. Skutt, WBFSZ, presented the award. Trombley, who spends hours helping new amateurs, holds daily code practice on 160 meters. Last year, he was net control for 100 straight days for the Upper Michigan Weather Net.

## ARRL PACIFIC DIVISION CONVENTION

San Jose, Calif. — July 3-5

The Associated Radio Clubs of Greater San Jose proudly extends an invitation to all amateurs to attend the Pacific Division Convention at San Jose, California on July 3, 4 and 5. Activities will include something of interest to everyone and technical talks by leading amateurs in all phases of amateur radio will be presented. The major speaker will be Goodwin L. Dosland, W0TSN, president of ARRL.

Convention headquarters will be the Hotel St. Claire and reservations can be made through the convention committee. The large number of motels in the San Jose area also offer facilities for amateurs who like to attend conventions in the "western" style. A special ladies program will be held on Saturday July 4. Various group breakfasts will be held Sunday morning July 5, including mobile groups, various traffic nets, s.s.b. groups, and v.h.f. minded amateurs. Main feature of the convention will be a steak barbecue, complete with all the trimmings, also on Sunday. Transmitter hunts will be held to test the skill of "radio snoopers."

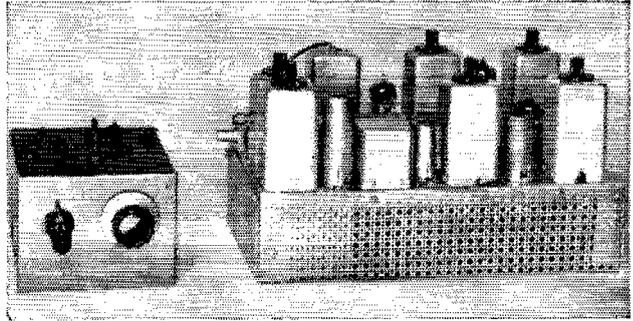
Ticket cost of \$7.50 will include admission to all convention sessions, ROWH initiation, Saturday evening dance, and entertainment, and the Sunday barbecue. Deadline for pre-registration is June 20 and reservations should be sent to Associated Radio Clubs for Greater San Jose, P. O. Box 6, San Jose, California.

Come to San Jose for wonderful "ham" time.



# Mobile S.S.B. Transceiver

The variable-frequency crystal oscillator (VXO) is at the left. The s.s.b. exciter chassis at the right contains all circuits except the audio amplifier used in receiving. Most of the tuned circuits are housed in shield cans taken from an ARC-5 receiver.



## High-Frequency Surplus-Crystal Filter in a 21-Mc. Car Station

BY BENJAMIN H. VESTER,\* W3TLN

*Here is a mobile s.s.b. station with common frequency control for transmitting and receiving, using an 8550-kc. crystal filter for sideband separation. The filter uses FT-243 surplus crystals as described by the same author in January QST. Liberal use of components from ARC-5 equipment keeps the cost within practically everyone's range.*

*This article covers the exciter and receiver. The final amplifier and power supply are conventional in design, so have not been included in the description.*

ONE doesn't have to listen much to the s.s.b. portions of the bands these days to spot the popularity of two very nice-sounding rigs, the HT-32 and the KWM-1. Since I had been planning to build an s.s.b. rig for the car for some time, I decided to combine some of the features of both into a mobile transceiver. W3HEC, a local buddy, had been toying with the idea also, so we argued a number of ideas back and forth and each came up with a transceiver design. Dan's design is somewhat more sophisticated (at the expense of a few more tubes) and covers two bands. I settled on one-band operation with the rig being built so I have the option of using plug-in coils for other bands if desired later on. VOX was omitted since I planned to use a hand-held mike anyway.

The advantages of using a high-frequency i.f. for a single-conversion receiver have been adequately pointed out by Goodman;<sup>1</sup> some-

what less has been said about single-conversion transmitters. The same advantages accrue, however; fewer "birdies," better linearity, and simpler circuitry, among others. Having been fortunate enough to find out how to make pretty decent high-frequency crystal filters from the surplus FT-243 crystals,<sup>2</sup> I found it possible to make almost the entire transceiver from parts in the junk box with essentially no cash outlay. The 15-meter band was chosen as the ideal mobile s.s.b. band to start on, since it hasn't yet been overrun with kilowatts. Also, the level of activity is good during the day and evenings.

It might be well to look over the block diagram of the unit before going into the circuit details. Fig. 1 on the next page shows the layout. On receive, the cascode 6BK7 feeds a 6BA7 mixer, the 21-Mc. signal being heterodyned down in this mixer to pass through the crystal filter at 8.55 Mc. The gain up to this point is kept low so there will be a minimum of cross-modulation from stations outside the filter passband. The filter is followed by two low-gain i.f. stages which feed into a product detector. The carrier reinsertion for this stage comes from the same oscillator that will later be used for generating our s.s.b. transmitter signal. This is really a very conventional single-conversion receiver; the main care taken is to keep the signal levels down, up to the final detector.

On transmit, a relay contact switches B+ off the tubes which are used for receive only and applies B+ to the transmit-only tubes. Since we have a fair amount of gain at the 8.55-Mc. i.f. frequency, we can generate the s.s.b. signal at a very low level. A 4-diode ring modulator is used, the level at the modulator being low enough so that it can be fed directly with a carbon mike. The unwanted sideband is eliminated by

\* 601 Wallerson Road, Baltimore 28, Md.

<sup>1</sup> Goodman, "What's Wrong With Our Present Receivers?", *QST*, Jan., 1957.

<sup>2</sup> Vester, "Surplus-Crystal High-Frequency Filters," *QST*, Jan., 1959.

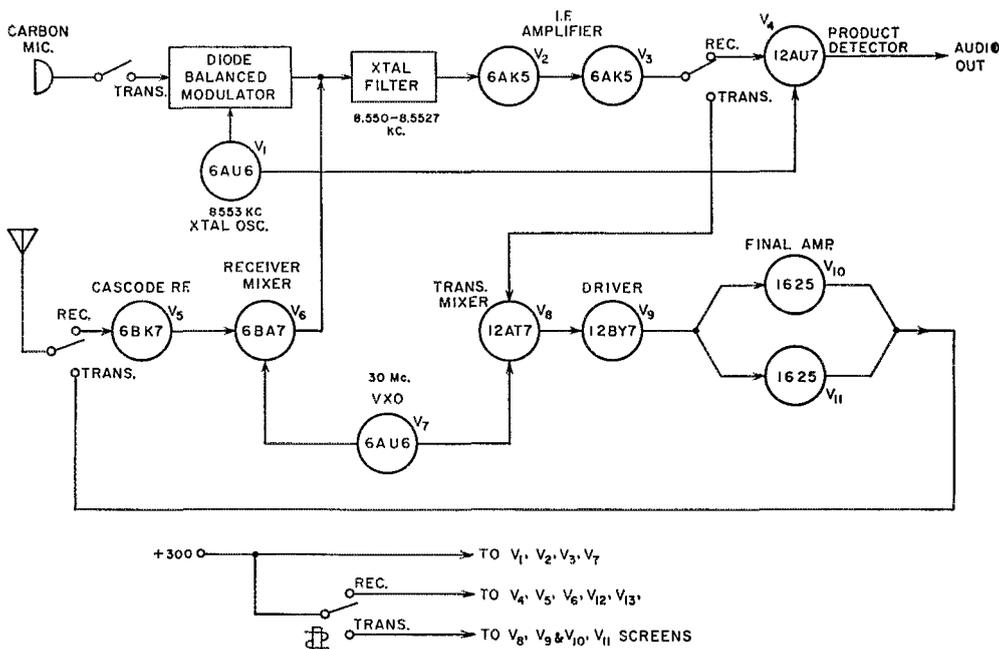


Fig. 1—Block diagram of the transceiver. The final amplifier (1625s) is not included in the accompanying description, nor are details of send-receive switching discussed.

the crystal filter, and the same two i.f. stages are used to get the signal up to a level sufficient to drive the transmit mixer. This is a cathode-coupled 12AT7 mixer, the heterodyne signal being provided from the same v.t.o., which was used for the receiver mixer. This, quite obviously, gives us an output signal which is exactly on the same frequency as that on which we were receiving. The 12BY7 driver amplifies the signal up to a level sufficient to drive the final tubes.

The only really serious design problem posed by this block diagram is the v.f.o. Those of you who have tried to build a v.f.o. stable enough for home-type s.s.b. undoubtedly can appreciate the problem of building one that will stay put in a bouncing car with the battery voltage roaming up and down. Fortunately, W3BWK has come up with a technique which solves this problem.<sup>3</sup> We happened to have a 30-Mc. harmonic-cut crystal (10-Mc. fundamental frequency) in the junk box which allowed itself to be pulled in frequency (using W3BWK's VXO circuit) just enough to cover the upper 50-60 kc. of 15 meters.

A few quick calculations will show you that all but one of the spurious images and harmonics lie far away from the 15-meter band, which is quite fortuitous since the choice of frequencies was based on the contents of my junkbox. The exception is that the VXO circuit does have a small amount of second harmonic (i.e., 20 Mc.) present. A 30-Mc. double-tuned circuit was used between the VXO and the mixers it feeds, this adequately suppressing the 20-Mc. signal. The

VXO was also placed in a separate box, which further enhanced suppression of the 20-Mc. signal. Most of the other interstage coupling circuits were made single-tuned for simplicity. This is one of the advantages of single conversion with a high-frequency i.f.—the double-tuned selectivity just is not required.

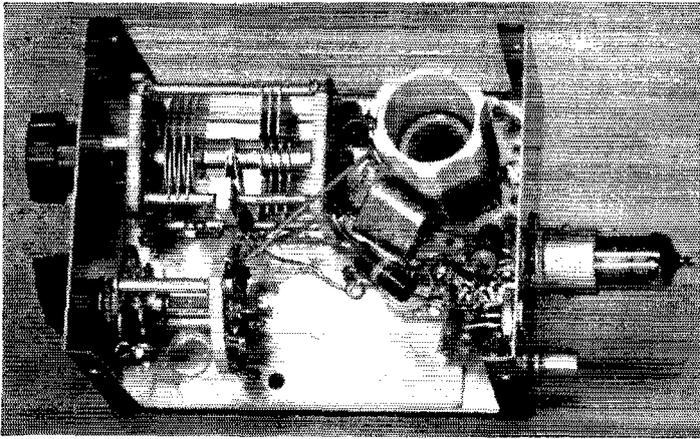
### Circuit Details

A schematic of the main unit is shown in Fig. 2. The 8553-ke. carrier crystal oscillator is a conventional Pierce circuit. Capacitor  $C_x$  is used only if necessary. It will pull the frequency of the oscillator down and can be used to place the carrier at just the correct spot on the skirts of the sideband filter. I was lucky enough to etch my crystal to just the right frequency and was able to omit  $C_x$ . The crystal oscillator coil, tuning capacitor, and the crystal were all stuffed into a Command-Set i.f. can to prevent any radiation of carrier around the modulator.

The balanced modulator is a modification of a circuit recommended by Collins Radio for use with their filters. There are quite a few balanced modulator circuits around and if you would prefer to use two diodes instead of four, you can use one of the circuits in the ARRL *Handbook*. The balanced modulator parts were also stuffed into a Command-Set i.f. can, further to contain the carrier leak-through. The 180- $\mu$ f. mica button capacitors in the Command-Set cans were used throughout the rig as coupling capacitors. Any value in the neighborhood of 200-250  $\mu$ f. will be satisfactory.

A resistive isolating pad is placed between the balanced modulator and the crystal filter to

<sup>3</sup> Shall, "VXO—A Variable Crystal Oscillator," *QST*, Jan., 1958.



Inside the VXO unit.  $L_9$  is the coil on the ceramic form.  $L_{10}$  is in the lower right corner near the tube socket, and  $C_{10}$  is on the chassis beneath the resistor and crystal.

terminate the filter input properly and to isolate the filter from the nonlinear impedances of the balanced modulator. The crystal filter itself consists of a pair of back-to-back half-lattice circuits, a terminating resistor of 510 ohms having been experimentally determined to give the flattest passband (only  $\pm \frac{1}{2}$  db. ripple with the crystals I had). The article referenced in Footnote 2 gives all the details on how to construct this filter.

The 6AK5 i.f. stages are conventional, their tank circuits being made from Miniductor stock and mounted in Command-Set i.f. cans for shielding. The first 6AK5 has such a low grid-circuit impedance that it doesn't require neutralizing. However, the second one is neutralized using the capacitive bridge technique. We happened to have a piston-type glass capacitor to neutralize this with; a twisted-pair "gimmick" would work just as well. The second i.f. amplifier also has its gain cut by  $R_1$  to a level which will just drive the final to saturation on voice peaks. You may prefer to make  $R_1$  a potentiometer.

The output of the second i.f. amplifier has to be switched from one tube to another, and still have its tank circuit remain resonant. Shielded leads are used to the relay,  $K_1$ , and the lengths of these leads are trimmed until resonance is obtained for both positions of the relay. It is important that this relay be placed as close to the circuit as possible and the shielded lead lengths kept down to a few inches.

A 12AT7 cathode-coupled circuit was used for the transmit mixer since it can handle relatively large signals with good linearity. A 6BA7 mixer was tried here but I couldn't get enough output from it with the available signal levels. The hot terminal of the grid coil,  $L_{13}$ , for  $V_{8A}$  should be arranged to be as close to where it feeds the 12AT7 as possible. I didn't have enough chassis space to put this coil in a separate i.f. can; however, it would undoubtedly enhance the over-all stability of the unit to do this.

The 12BY7 driver stage is run Class A. This is a very hot tube in Class A and special care

must be taken to neutralize it properly. I used a twisted pair gimmick for the neutralizing capacitor here. The final tubes are run Class AB<sub>1</sub> to avoid the drive difficulties which occur with AB<sub>2</sub> operation. They are also neutralized for maximum stability.

I have always liked to place the final amplifier tubes in a separate box in my mobile rigs, so they can be mounted right at the base of the whip (front-fender mounted). There is probably no real efficiency advantage to this arrangement, but putting the final in a separate shielded box does greatly enhance the over-all stability—believe me, a little regeneration in an s.s.b. rig can really wreck you. In any case, the final should be completely shielded from the low-power stages. (One additional advantage of breaking the unit into several boxes is that it will fit into odd spots behind your automobile dashboard much more nicely.)

The variable oscillator that supplies both transmit and receive functions is a copy of Shall's original VXO circuit<sup>3</sup> with only slight modifications. By tapping the coil which goes in series with the crystal you can tune different portions of the band and get a very slow tuning rate without any vernier tuning dials. My only purpose in using the tapped coil was to "make do" with the parts available in the junk box—if you buy a VXO-cut crystal per W3BWK's<sup>3</sup> advice, you can undoubtedly cover the entire band without requiring switching. Since the VXO is the only portion of the rig which must be accessible in regular operation, it is mounted in a separate Minibox which is presentable enough looking to pass the XYL's inspection.

The receiver front end uses a cascode r.f. stage. The only thing unique about this is the fact that it is the only stage in the receiver to which gain control is applied. A stage like this has a fairly large range of gain control that appears adequate to handle all the signals I have heard so far. Of course, there is some sacrifice in noise figure when the gain control is cut in for louder signals—but who cares about noise figure when the signal is

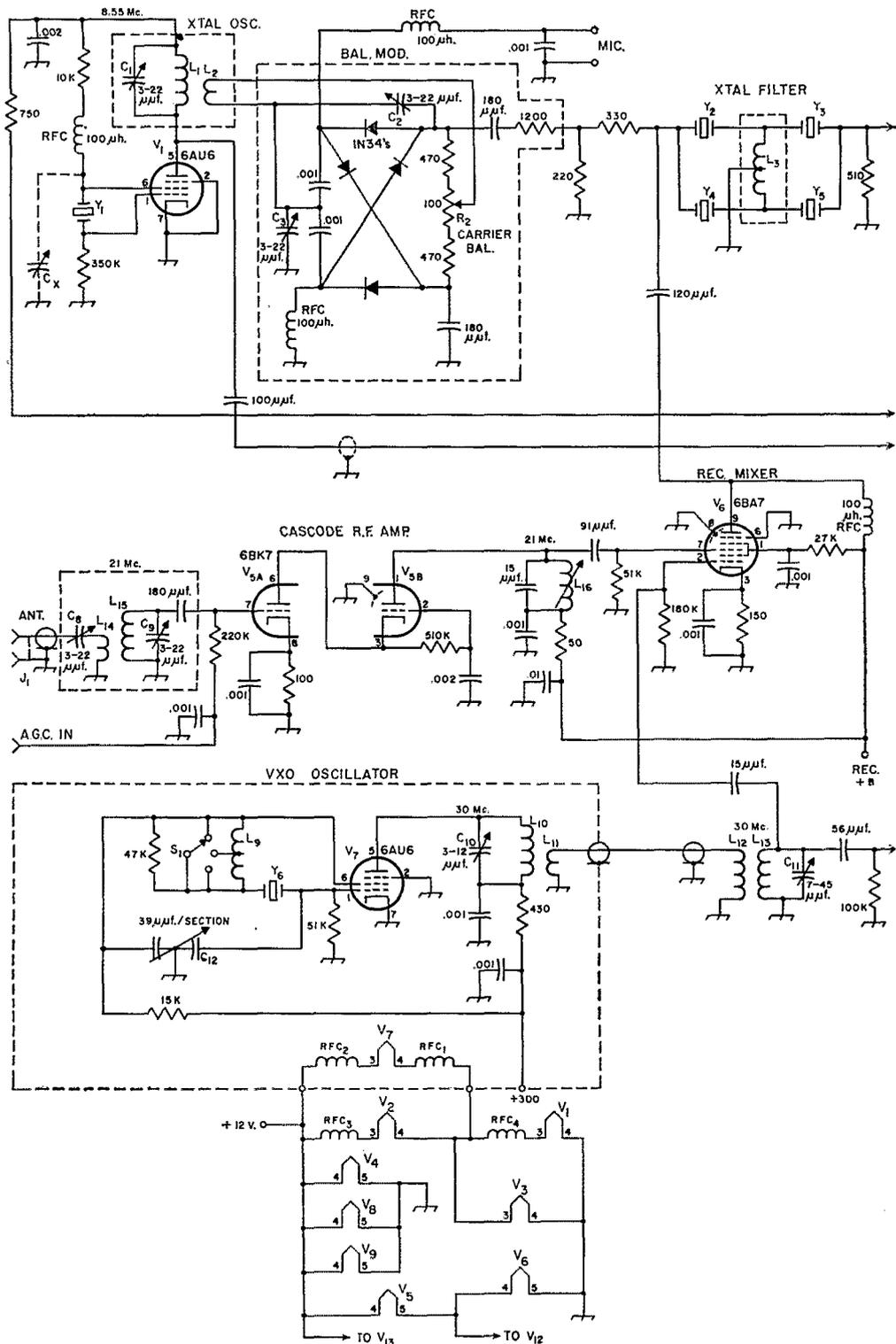
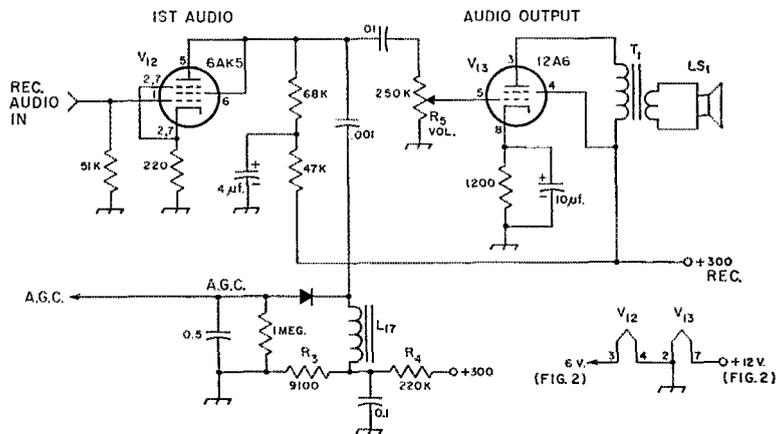




Fig. 3—Audio and a.g.c. circuits. Capacitances are in  $\mu\text{f}$ , resistances are in ohms, resistors are  $\frac{1}{2}$  watt. Capacitors with polarities indicated are electrolytic; others may be paper or ceramic as convenient.



L<sub>17</sub>—App. 3 henrys (Command-Set choke) or high-impedance winding of small audio transformer.  
 LS<sub>1</sub>—P.m. speaker  
 R<sub>3</sub>, R<sub>4</sub>—See text.

R<sub>5</sub>—0.25-megohm control.  
 T<sub>1</sub>—Universal output transformer, pentode plate to voice coil.  
 Diode in a.g.c. rectifier should be high back resistance type.

loud? The alternative to this is to apply a.g.c. to the i.f. stages too; this complicates the transmit-receive switching, however, since the gain required for transmit will be different from the receive gain.

The audio portion of the rig was put in a separate box since I intend to replace it some time in the future with a transistor amplifier. The schematic used is shown in Fig. 3. This is a standard audio amplifier and was built around tubes I had in the junk box. Automatic gain-control voltage is developed from the audio output of the first amplifier tube. The circuit used gives good "fast-make slow-recovery" a.g.c. action. Resistors R<sub>3</sub> and R<sub>4</sub> were chosen to give a delayed a.g.c. action so that there is no a.g.c. voltage developed on noise alone and on weak signals.

The circuits for the final amplifier and the transistor power supply used to power the rig are just like the ones which have appeared in *QST* and the *Handbook*, so we won't clutter up the pages here on them.

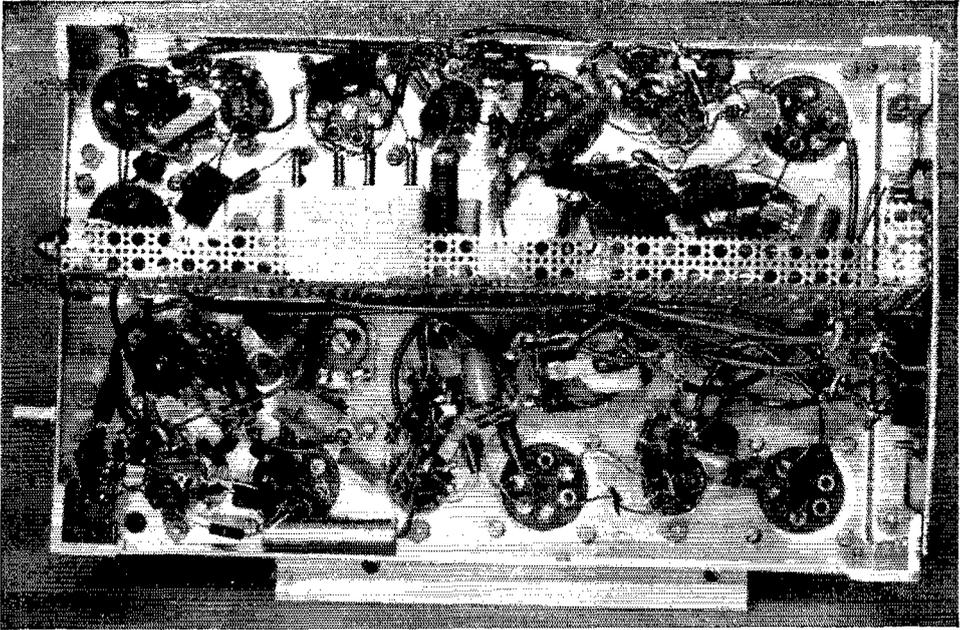
The constructional features of the unit can be seen from the illustrations. The main unit was built on two long narrow chassis (Seezak chassis stock, 3 by 10 inches) which were then bolted together. This allows good shielding and isolation with a minimum of effort. Shielded wire was used for all connections except the short r.f. leads between stages.

### Alignment

There is very little alignment difficulty. The first step is to open the filament or B+ leads to the stages which must be neutralized (V<sub>3</sub>, V<sub>9</sub>, V<sub>10</sub>, V<sub>11</sub>). Then apply power to the remaining stages. The station receiver S meter can be used for essentially all of the alignment. Couple the receiver lightly to the coax output of the final (or the 12BY7) and tune in the VXO frequency; C<sub>10</sub> and C<sub>11</sub> are then peaked for a maximum reading. Now switch down to 15 meters and tune in the carrier. You can set R<sub>2</sub> to one end of its range to assure that some carrier will come through.

- C<sub>1</sub>-C<sub>9</sub>, inc.—3-22- $\mu\text{f}$ . trimmers from ARC-5 i.f. transformers.
- C<sub>10</sub>—3-12- $\mu\text{f}$ . ceramic trimmer.
- C<sub>11</sub>—7-45- $\mu\text{f}$ . ceramic trimmer.
- C<sub>12</sub>—35- $\mu\text{f}$ . per-section variable.
- C<sub>13</sub>, C<sub>14</sub>—Neutralizing capacitor; see text.
- C<sub>X</sub>—3-12  $\mu\text{f}$ . ceramic trimmer (see text).
- J<sub>1</sub>, J<sub>2</sub>—Coaxial connectors, chassis mounting.
- K<sub>1</sub>—D.p.d.t. relay, 12-volt coil (operated by send-receive switch).
- L<sub>1</sub>—25 turns No. 34 on  $\frac{3}{8}$ -inch diam. form (ARC-5 i.f. transformer form). Adjust to resonate at 8550 kc. with C<sub>1</sub> and the shielded lead to V<sub>12</sub>.
- L<sub>2</sub>—8 turns wound on same form as L<sub>1</sub>.
- L<sub>3</sub>—Bifilar winding on toroidal ferrite core, total inductance 50  $\mu\text{h}$ . (See footnote 2).
- L<sub>4</sub>—40 turns No. 24,  $\frac{1}{2}$ -inch diam., 32 t.p.i. (Miniductor 3004).
- L<sub>5</sub>—35 turns same as L<sub>4</sub>.
- L<sub>6</sub>—22 turns same as L<sub>4</sub>, tapped 8 turns from bottom.
- L<sub>7</sub>—18 turns same as L<sub>4</sub>.
- L<sub>8</sub>—3 turns same as L<sub>4</sub>, spaced 2 turns from L<sub>7</sub>.

- L<sub>9</sub>—27 turns No. 28 enam. on  $1\frac{3}{8}$ -inch diam. form, 24 t.p.i. (BC-458 oscillator coil form). Tapped at 13th turn. Coil should be adjusted to function with crystal used in VXO.
- L<sub>10</sub>—13 turns same as L<sub>4</sub>.
- L<sub>11</sub>—7 turns same as L<sub>4</sub>, spaced 3 turns from ground end of L<sub>10</sub>.
- L<sub>12</sub>—7 turns same as L<sub>4</sub>.
- L<sub>13</sub>—11 turns same as L<sub>4</sub>, spaced 3 turns from ground end of L<sub>12</sub>.
- L<sub>14</sub>—19 turns same as L<sub>4</sub>.
- L<sub>15</sub>—19 turns same as L<sub>4</sub>, spaced 3 turns from L<sub>14</sub>.
- L<sub>16</sub>—16 turns No. 34 on  $\frac{3}{8}$ -inch diam. slug-tuned form (CTC LS-9).
- R<sub>1</sub>—See text.
- R<sub>2</sub>—100-ohm control.
- RFC<sub>1</sub>-RFC<sub>4</sub>, inc.—No. 30 enam. close-wound full length on 2-watt resistor.
- Y<sub>1</sub>—8553-kc. crystal.
- Y<sub>2</sub>, Y<sub>3</sub>—8550-kc. crystal.
- Y<sub>4</sub>, Y<sub>5</sub>—8551.5-kc. crystal.
- Y<sub>6</sub>—30-Mc. crystal (for VXO).



The various tubes and shield cans in this view can be identified by reference to Fig. 4,  $V_1$  being at the upper left. The filter crystals, confined by the aluminum strip just above left center, are soldered directly into the circuit.  $V_1$  is not visible in this photograph since it is mounted inside the can (upper left corner) containing  $C_1$ ,  $L_1$  and  $L_2$ . The Miniductor coil at left center in the lower section is  $L_{12}L_{13}$ . The send-receive relay,  $K_1$ , is to the right of center in this same section, just below the perforated dividing partition. Components are wired in for short leads. Power and microphone connections are through the octal socket on the right-hand wall.

Peak the i.f. transformers and all the other transmitter tuned circuits ( $C_1$ ,  $C_4$  through  $C_7$ ) for a maximum reading. To neutralize  $V_3$ , adjust its neutralizing capacitor to give a minimum S-meter reading. After it is neutralized, voltage should be applied to  $V_3$  to bring the carrier back up to a usable level. The neutralizing in the 12BY7 and the final is done similarly. Now that all the stages are operating properly, alternately adjust  $R_3$ ,  $C_2$  and  $C_3$  to null the carrier signal out. This completes the alignment of the transmitter.

The receiver front-end alignment can be done by the usual "tune for maximum signal" technique.

To get the 8553-ke. crystal oscillator on the proper frequency, leave the unit in the receive

condition, but connect the microphone. You will now be able to hear in the receiver just what your transmitted signal will sound like on the other end. Adjust  $C_x$  until your voice sounds most natural. The frequency will probably be about 200-500 cycles above the edge of the filter pass-band.

### Modifications

As was pointed out earlier, the choice of the VXO and filter frequencies was based on the contents of my junk box. Several of us who have built the FT-243 filters have found little difference in results from 5 Mc. up to 8.5 Mc., so you can choose frequencies which fit the VXO crystal

(Continued on page 164)

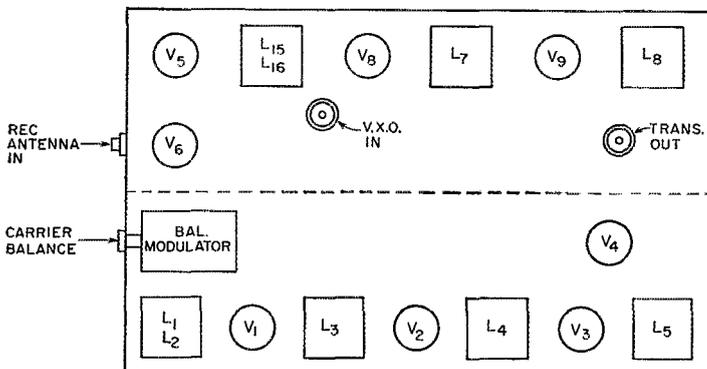


Fig. 4—Layout diagram of the top of the exciter chassis. The lower edge in this drawing is the front as seen in the front view of the unit.



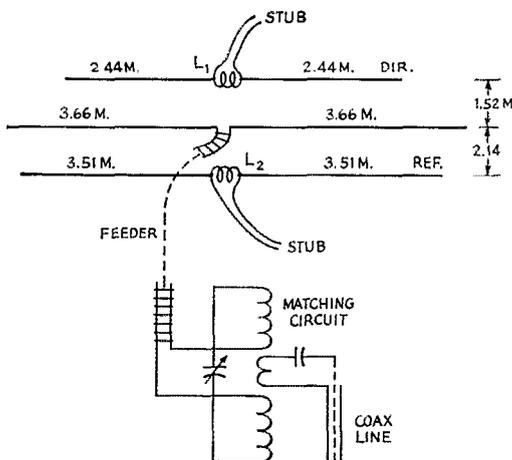


Fig. 1—The basic arrangement of the G4ZU antenna. Open-wire line is used from the driven element to the matching circuit.

14 Mc. is inductive and thus compensates for the capacitive reactance of the series circuit on that frequency. On 28 Mc. the opposite effect occurs and the capacitive input impedance of the feeder compensates for the inductive reactance of the series circuit.

Consequently, it is sufficient to couple a link of a few turns to the coil of the series circuit and to connect the link to a coaxial cable. The cable may be of any length since it will operate with a low standing-wave ratio. G4ZU has recommended a feeder length of about 39 feet for optimum operation.

A beam of this type was built and installed at ON4BX in December, 1956. It is mounted on a 55-foot mast, so the series circuit "matching box" is located about 16 feet from the ground. A coaxial cable about 160 feet long connects it to the transmitter. The directive patterns shown in Fig. 2 were measured at rather short range, which perhaps explains the absence of a null on 14 Mc. A complete description of the antenna was given in the February, 1957 number of the bulletin *QSO-CQ* of the Belgian Amateur Union.

### Modifications

However, measurement of the s.w.r. on the coaxial cable showed that the set-up was not perfect and that it should be possible to improve it. Exact compensation of the feeder input impedances by the series circuit requires taking into account the  $L/C$  ratio of the circuit and the length of the tuned feeder, as well as the coefficient of coupling and the number of turns on the coil connected to the coaxial cable. In my case, it was rather difficult to make adjustments of the matching circuit with the box 16 feet above the ground. The installation of a relay for selecting a variable capacitor for each band is one easy solution which showed itself experimentally to be effective for improving the s.w.r. However, after it had worked for a few months I preferred to give it up and to look experimentally for a means of totally eliminating the matching box.

It should be possible to find a feeder length such that the impedance at the input terminals would be resistive on the three bands. A series of impedance measurements was made over 10 to 30 Mc. on feeders of different lengths. These measurements were carried out on the G4ZU beam which ON4NO had built in the meantime, because its feeders were easier to reach than on my 55-foot pole. I thank him here for having "loaned" his beam for the measurements. Moreover, the results may be applied to any G4ZU whatever.

The feeders and the two halves of the driven element are considered as a transmission line open at the two ends. The length of this line is equal to the electrical length of the feeder increased by the electrical length of half the driven element.

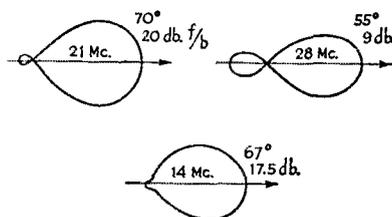


Fig. 2—Sketch of directive patterns measured by ON4BX on the original version of the antenna.

The measuring equipment consisted of an h.f. General Radio type 1606-A bridge, an h.f. General Radio type 1001-A generator, and a Super-Pro communications receiver as a null indicator. The corrections necessary because of the effect of the bridge connections have been calculated. The accuracy of the measurements was checked by measuring the resonant frequencies of a feeder having an electrical length of 21.6 meters (3.66 meters for the driven element plus a 17.94-meter feeder). This length is not resonant in the amateur bands and served only for a verification of the equipment. The following relation must be satisfied:

$$\text{Electrical length} = (2n + 1) \frac{\lambda}{4}$$

$$(n = 0, 1, 2, 3, \text{etc.})$$

since we are looking for the current loops. The resonances found were 11.0, 17.5, 23.2, and 29.8 Mc., as shown in Table I. The deviations cor-

Table I

Freq. in Mc.	$n$	Electrical Length	Difference in Meters	Difference in Per Cent
11.0	1	$\frac{3\lambda}{4} = 20.45 \text{ m.}$	- 1.15	- 5.3
17.5	2	$\frac{5\lambda}{4} = 21.42$	- 0.18	- 0.8
23.2	3	$\frac{7\lambda}{4} = 22.62$	+ 1.02	+ 4.8
29.8	4	$\frac{9\lambda}{4} = 22.65$	+ 1.05	+ 4.85

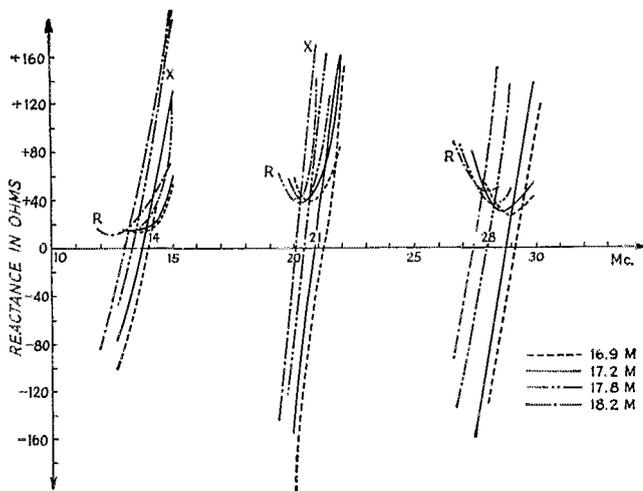


Fig. 3—Results of impedance measurements on four different lengths of open-wire lines.

respond to the maximum error of the equipment.<sup>1</sup>

A set of feeder calculations for 14, 21, and 28 Mc. was next made, as shown in Table II. It can be seen that with a length of about 17 meters (approximately 56 feet) it is possible to find a compromise such that the impedance will be essentially resistive on the three bands. We made systematic measurements of impedances of several feeders of lengths varying from 18.44 to 16.9 meters. The results in four cases are shown in Fig. 3.

The length of 16.9 meters (55 feet 6 inches) evidently effects the compromise looked for. Since this length includes half the length of the driven element, the feeder itself must measure 16.9-3.66 or 13.24 meters in electrical length. There remains the problem of matching the feeder to the coaxial line. In my case, I simply connected the coaxial directly to the feeder without using a balun. I know that purists will not think well of this procedure, but as a matter of fact no irregularities in the directive patterns have been observed and they have the proper symmetry. It is probable that the effect of this unbalanced connection is minimized because of the length of the open-wire feeder and that it is nonexistent in the proximity of the driven element.

Fig. 4 shows the impedance measured at the input terminals of the 16.9-meter (including antenna length) feeder.

It is possible to find a compromise characteristic impedance such that the s.w.r. will stay within acceptable limits on the three bands, except perhaps at the low end of the 28-Mc. band. It simply remains to choose a combination of coaxial cables in multiple that will bring about the impedance compromise at a minimum cost. Two 50-ohm cables in parallel offer a good compromise. Fig. 5 shows the s.w.r. which one must expect with lines of various values of characteristic impedance.

<sup>1</sup> End effects and the effect of insulators on propagation velocity, which destroy the exact harmonic relationship of natural frequencies of lines, also contribute to the discrepancies. The author evidently has included these in the overall error. — *Ed.*

Table II

<i>n</i>	$F = \frac{\lambda}{4}$	14 21.43	14.3 20.98	21 14.28	21.3 14.08	28 10.72	30 Mc. 10 Meters
0	$\frac{\lambda}{4}$	5.36	5.25	3.57	3.52	2.68	2.5
1	$\frac{3\lambda}{4}$	16.07	15.7	10.71	10.56	8.04	7.5
2	$\frac{5\lambda}{4}$	26.8	26.2	17.85	17.6	13.4	12.5
3	$\frac{7\lambda}{4}$	37.5	36.7	25.0	24.6	18.8	17.5
4	$\frac{9\lambda}{4}$	48.2	47.2	32.1	31.7	24.1	22.5
5	$\frac{11\lambda}{4}$	58.9	57.7	39.3	38.7	29.5	27.5
6	$\frac{13\lambda}{4}$	69.7	68.2	46.4	45.8	34.8	32.5
7	$\frac{15\lambda}{4}$	80.4	78.7	53.6	52.8	40.2	37.5
8	$\frac{17\lambda}{4}$			60.7	59.8	45.6	42.5
9	$\frac{19\lambda}{4}$			67.8	66.9	50.9	47.5
10	$\frac{21\lambda}{4}$			75.0	73.9	56.3	52.5
11	$\frac{23\lambda}{4}$			82.1	81.0	61.6	57.5
12	$\frac{25\lambda}{4}$					67.0	62.5
13	$\frac{27\lambda}{4}$					72.5	67.5

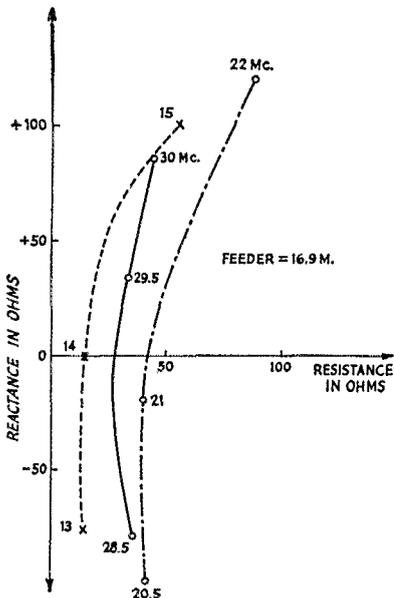


Fig. 4—Measurements on a 16.9-meter (electrical, including driven element) feeder length. These data were used in calculating the standing-wave ratios shown in Fig. 5.

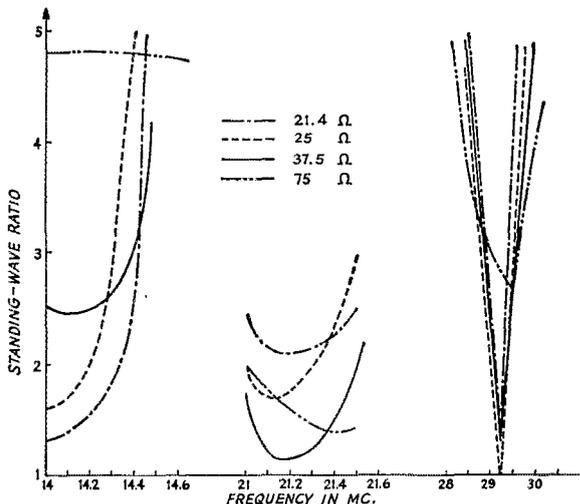


Fig. 5—Standing-wave ratios to be expected with coaxial lines of various values of characteristic impedance. The 37.5-ohm line consists of two 75-ohm cables in parallel; the 25-ohm line is two 50-ohm cables in parallel, and the 21.4-ohm line is two 75-ohm and one 50-ohm in parallel.

It is certain that the choice of the characteristic impedance of the line is important only if its length is relatively great. Let us note that in any case the use of the coaxial cable is necessary only if the distance requires it, and that a direct connection between the open feeder and a pi-network tank can be used successfully. The feeder also can be connected directly to the output link of a parallel-tuned plate tank.

All these possible variants using the feeder electrical length of 13.24 meters (approximately 43 feet) are featured by a low-impedance load, almost resistive, on the p.a. circuit.

### Conclusion

This version of the G4ZU beam has been used at ON4BX for several months without using the matching box. In less than 15 months it has permitted me to increase the number of countries worked for the phone DXCC from 85 to 182.

Its advantage is the ease of installing the feeders and the total absence of all tuned circuits from the antenna to the transmitter. The experimental results agree with the semi-theoretical determinations, and the deviations remain within the total maximum error which, taking everything into consideration, is probably of the order of 15 per cent.

QST

## Strays

The Denver Radio Club, Inc., has recently brought out a directory of Colorado hams, with three principal sections. The first is a master list of the 1700 hams in the state, alphabetically by call, and including addresses and telephone numbers. The second section shows amateurs in the Denver metropolitan area, alphabetically by name. The third lists amateurs outside Denver, alphabetically by name, and with a town number code making it easy to locate hams in a particular city. The *Colorado Ham Directory*, 66 pages with paper covers, can be obtained for \$1 from the Denver Radio Club, Inc., Box 356, Denver 1, Colorado.

Just another gentle reminder. Field Day is coming up, and the rules are on page 64.

### Back Copies and Photographs

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# Audio Compression with Transistors

## Simple Unit for Improving A.M. and S.S.B. Performance

BY EDWARD ARVONIO,\* W3LYP

*As the author points out, a compressor speech amplifier offers a means of increasing the average modulated output of a phone transmitter. The use of transistors in the unit described here provides compactness and simplicity impossible to approach with tubes.*

THE use of compressor amplifiers is not new. But for those who have never made their acquaintance, I will try to explain what they do and the advantages they offer.

Most of us are familiar with the oscilloscope picture of the normal voice signal which shows a characteristic with occasional high peaks, but a large portion of which is at relatively low amplitude. In fact, the average level is only about 30 per cent of the maximum peak value. However, if the modulation level is set so that the average value results in 100 per cent modulation, overmodulation will occur on the peaks. To avoid this, the modulation level has to be set so that 100 per cent modulation occurs only on the peaks, which means that most of the time modulation is far below 100 per cent. Since maximum output occurs only at 100 per cent modulation, it follows that the maximum output capability of the transmitter is utilized only a small percentage of the time.

More complete use of the modulated amplifier's capability can be realized if the lower-amplitude portions of the speech signal, which prevail most of the time, can be raised so as to modulate the transmitter output 100 per cent, at the same time reducing the amplitude of the occasional peaks so as not to overmodulate.

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This is what the compressor amplifier does. It is essentially an audio amplifier with a.g.c. The stronger the input signal, the less the amplification will be. As a result, voice output from the transmitter is maximum most of the time rather than at only relatively infrequent intervals. Another advantage is that the operator does not have to be careful in holding his voice level constant, nor in the distance between his lips and the microphone. Without adjusting the level control, I can speak close to the microphone or back off as much as a foot without any variation in the peak power output or tripping of the voice-control relay. Operators who have voices with very little "talk power" will be especially benefited by using this device. Using the compressor is merely a matter of plugging the unit in between the microphone and the transmitter microphone jack.

Fig. 2 shows the circuit diagram of a compressor amplifier using transistors. The first and second transistors are conventional speech amplifiers with a nominal output of 0.1 volt. The output of the second stage drives the third transistor to saturation, producing a square wave output. This output is fed back through a

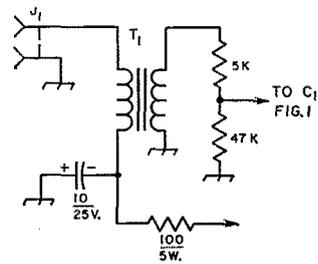
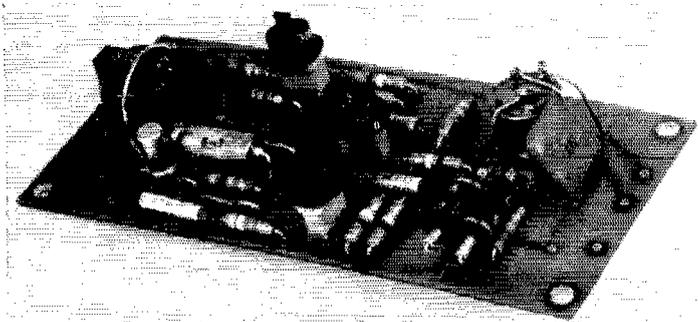


Fig. 1—Input circuit for carbon microphone. Capacitance is in  $\mu\text{f}$ .; resistance in ohms.

J1—Microphone connector.

T1—Microphone transformer.



The components of the transistor audio compressor are assembled on a  $2 \times 4$ -inch printed-circuit board. T<sub>1</sub> is at the left end, with CR<sub>1</sub> and C<sub>2</sub> slightly below and to the right. The transistors from top to bottom are Q<sub>1</sub>, Q<sub>2</sub> and Q<sub>3</sub>. The clipper diodes, CR<sub>2</sub> and CR<sub>3</sub>, are in the lower right-hand corner with the output connector above.

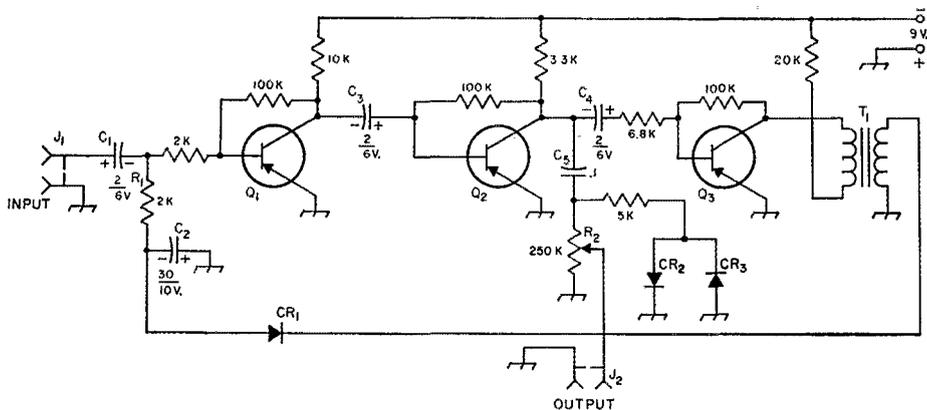


Fig. 2—Circuit of the transistorized compressor amplifier. Capacitances are in  $\mu\text{f}$ , resistances are in ohms, and fixed resistors are  $\frac{1}{2}$  watt.

$C_1, C_2, C_3, C_4$ —Ultraminiature electrolytic.  
 $C_5$ —Subminiature ceramic.  
 $CR_1$ —SG-22 or 1N138A silicon diode.  
 $CR_2, CR_3$ —1N48 germanium diode.  
 $J_1, J_2$ —Microphone connector.

$Q_1, Q_2, Q_3$ —2N188A transistor (see text).  
 $R_1$ —2000 ohms,  $\frac{1}{2}$  watt (see text).  
 $R_2$ —0.25-megohm potentiometer.  
 $T_1$ —Subminiature 1:3 interstage transformer.

1:3 transformer, diode rectifier, and time-constant network to the input of the first stage. The diode rectifies the output of the third stage and applies it as d.c. bias to the base of the first transistor, changing its gain in proportion to the level of the output signal. The time constant of the RC network following the diode is selected to control the bias at a syllabic rate. The value of  $R_1$  sets the compression level. With a value of 2000 ohms, compression starts at 0.5 mv. and the output will hold constant within 3 db. of maximum over an input change of 20 db.

The two diodes,  $CR_2$  and  $CR_3$ , and the 5K resistor  $R_2$  form a clipper circuit that clips transient peaks by about 2 db. Harmonic distortion at full output is 1 per cent from 300 cycles to 20,000 cycles. The attack time is 0.05 second, which is fast enough for good s.s.b. operation.

### Construction

A unit of this type lends itself well to printed circuitry,<sup>1</sup> although conventional wiring may be substituted, of course. The amplifier is assembled

<sup>1</sup>See Middleton & Stueber, "12AX7 Modulator Unit Utilizing Printed Circuit Techniques," *QST*, May, 1958.

on a board of epoxy material measuring 2 by 4 inches that will fit inside a  $5 \times 2\frac{1}{4} \times 2\frac{1}{4}$ -inch Minibox, along with the dry battery that powers the unit. The arrangement of components and the etched wiring pattern are shown in the photographs. Placement of parts is not highly critical. The transistor sockets are Cinch-Jones, or similar. Other components are of the subminiature or ultraminiature type.

Transistor units having a beta factor of 20 or more should be selected.<sup>2</sup> The type 2N188A is recommended, but some 2N107s, 2N109s or 2N188s will show sufficient gain.

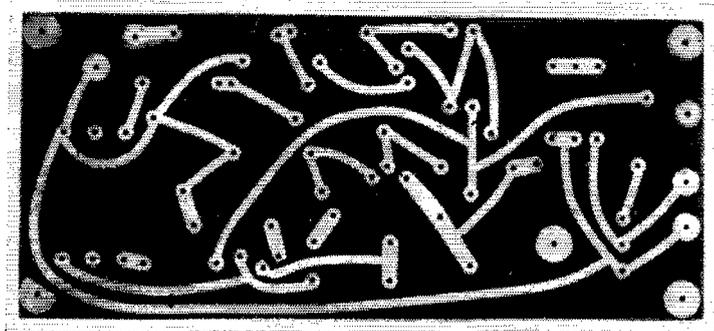
The unit will operate indefinitely from a 9-volt transistor battery having a diameter of about 1 inch and a length of less than 2 inches, such as the RCA V300, Burgess P6 or Eveready 226.

This unit can be used in other applications employing a microphone and audio system. When used with a p.a. system, it is no longer necessary to ride the gain control to compensate the difference in levels of a band and a vocalist, or to worry about audio feedback if someone screams into the microphone.

**QST**

<sup>2</sup>Priebe, "Checking Transistors," *QST*, April, 1958.

Bottom view of the printed-circuit board before mounting components. The upper edge of the board in this view corresponds to the lower edge in the preceding top-view photograph. Conventional wiring may be substituted.



# Simplified Break-In Control

## Receiver Muting and

## Side Tone without Relays

BY JEROME H. HORWITZ,\* W4HBO

This break-in system for blocked-grid keying systems makes use of the receiver's a.v.c. system for muting. Only a single dual triode, in addition to the t.r. switch, is required. In many cases, operating voltages can be taken from the transmitter, dispensing with the separate supply.

THE AUTHOR has long been interested in the advantages of c.w. break-in and, for about two years, had used a form of semi-break-in in which the v.f.o. and antenna relay were turned on with the first dot and held in for several seconds. The use of three relays in this circuit left much to be desired, however, as anyone who has ever tried operating with many relays banging and humming can attest.

The purchase of a new Heathkit Apache transmitter offered the possibility for a new control circuit, and it was decided to design and build same posthaste.

Several ideas had to be kept in mind in the design of this unit, which were as follows:

- 1) Utilization of the timed-sequence grid-block keying system supplied in the transmitter which, by the way, performed excellently.
- 2) No relays!
- 3) Electronic silencing of the receiver.
- 4) Electronic antenna change-over.
- 5) Ability to hear the transmitted signal in the receiver at reduced and variable gain.
- 6) Audio-tone keying monitor, independent of transmitter or receiver controls.

### Circuit

A look at the diagram of Fig. 1 will reveal that the circuit has three sections. The power supply is a bit unusual, because the center tap of the transformer is *not* grounded. The supply provides -105 volts for the muting and side-tone circuits and +105 volts for a t.r. switch. Back-to-back filament transformers with two half-wave selenium-rectifier power supplies could have been used instead, but all the parts in this circuit were on hand. It might be possible to "steal" the voltages from some existing piece of gear, but the negative voltage should be regulated to stabilize the bias circuits.

$V_{1A}$  is the receiver gain clamp. The negative keying voltage on its grid keeps it cut off with the key up. Closing the key grounds the grid at the same time that the transmitter is keyed. This allows the tube to conduct, and the negative drop across  $R_1$  is applied to the receiver a.v.c. line. The key-up voltage on Pin 3 (cathode) should be about 20 volts positive measured from Pin 1 (grid). If the keying voltage is too small, the tube will not cut off, and the receiver will be silenced all of the time. Moving the tap on the 100K potentiometer toward ground until the cathode is about 20 volts positive from the grid will correct this. (Note: It is obvious, of course, that this circuit can be used only in grid-block-keyed transmitters.)

$V_{1B}$  is a side-tone oscillator. It is keyed in the plate circuit. The 220K resistor  $R_4$  isolates the circuit from the audio grid in the receiver so that when the side-tone gain is turned down the receiver audio is not short-circuited to ground. The frequency of the side-tone oscillator can be changed by adjustment of the 5000-ohm potentiometer  $R_3$  in the cathode circuit. The tone can also be altered by changing the capacitance in shunt with  $R_3$ .

Antenna change-over is accomplished by an electronic t.r. switch. The actual circuit was taken from *QST*,<sup>1</sup> and since many good circuits have been described in the last year or so, the t.r. switch will not be discussed here.

### Construction

Construction is not critical, as long as the audio is kept away from the power supply. It is quite conceivable that room could be available to construct the unit right inside the transmitter, obtaining power from the transmitter power supplies.

It is desirable, however, to build the t.r. switch in a separate shielded box of some kind, and to filter the leads coming from it to prevent harmonic radiation.

### Installation

The installation of the unit is quickly accomplished as follows:

1) Plug the key lead from the unit into the transmitter key jack.

2) Connect the wire marked "Receiver A.V.C." in the schematic to some point on the receiver a.v.c. line. A good place is at the a.v.c. switch,

<sup>1</sup> Arvonio, "An Electronic Transmitter-Receiver Antenna Switch," *QST*, October, 1957.

\* 1650 Pelham Road, N.E., Atlanta 9, Georgia.

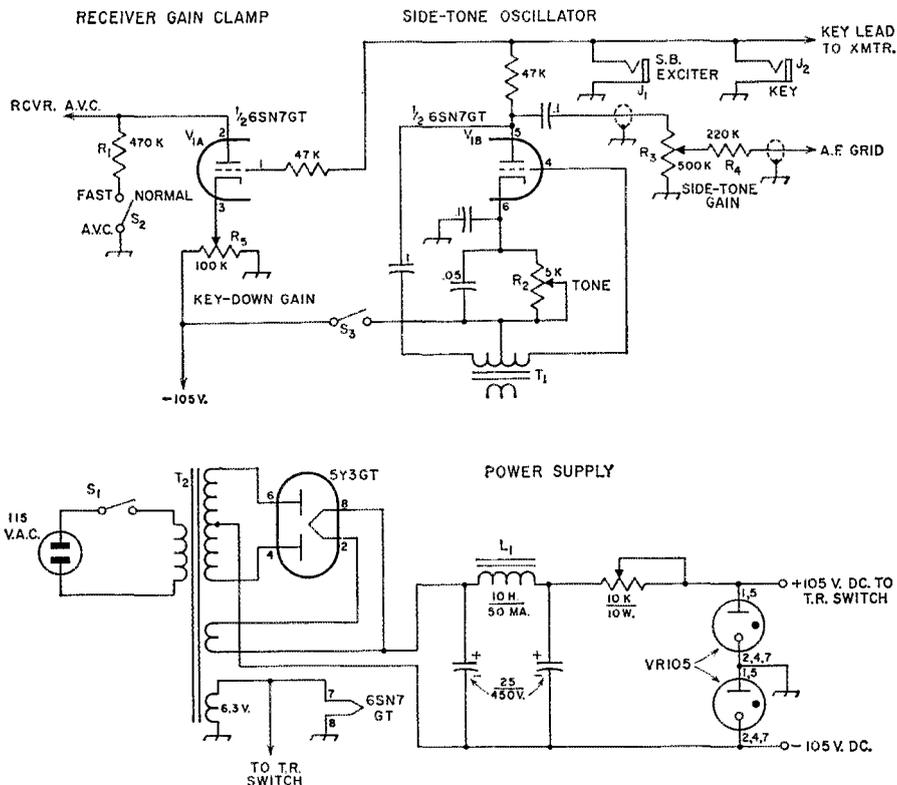


Fig. 1—Diagram showing receiver-muter, side-tone oscillator and power-supply circuits of W4HBO's simplified break-in system. Capacitances are in  $\mu\text{f}$ . Capacitors with polarity markings are electrolytic. Other capacitors are 400-volt paper. Resistances are in ohms and resistors are  $\frac{1}{2}$  watt unless indicated otherwise.

J<sub>1</sub>, J<sub>2</sub>—Open-circuit key jack.

L<sub>1</sub>—Filter choke.

R<sub>1</sub>—Muting-bias resistor.

R<sub>2</sub>—5000-ohm potentiometer.

R<sub>3</sub>—0.5-megohm volume control.

R<sub>4</sub>—0.22 megohm.

R<sub>5</sub>—0.1-megohm potentiometer.

S<sub>1</sub>, S<sub>2</sub>—S.p.s.t. toggle switch.

S<sub>3</sub>—S.p.s.t. switch ganged to side-tone gain control.

T<sub>1</sub>—Push-pull audio-output to voice-coil transformer, secondary not used.

T<sub>2</sub>—Power transformer: 500 v.c.t., 40 ma.; 5 volts, 2 amp.; 6.3 volts, 2 amp. (Thordarson 22R00 or similar).

V<sub>1</sub>—6SN7GT or equivalent.

if the receiver has one.<sup>2</sup>

3) Connect the shielded wire marked "A.F. Grid" to the grid terminal of the audio output stage in the receiver, and ground the braid.

4) Plug the power cord into a 110 v. a.c. socket.

5) Since the power cable from the t.r. switch was made plug-in for convenience, plug this into its socket.

6) Connect the various coaxial cables to their appropriate connectors on the t.r. switch.

7) Plug the key into the key jack in the unit.

While the receiver is out of its case to connect the a.v.c. and audio leads, it will be a good idea to install a coax connector for the antenna lead if one is not already present. This will shield the

receiver input so that less transmitter signal can get into it.

It will also be a good idea to test the unit before reinstalling the receiver. If it is not possible to cut the receiver off entirely with this unit, as was the case here, it is possible that one of the i.f. stages is not on a.v.c., and if its grid lead resistor is lifted from ground and connected to the a.v.c. line, the problem should be solved.

### Operation

The operation is extremely simple. To hear your own signal, adjust the key-down gain for desired volume. For off-frequency operation, or if it is desired to have just an audio tone, turn the key down gain control for minimum gain, and turn up the side-tone gain to the desired side-tone level. The 470K resistor, R<sub>1</sub>, should be in the circuit for c.w. to speed receiver recovery, but should be switched out of the circuit for proper a.v.c. action on a.m.

(Continued on page 178)

<sup>2</sup> In some receivers, the a.v.c. system is disabled by grounding the a.v.c. line. Thus the a.v.c. switch must be in the open or "a.v.c." position for the muter circuit to function. Since this leaves the receiver's a.v.c. system in functioning condition, a second pole on the a.v.c. switch, disconnecting the a.v.c. line from the a.v.c. rectifier, will be required if a.v.c. disabling for c.w. reception is desired. — Ed.

# Three Crystal-Controlled Converters

For 20, 15 and 10 Meters

BY ROBERT V. McGRAW,\* W2LYH

*This is largely a picture story because the author, as he puts it himself, "can't think of much to add to the manuscript since the things are so simple and they worked right off at the first try". What more is there to say?*

IF YOU'VE been thinking of building a crystal-controlled converter, you might be interested in three little jobs, for 14, 21 and 28 Mc., respectively, which have been giving a good account of themselves. The 15-meter converter was built first, for use ahead of the trusty old BC-312. It worked so well that a second model was soon built for 20 meters, even though the receiver already covered that band, because once you get used to using a crystal high-frequency oscillator and doing the tuning down around 3 megacycles, nothing less in the way of stability and bandspread will do from then on. The next step obviously was to build one of these marvelous gadgets for 10 meters, and I can only say that it is a real pleasure to operate 10-meter c.w. when the band starts at 3 megacycles on the dial.

The three units operate equally well, although their circuits are slightly different, as dictated by the contents of the junk box and the desire to experiment. The 15-meter converter has a band-pass coupler between the r.f. amplifier and the mixer, while the other two have only the mixer grid tank tuned. With the crystal frequencies used each of the three bands comes out starting at exactly 3 megacycles, and the receiver dial calibration can be used very nicely.

In the 15-meter converter, a 6000-ke. crystal operates on its third overtone. In this circuit, the output frequency was about 20 ke. too low, and a bit of grinding was required to bring it to exactly 18,000 ke.

For 20 meters, an injection frequency of 11,000 ke. is needed; this is furnished by a 5500-ke. crystal oscillator and doubler. The extra link-coupled tank in the doubler circuit may not be necessary, but it does no harm to discriminate against the fundamental and unwanted harmonics of the crystal frequency.

The 25,000-ke. oscillator in the 10-meter converter uses a third-overtone type crystal made by International Crystal Company, permitting the use of a simple circuit.

Although 6CB6s are shown, actually 6AK5s are being used. Either type works equally well. The r.f. amplifier cathodes are brought out separately, for keying in the break-in system used here. If this feature is not desired the cathodes should be grounded directly.

The input and output circuits are arranged for low-impedance coax cable. The converters are plugged into a power socket above the main receiver so it takes only a moment to change bands. The B+ voltage is normally about 250 volts.

All of the slug-tuned coils were contained in a one-dollar kit assortment, so exact specifications are not known. A little work with the grid-dip meter will enable you to tune whatever coils are available to the desired frequencies. Note that although the same specifications are given for  $L_4$  in all three converters, the actual inductance used will be slightly different in the 28-Mc. unit since on this band the i.f. output range to be covered is considerably larger. The slug in the coil should be adjusted to give the proper frequency coverage with the particular capacitor used to tune it.

The units are constructed on aluminum boxes, the 20-meter one on the  $8 \times 3 \times 2\frac{3}{4}$ -inch size, and the other two on the  $6\frac{1}{4} \times 3\frac{1}{2} \times 2\frac{1}{8}$ -inch size. The shield cans just happened to be in the junk box. In any case, the mechanical layout is not too important, so you can suit yourself on that point.

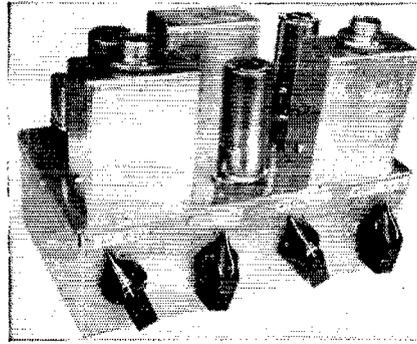
In case you're wondering about the fact that the tuned circuits are neither ganged nor broad-banded, you can forget it. Ganged tuning is not essential for covering an amateur band, and surely not for normal operation in a part of the band. Sharply-tuned tank circuits give higher gain and better protection against spurious responses.

These converters are quite sensitive, and seem to be completely free of images or other spurious signals. Just to prove that I'm really sold on the idea, a new receiver is being built which will have only one tuning range, 3 to 4 megacycles, with the emphasis on stability, bandspread, and selectivity.

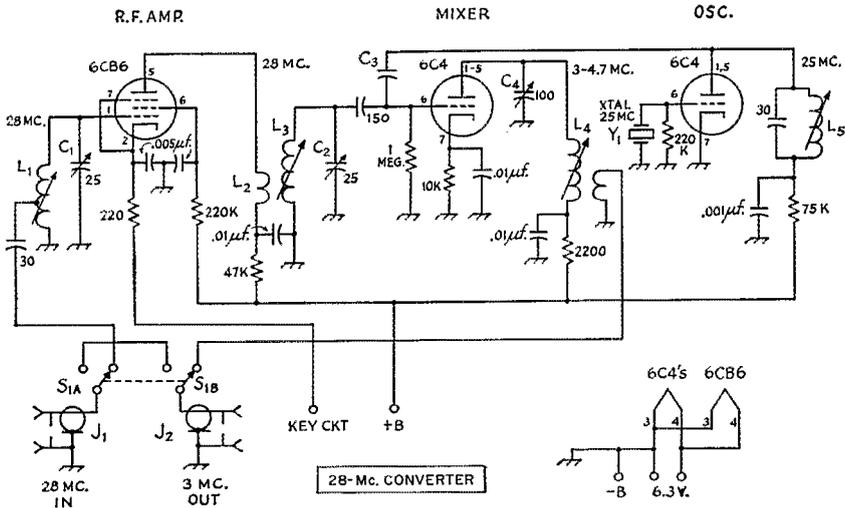
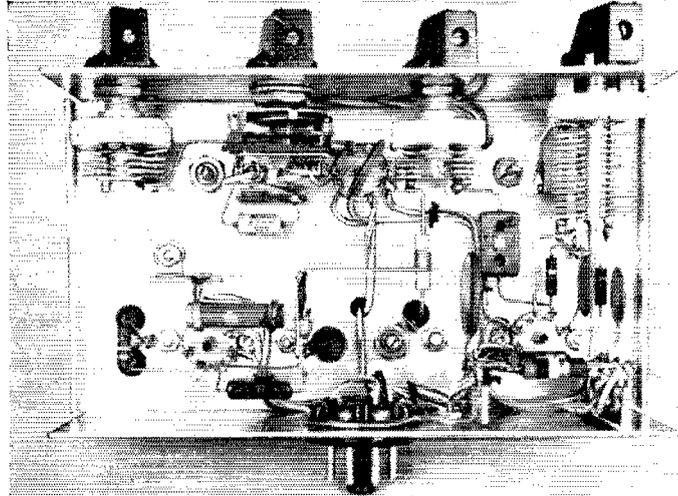
In the converter circuits on the following three pages capacitances are in  $\mu\text{f.}$  except as specified. Fixed capacitors 0.001  $\mu\text{f.}$  and larger may be ceramic or paper, ceramic preferable; others are mica or ceramic. Resistors are  $\frac{1}{2}$ -watt composition.

\*9 Pog's Lane, Riverhead, New York.

The 28-Mc. converter has the r.f. grid coil, r.f. amplifier tube, and mixer plate coil along the front, with the crystal, oscillator tube, mixer grid coil, and mixer tube along the rear edge. As in the other two units, the coaxial input and output connectors are mounted on top of the antenna-coil and output-coil shield cans.

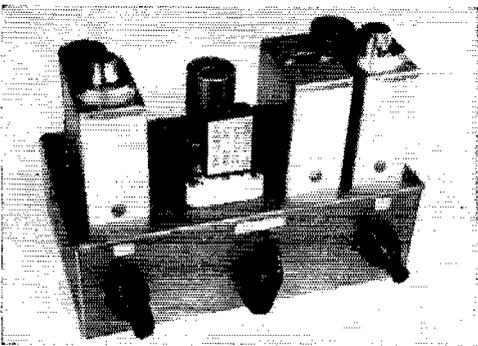


Coupling between the oscillator and mixer in the 28-Mc. converter is by means of the "gimmick" capacitor shown near the center in this view. The oscillator coil, not shielded, is mounted to the right of the oscillator tube socket and is end-on in this picture. The octal plug just below it is used for plug-in power and keying connections, as in the other two converters.

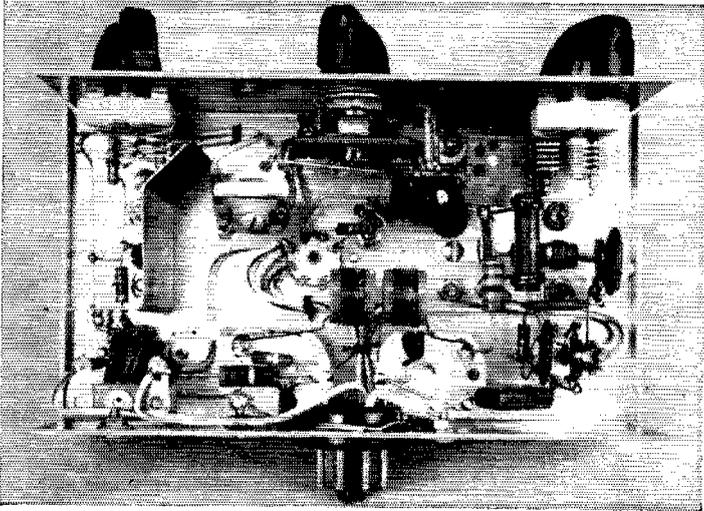


$C_1, C_2, C_4$ —Air midgets.  
 $C_3$ —6 turns bare wire wrapped on insulating sleeve over grid lead (see photograph).  
 $J_1, J_2$ —Coaxial connectors.  
 $L_1$ —2  $\mu$ h.; 9 turns No. 28 enam., close-wound on  $\frac{3}{8}$ -inch diam. slug-tuned form, tapped 3 turns from

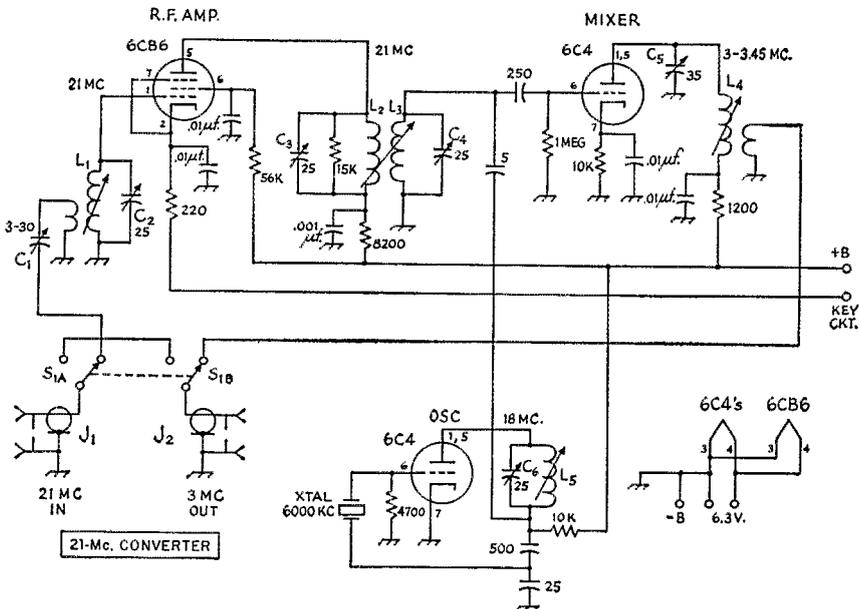
bottom.  
 $L_2$ —6 turns at cold end of  $L_3$ .  
 $L_3, L_5$ —Same as  $L_1$  without tap.  
 $L_4$ —Same as  $L_4$  in 14-Mc. converter.  
 $S_1$ —2-pole 2-position rotary.  
 $Y_1$ —25-Mc. overtone crystal (International type FA-9).



The 21-Mc. converter has a band-pass coupler between the r.f. amplifier and mixer and therefore has only two tuning controls on the front. General arrangement is similar to that used in the 14-Mc. converter. An overtone oscillator is used in this unit.



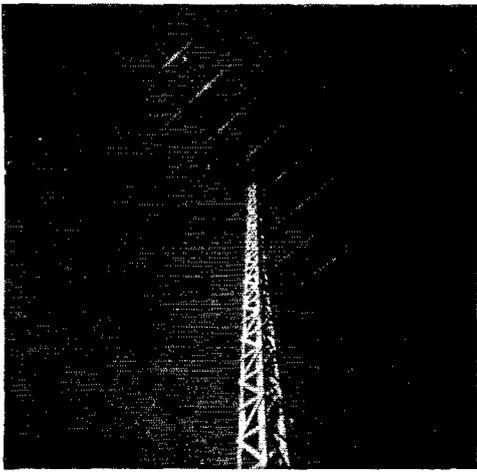
The band-pass coupler coils are centrally located in this bottom view of the 21-Mc. converter. The coils are tuned by the air padders at the bottom in this view. These capacitors are adjusted from the top of the chassis



C<sub>1</sub>—Mica compression padder.  
 C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub>, C<sub>6</sub>—Air midgits.  
 J<sub>1</sub>, J<sub>2</sub>—Coaxial connectors.  
 L<sub>1</sub>—4 μh.; 16 turns No. 28 enam., close-wound on 3/8-inch diam. slug-tuned form. Link 3 turns.

L<sub>2</sub>, L<sub>3</sub>—3 μh.; 12 turns No. 28 enam., close-wound on 1/2-inch diam. forms (band-pass coupler).  
 L<sub>4</sub>—Same as L<sub>2</sub> in 14-Mc. converter.  
 L<sub>5</sub>—7 μh.; 22 turns No. 28 enam. on 3/8-inch diam. slug-tuned form.





"The tower is quite impressive. . . ."

## Sixty Cents Per Foot

(Slightly Higher East of W6)

BY DON SUTHERLAND,\* K6JJK

WITH the  $F_2$  season rapidly approaching, we had been working the little 50-watter over in an effort to improve its efficiency. A compressor was built for the modulator and a new tank circuit was installed. But this seemed to be about as far as we could go with the rig itself.

Then we began to look at some of the fine 6-meter beams now on the market, and our little four-element job on the TV mast didn't look too impressive. The upshot was that we finally invested in a shiny new eight-element Yagi.

But those who move into new houses know how suddenly the old furniture takes on a shabby look. It was immediately evident that the new squirter needed a new support to give it proper dignity and a chance to show its worth. But with most of the cash tied up in the "mortgage" there was little left for "furniture." We decided to try our hand at building a wood tower.

### Construction

At the local lumber yard we bought eight 20-foot  $2 \times 2$ s of seasoned Douglas fir and 400 feet of redwood  $1 \times 2$  furring strip. Each of the four legs of the tower is made up of two  $2 \times 2$ s butted end to end and spliced together with a 3-foot length of the same material overlapping the joint. Two  $\frac{1}{4}$ -inch stove bolts 4 inches long, with washers, were used on each side of the joint.

Two of the legs were laid out with the splice laps facing each other. The bottom ends were spread 2 feet apart and the top ends 6 inches over all. The first horizontal crosspiece was nailed on at 2 feet from the bottom end, using four seven-

\*922 Cayuga St., Santa Cruz, California

Years ago, before the market was flooded with "boughten" crank-ups and lay-overs, a ham's standing on the air could be judged with good accuracy by how close to the stratosphere he dared stretch his homemade wood-lattice mast. Although this art is now an almost forgotten one, the lattice mast, properly built, still remains an inexpensive means of getting a reliable sky hook at reasonable heights. Witness this forty-footer by K6JJK.

penny galvanized box nails at each bearing. Before nailing, each joint was primed with white paint. This 2-foot spacing was maintained for the next four horizontal members. Then the spacing was progressively reduced by one inch each time a horizontal brace was added until the 20-foot mark was reached. A constant spacing of 20 inches was then maintained until the top of the mast was reached. The next step was to add the diagonal cross-bracing members, as shown in Fig. 1, alternating them in zigzag fashion.

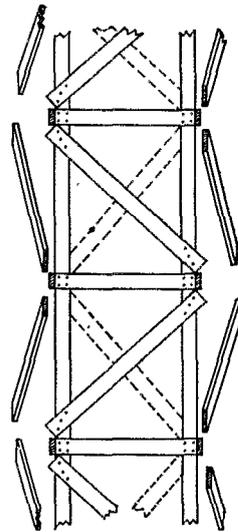


Fig. 1—Sketch showing details of cross bracing. At the sides are shown relative positions of diagonal braces on side surfaces. Dotted lines indicate positions of diagonal bracing on rear side.

### Joining the Sides

After the first side was completed a second side was made identical to the first. It is advisable to paint both faces of both sides before proceeding with the final assembly of the tower. The author neglected to do this and it was a real chore to get at the inside after assembly. Aluminum paint was used and it took about three quarts.

When the paint was dry, the two sides were placed on edge and held in position at the

proper tapered spacing, by stakes driven into the ground, while the horizontal and diagonal braces forming the third side were added. The inner surface of the third side can be painted before adding the fourth side, and the individual pieces of the fourth side can be painted before they are nailed in place. Be sure to add the diagonal braces on the third and fourth sides in the manner shown in Fig. 1. When this is done, the tower will have an identical appearance on all four sides.

At the 10- and 30-foot levels, the tower was stiffened by running a pair of wires fitted with turnbuckles diagonally from corner to corner.

### Rotator Mounting

A TV rotator was used and it was decided to place it on top of the tower, rather than inside, so that it would be more accessible. The mounting for the rotator is a 3-foot length of 1-inch water pipe screwed into a floor flange. This mounting is supported on a piece of  $2 \times 4$  fitting in between horizontal members approximately 2 feet from the top. The upper end of the pipe runs through a  $1\frac{1}{4}$ -inch hole bored in another piece of  $2 \times 4$  securely spiked across the top of the tower.

### Foundation

The foundation for the tower consists of four 4-foot lengths of  $4 \times 4$  lumber well painted and set in post holes with the earth well tamped around them. The exposed top ends of the ground posts were notched out to fit the legs of the tower so that the bottoms would rest on wood rather than on the ground. (Be sure to notch the posts with the faces of the notches parallel with the direction from which the tower will be raised.) Matching holes for  $\frac{3}{8}$ -inch bolts were drilled in the tower legs and ground posts.

### Raising the Tower

When this baby is lying down, it is quite an awesome sight, and at this point there might be some doubtful moments. But rest assured it will go up! The tower was first moved into position so that two legs straddled two of the ground posts and the bolts were slipped into place to act as pivots in raising the tower. Then the top end was lifted onto a 10-foot stepladder while the antenna was mounted and four guy wires attached 6 feet down from the top.

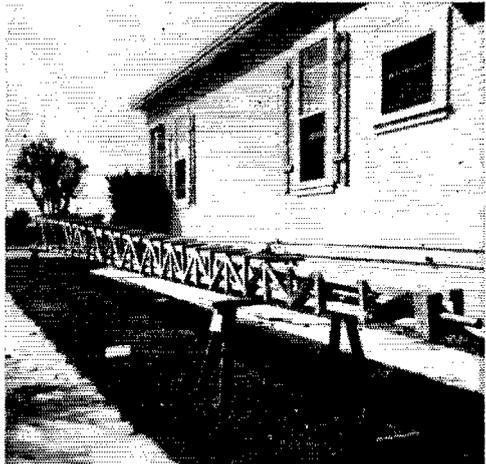
At this point, we called in K6GHA, W6NOE and K6LHG, all rabid 6-meter men who sympathized with the project. As they lifted, the stepladder was gradually moved toward the base until the tower rested at an angle of about 30 degrees. A long rope was attached near the top of the tower and led up to the roof of the house. With one man pulling from the roof and three men pushing, the whole assembly rose majestically until the remaining two legs dropped into place on the ground posts. The entire job took only 10 minutes and all our fears proved to be groundless.

The tower is quite impressive and has been

*(Continued on page 162)*



"The exposed ends of the ground posts are notched out to fit the legs . . ."



"At this point we called in K6GHA, W6NOE and K6LHG . . ."



"When this baby is lying down, it is quite an awesome sight . . ."

# A V.F.O. for 6 Meters

*Flexibility for the Rockbound V.H.F. Man*

BY THOMAS BECKAGE,\* W3LCK

EVER since thousands of crystals in the range between 8350 and 8550 kc. were released on the surplus market some years ago the 6-meter band has had a series of pileups at 50.1, 50.25, 50.4 Mc. and so on up through the band. If you have wished for an inexpensive way to avoid being rockbound on these popular channels you may be interested in the v.f.o. described here. It is simple and economical to build, having been designed for the 6-meter job only.

## Construction

A 5 by 6 by 2-inch chassis provides plenty of space for the v.f.o., and may even include a built-in power supply, if desired. Because of heat and vibration problems the power supply may introduce, it is recommended that the supply be made external to the v.f.o. It goes without saying that the power source should be well filtered. A small supply will suffice, as only 150 to 175 volts d.c. at 20 to 30 ma., and 6.3 volts a.c. at 0.3 amp. will be required. Small power transformers such as are commonly used in TV boosters and converters are ideal for this purpose. The full-wave center-tapped type is recommended.

Except for the mounting of  $L_1$ ,  $C_3$  and  $C_4$ , there is nothing critical about the construction of the v.f.o. The coil,  $L_1$ , is constructed by cementing a full length of B & W Miniductor No. 3007 to a block of polystyrene 1 by 3 by  $\frac{1}{4}$  inch in size. Use a good quality coil dope. Clamp the coil in place with one rib in contact with the block. Flood the contact area with cement and allow it to dry. Then repeat the application of cement and allow the assembly to dry overnight. Drill the ends of the block for mounting, as shown in Fig. 1. Connection to the coil should be made by unwinding a portion of the coil at either end, to get enough wire for the leads.

## Circuit

As may be seen from Fig. 2, the v.f.o. circuit is about as simple as it can be and still do the job. The popular series-tuned Colpitts circuit is used, with the grid of the 6AU6 oscillator on 12.5 Mc. to 13.5 Mc., for coverage of the band. The plate circuit is on 25 Mc. The v.f.o. is intended for use with transmitters in which the first stage is an oscillator-tripler for 8-Mc. crystals. The coupling method shown converts the first stage to a straight-through amplifier on 25 Mc., so a 4700-ohm swamping resistor is placed across  $L_2$  to minimize the tendency to spurious oscillation in this stage. The resistive loading also broadens the response of the oscillator, so that one setting of the slug in  $L_2$  will

\* 108 Throop St., Dunmore, Penna.

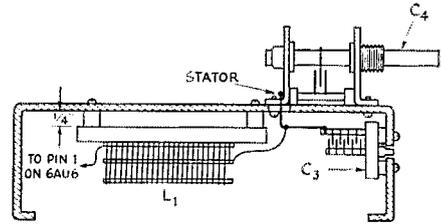


Fig. 1—Arrangement of the coil and tuning capacitors in the 6-meter v.f.o. Be sure that the access hole in the front panel for  $C_3$  will not be covered after mounting the main tuning dial on  $C_4$ .

suffice for coverage of the first megacycle of the band.

The output cable used is RG-62/U. Other types of cable can be used, but variations in capacitance may make a change in the number of turns in  $L_2$  necessary. The outer conductor of the cable should not be relied on for a bond between the transmitter and the v.f.o. Use a separate piece of copper braid or strap to bond the two together, and make it as short and direct as possible.

## Adjustment

After wiring is completed and checked, apply power to the v.f.o. The regulator tube should ignite, and current through it will be about 10 to 15 ma. Next, measure the voltage developed at the 6AU6 grid, using a vacuum-tube voltmeter, or volt-ohmmeter of the 20,000-ohms-per-volt type. Negative voltage developed on the 6AU6 grid shows that the tube is oscillating. It should be about 5 volts.

Set the main tuning capacitor,  $C_4$ , to near maximum capacitance, and by adjusting  $C_3$  bring the frequency of oscillation to 12.5 Mc. This can be checked at that frequency, if a receiver is available for tuning in that range; otherwise listen for it at 25.0 or 50.0 Mc. Be sure that the signal being checked is at the right frequency, and that you are not listening to an image or other spurious beat. A cross-check with a calibrated absorption-type wavemeter is desirable here. The note, as monitored with the receiver beat oscillator on, should be stable and free of a.c. modulation. The tuning range of  $C_4$  may now be checked by following the frequency change with the receiver. With the capacitor value given for  $C_4$  the range will be about four megacycles at 50 Mc. If greater tuning range is wanted use a larger capacitor for  $C_4$ . For a smaller tuning range remove one plate from  $C_4$ , and use slightly more capacitance in the padder,  $C_3$ .





the center frequency, but the bandwidth shrinks to an unacceptable value. The worst feature of narrow bandwidth is not the intrinsic inability of covering a wide frequency range with high efficiency but the accompanying vulnerability to various detuning effects: the effects of snow and rain, of changing the position of the antenna, of placing another antenna nearby, and possibly the effects of weathering of the antenna itself. In addition, replacement of parts damaged by storm requires very precise duplication of the original components.

Whether it is better to use a very short beam with its accompanying lower reliability and superior gain or a simple dipole with greater reliability but lower gain is a question to which no final answer can be given. The most important factors governing an attempt at making an answer are the local weather conditions and the objectives of the operator. In a dry climate a much narrower bandwidth can be tolerated than in a wet one. Does the operator insist upon uniform performance under all weather conditions, or is he willing to go off the air (or switch to an inferior auxiliary antenna) in bad weather to gain superior performance in good? The writer's opinion is to favor the short beam as indicated in detail below.

#### **Front-to-Back-Ratio**

High front-to-back ratio in a two-element beam never has seemed to this writer a very important feature. The main lobe is so broad under the most favorable conditions that little additional QRM is likely to be experienced with a ratio somewhat poorer than optimum. And even if a high ratio can be attained, it is usually close to optimum only over a very narrow frequency range, while it is well known that gain may be maintained over a much larger band.

However, it is possible to have high gain and a poor back-to-front ratio. Consider the W8JK antenna, which has a gain of about 5 db., while the back-to-front ratio is 0 db.; that is, the antenna is bidirectional. Although it is not usual, a two-element parasitic beam can be tuned up in a similar way. In the more usual procedure of tuning the parasitic element as a reflector, slight losses can materially affect the back-to-front ratio while having little effect upon the forward gain. To obtain perfect cancellation in the back direction, the field set up by the reflector must be exactly of the same magnitude as that of the driven element but opposite in phase. If at some standard distance we call the relative field strength of each 1.0, then the total field strength in the forward direction is 2.0 and the forward-to-back ratio is infinite. But if, with the same current in the driven element, losses cause the field from the reflector to drop to 0.5, the field in the forward direction is still as high as 1.5 while that toward the back is 0.5, resulting in a back-to-front ratio of 3 in voltage, or 9.5 db.

#### **Construction**

One favorable opportunity presented to the

constructor of short antennas is the possibility of using end loading or special construction utilizing several conductors diverging from the center of the antenna. Such construction, which is rarely practical mechanically with full-sized antennas, aids significantly not only in increasing the bandwidth but also in some cases in reducing losses by reducing the concentration of electric field.

The experimental antennas described below represent, the author feels, approximately the practical limit to which antenna shortening can be carried. While these antennas have not been engineered to perfection, data will be given to aid the reader to build similar or improved antennas of the same types.

The use of television receiving antennas as a source of materials was suggested by the work on the Wonder-Bar Antenna.<sup>1,2</sup> The kits which were used by this writer were obtained from Lafayette Radio at \$2.60 each. Several units purchased at different times were found to differ slightly in dimensions. Therefore, the dimensions given below are nominal and, for this reason and others, the coil specifications are to be regarded as approximate.

These kits contain six 43-inch rods,  $\frac{3}{8}$  inch in diameter, for a "biconical" driven element, and two 47-inch rods of the same diameter for a parasitic reflector. A 37-inch piece of 1-inch diameter tube is supplied for the boom, but the effective boom length is somewhat longer because the driven element projects forward, the two halves intersecting at an angle of about 135 degrees. The boom lengths given below are the actual lengths of the booms.

#### **A 21-Mc. Antenna**

The first antenna constructed was for 21 Mc., using two of these kits, one for the driven element and one for the reflector. Each dipole consists of four 43-inch rods on the outside and two 47-inch rods in the center, employing the original booms. New holes for the U bolts used for holding the booms on the mast were drilled near the ends, but the upper boom was made to overlap the lower one by a few inches so that the two could be locked together as a rigid structure with a third U bolt. The total boom length is 7 feet, and the swinging radius is 5 feet. Because of the angle, the over-all length of each element is 7 feet, slightly less than three tenths of the length of a half-wave dipole. This antenna is the upper one shown in Fig. 1.

The loading coils were made of Miniductor 3014 (1-inch diameter, 8 turns per inch). By coincidence both have 17 turns, and the link coil on the driven element consists of 4 turns of No. 12 enameled wire, self-supporting, wound around the center of the loading coil. As this first antenna was experimental and its final frequency of operation was not certain, the loading coils were

<sup>1</sup> Bishop, "The 'Wonder-Bar' Antenna," *QST*, November, 1956.

<sup>2</sup> Ryan, "Technical Correspondence," *QST*, February, 1957.

made plug-in by the use of strips of banana plugs and jacks, and the coils are supported from these only by their leads. Originally, the spacing between centers of the jacks was  $\frac{1}{2}$  inch, but after the antenna was in operation for some time breakdown resulted from dirt, and the spacing had to be increased to  $\frac{3}{4}$  inch. (The power input is about 150 watts.) The use of the plugs and jacks proved to be such a convenience that it was included in later antennas.

For adjustment the antenna was mounted about ten feet above ground. The coil in the reflector was adjusted to resonate this element at about 20 Mc., using a grid-dip meter whose calibration had been checked. Then, starting with a slightly larger coil in the driven element, turns were removed and the link coil was varied to get the best match to 50-ohm line, using a standing-wave bridge. Then the antenna was hoisted into its final location shown in Fig. 1, where it is about 30 feet above ground over the end of a wing of the house. This location is far from ideal. In one direction is the main part of the house, whose roof level is almost as high as the antenna. In the other are several nearby trees, some of whose branches practically overhang the antenna.

### 28-Mc. Antenna

Preliminary results from operation of this antenna were so favorable that it was decided to mount a 28-Mc. one four feet lower on the same mast, as shown in Fig. 1. This antenna is of similar construction except that the boom, 6 inches shorter, was made of a single piece of tubing as one just happened to be on hand. The loading coils are similar to those of the 21-Mc. antenna except that both have only 10 turns. The link coil is 2 turns of No. 12 wire  $1\frac{1}{8}$  inches in diameter. The reflector resonates at about 27 Mc.

### Performance

Evaluation of performance should be based upon objective measurements as well as upon subjective observations from actual results on the air. It is only honest to state that present measurements do not decide whether or not these antennas are performing in accordance with what can be expected from known theoretical considerations. Theoretically these short two-element beams should have gains only slightly less than those of full-sized beams, perhaps about 4.5 db. Whether such gains are obtained is unknown. They can be determined only by comparative measurements relative to a half-wave dipole located in entirely equivalent positions. Because of the difficulties of the author's location, to which he has alluded, it is impossible to erect suitable reference antennas.

Some significant objective information can be learned from the standing-wave ratio curves. Those pertaining to the 21-Mc. antenna are shown in Fig. 2. The dashed curve is with the 28-Mc. antenna removed while the solid curve is with it in place. The s.w.r. of the 28-Mc. antenna

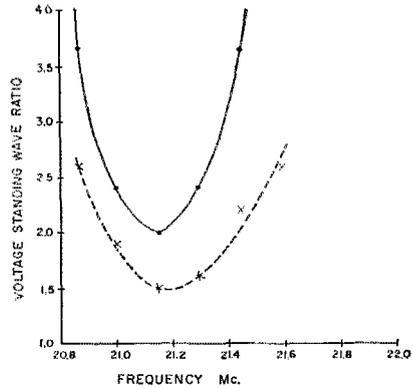


Fig. 2—Voltage standing-wave ratio versus frequency of 21-Mc. antenna. Solid curve applies when 28-Mc. antenna is in position, and the dashed curve applies when it is absent.

is shown in Fig. 3. From the point of view of transmission-line efficiency, the performance can be said to be very satisfactory. With the forty feet of RG-58 U cable that was used, the losses at 28 Mc. would be about 0.75 db. with a perfect impedance match, and by methods which have been discussed in an earlier article<sup>3</sup> it can be shown that with a standing-wave ratio of 4:1 the losses increase by only 0.9 db. Since the ratio is considerably smaller over most of the band, the losses can be considered to be close to minimum.

At 21 Mc. the losses are even smaller. While the standing-wave ratio is reasonably low, the variation of the line input impedance at 21 Mc. causes some inconvenience by requiring retuning. The standing wave ratios of both antennas vary slightly as they are rotated.

An attempt to measure the back-to-front ratio was made by putting up a test antenna at the same height as these antennas and connecting it to a crystal detector and a meter. These measurements indicated a ratio of about 6 db. with the 21-Mc. antenna and about 3 db. with the 28-Mc. one. The 28-Mc. antenna was in position during the measurements on the 21-Mc. one. Because of the proximity of the test antenna and various disturbing objects it is questionable whether these measurements are completely valid. However, reports from stations worked on the air are consistent with them. These results are something less than desired, and indicate that objects in the near fields of the antennas may cause some losses. This hypothesis is strengthened by the fact that the 21-Mc. antenna, which is more in the clear, has definitely the better ratio, and it could be supposed that the ratios could be improved with better locations.<sup>4</sup> The ratio of the 28-Mc. antenna was measured as a function of

<sup>3</sup> Beers, "Match, or Not To Match?," *QST*, September, 1958.

<sup>4</sup> Another possibility is radiation from the outside of the coax transmission line. Unavoidable coupling between the antenna and coax shield practically always results in a certain amount of such radiation, and the situation tends to become less manageable as the antenna is made shorter.

— Editor.

frequency and was found to be nearly independent of it within the range shown in Fig. 3. Both antennas can be used in a slight drizzle, with a change in characteristics. In a heavy rain it is necessary to switch to an auxiliary antenna.<sup>3</sup> It is probable that the susceptibility to moisture could be reduced by a "weatherized" construction of the loading coils.

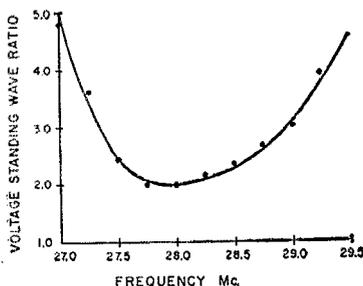


Fig. 3—Voltage standing-wave ratio of 28-Mc. antenna versus frequency.

There remain the subjective observations, and here the conclusions are most enthusiastically favorable. These antennas were used for about six months in the winter of 1957-1958 with power inputs from 50 to 175 watts. During the 1959 ARRL DX Contest (c.w.) these beams were used for a total of about 35 hours with a power input of 150 watts, and 130 contacts with a total of 43 different countries were made. In the some 28 years the writer has been an amateur he has never had a rotary beam on these frequencies, but the system which has been described has far outperformed anything he has had previously, although undoubtedly inferior to multi-element full-sized beams.

#### An Experimental 14-Mc. Dipole

The experiments just described indicated that the practical limit of shortening might not have been reached, at least for single dipoles. Therefore, it was decided to build an experimental dipole of approximately the same construction for 14 Mc. The resulting antenna is shown in Fig. 4, and its standing-wave curve is shown in Fig. 5. There was one difference in construction: the outer ends of the rods were joined by sections of the same type of rod about 14 inches long. One advantage of this modification is greater mechanical rigidity, and a more important one is an improvement in the radiation resistance and bandwidth that should result. The reader desiring to reproduce any of these antennas would be well advised to include this modification.

The loading coil of the antenna shown in Fig. 4 consisted of 15 turns, 8 turns to the inch,  $1\frac{3}{4}$  inches in diameter (Miniductor No. 3022). The link consisted of a single turn, about one inch in diameter, of plastic-insulated No. 18 wire inserted in the center of the loading coil. The antenna was tuned up for the c.w. end of the band but the standing-wave curve, Fig 5, indicates that reasonably good transmission-

line efficiency could be obtained over the entire band if the coil were tuned to the center. However, the variation of impedance with frequency required frequent retuning of the antenna coupler even within the c.w. segment. Several contacts were made — including one with a new country, 9G1BQ — and these indicated that the antenna was comparable with, but slightly inferior to, a full-sized vertical dipole which is on hand. Unfortunately, an accident forced the writer to take this antenna down a little sooner than he wished, but since he felt that he had observed the main features, he did not put it up again.

A theoretical analysis indicates that the efficiency is at least as low as -2.8 db. relative to a half-wave dipole because of losses in the loading coil, and the width of the standing-wave ratio curve suggests the possibility that it may be as low as -6.7 db. (The directivity relative to a half-wave dipole is -0.4 db., and thus the gain relative to an ideal half-wave dipole may be as low as about -7 db.) The efficiency could be improved by using larger conductors, a loading coil of higher  $Q$ , and, most particularly, a less screened location. However, if the losses were reduced the resistance also would be less, and the frequency response, now barely adequate, would deteriorate.

#### Conclusions

As stated at the beginning of this article, the present work was undertaken to find how small a beam antenna can be made and still give performance comparable with that of a full-sized

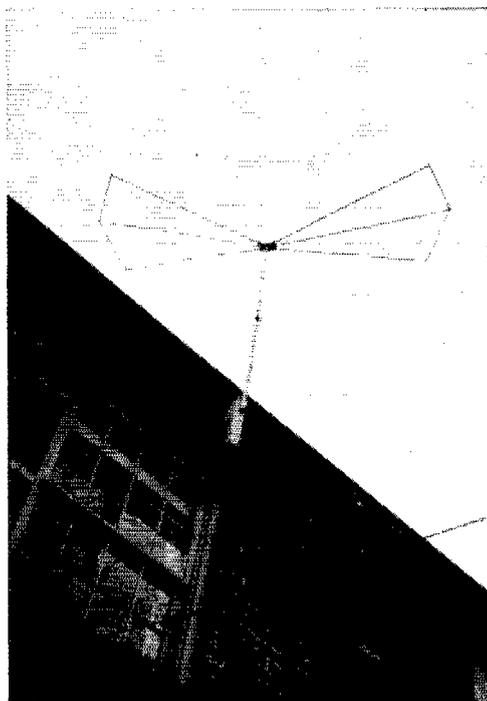


Fig. 4—Experimental 14-Mc. dipole.

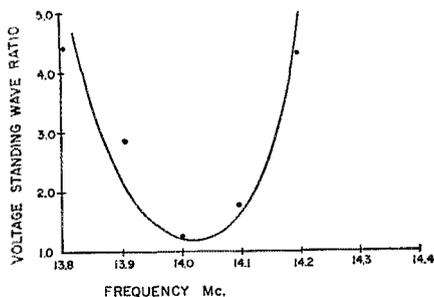


Fig. 5—Voltage standing-wave ratio versus frequency of 14-Mc. experimental dipole.

antenna under favorable conditions. The fact that the antennas that were built outperformed any which the author had used previously, in many years of experience, is only incidental. These antennas have not been completely engineered by weatherizing of the loading coils or by using the very best possible form of end loading. Nevertheless, the work with them has led the writer to the firm opinion that the present 21-Mc. beam, with its 0.15-wavelength elements, is representative of the smallest beam which is practical.

It can be shown theoretically that, in the absence of ohmic losses, the bandwidth of a short dipole of fixed length, expressed as a percentage of the center frequency, varies in proportion to the third power of the frequency. The bandwidth thus deteriorates very rapidly as the frequency decreases; at 21 Mc. it is 2.4 times smaller than at 28 Mc., and at 14 Mc. it is 8 times smaller than at 28 Mc. The introduction of parasitic elements will reduce the bandwidth further, but does not change this general situation. This rapid variation of bandwidth is illustrated roughly by comparison of the standing-wave curves, Figs. 2, 3, and 5. One of the writer's reasons for concluding that the 21-Mc. beam is the smallest which is practical is that its s.w.r. curve has the maximum variation that is acceptable under ordinary circumstances.

If a short antenna is made of large conductors and mounted in the clear, the losses are negligible when the  $Q$  of the coil is large compared with the  $Q$  of the antenna. It may be shown that the  $Q$  of a short antenna of fixed length varies inversely with the third power of the frequency and therefore rises rapidly as the frequency is decreased, while the  $Q$  of a well-designed loading coil remains approximately constant. King<sup>5</sup> has calculated the radiation resistance and reactance of short dipoles made of single rods. From his work the  $Q$  of a dipole 0.15 wavelength long, if made of single rods, can be estimated to be no more than about 150. However, with the type of construction employing three rods, the  $Q$  can be supposed to be somewhat lower, perhaps 50 or 75. The measured  $Q$  of one of the 21-Mc. loading coils is 285. Thus the present situation is one where the coil losses are small but are on the verge of becoming important. The introduction of a parasitic element tends to lower the radiation resistance. Thus any

further reduction in size beyond 0.15 wavelength is almost certain to result in the situation where the advantage of the added directivity obtained from the parasitic element is nullified by increased losses. Superior types of end loading or of coil construction are unlikely to give more than a minor improvement.

The beams which have been considered here have been made of linear elements. However, many amateurs use beams made of loop or quad elements. These have smaller swinging radii than beams of comparable gain made of linear elements. One might wonder about miniature beams of the loop type. The bandwidths of small loop antennas also vary approximately with the third power of the frequency, and in this respect they offer no advantage or disadvantage. However, the directional properties of linear antennas change very little as size is reduced, while there is a radical change in the directional properties of loops. The maximum of radiation for small loops lies in the plane of the loop instead of at right angles, as is the case with standard-sized quad elements. Thus a beam made of small loops would have the boom in the planes of the loops rather than at right angles, and the loops would extend out beyond the boom. The effect would be to increase, rather than to decrease, the swinging radius. This type of construction therefore is undesirable.

Thus the writer believes that beams made of 0.15-wavelength linear elements are about the smallest which can give reasonably effective performance, although this performance is subject to the reliability considerations mentioned in the introduction. At the same time, those amateurs who want the optimum in performance and have the space available are advised to use full-sized beams made of large conductors and with wide spacings between the elements.

<sup>5</sup> King, *Journal of Applied Physics*, Vol. 23, p. 1174, October 1952.

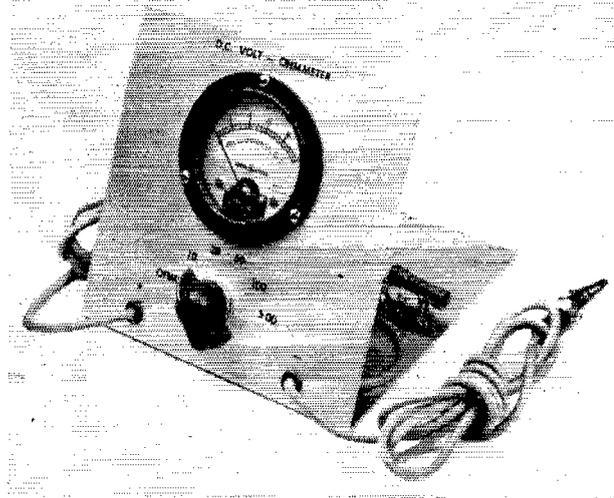
## Strays

Even the back pages of *QST* get read. W8DAE refers to a Stray printed on page 172 of the April issue and says that auto horn QSOs are nothing new. Way back in 1926 he and 8ADA drove a Model T over from Cleveland to Oberlin to visit 8RY, and had a key rigged up across the horn.

### Please Write Your Postal Zone Number

- By including your correct zone number each time you write your address you can speed delivery of your own mail and help cut Post Office costs. The Post Office must do extra work to deliver each letter, parcel and magazine that does not show the correct postal zone number in the address. It will help you — it will help the Post Office — and it will help us. Thanks.

# A Junk-Box D.C. Volt-Ohmmeter



A view of the completed volt-ohmmeter. The different switch positions are labeled with Tekni-Cals.

## A Simple Test Instrument for the Beginner

BY LEWIS G. McCOY,\* WIICP

Got a moderately well-stocked junk box? If it contains a reasonably sensitive d.c. meter, you have the principal component of a useful test meter. The assembly described here will give you many times the value of any small parts you may have to buy to complete the circuit.

You don't have to be a ham very long before you find that certain tools are required for keeping a station in working order. This doesn't mean that your equipment will be continually breaking down — at least let's hope not! — but that there are times when you are likely to have problems. When trouble occurs you'll find that a very handy instrument to have is a combination volt-ohmmeter. If you know what the voltages in a piece of equipment should be — and usually the instruction manuals provide such information — checking them with your voltmeter will help in locating faults and correcting them. In other words, you can do your own service work.

A combination d.c. volt-ohmmeter is such a simple instrument that any Novice should be able to build one. However, it should be pointed out right now that the unit in this article is described strictly as a junk-box project. If you have to pay full price for the meter used in this instrument you'll be better off to buy a ready-built volt-ohm-milliammeter, or a kit. However, if you already own a good quality 0-1 milliammeter, or a microammeter, this test instrument should only cost a couple of dollars to construct. Also, there are plenty of meters on the surplus market that can be purchased for a fraction of the usual price.

Before getting into construction details let's see how a voltmeter works. Fig. 1 shows the basic circuit of a d.c. voltmeter. For the purpose of explanation let's assume the meter,  $M$ , has a 0-1 milliamperere movement — or, to put it another way, when one milliamperere of current flows

through the meter the pointer will register full scale.

Let's also assume that the voltage,  $E$ , of the battery is 5 volts. Using Ohm's Law,  $R = E/I$ , if we divide five volts ( $E$ ) by 0.001 ampere ( $I$ ) the answer will be 5000 ohms. (Note that the current has to be expressed in amperes before it can be substituted in Ohm's Law. One milliamperere equals one one-thousandth of an ampere, or 0.001 ampere.) If a 5000-ohm resistor is inserted in the circuit at  $R$ , the meter will read full scale with five volts applied, provided the resistance of the meter itself is small — not more than 50 ohms or so.

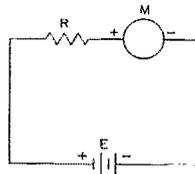


Fig. 1—D.c. voltmeter circuit.

What will the voltage be if the meter reads half scale — 0.5 milliamperere or 0.0005 ampere — and the resistor is still 5000 ohms? Again using Ohm's Law,  $E = IR$ , it is found that the voltage is 2.5. If you divide the meter scale into five equal parts, each division will represent a difference of one volt, with a 5000-ohm resistor in the circuit.

Suppose you want a full-scale reading of 10 volts. With a 0-1 milliamperere meter movement,  $E$  would have to be equal to 10 volts divided by 0.001 ampere, or 10,000 ohms. Now divide the meter scale into ten parts and each division will represent a difference of one volt. By now you will have observed, probably, that when you use a meter with a 0-1 ma. movement you will always need 1000 ohms in series for each volt in the full-scale reading. Such an instrument is called a 1000-ohms-per-volt voltmeter.

But suppose you have a 0-100 microammeter instead of a 0-1 milliamperere. From Ohm's Law you will find that a 50,000-ohm resistor will be

\*Technical Assistant, QST.

required for a full-scale reading of five volts. In this case the voltmeter could be classed as a 10,000-ohms-per-volt meter.

The important point to think about when considering the 1000-ohms versus the 10,000-ohms-per-volt meter is that the latter gives more accurate readings in high-resistance circuits. For example, suppose you want to check a circuit that has five volts applied to two 5000-ohm resistors in series. When you connect a voltmeter across one of the resistors, you would expect it to read 2.5 volts. But if the instrument is a 1000-ohms-per-volt meter with a full scale of five volts, it too will have a resistance of 5000 ohms, and since its resistance is in parallel with the 5000-ohm resistor to which it is connected, the resultant resistance is 2500 ohms.

Of course, the voltage drops across 2500 ohms and across 5000 ohms are different, although originally the voltage drops across both 5000-ohm resistors were the same. Actually, the voltmeter would read  $\frac{1}{3}$  of 5 volts, or  $1\frac{2}{3}$  volts. On the other hand, if a 10,000-ohms-per-volt meter having a full scale of 5 volts were connected across the same 5000-ohm resistor, the resultant resistance would be about 4500 ohms. This voltmeter would read 2.4 volts, which is considerably closer to the true voltage.

In other words, the greater the number of ohms per volt, the more accurate the readings in high-resistance circuits. Incidentally, this is the reason why the vacuum-tube voltmeter is so useful in checking such circuits. This type of instrument usually has a resistance of at least 10 megohms, so in most cases the voltage being checked will not be affected appreciably by connecting the test instrument in the circuit. However, once you understand its limitations, a 1000-ohms-per-volt voltmeter is suitable enough for most amateur needs.

## The Ohmmeter

In servicing a piece of equipment you'll often find it necessary to check the value of an unknown resistor or — even more common — to check continuity in a circuit. For this purpose, an ohmmeter is a very handy instrument to have in the shack. An ohmmeter is simply a low-range d.c. voltmeter provided with a source of voltage (usually dry cells) large enough to make it read full scale. In order to check a resistance, the voltmeter and battery are connected in series with the unknown resistor. The meter reading will then be less than full scale; how much less depends on the value of the unknown resistor being checked.

For example, let's assume that a 3-volt battery, a 3000-ohm resistor, and a 0-1 ma. milliammeter are connected in series. From our previous discussion of how a voltmeter works you know that with this combination the milliammeter will read full scale. Now, suppose that a resistor of unknown value is connected in series in the circuit and the meter reads 0.5 ma., or half scale. A quick check using Ohm's Law

$(R = \frac{E}{I})$  would show that 6000 ohms total resistance would be required for a reading of 0.5 ma. By simple subtraction, 3000 ohms (the known resistance) from 6000 ohms indicates that the unknown resistance is 3000 ohms. It is possible to calibrate the meter in ohms rather than milliamperes, and thus read resistance directly.

The ohmmeter part of the combination instrument described in this article can be used for measuring resistances up to about 50,000 ohms. Two  $1\frac{1}{2}$  volt Penlite cells are connected in series with a 0-1 milliammeter and a 3000-ohm resistor. Table I gives the approximate value of external resistance versus meter reading.

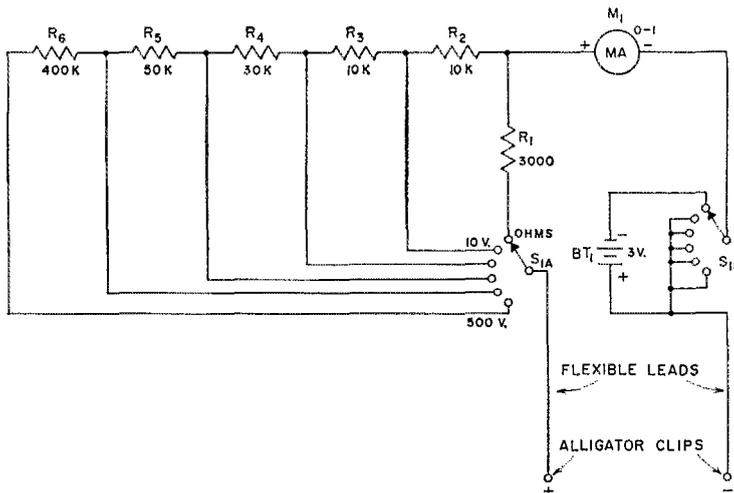


Fig. 2—Circuit diagram of the d.c. volt-ohmmeter. Resistors are  $\frac{1}{2}$  watt.

Voltage ranges are 10, 20, 50, 100 and 500 volts with the meter and resistance values specified. The resistors are connected in series to add up to the required value at each position of the range switch.

- BT<sub>1</sub>—3 volts; two  $1\frac{1}{2}$ -volt Penlite cells in series.
- M<sub>1</sub>—0-1 d.c. milliammeter, low internal resistance.
- R<sub>1</sub>—3000 ohms, 5 per cent.
- R<sub>2</sub>—10,000 ohms, 5 per cent.
- R<sub>3</sub>—10,000 ohms, 5 per cent.

- R<sub>4</sub>—30,000 ohms, 5 per cent.
- R<sub>5</sub>—50,000 ohms (51,000 ohms, 5 per cent).
- R<sub>6</sub>—400,000 ohms (390,000 ohms, 5 per cent; 1-watt size suggested for more conservative operation).
- S<sub>1</sub>—2-pole 6-position rotary (Mallory 3226J).

**Table I**

**Ohmmeter Calibration**

Meter Reading (Ma.)	Ohms
1.0	0
.97	100
.86	500
.75	1000
.60	2000
.50	3000
.375	5000
.30	7000
.23	10,000
.20	12,000
.14	18,000
.10	27,000
.06	47,000

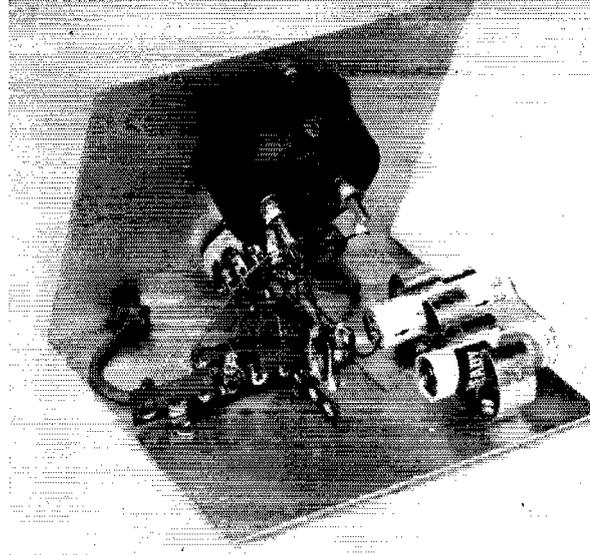
**Constructing the Unit**

Before attempting construction, study Fig. 2 and the photographs to familiarize yourself with the unit. This particular instrument has voltage ranges of 10, 20, 50, 100, and 500 volts, in addition to the ohmmeter range mentioned above. A two-pole, six-position switch,  $S_1$ , is used to change the various ranges by switching different combinations of resistors in series with the meter. The resistor values given in Fig. 2 are for a 0-1 ma. meter. If a more sensitive meter is used the required resistance values can be found by using Ohm's Law as described earlier. Also, you may want different ranges than those used in this unit; if so, calculate the resistor values accordingly and then get a parts catalog and check on the availability of resistors of the values needed. (If necessary, resistors can be connected in series or parallel to get an exact value.) But don't plan on any voltage ranges higher than 500 volts, because this is the maximum rating of  $S_1$ , and also is the maximum voltage that may be applied safely to a resistor of the type specified in Fig. 2.

Resistors are available in several different resistance tolerances, such as 10, 5, and 1 per cent. If you are a stickler for accuracy then by all means use 1 per cent resistors. However, you'll find 1 per cent resistors a bit more expensive than 5 per cent units. For most amateur work the 5 per cent resistors will be adequate.

The test meter shown in the photos is built on a piece of aluminum measuring 5 by 10 inches. The aluminum piece is bent at the center so that the front panel and base both measure 5 by 5 inches. However, almost any kind of box or container large enough to hold the parts can be used. In our unit, the meter and switch are mounted on the panel and all the other components are installed on the base. Two tie-point strips, one having two and the other six terminals, are used for holding the resistors.

Two 1½-volt Penlite cells are used to power the ohmmeter and these are mounted in two "broomstick" holders. These holders are available at practically any hardware or dime store, and cost 10 cents each. Connections to the cells are made by soldering leads to the end button and to the metal case. The case is negative and the button is positive.



The meter and switch are mounted on the front panel and all other components on the base. Note that the two Penlite cells are mounted in "broomstick" holders.

If you purchase the switch specified in Fig. 2 you'll find that it comes with a wiring sketch to show which connections are which. However, you don't *have* to have a switch with six positions. If your junk-box job has fewer it only means you won't have as many ranges.

Your radio parts dealer stocks test-lead wire and you'll need about six feet of it. It is a good idea to buy three feet of red-covered wire and a like amount of black, using the red wire for the positive test lead and the black for negative. In the unit shown, the ends of the test leads that are permanently connected to the circuit are run through rubber grommets mounted on the panel. A single knot in each lead, at the back of the panel, keeps the lead from being pulled off the connection point in the course of normal use.

After the wiring is finished you can check the lowest voltmeter range by measuring the 1½ or 3 volts of the Penlite cells. A check at higher voltage can be made by measuring the voltage in a voltage-regulated circuit, such as one using a VR-105 or VR-150.

Now that you have a test meter the next question you probably are asking is, "How do I use it?" The answer to this would take quite a bit of explanation — in fact, an entire *QST* article. Such an article was published some time ago,<sup>1</sup> and it is suggested for study by anyone interested in the use of a test meter.

One last word of caution: Always make it a point to be *extremely* careful when working around live circuits — and by "live" we mean *any* circuit that has voltage on it. It may sound trite, but it is always better to be safe than sorry. Also, when using the ohmmeter for continuity checks be sure all circuit voltages are off: if the circuit is "live" you're likely to burn out the test meter.

**QST**

<sup>1</sup> McCoy, "Test Meters and How To Use Them," *QST*, July, 1957.

## • Recent Equipment —

### The Hallicrafters SR-34

THE SR-34 by Hallicrafters is a bandswitching transmitter and receiver for 50 and 144 Mc., with universal power supply and modulation equipment in a space well under one cubic foot in volume. As the first two-band v.h.f. station, complete in one package ready for use, to be offered on the amateur market, it is of more than ordinary interest on several counts.

The transmitter delivers 7 to 8 watts on 50 Mc., and about two-thirds of that on 144. The receiver is a double-conversion job (23.25- and 1.65-Mc. i.f.) with completely separate tunable front ends for the two bands. Tuning range is just over five megacycles, allowing for examination of the busy commercial frequencies on the low side of the 50-Mc. band, and for tuning the MARS and CAP frequencies at the edges of the 2-meter band. An effective noise limiter and a low-threshold squelch system are included. Provision is made for c.w. in both transmitter and receiver.

As might be expected, this versatility entails some complexity and crowding in the matter of operating controls. The front panel view shows 13 controls, but there are 7 more under a hinged cover along the left front panel. These come into play when the transmitter is shifted from one band to the other. With all this, however, the tuning operations are simple and straightforward, and even the inexperienced operator will catch on to the use and adjustment of the equipment quickly. An interesting by-product of this flexibility is that the station can be used for "cross-banding." Bandswitching is separate for transmitter and receiver.

Looking at the front view of the SR-34, we see



The Hallicrafters SR-34 transmitter-receiver for 50 and 144 Mc. Power cables and a collapsible whip antenna are carried in the cover, shown here on top of the case.

the slide-rule dial at the top, with S meter at the right and a small built-in speaker at the left. The dial has a 0-100 logging scale between the calibrated scales for 50 and 144 Mc. Eight knobs, all alike, control the major functions. The three in the upper row at the right are for squelch threshold, main tuning and audio volume, in that order. Across the bottom are the main power switch, function switch (P.A., RCVR, CAL, AM, CW), phone jack, meter switch, send-receive switch, b.f.o. pitch control, receiver bandswitch, and r.f. gain control. Three rather inaccessible slide switches just above the last three knobs control the b.f.o., the noise limiter and the a.v.c.

The S meter doubles as an r.f. voltmeter for tuning the transmitter. The individual stage adjustments and the antenna loading are all "tune-for-max" operations, as the operator switches the meter from stage to stage. The last switch position at the right puts the meter into service as an S meter.

Crystals are plugged in through an access hole in the left side of the case. Choice of any of the four crystals or v.f.o. is made with a switch that is the first of the seven hidden controls. The v.f.o. is not included in the SR-34. If one is used, it is plugged into a jack on the back of the unit. Other controls under the hinged cover on the front of the SR-34 are for oscillator, tripler, doubler, final plate and antenna-loading capacitors, and the transmitter bandswitch. How these circuits work is of some interest, and will be covered later.

The exposed part of the back of the SR-34 carries the power connector, two fuses, keying jack, gain control, carbon-crystal microphone switch, v.f.o. jack, microphone jack, and external speaker and relay-switching terminals.

FCDA specifications governed the packaging of the unit to a considerable extent. The case had to be "drip-proof," which accounts for the unvented top. The bottom of the case is perforated metal and the sides have louvres, but we feel sure that the operating temperature of the SR-34 could be lowered markedly if the top were perforated, in the manner of many of the current crop of receivers and transmitters. The manufacturer assures us, however, that the range of operating temperature was studied carefully and that the cooling provisions are adequate.

The case has a rubber-edged cover that is clamped tightly in place by drawbars. Cables for a.c. and battery operation, and a telescoping whip antenna, are carried inside the cover. A lift-up leather carrying handle is mounted in a recess on the top side of the cover. The SR-34 closed is a smooth metal box with a handle, but you won't want to take it on long plane trips; it's a hefty

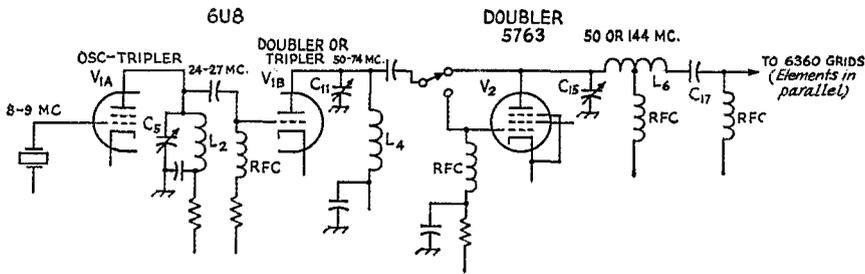


Fig. 1—Simplified diagram of the SR-34 transmitter circuit, showing the method used for developing 50- and 144-Mc. drive for the final amplifier. With this arrangement the only coil switching is in the final amplifier plate circuit.

package that will eat up a major portion of your baggage allowance.

### Some Circuit Tricks

So much for what the SR-34 is. Let's see what it does, and how it does it. Anyone who has tried to design a simple band-switching transmitter for 50 and 144 Mc. will find the system used here of interest, for only three tubes are used in the r.f. section of the SR-34 transmitter. A simplified schematic diagram, Fig. 1, shows how the switching is handled. We found an idea or two here that we've filed away for future use.

A 6U8 pentode section is the crystal oscillator, using crystals in the 8- to 9-Mc. range. The oscillator triples in its plate circuit to 24 to 27 Mc. (Crystals at 6, 12 or 24 Mc. may also be used, though grid drive developed along the line may be a bit on the low side with 6-Mc. rocks.) The triode section of the 6U8 doubles to 50 Mc. or triples to 72 Mc., depending on the band. The plate circuit tunes to both frequencies, so the operator must take care that he hits the right harmonic in 144-Mc. service. (There is no output from the final if you get the wrong harmonic.) Then comes a 5763, and the interesting part. On 144 Mc. this stage doubles, the 72-Mc. energy from the 6U8 triode being switched to the 5763 grid. (Parts designations used here are taken from the SR-34 manual.) On 50 Mc. the 5763 "just goes along for the ride" and its plate tuning capacitor,  $C_{15}$ , is effectively in parallel with the 6U8 tuning capacitor,  $C_{11}$ . The 144-Mc. plate coil of the 5763 stage,  $L_6$ , merely looks like extra lead length at 50 Mc., and the final stage is driven directly from the 6U8 doubler, through  $L_6$  and  $C_{17}$ . The circuit is completed by the input capacitance of the 6360.

This neat trick is not explained fully in the instruction book, and it takes a bit of studying the diagram to see how the switching is accomplished. The operator may be misled by the operating procedure outlined in the book, for it is not made clear that  $C_{11}$  and  $C_{15}$  are effectively in parallel on the 50-Mc. range, and that consequently only one of them need be adjusted when tuning up on 6.

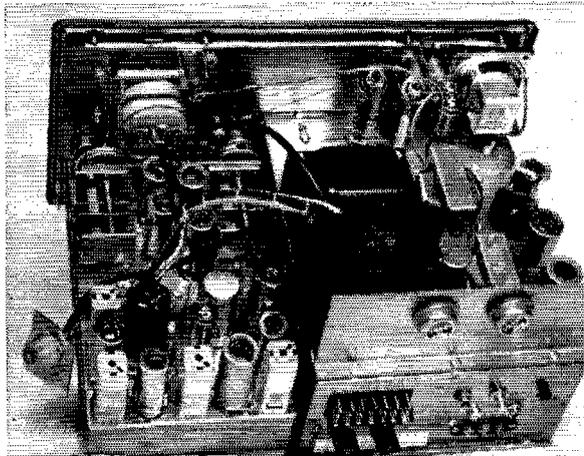
The final amplifier is a 6360 dual tetrode, with its elements in parallel. The only coil switching in the whole transmitter takes place in the plate

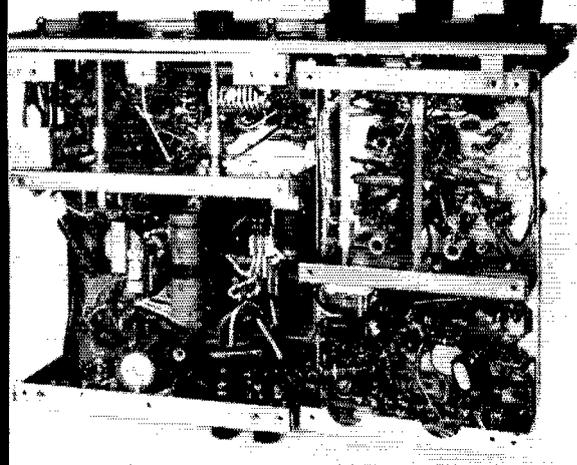
circuit of the 6360. The compact structure and low output capacitance of the 6360 allow parallel operation without appreciable loss of efficiency, even at 144 Mc.

Two front ends of similar design solve many of the receiver problems encountered in designing a stable tuning system for two v.h.f. bands. A 6BK7 cascode r.f. amplifier feeds a 6U8 pentode mixer, the triode portion serving as the tunable oscillator. Power and i.f. output are switched between the converters in changing bands, but the oscillator for the band in use runs continuously. This takes care of the drift problem that shows up in other v.h.f. receivers where plate voltage is removed from the oscillator during standby periods. Temperature compensation is used in the oscillator circuits, and warm-up drift is held to a very low value. We were gratified to see that c.w. signals remained tuned in when we switched back to receiving after a period of transmitting. The stability of the SR-34, while not the equal of good crystal-controlled converters working into a stable communications receiver, is still adequate for effective c.w. work. Receiver selectivity is 50 kc. at 60 db. down.

The output frequency of the mixers is 23.25 Mc. A 6BE6 second mixer, with crystal-controlled injection, converts to 1.65 Mc., at which frequency there are two stages of amplification, a 6BJ6 and the pentode section of a 6U8. The 6U8 triode is the b.f.o. A 6AL5 detector and noise limiter, and a 6AW8 audio amplifier and squelch complete

Looking at the bottom of the SR-34, we see the transmitter at the upper left, the receiver front ends at the right, the receiver i.f. and audio portion at the lower right, and the power supply and audio components at the lower left.





Interior view of the SR-34. Construction is in subassemblies, with receiver at the left and transmitter r.f. section at the right front. Power supply and audio components are at the right rear. Note that two completely separate front-end systems are used in the receiver, upper left.

the receiver proper. Audio output is fed into the second stage of the common audio system for additional amplification.

### Power Supply

The SR-34 can be operated from a 6- or 12-volt battery, or from 115 volts a.c. Separate cables are supplied for battery or a.c. operation. The battery cable comes wired for 12-volt service, but

conversion to 6 volts is shown in the instruction book. A separate cable fitting is supplied so that cables for both battery voltages can be made available. The differences are in the external cable fitting, and no changes need be made in the unit itself, other than substitution of a 20-amp. fuse for the 15-amp. fuse normally supplied for 12-volt service.

The power supply has a transistor section for efficient operation on battery power, and selenium rectifiers for the a.c. portion. Power drain is 8 amp. on receive and 9 on transmit, from a 12-volt system. A.c. power consumed is 112 watts on receive and 130 on transmit. A model (SR-34AC) is available for a.c. only. It is otherwise similar to the universal model described. Both units comply with FCDA specs for matching funds. Case size:  $8\frac{3}{8} \times 14\frac{1}{4} \times 12\frac{7}{8}$  inches. Weight: 76 lbs.

—E. P. T

## The Hammarlund HQ-145 Receiver

THE HQ-145 is a 12-tube (dual-conversion above 10 Mc.) general-coverage communications receiver which, in four bands, tunes from the broadcast band (.54 Mc.) to 30 Mc. Two separate tuning controls are used, one for general coverage and the other for bandspread. Short-wave broadcasting bands are marked by red segments on the general-coverage dial while the amateur bands are indicated by boxed-in areas. For amateur-band tuning the general-coverage control is set at the high-frequency end of the particular band and the calibrated bandspread dial is then used for tuning

through the range. The bandspread dial is calibrated every 10 kc. on the 80-, 40- and 20-meter bands, 20 kc. on 15 meters and 50 kc. on 10 meters. There is a special tuning range for 20 meters to provide optimum dial spread for this band. One revolution of the bandspread dial covers about 115 kc. on 20 meters.

The operating controls on the HQ-145 are spaced to provide plenty of room for handling. The range switch (band switch) is easy to turn — you certainly don't have to struggle with the switch to change bands on this receiver. How-

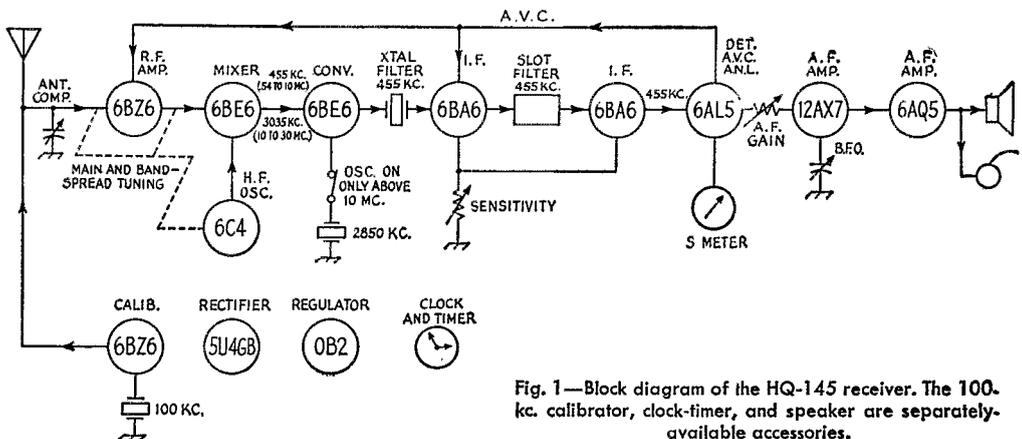


Fig. 1—Block diagram of the HQ-145 receiver. The 100-kc. calibrator, clock-timer, and speaker are separately-available accessories.

ever, the r.f. and i.f. gain controls are both at the lower right-hand corner of the panel with the handsread knob just to the left of them; thus if you like to "ride" the gain controls while tuning, you'll have to do your tuning with the left hand and touch up the gains with the right.

A block diagram of the receiver is shown in Fig. 1. An antenna compensator, adjustable from the panel, allows the operator to resonate the r.f. input circuit. Since the receiver has more than enough gain on the broadcast band (.54 to 1.6 Mc.) an untuned coupling circuit is used between the r.f. stage and mixer when receiving on this band. On all other bands, tuned coupling is used.

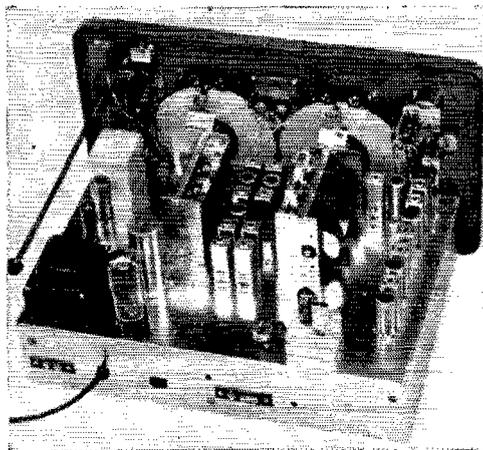
The 6BZ6 r.f. stage is followed by a 6BE6 mixer. The tunable local oscillator uses a separate tube (6C4), and on signal frequencies from .54 to 10 Mc. the mixer output is on 455 kc.

On the higher frequencies (10 to 30 Mc.) double conversion is used for greater image rejection, with a first i.f. of 3035 kc. A second 6BE6, a converter, follows the mixer. The crystal-controlled oscillator section of the converter operates at 2580 kc., combining with the 3035-kc. i.f. signal from the first 6BE6 to give output on 455 kc. On .54 to 10 Mc., the 2580-kc. crystal oscillator is switched off.

The crystal filter, which is at the input end of the 455-kc. i.f. amplifier, has a front-panel control which allows the selection of six different bandwidths. A phasing capacitor, also adjustable from the front panel, provides the usual rejection control of the conventional crystal filter. The SENSITIVITY control — which, as shown in the block diagram, is an i.f. gain control — is located in the cathode circuit of the first and second i.f. amplifiers. However, before going on to the second i.f. amplifier, the signal is fed into a bifilar "T" trap.<sup>1</sup> This is the same filter used in the popular HC-10 and the higher-priced HQ-170<sup>2</sup> receiver. This device, called a "slot filter," has the same effect on signals as a *Q* multiplier as far as rejecting unwanted frequencies is concerned. It is operated just like a *Q* multiplier, too, having two controls, one for notch frequency and one for notch depth.

One diode of a 6AL5 tube is used as the detector and a.v.c. rectifier. A.v.c. voltage is applied only to the r.f. amplifier and first i.f. stage. The other diode operates as an automatic noise limiter. Separate toggle switches allow switching the a.v.c. and noise limiter in and out of the circuit. A portion of the a.v.c.-noise limiter circuit uses a special *BC* printed-circuit network.

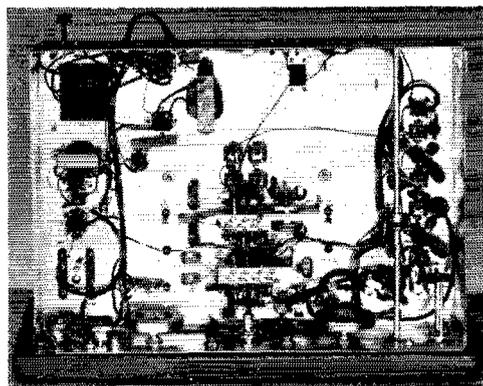
When the mode switch is turned to c.w.-s.s.b., the 12AX7 b.f.o. section is connected. The b.f.o. Colpitts oscillator has a range of plus or minus 2 kc. and includes temperature-compensating components for stability. The b.f.o. frequency is adjustable from the front panel. A resistance-coupled audio amplifier shares the 12AX7 tube with the b.f.o., and is coupled to the 6AQ5 audio power amplifier. Part of the audio circuit also



View of the HQ-145 with its gray case removed. The 100-kc. crystal calibrator (an accessory) is shown plugged in near the right-hand corner of the chassis. The cans and tubes nestled between the tuning capacitors belong to the antenna, local oscillator and r.f. stages. The i.f. strip runs along the right edge of the chassis while the power supply occupies the left foreground. The slot filter is on the panel just above the i.f. strip. The long shaft protruding from the panel is used for adjusting the clock-timer from the rear of the cabinet.

uses printed-circuit components. A special automatically regulated negative-feedback circuit in the HQ-145's audio circuit<sup>3</sup> provides "hi-fi" reception with low settings of the audio gain control. This is useful when strong broadcast-band signals are being received and good quality audio is desirable. As the gain control is advanced for weak signals, the feedback in the audio circuit decreases and extra audio selectivity is obtained.

Regulated voltage (108 volts) is applied to the local oscillator plate and to the screens of all tubes ahead of the detector. Regulated voltage is



This bottom view of the receiver shows the neat layout of the components and cable harness. The shaft running the breadth of the chassis near the right is the antenna compensator control shaft. It is string-coupled to a capacitor mounted near the "front-end" components. The tuning-control flywheels are visible near the panel.

<sup>1</sup> *QST*, August, 1957, page 38.

<sup>2</sup> *QST*, February, 1959, page 42.

<sup>3</sup> *QST*, January, 1957, page 34.

also used to power the crystal calibrator when it is switched into the circuit.

A few optional accessories are available for use with the HQ-145. There is a 100-ke. crystal calibrator, a portion of which uses a printed circuit. When it is switched in the circuit by the mode switch it gives 100-ke. markers throughout the tuning range of the receiver. These markers are sufficiently strong, even at 30 Mc. The calibrator contains a "crystal puller" which makes it possible to zero beat the oscillator to WWV. Another accessory is a Telechron timer which will turn on the receiver automatically at any predetermined time and, of course, is a clock as well. A speaker

in a matching gray cabinet is also available.

Connection points and controls at the rear of the chassis include a two-post terminal strip for the speaker, a female 117-volt chassis connector to which an external relay can be connected for remote control of the receiver, a three-post terminal strip for antenna-ground connections, and a zero adjustment control for the S meter. The HQ-145 is 19 inches wide, 13 inches deep and 11 inches high.

A 23-page instruction manual comes with the receiver. The HQ-145 power requirements are 117 volts, 60 cycles at about 80 watts. A 220-volt a.c. model is also available. — E. L. C.

## Millen Tone Modulator for G.D.O.

**T**HE Type 90751 Tone Modulator is a transistor audio oscillator powered by a self-contained mercury battery. It is designed specifically for modulating the Millen Grid-Dip Meter, by being plugged into its headphone jack, but can be used for a number of other jobs around the ham shack.

The circuit diagram is shown in Fig. 1. Basically, the circuit is a transistor RC phase shift oscillator, designed to oscillate at about 850 cycles, with output taken from the tap on  $L_1$ .  $L_1$  is not a fundamental part of the oscillator circuit but is used for coupling the oscillator to the grid circuit of the g.d.o. A unique on-off switching arrangement is used: when the unit is plugged in, a ring-shaped spring around the plug shank is pushed back against the plug base to close the battery circuit and thus turn on the tone oscillator. (The fiber shim shown in the photograph between the ring and the base prevents the switch from being closed accidentally during handling prior to use.) All components, including the mercury battery, are mounted on a flat phenolic board. The large circular component at the center of the board is the tapped inductance,  $L_1$ . The 2N107 transistor,  $Q_1$ , is just to the left of  $L_1$ .

The tone oscillator can be used with a key for code practice, and has sufficient power output to drive a pair of headphones without amplification. It can also be plugged into the mike jack of a phone transmitter to provide a tone for modula-



The Millen Tone Modulator for grid-dip oscillators is built to fit a standard phone jack.

tion checks and for generating m.c.w. emission. The waveform, although not purely sinusoidal, is good, and the output into a high-impedance load is slightly under 1 volt peak.

The Tone Modulator measures  $4 \times 1\frac{1}{4} \times 1\frac{1}{4}$  inches over-all and weighs  $4\frac{1}{4}$  oz. It is made by the James Millen Manufacturing Co., Inc., Malden, Massachusetts.

— E. L. C.

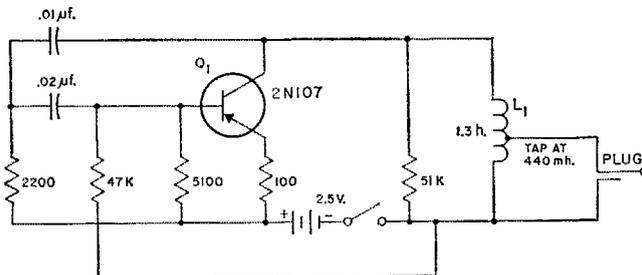


Fig. 1—Diagram of the 90751 Tone Modulator.

## Hamfest Calendar

**California** — The Orange County ARC will hold its fifth annual picnic on Sunday, June 7, from 1100 to 1600, at Irvine Park, Orange County, just a few miles from Disneyland, Santa Ana, Fullerton, Anaheim, Newport Beach and Costa Mesa. All sorts of entertainment at the park, from horseback riding to boating. The picnic program will include a baseball game, transmitter hunt, QSL card contest, and a swap table. Advance registration is \$1.00, and should be made with Ted Glick, K6LJA, 1009 River Lane., Santa Ana. Advance registrations are also available from many of the electronic supply houses in southern California.

**Illinois** — The annual Starved Rock RC hamfest will be held on Sunday, June 7, at the LaSalle County 4-H Home and picnic area on Route 71 southwest of Ottawa. (Same place as last year). Advance registration (prior to May 28) is \$1.00, or \$1.50 at the gate. Contact G. E. Keith, W9AKS, RFD #1, Box 171, Oglesby.

**Iowa** — The Iowa 160-meter hamfest will be held in Webster City on Sunday, June 28. For further information contact G. D. Warland, K9AHZ, 927 Elm St., Webster City.

**Maine** — The third annual Augusta hamfest will be held on Sunday, June 14, at the Calumet Club, West River Road, Highway 104 North. The doors will open at 0900, with a turkey dinner served at 1230. There will be meetings of the Sea Gull Net, the Barnyard Net, and RACES. A transmitter hunt and a swap table will be on the program. Advance registrations are \$2.25, at the door \$2.50, children \$1.50. Get your tickets by contacting Wilfred Lemieux, W1VXU, 151 Cony St., Augusta, by June 12.

**Mississippi** — The Cleveland ARC will hold a hamfest on Sunday, June 14, at Weber's place five miles north of Indianola, on highway 49W. For further information contact Thomas C. Pate, K5HYO, P. O. Box 812, Cleveland.

**Mississippi** — The Biloxi ARC will hold its annual hamfest on June 6 and 7 at the Biloxi Community House. Contests. A shrimp boil on Sunday. Tickets are \$1.00 each. For more information contact the BARC, Box 1574, Irish Hill Station, Biloxi.

**Nebraska** — The Dawes County ARC will hold its annual ham family picnic at Nebraska State Park, Chadron, on Sunday, June 7, beginning at noon. Each family is to bring its own food, which will then be put on picnic tables and served family style. Coffee and soft drinks will be furnished by the club. There will be a swap table and a hidden transmitter hunt. For further information contact Lynn Bilyeu, K9ODF, 406 Henkens Drive, Chadron.

**New Mexico** — The Totah ARC of Farmington, New Mexico, will hold its annual hamfest and picnic on July 4 and 5 at Pine River Dam, Vallecito Res., which is about 20 miles northeast of Durango, Colo. This is a wonderful place for an outdoor outing, plenty of free campsites, boating, water skiing, horseback riding and cabins at a nominal fee. Swap table. For further details contact Leonard M. Norman, W5CIN, 903 North Butler Ave., Farmington, New Mexico.

**New York** — The Second Annual Long Island Teenage Hamfest will be held on June 6 at 1000 at the South Side Senior High School in Rockville Centre. Sponsored by the South Side High School RC, events will include contests, films, equipment exchange, and 2- and 6-meter transmitter hunts. Tickets are 50¢ in advance or 75¢ at the door. Tickets and further details are available from John Cunitz, K2TBU, 10 Buckingham Rd., Rockville Centre.

**Ohio** — The fourth annual picnic sponsored by the Northeastern Ohio 50 Mc. Group will be held on Sunday, June 21, at Wadsworth Memorial Park, Wadsworth. Highlights of the program include "Queen for the day," swap shop, and activities for the XYL and kiddies. Picnic begins at 1200. Mobile check-in on 50.4 Mc. Complete catering service on the grounds. Registrations at \$2.00 per family available from Rev. Charles Burkey, K8LMG, 3156 Rose Bay Blvd., Barborton.

**Pennsylvania** — The Penn-York Hamfest Association will hold its first hamfest on Saturday, June 20, beginning at 1300, at the Elkland Legion Hall in Elkland, Pa. The program will include speakers, contests, and dinner. Ladies will be invited to tour the Corning Glass Center during the afternoon. Reservations at \$3.50 per person include everything. For more information, contact the Penn-York Hamfest Ass'n., c/o CARA, P. O. Box 301, Corning.

**Tennessee** — The Mid-South ARA will hold its annual hamfest on June 14 at the customary location on the grounds of the Shelby County Penal Farm. This is located off Highway 70 a few miles east of the Memphis city limits. The program will run from 100 to 1500. Tickets are \$1.50 including a box lunch, or 50¢ without. Free soft drinks. Mobile talk-in on 3980, 29,627 and 50,500 kc., monitored commencing at 0800.

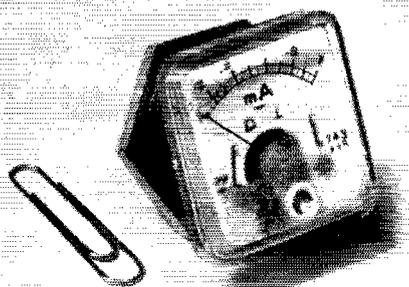
**Washington** — The annual picnic of the Royal Order of Hoot Owls will be held on June 21 at Gaffney Resort on Lake Wilderness near Renton. Registration commences at 0900 and closes at 1300, open only to ROHO membership and families.

**West Virginia** — The first annual hamfest of the Marshall County ARA will be held June 7 at Glendale Park, Glendale. For further details contact Louis Kaufman, K8LUS, 1212 6th St., Moundsville.

**West Virginia** — The West Virginia State Hamfest will be held at Jackson Mills 4-H Camp near Weston, on U. S. Route 19, on July 11 and 12. Registration prior to June 1 will be \$1.50, or \$2.00 at the gate. Accommodations at Jackson Mills are \$4.50 per day per person for lodging and three meals, and required in advance. The program will include activities for the whole family. There is a swimming pool with life guards. Reservations and more information can be obtained from the West Virginia Hamfest, Box 909, Fairmont.

## • New Apparatus Alco One-Inch Miniature Meters

THE miniature meters shown in the photograph should be "naturals" for small portable instruments, mobile gear, and transistorized equipment. Averaging only about one inch square, they come in a variety of useful ranges, and are available as d.c. microammeters, d.c. milliammeters, d.c. voltmeters (1000 ohms/volt) and a.c. voltmeters. A 0-1 ma. S meter is also included in the



line. The meter shown in the photograph is a sample of the P-1000 series, having a threaded case which is secured to the panel with the large nut. Other models (series B-100) use the conventional stud mounting. Both series have D'Arsonval movements and are equipped with zero-set adjustments. These imported meters are distributed by Alco Electronics Mfg. Co., Wolcott Ave., Lawrence, Mass.

QST

# A Look Back and Ahead at PRP

BY MASON P. SOUTHWORTH,\* W1VLH

**T**he King is dead. Long live the King!" This famous phrase which portrays the continuity of royal succession can be just as well applied to ARRL's Propagation Research Project.<sup>1,2,3</sup> The IGY portion of this U. S. Air Force Cambridge Research Center-sponsored program is over, but new and related phases have already begun. Now that the 1957-58 reports of v.h.f. ionospheric DX have been gathered, evaluated and transcribed onto nearly 300,000 IBM punched data cards, the time has come to really make use of this material in scientific propagation studies. Then too, as we shall see, the ham results have already justified further collection of certain logs during the International Geophysical Cooperation-1959.

First, let's check the box score on our 1957-58 PRP effort. At IGY's end there were 592 active observers sending in more-or-less regular semi-monthly reports covering their 50-, 144- and 220-Mc. accomplishments. Our mailbox would represent nearly half a DXCC — going on 50 countries — every 15 days. Consistent Reporting Award Certificates were earned by 438 stations who sent in six or more half-month, one-band logs. Most of these same amateurs then proceeded to qualify for one or more of the 973 endorsement stickers which certified to additional like feats. A perfect record of a certificate and seven stickers could only be achieved by starting off with a report for the first half of January, 1957, and sticking with it through the last of December, 1958. Nevertheless, 34 stations made such a record. We name them here as a memorial to their

\* ARRL-IGY Project Supervisor.

<sup>1</sup> Southworth, "The ARRL-IGY Propagation Research Project," *QST*, Sept., 1956.

<sup>2</sup> Southworth, "PRP — A Progress Report," *QST*, Apr., 1957.

<sup>3</sup> Southworth, "Another Peek at PRP," *QST*, Aug., 1958.

outstanding work: W1HDQ, W1MMN, W1PHR, W1SUZ, W2BLV, K2DIG, K2GCU, W3GKP, W4FLW, W4HHK, W4HKK, W4UMF, W4ZZ, W6AJF, W6BWG, W7INX, W8CMS, W8EHW, W8NQD, W8OJN, W8TCO, W9ALU, W9ARN, W9FVJ, W9MFH, W0CNM, K0EMQ, W0IBL, W0MOX, C02ZX, C1X1AQ, O44C, VE3AGU, SWJ-21 (Jim Pickering of Hightstown, N. J.).

Shortly after the first of this year a "thank you" letter went out over the signatures of the writer and AFCRC Project Monitor Dr. Wolfgang Pfister to all who had participated. By the time you read this most of these same amateurs will have also received an extremely handsome certificate of appreciation. This four-color document bears the names and seals of the following men and their organizations: Hugh Odishaw, Executive Director, U. S. National Committee for IGY; Col. Ernest A. Pinson, U.S.A.F., Director, Geophysics Research Directorate; and Goodwin L. Dosland, President, American Radio Relay League. A most distinguished memento of a job well done by PRPers around the world!

## What About the Data?

Besides two copies each of those 300,000 punch cards referred to earlier, the processed ham data exist in the form of several sets of machine-produced listings which have been forwarded to the various IGY World Data Centers. Since these volumes will be available to scientists of all the IGY countries we have right here quite a balance of scholarly credit payable to our hobby throughout the coming years. Already, AFCRC workers under Dr. Pfister and Mr. Thomas Keeneshea are well along on a study of sporadic-E based upon PRP reports. What a thrill it was for the writer to visit the Air Force's computing center and see a machine using its memorized tables of sines, cosines and tangents to figure and punch out the distances between stations on his *E<sub>s</sub>* cards, one every couple of seconds! Another automated process has been the plotting of sporadic-E midpoints on a series of maps — one for each half-hour or so of time. By viewing these maps consecutively it is possible to visual-

Printed in four colors, this imposing certificate will be a worthy adornment on many shack walls. It was awarded to all active PRP'ers at the close of the project.



ize (even make into a speeded-up movie) the motion of the ionized patches which provide our  $E_s$  contacts. By this means plus the study of a lot of plain old statistics about when and where sporadic-E occurs some understanding of the causes of this mode may develop. An article due to appear in *QST* within the next month or two will carry further details and preliminary results.

A second PRP study project will be getting under way this summer at Stanford University under the auspices of the AFCRC. Dr. O. G. Villard, Jr., whose several *QST* propagation articles are classics, will be the Principal Investigator, and the author will serve as Project Director while continuing his studies at the University. This program is aimed at unraveling some of the mystery behind transequatorial scatter (*TE*), a propagation mode noted for fluttery signals over long north-south trans-equatorial paths during the evening hours. Fig. 1 shows some of the *TE* paths reported by PRP observers during the IGY. Their number is the more remarkable since prior to 1957 *TE* signals had been logged only between the Americas. The availability of data for all of these circuits and information from various professional IGY experiments should make for a great deal of interesting analysis. *QST* will keep you posted on what develops.

#### Data Collection in 1959

As further proof of its belief in the value of amateur propagation observations the Cambridge Research Center has contracted for additional ham reports during IGC-1959. About 100 stations have been selected for the accuracy and consistency of their work and to secure a fairly even geographical distribution. They are now submitting monthly logs detailing 50-Mc. equatorial

propagation (the field judged least understood) and supplying general material about other six-meter openings. This data will be collected by ARRL and processed and studied in connection with the program at Stanford. The information should be particularly valuable because *TE* peak conditions were observed to lag maximum sunspot numbers by a year or more in the past cycle.

To help in spotting openings between the southern U. S. and South America, PRP beacon station W5FHS, Shreveport, Louisiana, which is operated by employees of the United Gas Corporation there, has obtained FCC permission to continue its 24-hour transmissions through the end of this year. A nine-element yagi has been constructed to replace the ground plane, and this is kept aimed at Buenos Aires, Argentina. Incidentally, W5FHS will send a special IGC-1959 confirmation card to any station reporting reception details.

Another *TE* warning device set up this spring was the TEW (transequatorial warning) Line. This is a network of nine stations and nine alternates which form a chain from Fort Lauderdale, Florida to Canton, Connecticut. When any TEW Line station hears South American signals after 1600 EST he telephones the stations north and/or south of him. They then check the 50-Mc. band and, if *TE* signals are heard, they pass the word along up or down the line. This way the whole U. S. east coast can be notified in a matter of minutes, but only as much of the line as is necessary is used during a given opening.

If all this makes you feel that amateur propagation studies are important and mean business, you're right! We think they also demonstrate that the day of ham contributions to the state of the art is by no means over! QST



Fig. 1—Dashed lines illustrate some of the 50-Mc. transequatorial scatter paths worked by PRP observers during the IGY. The solid, wavy line represents the magnetic equator where the earth's magnetic field is parallel to its surface. Note how the *TE* is roughly symmetrical to this equator.

# V.H.F. QSO Party Announcement

June 13-14

ANOTHER ARRL V.H.F. Party will be held from 2 P.M. local standard time Saturday, June 13, through 10 P.M. local standard time Sunday, June 14. All amateurs who can work any band or bands above 50 Mc. are urged to join the fun.

The rules are exactly as before, except that the ending time has been moved up an hour. This is to permit mountaintop portables to wrap up operations earlier, yet preserve the possibility of catching evening aurora and sporadic-E conditions late in the contest period.

Call "CQ V.H.F. QSO Party" or "CQ Contest" to raise other participants. During contact, operators must exchange names of their ARRL Sections (see page 6) to receive contest credit. Signal reports, operators' names, and equipment line-ups may also be exchanged, of course, but such information is not required by the contest rules. Figure your score as shown in rules 4 and 5.

A certificate will be awarded to the top scorer in each ARRL Section. In addition, certificate recognition will be extended to the high-scoring Novice, Technician, and multioperator station in each section from which three or more valid entries in these three special categories are received.

Submit your results as soon as the competition ends. A simple tabulation of stations and sections

worked, as shown in the accompanying sample log, is all that is required. Free log forms are now available from ARRL.

## Rules

1) The contest starts at 2:00 P.M. Local Standard Time, Saturday, June 13, and ends at 10:00 P.M. Local Standard Time, Sunday, June 14. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation under one call, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

4) Scoring: 1 point for completed two-way section exchanges on 50 or 144 Mc.; 2 points for such exchanges on 220 or 420 Mc.; 3 points for such exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of different ARRL sections worked per band; i.e., those with which at least one point has been earned. Re-working sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

5) A contact per band may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives

(Continued on page 164)

## SUMMARY OF CONTACTS, JUNE V.H.F. QSO PARTY

Station..... Class License..... ARRL Section.....

Freq. Band (Mc.)	Date and Time	Station Worked	Section	Record of New Sections for Each Band					Contact Points Claimed
				50	144	220	420	Other	
50	June 13 2:15 P.M.	W1AQE	E. Mass.	1					1
		W1RFU	W. Mass.	2					1
		K2IEJ/2	N. Y. C.-L. I.	3					1
		W1AQE	E. Mass.		1				1
		W1OOP	E. Mass.						1
		W1RJA	Conn.			2			1
		K2IEJ/2	N. Y. C.-L. I.			3			1
		W2GLU	N. Y. C.-L. I.						1
		W1VNH	W. Mass.					1	3
		W2ADE	N. N. J.		4				
144	3:00	W1AQE	E. Mass.		1				1
		W1OOP	E. Mass.						1
		W1RJA	Conn.			2			1
1215	3:16	K2IEJ/2	N. Y. C.-L. I.						1
		W2GLU	N. Y. C.-L. I.						1
		W1VNH	W. Mass.					1	3
50	3:48	W2ADE	N. N. J.	4					1
		K2HPN	E. N. Y.	5					1
220	3:55	W1OOP	E. Mass.			1			2
		W1AQE	E. Mass.						2
		W2AOC	N. Y. C.-L. I.				2		2
50	June 14 8:10 A.M.	W9ROS	Ill.	6					1
		W0FZ	Minn.	7					1
		W6NLZ	Los Angeles	8					1

Number of contacts: 50 Mc. 8 144 Mc. 5 220 Mc. 3 420 Mc. .... Other 1  
 Total contacts: 17 Total contact points: 22 Multiplier: 8 + 3 + 2 + 1 = 14  
 Claimed score: 22 × 14 = 308 Points Final Score

Names and calls of operators having a share in above work.....

I hereby state that I have abided by the rules specified for this contest and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

Transmitter:..... Signature.....

Receiver:.....

Antenna:..... Address.....

# Publicity Corner —

## Don't Be Shy About It!

BY JOE A. ROLF,\* K5JOK

**P**UBLICITY HOUND" seems to be a pretty common term in many ham circles. So common, in fact, that anyone sending out a QSL with even a remote resemblance of his beautiful mug is liable to earn the title. However, the unlaudable description falls much quicker upon the local ham whose call is presented over mass media. Amateur radio seemingly has retreated to the confines of a few precariously held kilocycles, and anyone departing from the bedlam to do a little bragging has a pretty good chance of being plastered with the publicity sticker. Hams have become, of all possible things, publicity shy!

This charge may be challenged as being untrue and unwarranted, but one has only to do a little rag-chewing to find that he isn't the only one to be misunderstood by neighbors, police, Congressmen, mayors, dog catchers, welfare officers, and XYs. Nor does one have to conduct an extensive survey outside the circle of immediate acquaintances to determine what his community knows about ham radio.

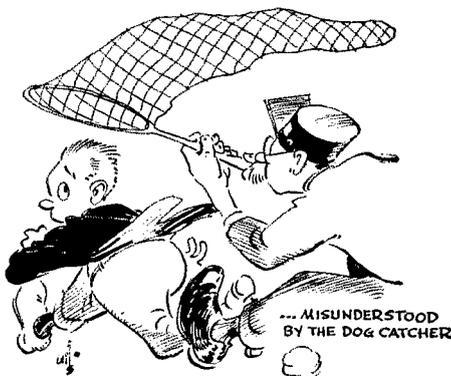
For instance, it is well known publicly that the hobby sometimes provides emergency communications during disaster (a fact often quickly forgotten with a little sunshine); that hams meet in nets to prepare for such emergencies (though nothing ever seems to come from these apparent social gatherings); and that they occasionally have success in sending garbled messages to such remote places as the North Pole. More often, the average ham is known as the arch-villain, by popular vote, of Channels 1 through 28; a joker who enjoys living dangerously in a junked-up basement, with the spider agility to cover a nice neighborhood with wire in nothing flat. During sunspot cycles, he is even known to become vicious, shouting at everybody's kids and leaving his wife.

Whether the above assertions are true or not, even to the belief of solar lunacy, they are typical negative attitudes existing in many localities.

\* Box 594, Jonesboro, Arkansas.

They exist, mainly because the real cause of ham radio has not been made sufficiently clear. For the same reason, the really significant aspects of the hobby are seldom known.

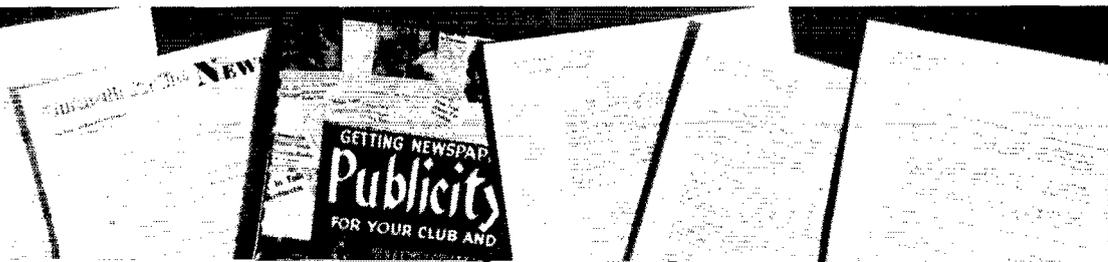
Today, ham radio's vastly improved technology and ability to render a superior public service doesn't often demand the limelight of the front pages, or the attention of a learned scientific



convention, as in the Golden Age before Pearl Harbor. The almost hidden role of modern amateur radio, now reaching through the ionosphere, is not so widely publicized as in the days when the hobby was reaching for Europe. This does not mean that national publicity is non-existent, or fails to meet a definite need, but that the real burden of publicity at the local level *has fallen upon the individual.*

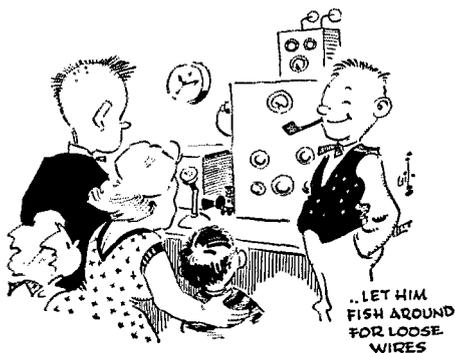
And why you? For one reason, you're a ham. For another, you're not the same kind of ham as the fellow out on the coast who won the Such-And-Such Award last year. Everybody read about his work during Hurricane Elmira and everybody was impressed. You felt good, yourself, when you read about it. The hero was a fellow hobbyist, and you understood his problems. It

When you get your own public-relations program off the ground, you may want to use some of the publicity aids available from League headquarters free of charge. Shown here, from the left, are the sample speech, good for either fifteen or thirty minutes at a meeting of a civic club, church group, youth organization or the like; news-release paper, 8½ by 14 inches, to give your own releases a professional appearance; the publicity booklet for clubs, containing five pages of general instructions and forty sample releases to be adapted to your own local use; a script for a fifteen-minute radio broadcast; the television interference script which, with its accompanying slides, shows viewers what causes interference and how it can be corrected; and the "Interview On Amateur Radio," especially useful to educate newsmen and feature writers on our hobby. Other aids include reprints of newspaper TVI stories, reprints of "glamour" articles on ham radio, and two movies on emergency radio operations. Requests for this material can be directed to ARRL Hq.



could have been you . . . sitting there in the darkness, fighting fatigue, hoping the long wire would hold during the 90 m.p.h. gale. You can picture our hero struggling, as you would have done, to pass his last bit of traffic before the water-cooled 6V6 disintegrated. This fellow, like you, is a credit to the hobby and everyone ought to love him and ham radio too.

Everyone does love him, but he's one in a thousand and you aren't even in the thousand that produced him. Not at all. Not with your rosy 813, beat up receiver, and antenna that's uprooting your neighbor's favorite sycamore. Besides, you're a scandal to the community when your rotor gets stuck. The other fellow never used such language (so the public thinks). He had new equipment, sat in an air conditioned office . . . even wore a grey flannel suit. The other fellow's achievement hasn't elevated you one kilocycle in the eyes of the public living within a second harmonic's throw. They know you and, like many of us, you may be pegged a real dirty-bird ham.



What to do about it? Either prop up the sycamore and make a mad dash before the grey flannel market takes an upward spiral—or become a publicity hound. You don't have to be a big one; in fact, there is as much harm in being too publicity conscious as there is in not being publicity conscious at all. The important thing to remember is that ham radio is an important service to any community and that it's not illegal, though a lot of people think it is. Let the facts be known. Don't whisper, speak up!

Publicity can be grouped, like anything else, into two categories—good and bad. Both are easy to come by, but good publicity can only come about by being a good ham and letting the good points come to light at the right time, by knowing something about the hobby and telling people about what you know.

It's hardly likely, for example, that any good publicity can come from a rig which tears up every TV within four blocks. But then, even good hams with good rigs have some trouble. If the mess can't be cleaned up, there should at least be an attempt at compromise. Many hams don't compromise, but consider the FCC as a complaint department for all misdemeanors.

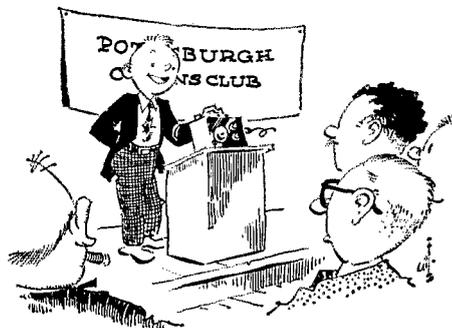
It's the easy way out—that is, until the Commission receives so many complaints it decides to allocate only the infra-red region for amateur use. The problem which can't be solved with a solder-iron is best solved first hand, rather than by letting the government try it through the mail. People aren't too hard to handle. Recent *Handbooks* have complete sections dealing with both technical and public-relations aspects of TVI. This material is easy to find too . . . it's the section with no grimy finger-prints or dog-eared pages.

Then too, there's small chance of becoming a full-fledged publicity hound if the rig won't stay on the air long enough to work the fellow across the street, let alone winning this year's Such-And-Such Award. And even if the rig does stay on longer, rag-chewing doesn't make as good publicity as the c.d. nets, traffic, instruction classes, and "Worked All ——" certificates we have to brag about. Believe it or not, these ham activities *are* newsworthy, particularly in small communities where many papers have as much trouble collecting local news as we do collecting a new state on 220 Mc. Intelligent publicity releases can really put the spotlight on ham radio, and you too for a change.

Whether a person is a full-time, part-time, or occasional ham, he should know something about the hobby and what's going on in it; he should also communicate this information to the public. This does not require a degree in electronic engineering, or the oratorical powers of Daniel Webster; it does, however, require initiative.

Three years ago a druggist mentioned his ham activities to a lady customer and within a week had an invitation to speak on the subject at the local luncheon club. Such was the interest that he has been giving lectures at the club every month since. He has not only won the reputation of being a local expert on ham radio, but also on Soviet industry, psycho-neurotic disturbances, and medieval geography. He has spoken on "Life on the Gobi", passed out ham literature like a magazine salesman at a hamfest, and probably has an honorary membership by now.

Despite the prospect of free lunches, lecturing probably is impractical for most hams. It does illustrate the fact, however, that the public is interested in the hobby and in what the average



ham has to say about it. Mention ham radio in conversation and there'll be three or four questions waiting for you. Answer them and everyone will gain.

How will everyone gain by being less shy? First, you stand the greatest chance to benefit. The fellow two doors down will be less likely to yell like murder when you put an occasional flutter on his TV with the kilowatt full-sail on ten. He'll probably be amazed that the harmonics haven't wilted his Yagi when he knows what you're doing and what you're doing it with. In fact, it wouldn't be a bad idea to let the fellow inspect the rig, even fish around in the innards

for loose wires if he wants to. Tell him about the nets you meet, the traffic you handle, the DX you've hooked and you'll no longer be the community crackpot — even though you *are* a publicity hound.

Respecting the entire hobby, there have been ominous forecasts (particularly, in the recent requiems for eleven meters) of dogdays ahead for ham radio. This may well be so, unless amateur radio convinces the public that it is an active and necessary public utility, which it is. To be convinced the public must be told and the individual ham can best tell the facts honestly. You're a ham . . . don't be shy about it. QST

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## Are Your Public Relations Showing?

BY JESS WHEATON,\* W9PDK

**G**OVERNMENT and business have long realized the necessity of a good public relations program to gain greater public support. Your club . . . all radio amateurs . . . and you . . . need the support of your community, state and nation. And more so today than ever before.

Are you experiencing difficulty in getting the local populace to understand the ham's side of things? In many communities, folks simply don't know of the activities amateurs conduct in the public interest, or anything else about the hobby — except perhaps TVI and unsightly towers and poles marring the landscape. They are not aware of anything constructive about radio amateurs.

What to do about it? Well, what is your club doing? What are *you* doing?

Club activity increasing? Plans for an all-out effort on Field Day? Emergency communications for the community and a RACES setup? Special club contests, code and theory training courses?

And now the loaded questions: Who knows about it? All of the local hams? Are you sure — *all* of them? How about the community itself? Your own neighbors? Remember — *good public relations start with the individual.*

An excellent project which can catch public interest, and which can reach out to a number of people directly, is a special traffic-handling program for members of National Guard or reserve units on summer training encampments. Some sites are too close to the home community but many are a considerable distance away and suitable for "Operation Camptraffic," a project to handle messages between these men and their families.

The fellows write home. Sure they do, when they get around to it. However, the service you can provide will bring thanks and a new community realization of the importance of amateur radio today.

To get your project rolling, contact the local unit commander, and he can contact your State

Adjutant General for you. Explain your project and don't forget to place proper emphasis on its strong morale and public relations factor for the unit. You may know of some local ham who belongs to the unit. If there is none, assistance in the project can probably be obtained through the main organization to which your local unit is attached. You can get help in establishing the workers in the project, the facilities available, schedules, frequencies, etc. Communications facilities in the form of radio equipment is always present, and many of the hams bring their own equipment with them to camp.

In your detail planning, it is suggested that a direct "camp to community" link be used. Don't hesitate to use early morning, morning, and afternoon hours. Make it easy to have operators available for the scheduled times. You will also find these hours will have less QRM and the traffic handling will be easier. The use of current state net frequencies will, in many cases, bog down due to the traffic handled and the QRM experienced. Coordination and proper planning beforehand will erase any great difficulties for you.

Now the public relations pitch: About two weeks prior to the unit's departure plan a joint unit-amateur group press release of the operation. Do not underestimate the value of photographs of the persons involved, equipment, and planning activity. During the encampment obtain photos of the men at camp writing messages, and the hams at both ends handling the traffic. News items, features of human interest events, emergencies, etc., should be channeled to the news media at all times.

Upon completion of the project, release details on the work accomplished, those who participated, and any commendations received by the military for the service to their men and their families. The impact of your local and a nationwide "Operation Camptraffic" cannot be overestimated in the valuable public support amateur radio would receive. QST

\*42 Maple Ave., Superior, Wisconsin.

# 25th ARRL Sweepstakes Results

## Part II — Phone and Club Totals

**P**ART I of the 1958 ARRL Sweepstakes results (May *QST*) recounted the considerable accomplishments of the c.w. specialists. This month we're pleased to report the upsurge in phone participation and the club competition, and publish photos of the fellows who helped make this 25th SS better and bigger than ever.

Phone entries were submitted by 706 in 71 sections, this reflecting a 13.3% rise in activity over 1957. Any way you figure that turns out to be a lot of voice power.

Top over-all score was posted by K6EVR, passing all Los Angeles Section and Southwestern Division comers (phone or c.w.) with a nifty 212,321 points. Still out that way, 'though up north in East Bay, W6PQW remained on 10 for a total of 960 QSOs and second place, never straying from his chosen band. K5MDX of Mississippi made third national high with 821 contacts.

Here's a quick rundown on licensing area leaders:

W1EKO . . . . . 122,040	VE2AZI . . . . . 45,266
K2BHP . . . . . 106,088	VE3DRL . . . . . 11,280
W3ECR . . . . . 107,967	VE5FN . . . . . 26,871
K4SXO . . . . . 137,423	VE6TP . . . . . 54,251
K5MDX . . . . . 179,690	VE7CE . . . . . 53,213
K6EVR . . . . . 212,321	VE8FO . . . . . 27,094
W7BSW . . . . . 142,350	KL7CKB . . . . . 25,493
W8AJW . . . . . 134,136	KH6IJ . . . . . 31,578
K9ALP . . . . . 142,350	KZ5GT . . . . . 55,543
W9CYT . . . . . 132,057	CO3HD . . . . . 7,410
K8LTZ/VO1 . . . . . 22,343	

For many ops, working all sections is more than half the fun of the race. Specialists in this department were K1CTD, W3ECR, K4s IEX SXO, W5s DQK ZHI, K5MDX, W6KG, K6EVR, W7BSW, W9s DUP FBP NZM, K9s ALP ATZ CLO, W0s CYT PRZ. Hearts were saddened for these, though, when the final tally came out one section short: W1s EKO KBN, W5s IWL LDH, W6LNW, W8AJW, K8KLI, W9VZP.

### Club Scores

The Frankford Radio Club did it again! Extra persuasion (or *something*) helped coax almost one million additional points from the same number of participants as last time. Their Delaware trio alone (W3s DRD GAU IYE) handed out about 2800 Diamond State QSOs. With a tight grasp on another engraved gavel, Frankford plans to keep up this intense type of club competition until "something gives!"

Potomac Valley Radio Club, 600 thousand points out of first, upped its aggregate score by more than a million points over the 1957 figures. Average score rose to almost 100,000 points per entry.

New to the show position, and getting better steadily, was the Milwaukee Radio Amateurs'

Club. To 4th place went the fast-climbing Sioux City Amateur Radio Association of Iowa, all the way from 14th. Nice going!

Other noteworthy gains: Richmond (Va.) Amateur Radio Club, 23rd to 11th; Ohio's Buckeye Shortwave Radio Association, 18th to 13th; the Connecticut Wireless Association, 23th to 16th; and a fine leap by the Canton (Ohio) Amateur Radio Club from 58th to 18th place.

To see how your own club stacks up, check the accompanying box of 99 qualifying clubs. Certificates are scheduled to go to section and club winners this month. Please stand by.

The second quarter century of the Sweepstakes comes up November 7-8 and 14-15. Let's hear you!

— E. W.

### Soapbox

"If those Technicians on six had been SSers I'd have made a million." — W3ECR. . . . "Planned to triple last year's score but ended up matching it in one-third of the operating time." — K4LNQ. . . . "The boys really must have needed Utah. I felt like rare DX!" — W7DTB. . . . "This was my first SS and although my tales of woe would fill many volumes I did reach my goal of 250 contacts and finished WAS." — K0MOD. . . . "Wonder how that W6 station got up to number 58 just fourteen minutes after the fracas started?" — K5MID. . . . "We were fortunate enough to work 71 sections during the first sixteen hours." — W9YDX. . . . "Heavy QRM made 40 and 20 almost useless." — K6ICS. . . . "My first SS and I had a ball. In spite of QRM, TVI and QRP, I enjoyed every minute of it." — K7BHE. . . . "Heard one OM calling 'CQ rat race' but what do you call it when two high-scoring power houses get on the same band, same frequency and the same time with calls like K6EVR and K6ERV?" — W5IWL. . . . "Made a mistake going on phone in my first try. Next year it's QRP c.w. for me." — W2REH. . . . "My first phone try and I was amazed at the number of returns on first calls." — K4IEX. . . . "My thanks to those who



In his successful race for the Mississippi award, K5MDX placed third in the national comparisons. Since acquiring General Class license in 1958, Dave has worked 153 countries on phone. This kind of operating ability helps roll up contest QSOs; witness 821 of them in this SS competition. Grand total: 179,690 points. Age: 15.

helped me roll up a pretty respectable mobile score." — *W9JQE/9*. . . . "This year, for the first time, we operated as a husband-wife team for a full 40 hours. We were pleased to work all 73 sections but surprised that VE3, normally an easy section, was the last one worked." — *W6KG*. . . . "It sure would make QSLs easier to do if the number of the QSO would appear on all incoming cards." — *W5MYI*. . . . "Sorry I missed Santa Barbara for my 73rd." — *W1EKO*. . . . "The high point in the contest was a QSO with VESMC who wasn't participating. It took the contest to get me there at the right time." — *W1EJB*. . . . "The old Viking I with the same tube in the final won for me five years in a row. In this attempt for 6 consecutive awards (successful!) my sturdy companion put forth its best effort to date." — *W7OVA*. . . . "I spent my time section hunting and averaged .54 sections per contact." — *W3OMY*. . . . "Last year I said wait 'til next year and then I went and took a Sunday job. Oh well, just wait until 1959!" — *K2TSW*. . . . "Where do the Vermont and Mississippi stations go during the SS?" — *W7BLX*. . . . "My first attempt at running up a high score and enjoyed the contest as usual. However it sure takes a lot out of you to pursue the SS for the full course. Worked Vermont for the 72nd section, last state, and 475th contact. As soon as W1BKZ acknowledged my preamble, I pulled the cork and called it quits." — *K8KLI*. . . . "Whew! Now I know what it's all about!" — *K6YLD*. . . . "Never heard a KP4, KL7 or KH6 at this Oklahoma QTH." — *K5BBA*. . . . "Ten meters was in great shape." — *K6QHE*. . . . "I got a scare at the start of things as the power went off and didn't come on until two minutes before the contest began. Boy what bedlam!" — *K4SXO*. . . . "Nothing from the antenna down to the receiver and back through the transmitter worked right." — *K0IJP*. . . . "My second year in the SS and doubled my previous years score." — *K2MDL*. . . . "More power plus more time equalled lots more fun, but 50 watts on 75 and 40 can be pretty rough." — *W1HAM*. . . . "My first SS and the only complaint I have is that K6EVR also worked the contest. During the 2nd week end I had to plead with the fellows to give me a contact. They thought they had already worked me when it was actually K6EVR they had contacted. And, of course, he must have worked everybody. Do you suppose FCC could make an exception to their rules and give out different call letters in a hardship case like this?" — *K6ERY*. . . . "Glad to see all the Wyoming activity." — *K5EDM*. . . . "I'd like to compliment the great majority of W/K stations on their courtesy and patience when working the relatively rare VE5 section." — *VE5FN*. . . . "Tried to make it all sections worked with the least number of contacts but wound up with 73 QSOs in 65 sections." — *W4KMS*. . . . "Mobiling is a pretty inefficient way to get a signal on the air especially for a sustained time. I burned a full tank of gas in operating 18½ hours and had to shut down several times to allow rig, car and operator to cool off. It was warm in So. Texas that first week end!" — *K5HAL/5*. . . . "Considering all the situations I still had a wonderful time and wonder why I spent the first 25 years of my ham existence wondering why anyone would bother to work the SS." — *W1DIS*. . . . "Tried low power this year and found contacts much harder to get with end results about the same." — *W9NZM*. . . . "Missed Santa Barbara for the second year in a row but doubled my score." — *K1BEB*. . . . "Bands crowded and skip funny in Washington Section. Pleased to hear K8KLI answer my 'CQ W. Virginia' after I had given up on working all 73. After that I regained enough strength to work a few more." — *W7BSW*. . . . "Everything worked fine, not one bit of trouble this year. Those tips from W9IOP (September, 1958 QST) work equally well on phone." — *K9ALP*. . . . "This year I remembered to operate the second week end." — *W1DGJ*. . . . "My Santa Barbara location seemed like DX. Sometimes there were 8 or 10 stations calling me at the same time." — *K6SDE*. . . . "Both week ends everything went wrong but I would still like to express my thanks to all who helped." — *K1DWQ*. . . . "My wife gets a big laugh out of my present rabid pursuit of the SS. She remembers those years when I used to complain of the messed-up bands on contest week ends. As I like to point out, if you can't lick 'em, join 'em." — *K4ZGM*. . . . "This being my second SS and being just 17 I feel I still have a lot to learn. However, I'm quite proud of my 75,888 points as it was achieved with a maximum of 55 watts input. Bettered my last year's



Glendale College student K6EVR broke the bank and established a new mark of achievement in the phone SS. This Los Angeles leader began hamming in 1954 and, besides setting contest records, has skyrocketed to DXCC 264/253. It's going to take a powerful lot of lung power to beat Ron's 1958 success: 976 exchanges in all sections for 212,321 points!

score by 63,684 points. Boy, what a difference a beam can make!" — *K5JCC*. . . . "Got the 'flu the second week end, beginner's luck." — *W6YEA*. . . . "Some day I'm going to have the time, luck and temperament to get all sections." — *W0VTP*. . . . "The most frustrating moments were spent hearing VE1s, and VE2s in QSO and not being able to break through for my last two sections." — *W0BWFJ*. . . . "Only operated a fraction of the allotted time due to a football game (I'm in the high school band) at our own stadium one week end and 100 miles away in Tallahassee the other week end." — *K4CEF*. . . . "My most enjoyable SS to date, mostly attributed to my better signals with the quad. The adjacent sections are the hard ones. Where were the VE's?" — *W5INL*. . . . "Worked quite a few new states." — *K4RSY*.

## PHONE SCORES

### Twenty-Fifth Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 150 watts (multiplier of 1.5, phone), B over 150 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3ECR . . . 107,967-493-73-A-28, or, final score 107,967, number of sections 493, number of sections 73, power factor of 1.5, total operating time 28 hours. . . . Multioperator stations are grouped in order of score following single-operator station listings in each section tabulation.

### ATLANTIC DIVISION

#### Eastern Pennsylvania

W3ECR	107,967-493-73-A-28	K3AZI	5468-70-27-A-25
K3ALJ	74,655-385-65-A-87	W3DYL	5440-85-32-B-7
W3ERU	48,000-300-70-A-36	K3ASH	5400-109-25-B-17
W3SEB	46,575-235-69-A-28	W3PNL	4125-56-25-A-5
W3ORU	35,700-300-60-B-19	W3HLZ	3480-58-20-A-4
W3DHM	33,807-191-59-A-8	W3FQA	3267-61-18-A-11
W3ZJD	31,980-205-52-A-30	K3EPL	3267-60-22-A-7
W3BFL	31,800-201-53-A-23	W3L10	2739-42-22-A-7
W3QEZ	23,715-155-51-A-25	W3JLI	2268-42-18-A-11
W3ZXV	22,149-161-45-A-17	K3BFW	1824-32-19-A-2
W3RAE	19,680-160-41-A-23	W3U01	1530-51-10-A-12
K3DVS	18,060-141-43-A-23	W3FWC	1440-40-12-A-14
W3MQC	17,760-160-37-A-8	W3KAG	1305-29-15-A-8
W3KIG	16,884-135-42-A-17	W3CMD	1248-26-18-A-2
W3EBC	14,520-110-44-A-4	W3JRY	1188-66-6-A-19
W3TMN	13,179-96-46-A-21	W3BRU	1092-52-7-A-30
K3BKT	11,625-125-31-A-14	W3YLL	1008-21-16-A-2
W3YEA	11,211-101-37-A-10	W3CNO	900-20-15-A-1
W3P8Z	10,800-100-36-A-20	W3GTC	570-19-10-A-3
W3HGZ	7872-82-32-A-11	W3GDV	180-20-3-A-7
W3GSC	6288-66-32-A-11	K3DNL	128-9-6-A-5
W3JZB	5565-39-35-A-7	W3BNN	75-5-5-A-1
		W3EAN	75-5-5-A-1
		W3BUR	24-4-3-B-1
		K3CNF (K3 CNF ETT)	3585-44-23-A-7

Md.-Del.-D. C.		Southern New Jersey		Western New York		Western Pennsylvania	
W3AZD	68,626-375-61-A-39	K2MPP	89,892-450-66-A-38	K2BHP	106,088-515-69-A-40	W2EWO	4230-47-30-A-5
W3IBX	25,354-139-62-A-16	K2ZTT	14,648-141-35-A-17	W2VDX	82,926-408-68-A-37	W2UMS	1280-32-20-B-5
W3AYD	17,584-160-36-B-16	W2ILN	9600-80-40-A-6	W2ZSF	34,968-250-47-A-23	K2EQR	297-11-9-A-3
W3FKC	14,752-120-32-B-24	W2DMR	8880-111-40-B-12	K2ABE	32,310-181-60-A-37	W2EEB	10-9-A-1
W3MTU	13,320-120-37-A-10	W2ESG	7198-70-55-A-7	K2YJN	21,465-135-53-A-8	K2MTW	18-4-1-A-1
K3BYR	7038-69-34-A-7	K2BVK/2	6399-79-27-A-10	W2RTK	20,849-171-41-A-19	K2LUN (K2LUN QZHI)	26,216-227-58-B-26
K3CG <sup>2</sup>	1525-31-25-B-7	K2BY	6386-66-32-A-21	K2SQU	18,254-110-51-A-22		
W0BPO/3	726-22-11-A-5	K2DEL2	6216-74-28-A-8	K2UN	98-47-A-2		
W3CQF (38 HLG)	38 HOQ	W2ACNB	3213-54-21-A-7	K2MAF	9660-82-40-A-21		
YY1, K3ALU, W1HFO	32,330-308-53-B-40	W2ISZ	1607-32-17-A-3	W2QCI	6390-71-30-A-6		

### CLUB SCORES

Club	Score	C. W. Winner	Phone Winner
Frankford Radio Club	5,966,485	W3JNQ	W3ECR
Potomac Valley Radio Club	5,345,727	W4KFC	
Milwaukee Radio Amateurs Club	1,586,739	K9CAN	K9CJX
St. Louis City Amateur Radio Assn. (Iowa)	1,223,402	W0PZO	W0AXE
Ohio Valley Amateur Radio Assn.	1,167,908	W8LQA	
Hamfesters Radio Club (Ill.)	1,120,659	W9IRH	K9EED
Ed-Ray Radio Club (Mass.)	1,054,328	K1CQO	W1OTH
South Jersey Radio Assn.	753,753	W2GCB	W2GQD
Chicago Suburban Radio Assn.	674,452	W9ZRG	W9HJE
Westpark Radlops (Ohio)	673,995	W8YPT	W8AJW
Ritchmond Amateur Radio Club (Va.)	626,414	W4BZE	K4HUC
Garden State Amateur Radio Assn. (N. J.)	621,962	W2CQB	
Buckeye Shortwave Radio Assn. (Ohio)	617,683	W80YT	
Tri-County Radio Assn. (Ill.)	559,833	W9RGN	
Suffolk County Radio Club (N. Y.)	554,452	W2PZE	W2JFU
Connecticut Wireless Assn.	519,019	W1BIH	
Order of Boiled Owls (N. Y.)	506,073	W2AYJ	
Canon Amateur Radio Club (Ohio)	495,530	W8NWR	W8IKM
Douner Radio Club	468,610	W0ANA	W0CYT
Wisconsin Valley Radio Assn.	469,585	W9RGN	W9JBF
Montrose County Amateur Radio Club (Colo.)	445,853	W0WME	K0EJC
Bronx High School of Science Radio Club	445,376	K2LAD <sup>2</sup>	K2QDD
South Lyme Beer, Chowder & Propagation Society (Conn.)	395,833	W1LVQ	
West Seattle Amateur Radio Club	390,869	W7YGN	W7IKK
Narragansett Assn. of Amateur Radio Operators (R. I.)	381,142	W1CJH	
Huguenot Amateur Radio Club (Cal.)	380,744	K6VTQ	
San Diego DX Club	376,383	W6ZVQ	
South Miami DX Club	372,091	K4DAS	K48XO
Lake Success Radio Club (N. Y.)	359,830	W2CWD	K2DZU
Central Michigan Amateur Radio Club	353,971	W8TJQ	
Westside Amateur Radio Club (La.)	344,106	W5BUK	W5INL
Radio Amateurs of Greater Syracuse	340,454	W4HBO	
Atlanta Radio Club	336,366		
Four Lakes Amateur Radio Club (Wis.)	311,326	K2MWM	
Niagara Radio Club (N. Y.)	306,927	W9ARY	W9LIG
Starved Rock Radio Club (Ill.)	306,275	W3BUP	W3URU
North Penn Amateur Radio Club	291,310	W8DWP	W8YOW/8
Columbus Amateur Radio Assn.	278,000		W9DUB
SWANI Amateur Radio Club (Ill.-Wis.)	269,323	W9YYG	W9DUB
Joliet Township H. S. & Jr. College Radio Club (Ill.)	260,390	W2ILN	W3ZJD
Short Skip Radio Club (Pa.)	254,356	K8CHD	W8BIM
Fisco Radio Club (Ohio)	251,020	K2YJH	W2LOP
Watchung Valley Radio Club (N. J.)	250,756	K9IND	K9MPC
West Suburban YMCA Amateur Radio Council (Ill.)	240,069		K8CPM
Mumford High School Radio Club (Mich.)	238,655		W5MYI
Santa Fe Radio Club	232,924		W4ZPO
Dade Radio Club (Fla.)	215,175		
Huron Valley Amateur Radio Assn. (Mich.)	205,486	K8IUF	
Citrus Belt Amateur Radio Club (Cal.)	204,373	K6GLC	
Milwaukee School of Engineering Amateur Radio Club	202,892	W9VCH	
Montachusett Amateur Radio Club (Mass.)	193,991	W1DZV	
Oxford Circle Radio Club (Pa.)	187,794	K3ALD	K3ALU
Kankakee Area Radio Society (Ill.)	186,231	W9KLD	
Clarkfield Amateur Radio Club (N. Y.)	172,208	W20WQ	K2JHW
Syracuse V. H. S. Club	167,749	W2CAW	
Springfield Amateur Radio Club (Ohio)	166,794	W8LVH	
St. Louis University Amateur Radio Club	154,037	K0GJD	W0FTV
Waupaca Amateur Radio Club (Wis.)	144,599	W9KXK	
Beachwood Amateur Radio Club (Cal.)	134,866		K6DDO
Hopkins Amateur Radio Club (Md.)	132,082		
Amateur Radio Society of CONY	129,332	K2IVC	
William Penn Radio Club (Pa.)	124,970	W3DAO	
Middlesex Amateur Radio Club (Mass.)	117,226		
Jamestown Amateur Radio Club (N. Dak.)	114,757		
Amateur Radio Club of University of Arkansas	107,531	K5GRT	K5JPB
Wheatley Amateur Radio Club (N. Y.)	105,971	K2TIV	
Mamaroneck High School Radio Club (N. Y.)	103,788	W8GFB	
Detroit Amateur Radio Assn.	102,603		K2TAP
Five Towns Radio Club (N. Y.)	100,143	W8GB	
BACRAL Radio Club (Mich.)	99,240		W2WPH
Mohawk Amateur Radio Club (N. Y.)	97,009	K4EKC	
Atlanta Teenage Amateur Radio Club	96,053	V82ADD	
Norqobant Amateur Radio Assn.	94,783	W3NEX	
Philadelphia Wireless Assn.	94,125	K9HCP	
Fenwick High School Radio Club (Ill.)	93,919	K2QIX	
Schenectady Amateur Radio Assn.	82,116	W9RFC	
Chicago Radio Trade Assn.	79,573	W2CWW	
Oak Park Amateur Radio Club (Mich.)	78,023	K6BCG	
Raritan Bay Radio Amateurs (N. J.)	73,068	W9PCQ	
South Bay Amateur Radio Society (Cal.)	71,108	K9ISB	
Radio Amateur Megacycle Society (Ill.)	67,326	W88JU	W8UXP
Albany Park Amateur Radio Club (Ill.)	66,293	K2LTI	
Forest City Amateur Radio Club (Ohio)	64,315		
Hunter College Amateur Radio Society (N. Y.)	62,190	K8BSM	
Jasper High School Radio Club (Texas)	58,738		
Dayton Amateur Radio Assn.	54,841	K2ZAE	
Explorer Post 599 B.S.A. (Ga.)	52,158	K0BEP	
Pelham Memorial High School Radio Club (N. Y.)	41,566	W2TQJ	
Hamilton High School Radio Club (Cal.)	38,623	W2TJD	
Mid-Island Radio Club (N. Y.)	37,068	K2LXU	
Nutley Amateur Radio Society (N. J.)	29,690		
Woodlawn Radio Club (N. Y.)	25,323		
Rochester Amateur Radio Assn.	25,321		
Central Illinois Radio Club	22,998	W9VPD	
South Side High School Radio Club (N. Y.)	16,092	K2TBU	
The Communicators (Ill.)	15,000		W9OQI
Mra. Costa High School Amateur Radio Club (Cal.)	12,427	K6YNB	
Middlebury Mike & Key Club (Vt.)	10,772		K1BXV
Brookline High School Amateur Radio Club (Mass.)	7432	W1ETI	K1ACJ
1 W0FV.D, opr. 2 K2JVB, opr			

W3ROA... 37,436- 213-59-A-30  
 W3KTV... 26,025- 175-53-A-14  
 W3CMN... 17,493- 172-51-B-16  
 W3CTN... 10,343- 103-35-A-10  
 W3KBB... 6846- 85-28-A-12  
 W3DME... 3863- 53-25-A-8  
 W3BFW... 1540- 55-14-B-18  
 W3APR... 204- 17-4-A-14

**CENTRAL DIVISION**

*Illinois*

K9ATZ... 116,070- 530-73-A-40  
 K9BGL... 92,466- 467-66-A-40  
 W9NDM... 39,851- 414-73-A-34  
 K9EED... 7,844- 376-96-A-38  
 W9HKE... 70,794- 342-69-A-35  
 W9LLG... 62,832- 308-68-A-33  
 W9FVU... 59,430- 283-70-A-24  
 W9LQF... 57,519- 291-66-A-27  
 W9KMN... 55,185- 289-65-A-23  
 W9ORH... 54,464- 34-28  
 W9WGO... 45,567- 250-61-A-27  
 W9PNY... 44,699- 237-63-A-34  
 W9PNE... 36,735- 204-62-A-24  
 W9RHV... 36,036- 231-52-A-37  
 W9ZLV... 37,018- 160-57-A-19  
 K9MPC... 26,622- 175-51-A-38  
 W9IVG... 23,322- 169-16-A-18  
 W9KRL... 23,184- 185-42-A-22  
 W9PVE... 16,974- 138-41-A-18  
 K9DEQ... 16,611- 133-49-A-20  
 W9PHZ... 15,429- 139-47-A-19  
 W9QVM... 13,440- 139-40-A-10  
 W9OOJ... 13,200- 111-10-A-17  
 K9EAZ... 12,543- 115-37-A-17  
 K9BPT... 11,016- 108-34-A-26  
 W9VGC... 10,032- 88-38-A-15  
 K9KIZ... 8,640- 72-40-A-17  
 W9AJJ... 8,400- 9-26-A-29  
 K9IEK... 7,770- 74-35-A-7  
 W9PCB... 7,398- 72-36-A-4  
 W9JTT... 7,392- 88-28-A-11  
 W9JMY... 6,930- 70-33-A-8  
 W9PNI... 6,650- 73-21-A-11  
 W9NZS... 5,440- 69-30-A-13  
 K9MDH... 5,304- 70-26-A-14  
 K9JAA... 4,984- 89-28-B-13  
 W9MZX... 4,002- 69-29-B-11  
 K9KAR... 3,584- 43-27-A-7  
 W9ATU... 2,975- 55-18-A-8  
 W9MAT... 2,751- 23-2-A-4  
 W9TCA... 2,160- 48-15-A-2  
 W9ZLV... 2,000- 50-20-B-7  
 K9EFC... 1,900- 50-19-B-20  
 K9HFA... 1,890- 35-18-A-3  
 K9JPR... 1,620- 30-18-A-3  
 W9UMF... 1,080- 39-16-A-3  
 K9JDU... 1,080- 24-15-A-3  
 W9GPV... 960- 20-20-B-3  
 W9PDP... 903- 22-14-A-4  
 K9KBJ... 810- 27-15-B-10  
 W9CZF... 737- 49-9-B-4  
 W9TLC... 716- 24-8-A-4  
 W9TLD... 408- 17-8-A-4  
 W9WH9... 360- 12-10-A-3  
 K9JMA... 360- 60-2-A-27  
 K9HSP... 324- 12-9-A-1  
 W9HWN... 270- 10-9-A-3  
 K9PKJ... 270- 10-9-A-3  
 W9PHK... 252- 14-9-B-1  
 W9OYW... 216- 9-8-A-3  
 K9BVI... 210- 10-7-A-1  
 W9YYP... 75- 3-3-A-1  
 W9NFI... 38- 8-2-A-1  
 W9BIN... 38- 8-2-A-1  
 W9YVG... 12- 2-2-A-1  
 W9WAV... 3- 1-1-A-1  
 W9PFB (W9B YD) X

**DAKOTA DIVISION**

*North Dakota*

W0WFO... 87,936- 458-64-A-32  
 W0JWL... 38,430- 306-63-B-18  
 K9OSV... 21,623- 171-49-A-26  
 K9GBQ... 18,081- 150-41-A-29  
 K9OSV... 15,375- 128-42-A-26  
 W9GNS... 8,424- 73-39-A-7  
 K9ADI... 6383- 64-34-A-6  
 K9GRM... 432- 18-8-A-2

*South Dakota*

W9PRZ... 107,529- 738-73-B-35  
 W0WUU... 1254- 33-19-B-3

*Minnesota*

W0VPL... 28,000- 200-70-B-40  
 W9TCP... 25,410- 156-55-A-22  
 K9IOU... 23,652- 130-54-B-31  
 K9IOP... 23,425- 150-50-A-21  
 W9EEL/9... 15,375- 133-42-A-18  
 K9GVS... 4200- 50-28-A-4

**DELTA DIVISION**

*Arkansas*

K5JBP... 51,988- 290-61-A-31  
 W5WXP/5... 932- 100-32-A-10  
 K5GRT... 3- 1-1-A-1

*Louisiana*

W5KC... 123,917- 617-67-A-37  
 W5INL... 113,610- 546-70-A-34  
 W5HMU... 81,908- 417-67-A-40  
 W5YVI... 37,127- 237-53-A-38  
 W5LDH... 55,512- 258-72-A-22  
 K5KLA... 30,096- 176-57-A-16  
 W5VND... 22,876- 155-50-A-15  
 W5QPS... 14,384- 126-36-A-16  
 W5ZAK... 9997- 79-43-A-14  
 K5FUH (W5S FJB) (ZR, K5s EAW ELP E2) 7752- 104-38-B-21

*Mississippi*

K5MDX... 179,690- 821-73-A-35  
 W5DQK... 169,944- 777-73-A-38

*Tennessee*

KALTA... 82,973- 383-71-A-4  
 W4IGW... 202-70-A-28  
 K4RWT... 28,773- 214-48-A-28  
 W4HUC... 26,992- 247-56-B-29  
 W5SZE/4... 11,718- 93-42-A-22  
 K4RSY... 9254- 100-31-A-9  
 W4TDZ... 3666- 47-26-A-12  
 W4ODR (K4S ARU OXV, W5CWF, K6INX) 10,340- 119-44-B-20

**GREAT LAKES DIVISION**

*Kentucky*

W4VJV... 18,411- 181-51-B-16  
 W4NWT... 9879- 89-37-A-3  
 W4SMU... 975- 25-13-A-3  
 W8FPB/4... 312- 11-8-A-4

*Michigan*

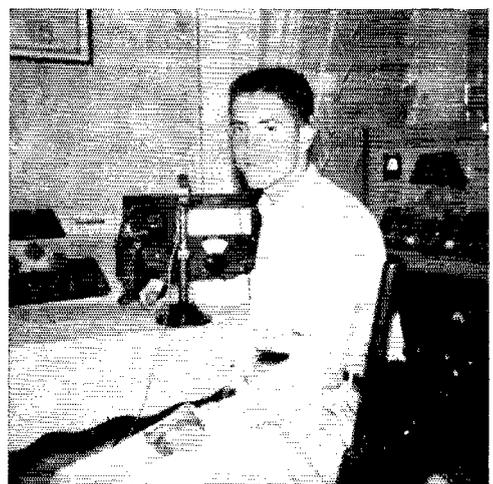
K8CPM... 64,823- 324-67-A-32  
 K8EJS... 52,266- 281-62-A-37  
 K8DJR... 36,207- 225-54-A-27  
 W8RDX... 31,350- 190-55-A-23  
 W9UQC... 29,493- 170-58-A-34  
 K8CHS... 24,368- 143-57-A-24  
 K8EAP... 18,240- 160-39-A-40  
 K8GTO... 18,000- 120-50-A-11  
 K8IDZ... 16,077- 117-46-A-16  
 W9UOC/8... 14,243- 106-45-A-35  
 W8NBN... 12,960- 138-48-B-17  
 K8HES... 11,475- 138-32-A-10  
 K8GVE... 9168- 66-32-A-8  
 W8JKD... 5016- 66-38-B-16  
 W8HNI/8... 4192- 66-32-B-9  
 W8SWI... 2508- 44-19-A-6  
 K8HPX... 1995- 49-14-A-10  
 W8KXN... 742- 17-15-A-2  
 K8HKS... 12- 2-2-A-1  
 K8GUM... 12- 2-2-A-1  
 W8SH (K2KNZ, W8UCN, K8IVQ) 53,100- 295-60-A-36

**INDIANA DIVISION**

K9CLO... 77,380- 530-73-B-33  
 W9QAX... 57,525- 325-59-A-35  
 W3UNY/9... 20,139- 137-49-A-13  
 W9QEM... 19,606- 172-49-A-25  
 W9LEL... 13,492- 109-43-B-18  
 W9EBB... 10,206- 123-42-B-21  
 W9DGA... 6549- 59-37-A-1  
 K9BLE... 6510- 70-31-A-8  
 W9RQC... 3000- 40-25-A-17  
 W9RUC... 300- 17-13-B-6  
 W9EPI (W9S EPI INL) 9072- 109-42-B-33

*Wisconsin*

K9ALP... 142,350- 650-73-A-36  
 W9DUB... 102,164- 471-73-A-40  
 W9ZSO... 91,563- 668-69-B-39  
 W9VZP... 87,264- 404-72-A-40  
 K9GSK... 76,650- 472-53-B-38  
 K9FVB... 46,800- 240-65-A-28  
 W9ECC... 38,912- 301-64-B-17  
 K9GOQ... 37,515- 317-61-B-23  
 W9RZW... 34,770- 190-61-A-20  
 W9HBF... 32,780- 210-52-A-15  
 W9VGC... 30,850- 163-57-A-38  
 W9JFO... 29,334- 162-57-A-25  
 W9SEK... 26,160- 218-60-B-25  
 W9JQE/9... 23,850- 155-53-A-34  
 W98AA... 13,803- 107-43-A-12  
 W9PQA... 11,682- 89-44-A-9



KØCHE, top scorer in Missouri, started SSing as a Novice in 1955. His scores kept improving and reached 102,900 this 25th Sweepstakes. Equipment in use included a DX100, Communicator, SX-71 and 75A-1.

**OHIO DIVISION**

W8AJW... 134,136- 625-72-A-37  
 W8VOW/8... 105,630- 506-70-A-35  
 K8AEK... 74,444- 350-71-A-10  
 W8BIM... 42,120- 325-65-B-32  
 W8UON... 36,456- 196-62-A-31  
 W8BMX... 31,800- 200-53-A-23  
 W8UXP... 30,000- 200-50-A-26  
 W8TDB... 29,260- 267-55-B-31  
 K8J8Z... 27,318- 236-58-B-37  
 W8FEM... 25,251- 162-53-A-22  
 K8DNH... 23,712- 153-52-A-37  
 W8HQB... 22,650- 151-50-A-15  
 W8IKM... 22,050- 150-48-A-18  
 W8OMY... 16,200- 100-54-A-27  
 W8BCU... 8343- 103-27-A-10  
 K8LXL... 7191- 71-34-A-11  
 W8AJH... 6426- 97-34-B-9  
 W8GAT... 5880- 70-28-A-6  
 W8EPB... 4836- 64-39-B-10  
 W8NAL... 4788- 57-28-A-7  
 W8GKQ... 2652- 51-26-B-1  
 W8RNL... 2178- 33-22-A-10  
 W8TLD... 2142- 42-17-A-4  
 W8KXP... 1824- 32-19-A-5  
 K8AAG... 1804- 41-22-B-8  
 K8BPY... 1134- 27-21-B-3  
 W8PFC... 1200- 30-20-B-2  
 W9PLO... 1148- 26-15-A-2  
 W8KVF... 972- 27-12-A-4  
 K8AET... 570- 19-10-A-2  
 W8CZM... 308- 17-6-A-2  
 W8TJT... 258- 12-8-A-2  
 W8STR... 144- 8-6-A-5  
 W8IBX... 108- 9-6-B-1  
 W8DOG... 3- 1-1-A-1

**MISSOURI DIVISION**

W8VFN/8 (6 ops) 45,045- 232-65-A-37  
 W8CVW (W8CVW, K8I/LH) 22,896- 122-36-A-23  
 W9LBU/8 (W8S DLB TTN, K8S CZJ EHQ) 2212- 41-28-B-13

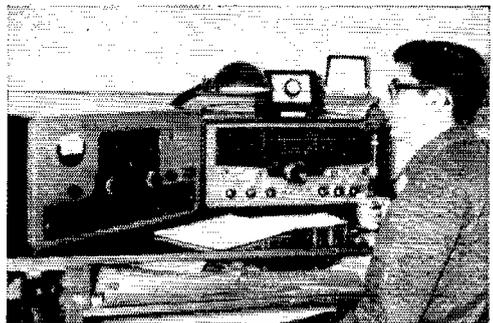
**HUDSON DIVISION**

*Eastern New York*

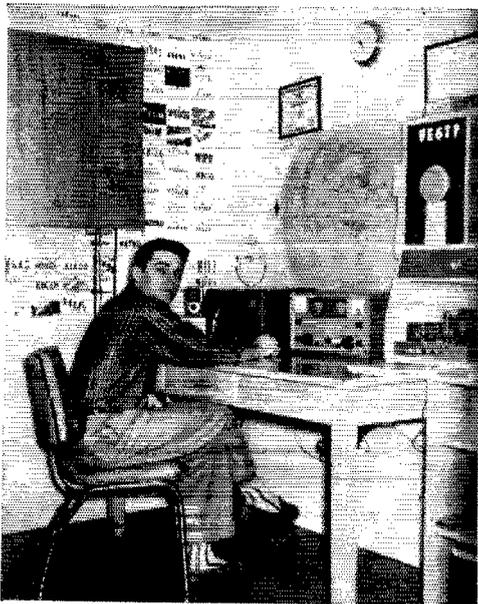
K9ZAT... 25,520- 235-55-B-21  
 W2KSH... 12,120- 102-40-A-15  
 K2CJ... 11,132- 122-46-B-22  
 K2YFI... 11,165- 28-14-A-3

*N. Y. C. - L. I.*

K9MDL... 71,888- 338-71-A-40  
 K2TAP... 65,489- 350-63-A-38  
 K2DZU... 39,117- 222-59-A-40  
 K2RAN... 37,632- 230-56-A-27  
 W2WPH... 36,600- 200-61-B-18  
 W2YKQ... 36,456- 219-56-A-21  
 K2SGO... 34,020- 210-54-A-18  
 W2ALR... 30,324- 266-57-B-30  
 K2LGS... 26,047- 214-61-B-18  
 W2MCO... 25,500- 170-50-A-23  
 W2JFU... 23,616- 164-48-A-21  
 K2QDD... 18,225- 137-45-A-22  
 K2CIC... 17,820- 135-44-A-17  
 K2QBQ... 15,732- 171-46-B-30  
 W2LXD... 15,120- 228-40-A-11  
 F2IQA... 13,899- 113-41-A-14  
 K2RYI... 13,821- 137-51-B-18  
 F2TSW... 13,311- 132-34-A-12  
 W2OMI... 12,555- 93-45-A-26  
 W2PDU... 12,543- 113-37-A-9



Typical of the efficient way younger hams are snapping up section awards is the operation of K8CPM, a 16-year-old vocalist who led 20 Michigan phone fanciers with 64,823 points.



Alberta honors and distinction of making the leading Canadian score go to VEGTP. Single-band operation on 28 Mc. accounted for Gene's score of 54,251.

W2EHC.....10,500-100-35-A-16  
 W2QFF.....10,148-108-33-A-24  
 K2IHS.....9887-85-39-A-15  
 K2YGN.....9765-105-31-A-16  
 K2CTK.....9607-76-38-A-14  
 K2KIV.....7140-85-28-A-16  
 K2LJM.....7112-74-32-A-10  
 W2JGQ.....4587-51-29-A-1  
 W2OIC.....4010-50-27-A-13  
 K2JHW.....3750-50-25-A-9  
 K2MFO.....3000-50-20-A-6  
 K2EWD.....2988-42-24-A-8  
 W2EVV.....1485-28-18-A-5  
 W2MGV.....1860-31-20-A-12  
 K2AAW.....1248-26-16-A-4  
 W2KVT.....1242-25-18-A-4  
 K2GJF.....819-21-14-A-2  
 K2.MV.....863-17-13-A-2  
 W2RWX.....540-16-12-A-2  
 K2BUS/2.....540-15-12-A-2  
 K2UYG.....432-16-9-A-1  
 K2REX.....351-13-9-A-4  
 K2LHJ.....336-14-8-A-3  
 K2PHE.....208-19-3-H-1  
 K2AED/2.....179-9-7-A-2  
 K2PBO.....108-12-3-A-1  
 K2GYO.....105-7-5-A-3  
 K2PRP.....105-7-5-A-3  
 W2KLS.....54-6-3-A-8  
 K2TBU.....54-6-3-A-1  
 K2UQX.....27-3-3-A-1  
 K2PNK.....24-4-2-A-3  
 K2RAF (K28 QJ) QMF RAF)  
 61,709-327-63-A-27

**Northern New Jersey**

K2LXL.....85,626-429-68-A-28  
 K2UQD.....70,119-371-63-A-39  
 W2XNG.....49,959-274-61-A-26  
 K2VYZ.....49,638-251-66-A-24  
 W2PEV.....39,843-233-57-A-28  
 K2JQU.....20,907-152-46-A-34  
 K2CBC.....20,202-130-52-A-25  
 K2PGJ.....15,972-125-44-A-13  
 W2JFH.....5687-106-18-A-6  
 W2LOP.....5308-77-36-B-4  
 W2JLX.....4368-52-28-A-8  
 K2LES.....2618-77-17-B-12  
 K2TSD.....3276-42-26-A-8  
 W2WCC.....2637-45-18-A-8  
 K2GDR.....1584-33-16-A-13  
 K2OHC.....1512-25-21-A-5  
 W2GXN.....462-14-11-A-2  
 K2SBT.....12-3-2-B-1  
 K2VQZ (K28 MBQ PHP VQZ)  
 66,210-354-64-A-31  
 K2RSQ (K28 MBQ BSC)  
 9870-105-47-B-13  
 W2REH (W2REH, K2ZMZ)  
 8460-119-36-B-1

**MIDWEST DIVISION**

**Iowa**  
 W0AXE.....77,088-407-64-A-38  
 K0MMS.....61,119-347-59-A-33

K0DPT.....60,060-455-66-B-37  
 K0LUT.....50,496-273-64-A-4  
 K0LYV.....16,854-108-53-A-22  
 W0FWO.....15,840-132-38-A-19  
 K0LJZ.....13,832-184-38-B-16  
 K0MDX.....12,771-101-43-A-26  
 K0HPW.....11,115-125-45-B-18  
 W0SQN.....8820-98-30-A-6  
 W0SQE.....5580-62-30-A-20  
 W0BGB.....5130-57-30-A-6  
 K0MMQ.....495-15-11-A-1  
 W0MHC (3 ops)  
 29,646-162-61-A-20

**Kansas**

K0RNZ.....126,931-652-67-A-37  
 W0QMS.....67,737-337-67-A-34  
 W0XNG.....63,444-311-68-A-25  
 K0AYS.....41,940-253-60-A-21  
 K0QPO.....36,280-146-60-A-14  
 K0CIC.....20,880-145-48-A-15  
 W0TV.....11,844-94-42-A-9  
 W0IFR.....11,468-122-47-B-9

**Missouri**

K0CHE.....102,900-492-70-A-40  
 W0RXG.....45,750-250-61-A-38  
 K0MOD.....43,500-250-58-A-25  
 W0SPO.....36,383-274-45-A-27  
 K0LRS.....29,841-173-58-A-30  
 K0JZW.....28,959-200-49-A-29  
 K0VJ.....16,097-137-41-A-21  
 K0JOC.....12,144-139-44-B-14  
 W0ETV.....7352-85-29-A-6  
 K0BYN.....5400-60-30-A-6  
 K0DEQ.....3036-44-23-A-7  
 K0JPL.....325-18-10-A-1  
 W0ZLN (7 ops)  
 23,775-163-50-A-31  
 W0QON (10 ops)  
 8400-108-42-B-17  
 W0FLN (2 ops)  
 420-14-10-A-2

**Nebraska**

K0DLL.....75,600-420-60-A-29  
 W0VST (4 ops)  
 72,427-548-67-B-40

**NEW ENGLAND DIVISION**

**Connecticut**  
 W1FYF.....49,248-288-57-A-26  
 W1NFT.....47,988-263-62-A-26  
 K1DMS.....35,139-233-53-A-21  
 W1XYU.....31,482-198-53-A-10  
 K1ABI.....16,298-133-41-A-12  
 K1EPL.....13,680-120-38-A-19  
 K1DGN.....11,679-116-34-A-13  
 W1ZDF.....1272-27-16-A-2  
 K1CAE.....924-28-11-A-4  
 K1EIH.....756-22-12-A-4  
 W1VOK.....330-15-11-B-1  
 K1GUD.....34-7-4-A-1

WIUED/13.....9-3-1-A-1  
 K1BFB (W1CAL, K1BEB)  
 84,630-404-70-A-40

**Maine**  
 W1GKJ.....56,640-206-61-A-39  
 W1UOT.....47,610-265-60-A-34  
 W1YDA.....45,808-367-62-B-32  
 K1DPM.....41,664-254-56-A-38  
 W1DIS.....21,950-221-50-B-12  
 K1DWQ.....14,307-127-38-A-31  
 K1AKO.....5700-76-25-A-4  
 W1KGB.....5206-71-38-B-10  
 K1ATP.....4635-52-30-A-8

**Eastern Massachusetts**  
 W1QWT.....83,622-640-66-B-36  
 W1OTH.....18,221-267-61-A-28  
 W1PKV.....42,120-234-60-A-26  
 W1JNX.....17,292-131-44-A-18  
 W1BSC.....10,800-80-45-A-12  
 K1EKP.....10,659-106-34-A-12  
 W1LML.....9744-116-42-B-25  
 W2KCD/1.....5070-65-26-A-18  
 K1ACJ.....3300-50-22-A-11  
 K1DEF.....1710-29-20-A-2  
 W1BFP.....1680-41-14-A-12  
 W1SBP.....750-25-16-B-9  
 W1MEG.....726-22-11-A-4  
 W1COL.....165-11-5-A-1  
 W1ETH.....105-7-5-A-1  
 W1KBN (W18 EUJ EJJ HG7  
 JVV) 103,104-733-72-B-40  
 W1AF (K2HGM, W5CPB) -  
 4557-75-31-B-9  
 W1JMS (W1JMS, K18 BID  
 K1E) 756-27-14-B-8

**Western Massachusetts**  
 W1EKO.....122,040-574-72-A-36  
 W1DXS.....74,188-549-68-B-35  
 K1CTD.....37,668-172-73-A-13  
 W1DCJ.....36,792-218-56-A-25  
 K1AED.....25,551-169-51-A-27  
 K1CPD.....24,300-203-48-A-24  
 W1RMR.....20,250-185-50-A-15  
 W1WF.....195-17-10-A-2

**New Hampshire**  
 K1DFM.....64,838-319-65-A-1  
 K1BCS.....12,067-87-47-A-11  
 W1HAM.....11,970-105-38-A-19  
 W1CVK.....3113-42-25-A-9  
 W1OQC.....861-21-14-A-4

**Rhode Island**  
 W1BFB.....92,070-468-66-A-1  
 W1REK.....9120-76-40-A-24  
 W1AVE.....3060-34-30-A-8

(Continued on page 170)



K4SXO, E. Fla. top scorer, put 40-20-15-10 to good use in his first contest try. Jerry came up smiling with 640 QSOs in all sections and tabulated 137,423 points which also led his division. Some of the certificates visible are Asst. EC, WAC, CP-30, Grave Yard and Flamingo Net, WAS and RCC.

## PHONE WINNERS, 25TH A.R.R.L. SWEEPSTAKES CONTEST

Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3ECR	107,967	32V3	75A4, conv.	75, 40, 20, 15, 10, 6
Md.-Del.-D. C.	W3AZD	68,625	Apache	NC300	40, 20, 15, 10
S. N. J.	K2MPB	89,892	DX100	75A4	75, 40, 20, 15, 10
W. N. Y.	R2BHP	106,088	DX100	NC183D	75, 40, 15, 10
W. Penna.	W3JWW	47,190	Sig. Shifter-807-8005	NC300	75, 40, 20, 15
Illinois	K9ATZ	116,070	Viking II	NC300	75, 40, 20, 15, 10
Indiana	K9CLO	77,380	VFO-6A058-2E26-4-250A	HRO7	75, 40, 20, 15, 10
Wisconsin	K9ALP	142,350	Viking II	NC300	75, 40, 20, 15, 10
No. Dakota	W0WFO	87,936	Viking I	HQ170; HQ129X	75, 40, 20, 15, 10
So. Dakota	W0PRZ	107,529	Viking II: 5100B	75A4	75, 40, 20, 15, 10
Minnesota	W0VIP	28,000	4-400A	NC183D	40, 20, 15, 10
Arkansas	K5JPB	51,881	Ranger	NC98	75, 40, 20, 15, 10
Louisiana	W5KC	123,917	32V3	HRO7	75, 40, 20, 15, 10
Mississippi	K5MDX	179,690	6AU6-12BY7-6146-4-100A	HQ110	75, 40, 20, 15, 10
Tennessee	K4LTA	82,973	Viking I	SX101	75, 40, 20, 15, 10, 6
Kentucky	W4JVJ	18,411	Globe King	NC183	75, 20, 15, 10
Michigan	K8CPM	64,823	Valiant	SX101	40, 20, 15, 10
Ohio	W8AJW	134,136	32V1; Communicator	HQ120X; Communicator	75, 40, 20, 15, 10, 6
E. N. Y.	K2ZAU	25,520	Valiant	SX99	75, 40, 20, 15, 10
N. Y. C.-L.I.	K2MDL	71,888	DX100; Gonset II	SX100; Gonset II	75, 40, 20, 15, 10
N. N. J.	K2LXL	85,626	DX100	HQ150	75, 40, 15, 10
Iowa	W0AXE	77,088	Ranger	NC300	75, 40, 20, 15, 10
Kansas	K0RNE	126,931	Viking II	NC300	40, 20, 15, 10
Missouri	K9CHE	102,900	DX100; Communicator	SX71; 75A1; Communicator	40, 20, 15, 10, 6
Nebraska	K0DLL	75,600	DX100	NC300; SX1C1	75, 40, 20, 15, 10
Connecticut	W1FYF	49,248	DX100	SX71	75, 40, 15, 2
Maine	W1GKJ	56,640	Viking II	HRO60	75, 40, 20, 15, 10, 6
E. Mass.	W1QWI	83,622	Viking 500	SX101	75, 40, 20, 15, 10
W. Mass.	W1EKO	122,040	32V2; Communicator	NC183; Communicator	75, 40, 20, 15, 10, 6
N. H.	K1DFM	64,838	DX100	SX43, QF1	75, 15, 10
R. I.	W1BFB	92,070	Ranger-813	NC300	75, 40, 15, 10
Vermont	K1BXV	5841	DX35	SX25	75, 40, 20, 15, 10
Alaska	KL7CKB	25,493	Ranger	SX101	20, 15, 10
Idaho	K7BWW	96,833	DX100	75A4	40, 20, 10
Montana	W7FFM	92,058	DX100	SX71	75, 20, 15, 10
Oregon	W7OVA	112,992	Viking I	75A2	75, 40, 20, 15, 10
Washington	W7BSW	142,350	Valiant	NC300	75, 40, 20, 15, 10
Hawaii	KH6IJ	31,578	HT32-4-250s	75A4	20, 15, 10
Nevada	W7ZCA	138,495	DX100	RME1350A	40, 15, 10
Santa Clara V.	K6ERV	105,468	Valiant	75A2	40, 20, 15, 10
East Bay	W6PQW	188,100	VFO-6L6-2E26-811A	75A4	10
San Francisco	K6HIP	43,173	DX40	NC101X (modified)	10
Sacramento V.	K6OND/6	62,628	Ranger	AR88	75, 40, 15, 10
San Joaquin V.	K6OOV	103,740	Viking II	HQ110C	75, 40, 15, 10
No. Carolina	K4IEF	96,579	Ranger	SX99	75, 20, 15, 10
Virginia	K4HTU	90,405	DX100	NC300, DB23	75, 40, 20, 15, 10
W. Virginia	K8KLI	102,168	Viking II	HRO60	75, 40, 20, 15, 10
Colorado	W0CYT	132,057	T90	NC300	40, 20, 15, 10
Utah	W7DTB	100,232	6A8-6AG7-807s-813s; 6A8-6AG7-807s-4-400A	Super Pro	75, 40, 20, 15, 10
New Mexico	W5MYI	126,735	DX100	SX1C1	40, 20, 15, 10
Wyoming	W7SZZ	50,324	DX100	SX24	40, 20, 15, 10
Alabama	K4LNQ	42,036	DX100	SX99	40, 20, 15, 10
E. Florida	K4SXO	137,423	Valiant	NC300	40, 20, 15, 10
W. Florida	K4CEF	27,300	Valiant	NC98	40, 20, 15
Georgia	W4FGH	120,258	813; 6146 SSB	75A3; HQ129X; BC348	40, 20, 15
West Indies	O03HD	7410	813	SX28	20, 15
Canal Zone	KZ5GT	53,543	5100B	NC300	15, 10
Los Angeles	K6EVR	212,221	Viking II: 6146s	75A1	40, 20, 15, 10
Arizona	W7ENA	71,760	HT9	SX96; NC183D	75, 40, 20, 15, 10
San Diego	W6WDL	3785	DX100	SX101	15, 10
Santa Barbara	K6SDE	9555	DX100	NC125	20, 10
No. Texas	W5UMP	92,616	DX40	S76	40, 20, 15, 10
Oklahoma	W51WL	108,216	5763-5763-5763-6146-813	NC300	75, 40, 20, 15, 10
So. Texas	K5EDM	115,605	DX100	SX100	40, 20, 15, 10
Maritime	K8LPZ/VOI	22,343	Apache	SX25	20, 15, 10
Quebec	VE2AZI	45,256	Ranger	HRO	75, 40, 20, 15, 10
Ontario	VE3DRL	11,280	12J5-6AG7-1625s-813	Homebuilt (10-tube single conv.)	40
Sask.	VE5FN	26,871	Viking II	HRO	75, 40, 20, 15, 10
Alberta	VE6TP	54,251	Ranger	HQ110	10
B. C.	VE7CE	53,213	Valiant	SX71, DB22	40, 20, 15, 10
Yukon	VE8FO	27,094	431B-1	51J-4	20, 15, 10

High school senior W1EKO kept things hopping up W. Mass. way in ferreting out contacts on 75 through 6 meters. Proof of his success is the section award, 574 two-ways with 72 sections. Antennas were dipoles on 75 and 40, 4-element beams on 10 and 6, a 3-element beam on 15 and ground plane on 20. Four years of operation have brought DXCC 130, WAC, WAS, CP-30.





# Hints and Kinks

For the Experimenter



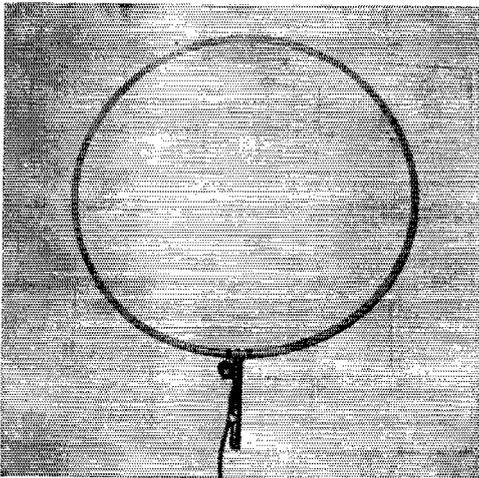
## SOLDERING IRON CLEANER

SOLDERING iron tips can be cleaned easily without sandpaper, files or wire brushes simply by using a Sal-Ammoniac brick. The brick can usually be purchased from hardware or plumbing supply houses. Place the hot soldering iron tip against the Sal-Ammoniac brick and the oxide coating will be removed quickly.

— Alex Toke, K2YVQ

## HULA D.F. LOOP

SHOWN in the photograph is my revised Hula Hoop. As the name signifies, it is a direction finding loop made from the infamous hula-hoop. Mine was designed for 75-meter operation so that I could participate in the local 75-meter transmitter hunts. Here are the constructional details: First a handle had to be attached. This was accomplished by drilling a hole in the hoop tube and attaching an 8-inch piece of broom handle with a wood screw. The loop consists of 185 turns of No. 18 enamel wire with the turns spaced about  $\frac{3}{8}$  of an inch apart. A check with a grid-dip meter indicated the resonant frequency of the hoop was a bit high. Rather than add more wire, I attached a 50  $\mu\text{f}$ . variable capacitor in series with the coil. Now I can tune the hoop from 3.5 to 4.0 Mc with the capacitor. The addi-



K5AHT's Hula D.F. Loop

tion of a piece of low impedance coaxial cable connected to the capacitor and coil<sup>1</sup> completed the Hula D.F. Loop.

— Bobby J. Bellar, K5AHT

<sup>1</sup> Campbell, "Hula-Hoop Helical Halo," QST, Feb., 1959

## TRANSISTOR B.F.O.

FIG. 1 shows a transistor b.f.o. that can be used with any receiver having a 455-ke. i.f. It is basically a Colpitts oscillator and uses a 2N190 transistor. I built the unit in a b.f.o. can discarded

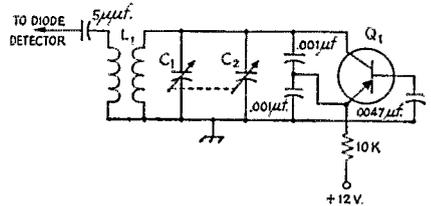


Fig. 1—Transistor b.f.o. The tuned circuit  $L_1, C_1, C_2$  is the b.f.o. assembly from a 1.5 to 3 Mc. ARC/5 receiver.  $Q_1$ —2N190, CK768, 2N107

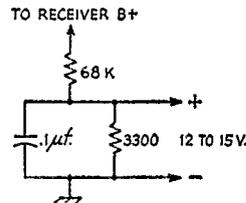


Fig. 2—The voltage divider connects to a 250 to 300-volt source. Resistors are  $\frac{1}{2}$  watt.

from a 1.5 to 3 Mc. ARC/5 receiver. The oscillator tank  $L_1C_1C_2$  is the b.f.o. coil assembly from the 1.5 to 3 Mc. ARC/5 receiver. The oscillator is coupled to the receiver detector through the 5- $\mu\text{f}$ . capacitor. Since the unit requires only 12 volts at 60  $\mu\text{a}$ ., it makes a convenient b.f.o. for mobile operation. It can also be incorporated into the home receiver by using the voltage divider shown in Fig. 2. The divider is connected to the receiver B-plus line.

— Charles Hartley, K6GQL

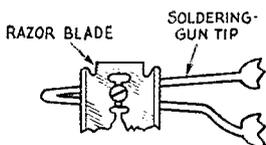
## A PANADAPTER CONNECTION FOR THE 75A-4

I FOUND an easy way to connect a BC-1031C panadapter to my 75A-4 without the need for much more than lifting the cabinet lid. Connect the hot wire from the panadapter cable to the tube shield of the 6BA7 second mixer and ground the outer shield of the cable to the receiver chassis. When replacing the tube shield, push it down to within  $\frac{1}{32}$  of an inch from the tube base shield, but don't let it touch! This forms a concentric capacitor around the tube and provides sufficient coupling between the receiver and panadapter.

— Robert W. Westcott, W8DNY

## CUTTING 32 T.P.I. MINIDUCTORS

THE difficult task of cutting fine pitch Miniductors can be easily accomplished by breaking a discarded razor blade in half and fastening



one half of the blade to the tip of a soldering gun as shown in Fig. 3. Slip the blade between the turns to be cut and switch on the soldering gun. As the blade warms up it will cut through the plastic. Don't allow the tip to remain hot too long as this will melt the plastic and loosen adjacent coil turns. Incidentally, for safety's sake, hold the razor blade in a vise and break it with pliers.

— E. A. Sahn, W5FFE

## BACK TO BACK TRANSFORMER CIRCUITS

FIG. 4 shows a simple circuit that I use around the workshop when I need isolated 117-volt a.c. The circuit also provides a handy source of low voltage a.c. for test set-ups. Be careful not to exceed the power rating of the transformers.

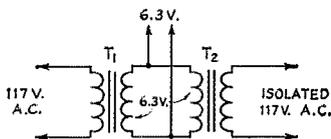


Fig. 4—Back to back filament transformers provide a source of isolated 117 v.a.c.

$T_1, T_2$ —6.3 V. filament transformers.

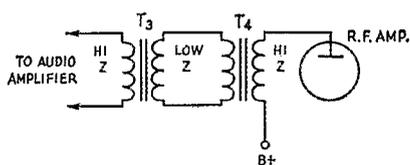


Fig. 5—Makeshift modulator using two output transformers.

$T_3, T_4$ —Audio output transformers.

The circuit in Fig. 5 has two audio output transformers back to back and allows an ordinary audio amplifier to be used as a modulator. The Class C load should have a value close to the high impedance value of the transformer  $T_4$ .

—Donald R. Wesson, K4HCZ

## CLEAR PLASTIC REFINISHING

RESTORATION of transparency and lustre to scratched or fogged clear plastics is easily done by going over the surface of the plastic with fine grade steel wool. Use fast light strokes until

the entire surface is matted. Don't concentrate on individual scratches; bring the entire surface down to the level of the deepest scratch. After the surface is leveled and evenly matted, apply ordinary household silver polish cream and rub lightly with the finger tips or with a piece of fine chamois. A few minutes of light rubbing will make the plastic as clear as glass.

—John B. Ferguson, jr., W3AEV

## IMPROVING THE OPERATING CONVENIENCE OF THE NATIONAL NC-109

RECENTLY, I purchased a National NC-109 receiver and its companion frequency standard, the XCU-109. It soon became apparent that

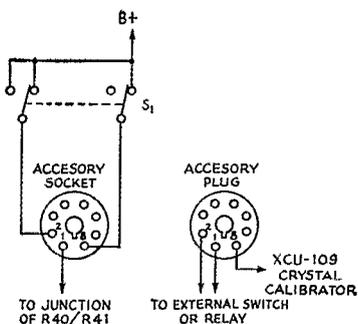


Fig. 6—NC-109 connections to improve operating convenience.

these two items needed improvement. First, there was no way to switch the receiver to standby other than with the panel receive/standby switch. This prevented the use of an external relay or switch for station control. Also, there was no means of controlling the crystal calibrator from the front panel. In order to use the calibrator, it was necessary to reach over and behind the receiver.

By replacing the original receive/standby switch and utilizing two of the three unused pins on the accessory socket, the above operating difficulties were overcome. The diagram for the changes are shown in Fig. 6. Replace the existing s.p.s.t. receive/standby switch with a d.p.d.t. toggle switch  $S_1$ . The high voltage lead that was connected to the original switch should be transferred to pin 1 of the accessory socket. Now remove the two wires from pin 8 of the accessory socket but leave them connected. Place a lead from pin 8 of the accessory socket to the d.p.d.t. switch as shown in Fig. 6.

With these modifications, the switch in one position will allow the receiver to operate normally with the calibrator off. In the other position, the receiver will be on with the calibrator. For standby, the connection between pin 1 and 2 is broken with a switch or relay. The calibrator is connected to pin 8 of the accessory plug.

—Donald G. Blake, W1TTD

## B.C. BAND HALO

BECAUSE I wanted to use my 6-meter halo for broadcast reception I tried connecting the halo to the car b.c. set. Reception was poor and only a few very strong stations were copiable. To remedy the situation, I installed a 400- $\mu\text{f}$ . ceramic capacitor  $C_1$  between the ground end



Fig. 7 — Diagram of the 6-meter b.c.-band halo.

of the halo and the shield of the coaxial cable as shown in Fig. 7. With this arrangement, I am able to receive signals on the b.c. band and still use the antenna for 6-meter operation.

— *Barrie C. Hiern, K5SGP*

## USING THE HEATH VF-1 TO DRIVE THE AT-1 ON 15 METERS

UNFORTUNATELY, it is impossible to use the Heath VF-1 v.f.o. with the AT-1 transmitter on 15 meters because the AT-1 requires a fundamental frequency of about 5.3 Mc. at the oscillator in order to quadruple to 21 Mc. The VF-1 is not designed to give 5.3 Mc. output so crystal controlled operation is the only method possible on 15 meters with the AT-1.

However, since the 11-meter band is no longer usable, the 11-meter portion of the v.f.o. (which normally oscillates around 6.7 Mc.) can be changed to tune to 5.3 Mc. and used to drive the AT-1 on 15 meters. All that is necessary is the addition of a 68  $\mu\text{f}$ . silver mica capacitor across the 11-meter trimmer capacitor in the VF-1. This will lower the frequency of the oscillator to about 5.3 Mc.

Calibration of the VF-1 is accomplished by using the station receiver after it has been calibrated to WWV. The 11-meter trimmer is then adjusted until the high end of 15 meters falls in line with the upper end of the old 11-meter band on the VF-1 dial. This places the low end of the 15-meter band a bit below the bottom end of the 11 meters on the dial but the entire 15-meter band will be contained within the high-frequency side of the VF-1 dial.

Spot checks throughout the band will give markers for rough calibration. To operate on 15 meters, switch the VF-1 to 11 meters, zero beat and you're in business. The above changes don't require changing the calibration of any of the other VF-1 bands.

— *Capt. Frank T. Moss, K2TMI*

## SHIELDING DUMMY LOADS

WHILE checking a new rig I connected a dummy load (a 25-watt lamp) to the transmitter. During the checks I heard an out-of-town station calling CQ. I was still using the dummy antenna on the transmitter but since I was tuned up on his frequency I gave him a call just for fun. Not only did I make the contact but I also received a good report!

A later check with a field-strength meter indicated an extremely strong r.f. field around the lamp. I applied several coats of conductive paint (Television Tube Coat, General Cement No. 49-2) to the glass envelope around the lamp, leaving a small  $\frac{1}{4}$ -inch circle to allow observation of lamp brilliance. After this coating, the field-strength meter gave only a slight reading a few inches from the dummy load. Now, the lamp makes a good dummy antenna.

— *Harrison A. G. Stone, K2LIF*

## CORRECTING WRONG-WAY GRID CURRENT IN THE HEATHKIT DX-100 AND APACHE TRANSMITTERS

UNDER certain conditions during tune-up the final grid current reading on both the DX-100 and Apache transmitters will go below zero. With the change shown in Fig. 8, the meters will read actual grid current without going below zero.

On the Apache, the change is easily made by shifting the yellow wire from terminal C1-2 to C1-1, as shown in Pictorial 22, page 67 of the Apache instruction book. On the DX-100 it will be necessary to add an insulated terminal. Mount the terminal on the spade bolt that holds the v.f.o. bracket adjacent to the 500,000-ohm clamp-circuit potentiometer (see Pictorial 7, page 34 of the DX-100 instruction book).

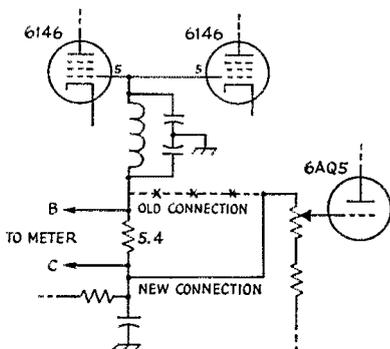


Fig. 8—New connection to improve the DX-100 and Apache meter circuit.

Remove the violet wire and the 5.4-ohm resistor from terminal 3 of the 500,000-ohm clamp circuit potentiometer. Reconnect these leads to the insulated terminal. Now connect the vacant potentiometer terminal (3) to the other side of the 5.4-ohm meter shunt.

— *Harold C. Jensen, W1LUW*

## TR SWITCH

HERE is a t.r. switch that I use with my Navigator transmitter and HQ-100 receiver. It's easy to build and there is nothing critical to adjust. The circuit for the switch is shown in Fig. 9. The output circuit, including the 180-ohm resistor, 0.002  $\mu$ f. capacitor and the r.f. choke, should be shielded. Ideally, the switch would be mounted as close as possible to the final ampli-

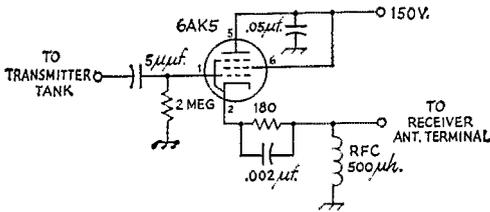


Fig. 9—Diagram of the t.r. switch

fier tank circuit to prevent pick-up. Be sure to use an input capacitor that will safely handle transmitter voltages. Also, use of the switch will depend on the voltage that may be safely applied between the grid and cathode of the tube.

—Ray Smith, W7UZI

## DECAL COATER

THE exasperating experience of having decals wrinkle because of a slight overdose of lacquer or plastic spray induced me to find a sure-fire non-curl method of coating. The solution—Polaroid Print Coater. It comes supplied with every package of Polaroid Land film and is used to protect the pictures from grease and give a lustrous finish to the print. Place some of the solution over the decal with the applicator and you have a non-wrinkle coating.

—Richard E. Bakula, K0MOD

## TRANSMITTER NEUTRALIZING WITH THE STATION RECEIVER

RECENTLY, while neutralizing a new transmitter I tried using the station receiver as a neutralizing indicator. High voltage was removed from the transmitter final amplifier tubes and a short piece of coax was connected to the transmitter output. The coax was terminated with a wide spaced two turn coil about  $\frac{5}{8}$  inch in diameter. A one-turn coil of the same diameter was connected to a short piece of Twin-Lead which in turn was connected to the receiver's antenna input terminals. The receiver was then tuned to the transmitter frequency.

With drive applied to the transmitter final amplifier, adjust both the coupling between the above coils and also the receiver's r.f. gain control for maximum S-meter reading. To neutralize; adjust the neutralizing circuit in the transmitter for minimum S-meter reading.

—Corwin Butler, K5INC

## STOP ROTATOR FREEZING

AMATEURS who have experienced difficulty with A beam rotators freezing-up in cold weather might be interested in my inexpensive solution to this problem. Position a 150-watt light bulb just below the rotator mechanism and enclose it with asbestos paper. Connect a heavy duty power cord to the lamp and to a power receptacle. When the temperature goes down and the rotator sticks, turn on the light bulb for about fifteen or thirty minutes. The rotator will then turn "free" again.

—John L. Spencer, K0IUC

## TRANSISTOR CONVERTER

SHOWN in Fig. 10 is a circuit diagram of a 40-S meter transistorized crystal controlled converter. It is a simple circuit, yet works surprisingly well considering the small number of parts it uses. The circuit is basically a Pierce oscillator with an untuned collector. The transistor used is one of the less expensive types and the crystals can be surplus. Basically, the circuit oscillates as a crystal-controlled oscillator while the input signal is injected into the base. After mixing, the desired signal is picked out by a tunable receiver. I use a 3 to 6 Mc. ARC/5 receiver with my converter. Resistor  $R_1$  may have a value from 100,000 ohms to 1 megohm. However, I found 390,000 ohms worked best in my circuit.

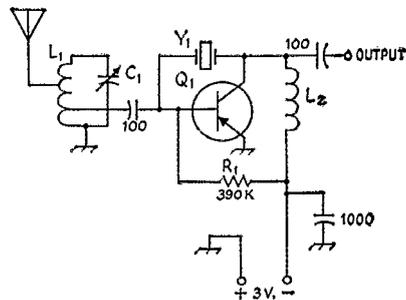


Fig. 10—Transistor crystal-controlled converter. All capacitors are in  $\mu$ f., resistance are ohms, resistors are  $\frac{1}{2}$  watt.

$C_1$ —100  $\mu$ f. variable capacitor.

$L_1$ —30 turns No. 22 enam. wire, close wound on  $\frac{1}{16}$  inch dia. tube. Transistor tap at 3 turns from cold end, antenna tap 12 turns from cold end.

$L_2$ —1- to 2.5-mh. r.f. choke.

$Q_1$ —2N247, 2N170.

$Y_1$ —3700 kc. to receive 7000 to 7300 kc. when tuning receiver 3300 to 3600 kc.

With 3 volts on the collector, the unit draws about 100  $\mu$ a. When the crystal is removed, the collector current will jump to 500 to 1000  $\mu$ a. This is a good indicator to show when the circuit is not oscillating. The converter can be used to cover other bands by choosing the proper crystal and changing the input circuit to tune to the new frequency.

—Milton K. Foxworthy, W9BNW/8

# 1959 ARRL Field Day Rules

*Annual Test for Emergency-Powered Stations, June 27-28*

ALL set for the 1959 Field Day? Almost every active amateur in the 73 ARRL Sections is already aware that June is Field Day month and that more operating fun is to be had on that one June week end than at any other time during the year.

Working under conditions which could be encountered in an actual emergency, clubs and other organized groups will set up and operate multitransmitter stations independently of normal power facilities. Amateurs not with such teams will go into action as mobiles or unit-individual portables. Emergency-powered fixed stations, such as civil defense and amateur club stations, will compete in the Class D category. But whatever *your* method of participation, hundreds of amateurs will be scanning the bands for your signal.

The rules and entry classifications are unchanged. Pick any consecutive 24-hour period from the Field Day timetable. Once on the air call "CQ FD" on c.w. or "CQ Field Day" on phone, then give the station worked a signal report and your ARRL Section or specific location and stand by to receive like information.

Here are three examples to assist score calculations:

### Example 1

Assume a 25-watt rig wholly on batteries, not originating or relaying any messages, and not having more than two operators.

40 points (40 stations worked)  
 $\times 3$  (power below 30 watts)  
120  
 $\times 3$  (all radio equipment independent of commercial mains)  
360  
 $\times 1.5$  (If Class B or C and everything on batteries)  
540 claimed score

### Example 2

Same as Example 1 but one Field Day Message to the SEC or SCM is originated and passed in good form.

65 points (40 QSOs + 25 points for FD message)  
 $\times 3$  (3  $\times$  3 — power multiplier multiplied by independence-of-mains multiplier)  
585  
 $\times 1.5$  (everything on batteries)  
877.5 claimed score

(Copies of all messages originated and relayed must accompany Field Day reports.)

### Example 3

The Podunk Hollow Radio Club (or any group of three or more licensed operators), portable at its FD site, operates two transmitters simultaneously. Each rig runs 75 watts input and batteries or generators furnish power. One message is started in good form (25 points), 1 is received and relayed onward (2 points), and 230 stations are contacted.

237 points (230 QSOs + 25 + 2)  
 $\times 2$  (power input over 30 and under 150 watts)  
514  
 $\times 3$  (all gear independent of mains)  
1542 claimed score  
(No battery multiplier for either clubs or groups.)

Clubs should get every member-owned mobile

unit active and report their aggregate scores to ARRL. Our increased showing through individual mobile reports and club aggregate mobile scores is important because such units are considered indispensable in civil defense planning.

Convenient log forms and summary sheets are now available from the ARRL Communications Department. You may make up your own, but please remember to include starting and ending time of operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and locations of stations worked as well as power sources and inputs, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any) and score computations. To assure listing in the final results in *QST*, mail your logs by July 25.

Read over the rules below and review the results of last year's FD in December 1958 *QST*. Then you're ready to join in the portable fun and help make the 1959 Field Day the most successful amateur emergency test ever!

## Rules

**1. Eligibility:** The Field Day is open to all radio amateurs in the sections listed on page 6 of this issue of *QST*.

**2. Object:** For portable and mobile stations to work as many stations as possible; for home stations to work as many portable and mobile stations as possible.

**3. Conditions of Entry:** Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Contest Committee.

**4. Entry Classification:** All entries will be classified according to number of transmitters in simultaneous operation. They will be further classified as follows: "A," club or nonclub group portable stations; "B," unit or individual portable stations; "C," mobile stations; "D," home stations operating from emergency power; "E," home stations operating from commercial power sources. Thus a club or group running three transmitters simultaneously will be in the 3A classification, or a mobile station with one transmitter will be in the 1C classification.

*Portable stations* are those installed temporarily, for FD purposes, at sites away from customary fixed-station locations. Portable equipment or units must be placed under one call and the control of one license, for one entry. All control locations for equipment operating under one call must lie within a 1000-foot diameter circle.

*Group participation* is that portable-station work accomplished by three or more licensed operators.

*Unit or individual participation* is that portable-station work accomplished by either one or two licensed operators.

*Mobile stations* are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

*Home-Station participation* is that work by fixed amateur stations not operating portable or mobile.

A transmitter used to contact one or more stations may not subsequently be used under more than one other station call during the Field Day period.

**5. Field Day Period:** All contacts must be made during the period indicated elsewhere in this announcement. An entry may be operated no more than 24 consecutive hours of the 27 hours available.

**6. Bands:** Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: A1: 1,800-1,825 "east" or 1,975-2,000 "west." 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45, 28.0-29.7, 50-54 and 144-148 Mc. (A2, radio-teletype and frequency-shift keying are grouped with A1, in the bands where they are allowed). A3: 1,800-1,825 "east" or 1,975-2,000 "west." 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

The use of more than one transmitter at one time in the same band is not allowed.

**7. Exchanges:** Signal reports and ARRL section (or specific location) must be exchanged in proof of contact.

**8. Valid Contacts:** In Class A, B and C, a valid contact is a completed exchange with any amateur station. In Classes D and E, a valid contact is a completed exchange with any station in Class A, B or C. Cross-band contacts are not allowed. Contacts by mobile stations may be made in motion or from any location(s). A station may be worked more than once only if the additional contacts are made on different bands.

**9. Field Day Message:** A Field Day Message is one originated by a Class A, B, or C station and addressed to the SEC or SCM (see address in QST, p. 6) stating the number of operators, the field location, and the number of AREC members at the Field Day station. Only one Field Day Message may be originated.

**10. Scoring:**

*Points:* Each valid contact counts 1 point.

*Message Credit:* Credit for handling messages may be obtained only as follows: 25 points for originating one Field Day Message to SEC or SCM. In addition, each Field Day Message received for relay will score 1 point when received by radio and 1 point when sent onward by radio. No FD Message may pass through the same station twice. There will be a deduction of 10 points for omission of handling data or for defects in form. Copies of all messages originated and relayed must accompany Field Day reports.

*Multipliers:*

*Power:* Output-stage plate input 30 watts or less: 3. Output-stage plate input between 30 and 150 watts: 2. Output-stage plate input between 150 and 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

*Independence-of-Mains:* All radio equipment independent of commercial power source: 3. All radio equipment not independent of commercial power: 1.

*Battery Power:* (applies to Class B and C only): 1.5. The battery capacity or size shall in all cases be adequate to permit one hour's continuous operation of the station. Charging batteries from commercial mains while batteries are

FIELD DAY TIMETABLE		
Time	Start	End
	June 27	June 28
AST	5:00 P.M.	8:00 P.M.
EST	4:00 P.M.	7:00 P.M.
CST	3:00 P.M.	6:00 P.M.
MST	2:00 P.M.	5:00 P.M.
PST	1:00 P.M.	4:00 P.M.

(Operate no more than 24 consecutive hours out of the total 27-hour period)

connected to transmitter or receiver voids the "independence-of-mains" and "battery power" multipliers.

Multipliers do not apply to Class D and E entries.

*Final Score:* The final score equals the total "points" multiplied by the "power multiplier" multiplied by the "independence-of-mains" multiplier (multiplied by the "battery power" multiplier, if applicable). Where different multipliers apply during the Field Day period, points are multiplied by the multiplier in effect at the time the points were earned.

**11. Club Aggregate-Mobile Scores:** Entries under Class C may be combined to form a "Club Aggregate-Mobile Score." The club name must be noted on the individual reports, and the club secretary must submit a claimed aggregate score. Credits to the extent supported by the reports submitted to ARRL will be allowed. Only bona fide members of the club, residing in the club territory, may contribute to the aggregate-mobile club listing.

**12. Reporting:** Mail reports or entries on or before July 25. Reports must show starting and ending time of FD operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and scores of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

## ARRL FIELD DAY SUMMARY

Station Call..... FD Location.....

Class of entry (underline one): A. Club or Group, Portable. B. Unit or Individual, Portable. C. Mobile. D. Home -- Emergency Power. E. Home -- Commercial Power.

Number of transmitters in simultaneous operation.....

If club entry, name of club.....

Number of persons participating at this station.....

Period of FD operation: Starting time..... Ending time.....

	3.5 Mc. c.w.	3.5 Mc. A3	7 Mc. c.w.	7 Mc. A3	14 Mc. c.w.	14 Mc. A3					Totals
Bands											
Nr. stns. worked											
Score											CLAIMED SCORE

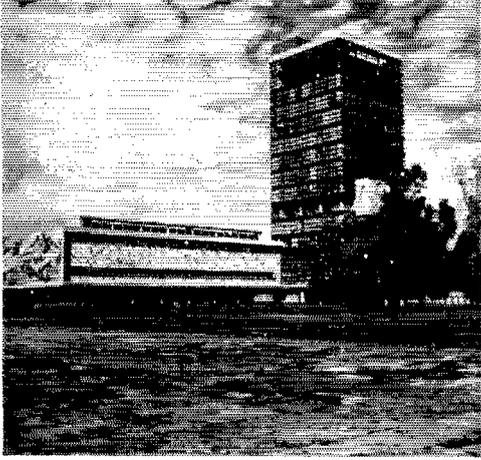
Each entry must be accompanied by this summary (CD-66) with appropriate items filled in. If you do not use this, please prepare a facsimile. Attach logs of all Field Day contacts and copies of messages originated and relayed, if score credit is claimed.

EQPT: Power Source Transmitter Input Receiver Antenna

(Band)  
3.5 Mc. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

This certifies that the station whose call appears above was operated in accordance with the current Field Day rules and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

..... (Date)  
 ..... (Signature of club secretary or licensee of station whose activities covered in this FD entry)



At the left is some of the very modern University of Mexico, in Mexico City, while at the right is the interior of a market in Guanajuato.

## Mobiling in Mexico

BY DALTON S. REYMOND,\* K6JD, XE0JD

**M**EXICO! — The mere word conjures up in the minds of many of us the desire for adventure in a strange, little known and primitive land; in others an extreme misconception of a hostile country teeming with *bandidos*, strife and unfriendliness. Both of these concepts are far from valid. While it is true that the country may seem strange to the first-time visitor from the United States, he will soon discover that Mexico is a land of enchantment and deep-rooted tradition, a land of sincere friendship and unbounded hospitality. It is a land of extreme contrasts of the very old with the very new; modern buildings, conveniences and facilities that compare with any in the world; fine paved highways weaving through some of the most spectacular scenery to be found anywhere in the Western hemisphere; all intermingled with unbelievable architectural gems of many bygone generations the superb construction and beauty of which are beyond description.

On every side you will see much evidence of a virile leadership and an expanding economy; huge dams and extensive irrigation projects in the states of Sonora and Sinaloa; people working, lush crops now growing in land which only a few years ago was parched desert. You will see active agriculture and new industry on the great plateau, 6500 feet above sea level, almost all the way from Mexico City through Queretaro to Lagos de Moreno; new industrial plants and extensive residential subdivisions on the rolling hills surrounding Mexico City.

But you will also see many indescribable old cities like San Miguel Allende, Guanajuato and Taxco, and many, many others of all sizes from the jungle tropics of San Blas and Nayarit to the great 7500-foot plateau in the middle of the re-

public, some perched on mountain sides, some in deep lush valleys, with their narrow cobble-stone streets and their magnificent churches and public buildings, almost untouched in their Colonial and Castillian charm.

However, if one intends to travel in Mexico and is not familiar with the marvels of its antiquity and the rich tradition and culture of this great nation to the south of us, which was great even before Columbus set foot on this continent, then he had better do some studying before he crosses the border, or stay home. If one travels in Mexico with the attitude, much too prevalent among American *turistas*, that everything in, or from, the United States is superior, and does not possess the humility to meet these friendly neighbors on an equal footing, then he, too, had better stay home. I found it to be an invariable fact that you will be repaid with two smiles for every one you give in Mexico, whether it be to the lowliest *peon* or to the *Alcalde* himself. It makes no difference. And there is much for us to learn about life and peace of mind and ease of living from these gracious and friendly and courageous people if we will just open our eyes and our hearts to them when they offer us the hospitality of their country.

They have just given freely of that hospitality and kindness to me. The three and a half weeks spent in Mexico will never be forgotten. And the summarizing of this experience is prompted by literally dozens of inquiries from my fine radio colleagues all over the United States, both during and since my trip, for information concerning various phases of mobile travel in Mexico.

First, in order to travel mobile in Mexico, a Mexican license must be obtained. This is a relatively simple matter today, although a year or so ago mobile travel there was not permitted. The

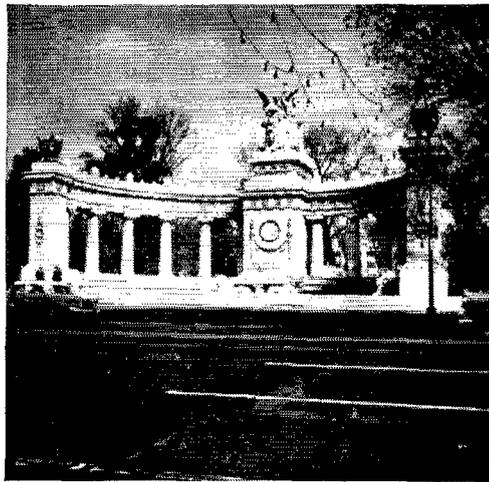
\* 2205 Benedict Canyon Drive, Beverly Hills, Calif.

first step is to write to the *Liga Mexicana de Radio Experimentadores (LAIRE)*, Liverpool 195-A, Mexico, 6, D. F., for the application forms. They will be forwarded promptly by the very kind and cooperative *Gerente Administrativo* of the Liga, Tte. Corl. Mariano Yustis C (XE1BX) and consist of the following: (1) Application for membership in the *Liga*; (2) Application for the Mexican licence; (3) Waiver of U. S. immunity in case of violation of Mexican communications laws. These are to be filled out and returned with a Mexican Money Order for \$8 (U. S.) for *Liga* membership, and \$8.80 (U. S.) for the license. You must also send a photostatic copy of your FCC licence, a photostatic copy of your car ownership certificate, and a letter or statement from either the Mexican Tourist Bureau or the Mexican Consulate from which you obtain your visitor's permit, good for six months, stating that you are coming to Mexico as a Tourist. All Americans going into the interior of Mexico must obtain a Tourist Permit for which the fee is \$3. No passport is required. When all these documents are sent to the office of the *Liga*, you will in from six weeks to two months receive your Mexican licence and the call which will be the XEØ prefix followed by your call letters. In addition, all travellers into Mexico who will return to the United States must have a vaccination certificate for small pox, which will be asked for by the U. S. Customs officer at the point of re-entry into the States.

The trip began on December 16, 1958. I must admit I had considerable apprehension about driving so far without a companion. In the first day's drive from my home in Beverly Hills, California, I reached Nogales, Ariz. in time to take care of my car insurance at the office of the AAA. Mexico Auto Insurance is a must as U. S. insurance is not in effect in Mexico. The policy covering the usual fire and theft and PD and PI, plus collision cost \$12 for 30 days coverage with a rebate for each day of \$1.87 if I returned in less than 30 days. My car is a 1956 Chevrolet.

The mobile rig is a Gonsset 77A and 66B with a Rafted 5-band antenna controlled from the dash of the car; and I must say here that its performance on this trip under all kinds of conditions was nothing short of amazing. It speaks more forcibly than anything I could say concerning its stability and power and precision of manufacture. I have received QSL cards from as far away as New Brunswick and Argentina and Chile, with signal reports of 30 and 40 over 9. This did not happen just one day or under freak skip conditions, but every day and almost every hour over a continuous three and a half weeks.

When I had gone about one hundred miles from my home QTH I picked up, on the mobile rig, my good friend Mac (W7BD) in Eugene, Oregon. I had talked to Mac two days previous from the inside of a brick garage in downtown Los Angeles where I was having an extra 12-volt battery installed under the hood. This contact proved to be the beginning of an almost unbelievable mobile schedule. Every day and almost



This is a monument in Mexico City, honoring Benito Juarez, the father of Mexican independence.

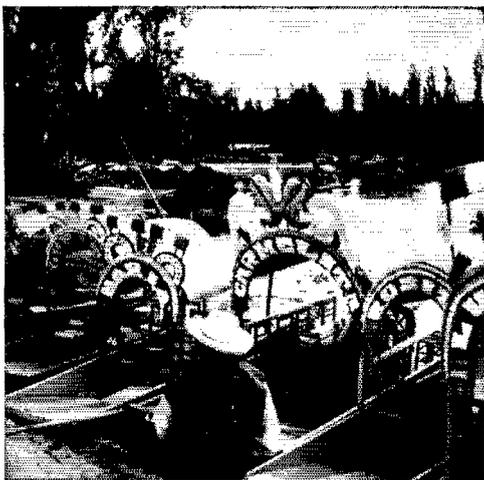
every hour thereafter when I was in motion, and many times when I was not, we kept the schedule, all the way to Taxco, 150 miles south of Mexico City, and all the way back to Beverly Hills, on 20 meters. Valleys, hills, tunnels, buildings, power lines, QRM, QSB to the contrary notwithstanding; nothing seemed to make any difference. No matter where I was or when I called, Mac was there. He had the AAA book *Mexico by Motor*, similar to the one I had in my car, and a map; he directed me almost everywhere on the trip — motels, restaurants, crossroads, mileage, etc., just as though he were sitting beside me in the car.

In addition to my regular contacts with Mac, when I got below the border and could use my Mexican licence, I could operate below the American band. One CQ would sometimes bring as many as eight or ten replies. Many thought, erroneously of course, that XEØJD was a new country. By the end of the third day my voice was almost gone. The 150 XEØJD QSL cards I took with me were exhausted a week before I returned.

For several weeks before my departure I had concentrated from my home QTH with Mexican amateurs. I was successful with about twenty-five. Without exception, when I told them of my proposed trip, they extended me their hospitality, invited me to their cities and towns, and to their homes. My only regret is that I could not visit them all. This, of course, was impossible on a three-week trip. I missed the friends I had made in such beautiful places as Chihuahua, Torreon, Gomez Palacio, Durango, Puebla and many others. But I have since made another trip at which time I visited them; and I found their cities as fascinating and their people as gracious as those I was fortunate enough to see the first time.

Interesting experiences were many and varied and unexpected from the time of crossing the border into Mexico until my re-entry into the States — far too many to be detailed in so brief a summary. But a few will illustrate.

I entered at Nogales and travelled down the



A scene in the Xochimilco Floating Gardens, in Mexico City.

excellent paved Mexican Highway No. 15, through the surprisingly clean and modern city of Hermosillo, Guaymas, Obregon, Navajoa, Culiacan, the fascinating beach city of Mazatlán, Tepic, to my favorite city in all Mexico, Guadalajara. Arriving there about 4 in the afternoon I registered (on Mac's radio advice) at the Motel Chapalita. I tried immediately to contact my friend Luis Moragrega (XE1SN) by telephone but without success. After dinner, and still without success, I decided to drive down the Av. Vallarta and Av. Juarez through the very modern business section of the city, ablaze with neon lights, lined with fine stores and hotels. On the way back I decided to call "CQ Guadalajara" a few times, just to see what would happen. Immediately a strong carrier pinned the needle on my receiver. After about 30 seconds someone said, "XE0JD, this is XE1SN. Where are you, Ray?" Luis! I was three blocks from his home. He directed me there for a visit, and the following evening we spent together, chatting with his charming XYL, and working his Johnson 500 and 75A-4 until after midnight.

The following day I drove to Morelia, a very unusual city about 165 miles from Guadalajara, arriving there about 3 in the afternoon. After registering (again on Mac's advice) at the Villa San Jose, a superb motel on the side of a beautiful hill overlooking the city, I drove back down to the Plaza, or *Zócalo*, to take a few pictures with my Rollei. When I had parked, a *vigilante*, or watchman, offered to watch my car. I asked him, "*Conoce Ud. un radio aficionado aquí en Morelia?*" "Do you know a radio amateur here in Morelia?" His answer, with a big smile as he examined the whip antenna on my car, was, "Sí." And in Spanish, "Would you wish me to take you to his house?" My answer of course was also, "Sí." Through narrow, one way cobblestone streets we drove for a few blocks and soon arrived at the home of my now good friend J. Manuel Treviño (XE1TV), who owns the local radio

station. With three or four other local amateurs he was engaged in repairing his antenna transmission line. With open-armed hospitality they took me in tow, showed me all over the town, and took me to a Mexican chicken dinner. They were extremely interested in the Gonset Twins in my car, crowding inside, working Mexican and Central American and Cuban stations in Spanish, and of course my standby as usual, Mac (W7BD), in Eugene, Ore. Very little English was spoken during the evening, which caused me some pain and some strain, but it was thoroughly enjoyed.

But the kindness was not limited to the Mexican hams. At about 8 o'clock on the morning of January 1 I was driving south about 50 miles from Guanajuato on the way to Guadalajara. Over the mobile rig, one of my friends in Encino, Calif., near my home, told me about the very serious brush fire in Benedict Canyon. The fire was out of control and was threatening my home as well as many others. All that day and into the night I had almost hourly reports about the fire from such fine friends as W6HX, W6PIB, W6KUL, W6LI W6FZL (who is the Fire Chief in Van Nuys). At 8 P.M. I was sitting in the car at the Chapalita Motel in Guadalajara, 1700 miles away, still worried, still getting reports, when the deep bass voice of W6KUL called me on schedule. The fire was under control. My home was safe.

The entire trip was filled with such kind and friendly and generous experiences as these, which one cannot easily forget. Christmas lunch in Cuernavaca with Geoff Lord (XE1GE) and his delightful wife and 7-year-old twins, Pat and Mike. Lunch in Culiacan with Max (XE2K); a visit to the home of Regino Sandoval (XE2AO) in Mazatlán; a wonderful dinner in Mexico City with Rafael Villaseñor (XE1YT) and his attractive blonde wife; a memorable New Year's Eve party at the Hotel Arozo in Guanajuato; and possibly the most enjoyable of all, a delicious dinner and floor show with my good friend Bill Tapia (XE2GT) and his lovely XYL and another attractive couple in the surprisingly modern city of Hermosillo, Sonora.

One of the questions most frequently asked was about food and water in Mexico. There are excellent restaurants almost everywhere. However, green or uncooked vegetables should be avoided except in the best restaurants in the largest cities. Milk, too, and butter should be avoided except in cities where pasteurization is required by law. A simple question will bring a frank answer about pasteurization. I found that in Hermosillo, Guadalajara, Mexico City, Cuernavaca and Taxco, milk and butter were pasteurized. The water problem is quite simple. In all hotels and motels where I stopped, a pitcher or bottle of *agua purificada* was provided in every room with sterile glasses wrapped in cellophane. Practically all restaurants serve only purified water and most hotels operate their own purifying systems. Tap water is to be avoided for

(Continued on page 172)

# I.A.R.U. News



## QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. Cards for territories and possessions not listed separately can be mailed to the bureau in the parent country; e.g., cards for French Camerouns (FES) go to REF in France; cards for VP8s go to RSGB in England. W, K, VE and VO stations only may send foreign cards for which no bureau is listed to ARRL.

For service on incoming foreign cards, see list of domestic bureaus in most QSTs under "ARRL QSL Bureau."

*Algeria:* G. Deville, FA9RW, Box 21, Maison-Carree, Alger  
*Angola:* L.A.R.A., P.O. Box 484, Luanda  
*Argentina:* R.C.A., Carlos Calvo 1424, Buenos Aires  
*Australia:* W.I.A., Box 2611 W, G.P.O., Melbourne  
*Austria:* Oe. V.S.V. P.O. Box 15, Klosterneuburg, 2  
*Azores:* Via Portugal  
*Bahamas:* C. N. Albury, Telecommunications Dept., Nassau  
*Barbados:* Arthur St.C. Farmer, Storms Gift, Brandons, Deacons Road, St. Michael  
*Belgian Congo:* U.C.A.R. QSL Bureau, P.O. Box 3748, Elizabethville  
*Belgium:* U.B.A., Postbox 634, Brussels  
*Bermuda:* R.S.B. P.O. Box 275, Hamilton  
*Bolivia:* R.C.B., Casilla 2111, La Paz  
*Brazil:* L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro  
*British Guiana:* D. E. Yong, VP3YG, Box 325, Georgetown  
*British Honduras:* L. H. Alpuche, VP1HA, P.O. Box 1, El Cayo  
*Bulgaria:* Box 830, Sofia  
*Burma:* B.A.R.S. % Tara Singh, 187 Eden St., Rangoon, Burma  
*Canton Island:* H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific  
*Ceylon:* P.O. Box 907, Colombo  
*Chile:* Radio Club de Chile, Casilla 761, Santiago  
*China:* M. T. Young, P.O. Box 16, Taichung, Formosa  
*Colombia:* L.C.R.A., P.O. Box 584, Bogotá  
*Cook Islands:* Ray Holloway, P.O. Box 65, Rarotonga  
*Costa Rica:* Radio Club of Costa Rica, Box 2412, San Jose  
*Cuba:* Radio Club de Cuba, QSL Bureau, Avestaran 629, Altos Cerro, Habana  
*Cyprus:* Mrs. E. Barrett, P.O. Box 219, Limassol  
*Czechoslovakia:* C.A.V., P.O. Box 69, Prague I  
*Denmark:* OZNU, Borge Petersen, P.O. Box 335, Aalborg  
*Dominica:* VP2DA, Box 64 Roseau, Dominica, Windward Islands  
*Dominican Republic:* R.C.D., Calle Dr Baez, No. 25, Ciudad Trujillo  
*East Africa:* (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony  
*Ecuador:* Guayaquil Radio Club, Casilla 784, Guayaquil  
*Ethiopia:* Telecommunications Amateur Radio Club, P.O. Box 1047, Addis Ababa  
*Fiji:* S. H. Mayne, VR2AS Victoria Parade, Suva  
*Finland:* SRAL, Box 306, Helsinki  
*Formosa:* Hq MAAG, APO 63, San Francisco, California  
*France:* R.E.F., BP 26, Versailles (S & O)  
*France:* (F7 only): F7 QSL Bureau, MARS, Headquarters U. S. European Command, APO 128, New York, N. Y.  
*Germany:* (DL2 calls only): G. E. Verrill, G3IEC, 10 Seahorse St., Gosport, Hants, England  
*Germany:* (DL4 calls only): DL4 QSL Bureau, 604th Comm, APO 12, N. Y., N. Y.  
*Germany:* (DL5 calls only): Via France  
*Germany:* (other than above): D.A.R.C., Box 99, Munich 27  
*Gibraltar:* E. D. Wills, ZB21, 9 Naval Hospital Road

*Ghana:* 9G1AB, John Burton, Telecommunication School, Post & Telecommunication Dept., Accra  
*Great Britain* (and British Empire): A. Milne, 29 Keehill Gardens, Hayes, Bromley, Kent  
*Greece:* George Zarakis, P.O. Box 564, Athens  
*Greece* (Unlisted SV0s only): USASG, APO 206, New York, N. Y.  
*Greenland* (OXs only): Via Denmark  
*Greenland:* (KG1s only): MARS Director, Directorate of Operations, Hq. 8th Air Force, Westover A.F.B., Mass.  
*Grenada:* VP2GE, St. Georges  
*Guam:* M.A.R.C., Box 145, Agaña, Guam, Marianas Islands  
*Guantanamo Bay:* Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.  
*Guatemala:* C.R.A.G., P.O. Box 115, Guatemala City  
*Haiti:* Radio Club d'Haiti, Box 943, Port-au-Prince  
*Honduras:* O. A. Trochez, P.O. Box 244, Tegucigalpa, D. C.  
*Hong Kong:* Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong  
*Hungary:* H.S.R.L., Postbox 185, Budapest 4  
*Iceland:* Islenskir Radio Amatorar, Box 1058, Reykjavik  
*India:* P.O. Box 534, New Delhi  
*Ireland:* I.R.T.S. QSL Bureau, 39 Booterstown Ave., Blackrock, Co. Dublin  
*Israel:* I.A.R.C., P.O. Box 4099, Tel-Aviv  
*Italy:* A.R.L., Viale Vittorio Veneto 12, Milano, Italy  
*Jamaica:* Ruel Samuels, VP5RS, 34 Port Royal Street, Kingston  
*Japan* (JA): J.A.R.L., Box 377, Tokyo  
*Japan* (KA): F.E.A.R.L., A.P.O. 994, % Postmaster, San Francisco, Calif.  
*Kenya:* East Africa QSL Bureau, Box 1313, Nairobi  
*Korea:* Mr. In Kwan Lee, Chief Engineer, Radio Supervisory Bureau, O.P.I.R.O.K. Seoul (HL2AM via ARRL)  
*Kuwait:* William N. Burgess, 9K2AZ, % Kuwait Oil Co. 14 — 5th St. North, Kuwait, Persian Gulf  
*Lebanon:* R.A.L., Ahmad, B.P. 3245, Beyrouth  
*Liberia:* (EL1s only) HARC, P.O. Box 32, Harbel  
*Libya:* 5A2TZ, Box 372, Tripoli  
*Liechtenstein:* via Switzerland  
*Luxembourg:* R. Schott, rue Brouch 35, Esch/Alzette  
*Macao:* Via Hong Kong  
*Madagascar:* P.O. Box 587, Tannarive  
*Madeira Island:* P.O. Box 257, Funchal  
*Malaya:* QSL Manager, Box 777, Kuala Lumpur  
*Malta:* R. F. Galea, ZB1E, "Casa Galea", Railway Road, Birkirkara  
*Mauritius:* V. de Robillard, Box 155, Port Louis  
*Mexico:* L.A.R.E., Apartado Postal 907, Mexico, D.F.  
*Midway Island:* KM6BI AIRBARSRON Two Detachment, Midway Navy #3080, F.P.O. San Francisco, Calif.  
*Montserrat:* VP2MY, Plymouth  
*Morocco:* A.A.E.M., P.O. Box 2060, Casablanca  
*Mozambique:* Liga dos Radio-Emissores de Mocambique, P.O. Box 812, Lourenco Marques  
*Netherlands:* V.E.R.O.N., Postbox 400, Rotterdam  
*Netherlands Antilles* (Aruba): Verona, Postbox 392, San Nicolas, Aruba  
*Netherlands Antilles* (Curacao): Verona, Postbox 383, Willemstad, Curacao  
*New Guinea:* Via Papua  
*New Zealand:* N.Z.A.R.T., P.O. Box 489, Wellington C1  
*Nicaragua:* YN1RA, Apartado Postal 555, Managua  
*Northern Rhodesia:* N.R.A.R.S., P.O. Box 332, Kitwe  
*Norway:* N.R.R.L., P.O. Box 898, Oslo  
*Okinawa:* O.A.R.C., P.O. Box 739, APO 331, % Postmaster San Francisco, Calif.  
*Pakistan:* Box 4074, Karachi  
*Panama, Republic of:* L.P.R.A., P.O. Box 1622, Panama  
*Paraguay:* R.C.P., P.O. Box 512, Asuncion  
*Papua:* VK9 QSL Officer, P.O. Box 204, Port Moresby

(Continued on page 188)

## Happenings of the Month

### Greetings from Eisenhower

14-Mc. Phone

### Geneva Proposals

C. W. on Six and Two

#### EISENHOWER GREETES CCIR, PRAISES AMATEURS

President Dwight D. Eisenhower, on the occasion of the opening of the CCIR international technical radio conference at Los Angeles the first of April, transmitted via amateur radio a message of greetings and welcome to the delegates from all over the world. The President's message also bestowed high praise on the amateur radio service.

Contact was made between W3WTE, the amateur station at the White House, operated by Col. E. J. McNally (W3NAL), and K6USA, the special amateur station at the CCIR conference, operated by ARRL Southwestern Division Director Ray Meyers (W6MLZ). After a word of greeting of his own, Col. McNally introduced Undersecretary of State C. Douglas Dillon, who took the mike and said:

"I am happy to join President Eisenhower in sending greetings to the amateur radio operators attending the 9th plenary assembly of the International Radio Consultative Committee. The Department of State and other agencies of the United States Government have long recognized the vital role played by telecommunications in promoting the increased exchange of information between nations that is so important to better understanding among all peoples of the world. We in government also recognize the very large part early interest in radio plays in motivating talented young people to enter science and engineering that contribute to steady improvements and new developments in international communications. I wish you well in your new project at Los Angeles and in all of your future activities."

Col. McNally then handed the mike of W3WTE to James Hagerty, White House press secretary, who read the President's message:

"First, the President wants to extend his

greetings to the delegates and visitors who have gathered from all parts of the world for the technical sessions of the international radio conference at Los Angeles. He knows that the decisions which are reached at this meeting may well play a most significant part in the future of worldwide communications everywhere. He wishes to send his best regards to all of the delegates for a most successful conference.

"Incidentally, it seems altogether appropriate that the President should send these greetings by radio directly from our amateur station in the White House to K6USA at the conference headquarters in Los Angeles. The President knows that many of the leaders in radio and communications who are now at Los Angeles from all over the globe have the same deep interest in amateur radio as we have in this country. Not only have the amateurs made a vital, technical contribution to world-wide communications since the earliest day of the art, but their unselfish devotion to the public welfare in time of emergency and disaster is well-known and appreciated by the President.

"In addition to these tangible contributions, there is still another — an intangible one that interests the President very much indeed. In this electronic age, a large proportion of our scientists and leaders in the industry got their starts by way of amateur radio. It was in this field that their scientific curiosities were first aroused. Their imaginations became kindled and they developed a first-hand understanding of the complicated principles that were involved. Consequently, the President of the United States is delighted to have an opportunity through this broadcast to salute the radio amateurs everywhere over the air. To all of them he sends his 73, good luck, and please QSL."

At K6USA the messages were acknowledged by Herbert Hoover, Jr., W6ZIH.

Indiana Amateur Radio Week becomes official as Governor Harold W. Handley signs the proclamation. Watching are Doris "Butch" Singer, K9IXD, editor of *Bison*, publication of the Indiana Radio Club Council, and her OM W9SWD, who was selected by the Council in 1958 as Indiana's outstanding amateur.

QST for



## U. S. CONFERENCE PROPOSALS

The Government of the United States has now transmitted to the International Telecommunications Union headquarters at Geneva, Switzerland, the text of its proposals for changes in the Atlantic City Radio Regulations of 1947, the presently effective rules which govern international radio operation.

Insofar as the amateur radio service is concerned, our Government's proposals include provision for continuance of every amateur band we now occupy.

We expect next month to have information on proposals of other governments in respect of the amateur bands.

## 50 AND 220 MC. CHANGES

Last year FCC, largely responsive to a petition of the U. S. Civil Defense Amateur Radio Alliance, proposed minor changes in our 50- and 220-Mc. bands. This proposal has now been made final, effective May 20, so that after that date (1) narrow-band frequency modulation for telegraphy is permitted in 50-54 Mc.; (2) remote control, previously limited to 420 Mc. and above, is now allowed in 220-225 Mc.; and (3) 6F2 emission (intended mostly for radio teleprinter) is authorized in the RACES segment 50.35-50.75 Mc.

The Commission's order accomplishing the changes reports that comment was overwhelmingly in favor of the proposal. The text of the order is not published here because exact language of the amended rules appears on page 180 of December *QST*.

## W. VA. LICENSE PLATES

Add one more to the list of states issuing call letter license plates — on the third try, West Virginia amateurs were successful in convincing their legislature, and the governor, of the importance of their bill.

As in the case of Iowa, reported last month, perseverance paid off. An attempt in 1955 failed. Another the next legislative year, 1957, passed the legislature but was vetoed by the governor as "class legislation." The 1959 bill went through and was signed. Mel Swillinger, W8NLT, has headed up participation by West Virginia amateurs in their campaign. A handsome brochure was sent to each member of the legislature, containing replicas of many newspaper stories praising the performance of hams especially in the field of disaster communications, and containing also endorsements by various state and municipal officials.

The total is now 46 out of 50 states.

A campaign for call-letter license plates lasting more than a year, spearheaded by the Nova Scotia Amateur Radio Association, achieved success earlier this year. Here the Honorable G. I. Smith, minister of highways, presents the first set of plates to Hugh H. Corkum, VE1VN, club president, while E. S. Campbell (center), Nova Scotia registrar of motor vehicles and also VE1QQ, beams approval.

## 14-MC. PHONE

This department of April *QST* carried the announcement that FCC had, responsive to ARRL request, proposed an expansion of the 20-meter voice band so that it would become 14,200-14,350 kc. The League's filing was, of course, in support of the proposal; the text is as follows:

### FEDERAL COMMUNICATIONS COMMISSION

Amendment of Section 12.111(d) of Part 12 of the Commission's Rules to permit radiotelephony between the frequencies 14,200 kc. and 14,350 kc. } Docket 12780

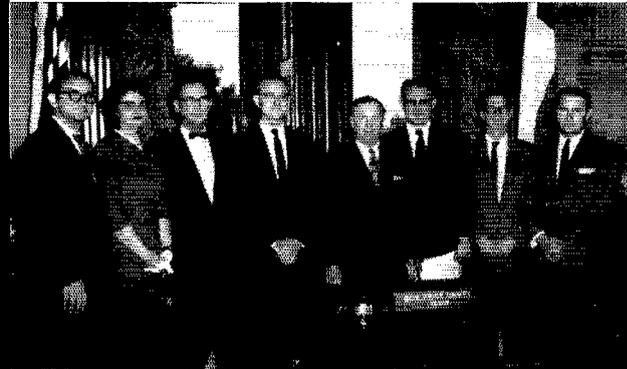
### COMMENT OF THE AMERICAN RADIO RELAY LEAGUE, INC.

Pursuant to paragraph 9 of the notice of proposed rule-making in Docket 12780, The American Radio Relay League, Inc., files these comments on behalf of some 70,000 FCC-licensed amateurs who are members of the League.

The League urges the Commission to adopt the amendment to the amateur rules as proposed, so that radiotelephony operation will be permitted in 14,200-14,350 kilocycles.

1. In the fourteen years since World War II, U. S. amateurs have consistently expressed themselves as strongly in favor of an expansion of that portion of the 14-megacycle amateur band which is authorized for radiotelephony emission. Responsive to initial sentiment, the League in 1946 proposed to the Commission that the A3 subband be doubled; subsequently, however, so that there would be no domestic amateur questions of possible international effect pending during the Atlantic City Radio Conference or its preparatory phases, the League withdrew the proposal. In 1948, the League polled its membership on the question of doubling the A3 subband and response from 13,499 FCC-licensed amateurs, a sizeable portion of the amateur body at that time, indicated a 76.2 per cent majority in favor; the strength of this feeling was further demonstrated by the fact that when the League failed to act promptly to transmit to the Commission a request for an expansion of the 14-megacycle voice band, it caused considerable dissension among the amateur body. In 1949, the ARRL Board of Directors, responsive to the continuing problem, decided that a request to make the radiotelephony assignment 14,200-14,350 kilocycles would be submitted to the Commission when the new 21-megacycle band became available to amateurs. Such a petition was filed in 1952. In February 1954, the Commission acted on the petition and issued a notice of proposed rule-making, Docket 10927, in accordance therewith. In September 1954, the Commission dismissed the proposed amendment, stating that more experience with amateur use of the 21-megacycle band was needed before the 14-megacycle question could properly be appraised. In September 1956, again responsive to continuing amateur demand for an expansion of the voice subband, the League petitioned the Commission to authorize radiotelephony emission in 14,300-14,350 kilocycles, in addition to the present subband, but available only to holders of Advanced or Extra Class licenses. No action having been forthcoming, in May 1958 the League amended its petition by deleting its requested restriction to the two-named classes of license.





As the official Texas welcome to hams who will converge in Galveston on June 19-21 for the ARRL National Convention, Governor Price Daniel has declared the week of June 20-27 as "Amateur Radio Week." Here, a group of convention officials meet in his office in Austin: W5DMM, W5DCJ, W5ZG, W5JJD, the Governor, W5JET, K5AFN, and State Representative Pete LaValle.

2. We believe the above record adequately shows a continuing and widespread desire on the part of U. S. amateurs to obtain additional space for radiotelephony operation in the 14-megacycle amateur band.

3. In Docket 10927, the Commission dismissed its proposal to expand the voice subband in the belief that more experience with amateur use of the then-new 21-megacycle band was necessary before a proper appraisal could be made of the 14-megacycle question. The 21-megacycle band has now been available to the amateur service for seven years. It is well known that the voice subband at 21 megacycles is heavily occupied. But not the slightest decrease in congestion of the 14-megacycle subband has occurred. This congestion not only continues, but actually is increasing. This has occurred despite a heavy trend to the narrower-band mode of voice emission, single sideband.

4. The reasons are, of course, the continued heavy growth of the amateur body, and a trend to a greater percentage of interest in radiotelephony operation. When amateur operation was again authorized after World War II, there were approximately 60,000 licensees; today, there are more than three times that number. During this period amateur interest in radiotelephony operation has also increased considerably. Yet the space available for radiotelephony operation at 14 megacycles, a 100-kilocycle subband, remains today exactly the same as it was at the start of this growth period. We believe there is no need to point out in detail the obvious problems of occupancy created by the increase both in the over-all number of amateurs and the percentage of interest in radiotelephony.

5. Responsive to amateur need, since World War II the radiotelephony subband at 4.0 megacycles has been doubled, and a new radiotelephony subband has been authorized at 7 megacycles. Similar relief has not been provided for the crowded voice subband at 14 megacycles.

6. The League is quite aware that some amateurs in countries outside the United States are opposed to an expansion of the U. S. voice band. The reason is that in practically every country, other than the U. S., amateurs are permitted radiotelephony operation in subbands considerably larger than those made available to U. S. amateurs by the Commission. Foreign amateurs feel that an expansion of the U. S. voice band at 14 megacycles will reduce the amount of space they have for radiotelephony operation, since in practice those amateurs do not use frequencies within the U. S. voice bands because of heavy interference from the predominance of U. S. amateur stations. Admittedly, this is a valid argument. However, this point has been thoroughly considered by the ARRL Board of Directors in every one of the numerous examinations it has made of the 14-megacycle radiotelephony question outlined earlier in this comment. The decision has consistently been that the advantages of expansion of the U. S. voice subband heavily outweigh this one disadvantage. The Board feels that the demonstrated need of U. S. amateurs for the additional radiotelephony space at 14 megacycles is the paramount factor.

7. The League believes that the evidence adds up unmistakably to support a need for expansion of U. S. amateur radiotelephony privileges in 14,200-14,350 kilocycles, and urges the Commission to act affirmatively on its notice of proposed rule-making in this matter.

THE AMERICAN RADIO RELAY LEAGUE, INC.  
By PAUL M. SEGAL  
Its General Counsel

A. L. BUDLONG  
General Manager  
April 30, 1959

  
**Official Memorandum**  
By  
**PRICE DANIEL**  
Governor of Texas  
AUSTIN, TEXAS

CHECKING:

AMATEUR RADIO OPERATORS HAVE PROVEN THEMSELVES AS VITAL CONTRIBUTORS TO THE PRESERVATION OF THE CIVIL DEFENSE AND SECURITY OF OUR STATE AND NATION, IN TIME OF EMERGENCY.

THE OUTSTANDING WORK DONE BY THESE "HAM OPERATORS" IN YEARS DURING WHICH CRITICAL TIMES AT THE TEXAS CITY CATASTROPHES, DESTRUCTIVE HURRICANE ANDREY AND THE RIO GRANDE FLOODS HAVE ASSISTED THEM THE RESCUE AND ADMINISTRATION OF ALL TEXANS.

THE NATIONAL CONVENTION OF THE AMERICAN RADIO RELAY LEAGUE WILL BE HELD IN GALVESTON JUNE 19 - 21.

THEREFORE, I, as Governor of Texas, do hereby designate the week of June 20 - 27, 1959, as

**AMATEUR RADIO WEEK**

AN HONOR AND GREAT WILL BE DONE TO  
GIVE THEIR APPRECIATION TO THESE  
AMATEUR RADIO OPERATORS FOR THE  
VALUABLE SERVICE THEY PROVIDE.



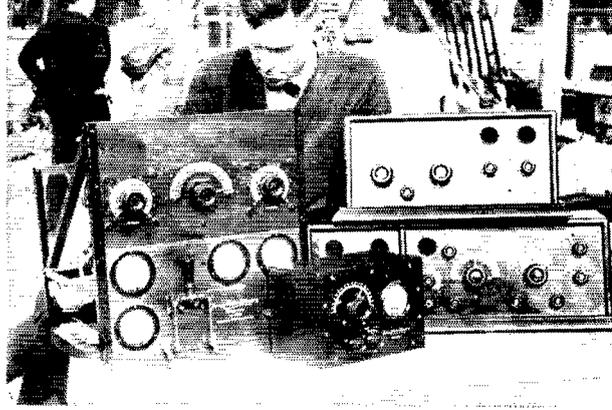
In official recognition whereof, I have caused this  
proclamation to be published in the Official Gazette of the State of Texas,  
this 29th day of April, 1959.

*Price Daniel*  
Governor of Texas

### C. W. ON SIX AND TWO

Just at press time FCC announced that it had granted petitions for reconsideration (filed by the League and others) of its earlier action which established 100-ke. c.w. sub-bands at 6 and 2 meters but at locations differing considerably from those originally requested and proposed by FCC. The Commission did not grant the request of some petitioners that establishment of sub-bands at the low ends be accomplished immediately, but does solicit the views of interested parties, by August 3, on its original proposal (published last June responsive to League petition) to set 100 ke. c.w. bands at the low ends. July *QST* will contain more details. **QST**

Don Mix with the *Bowdoin's* polar radio rig: left, transmitter; right top, broadcast-band receiver; right bottom, ham-band receiver; foreground, wavemeter.



## The *Bowdoin's* Last Voyage

**T**HE first ham ever to operate a short-wave set from the North Pole area — Don Mix, W1TS, of Bristol, Conn. — is giving brother hams their last chance to work the Arctic explorer ship, *Bowdoin*.

Thirty-six years ago, Mix was the *Bowdoin's* only link with civilization, pounding out his WNP call for 15 months . . . most of the time as the little ship lay frozen in solid ice at the top of the world.

This month, Mix will sail on the *Bowdoin* again as she makes her last voyage, from Provincetown on Cape Cod to the Mystic Sea Museum where she will be enshrined permanently. The schooner will take three days for the trip, stopping at Newport, R. I. and Stonington, Conn.

Details were not settled at the time of this issue, but information on Mix's call sign (probably K1WNP) and frequencies will be sent on a W1AW bulletin about the middle of June.

Mix sailed in June, 1923 with Arctic explorer and scientific researcher Admiral Donald B. MacMillan.

It was a great day for amateur radio.

"The greatest hardship of the Arctic explorer is to be cut off entirely from his own world," said Admiral MacMillan in June, 1923.

"I wish to express my deep appreciation to all members of the American Radio Relay League for their cooperation in making possible the first real radio work in the Arctic regions."



And *QST* editors wrote:

"It offers us amateurs an opportunity to see a business through which everybody admits we alone can do."

Hams all over the world pitched in.

Night after night, they crouched over their sets, searching the air for Mix' elusive WNP signals.

Only a few could work WNP through the hail of QRN and QRM that blanketed calls coming out of the long Arctic night. One was 6CEU in Hawaii, working with three 5-watters.

"MIM!" commented Mix. "I nearly fainted."

In 1923, a "short"-wave set was pretty long. Mix worked on 220 meters.

"During the winter we copied scraps here and there that experiments were being made on waves below 200 meters. We had an available wave of 175 meters but the stations we worked invariably reported N.D. on this wave and requested QSY back to 220.

"If we had been able to get down to 100 meters or lower, we would have been able to keep in constant communication during the light period as well as the dark period."

Mix sent regular news reports for a syndicate of papers. The reports were painstakingly copied in code by earnest hams and delivered to the nearest syndicate newspaper.

"Almost all traffic was cleared with the greatest difficulty, repeat after repeat being necessary," Mix commented later.

"Enough credit cannot be given to those fellows who stuck at the job and copied our weak and fading signals."

Mix, now an assistant technical editor of *QST*, is a lanky, sandy-haired man who smokes constantly and talks very little.

Asked why he spent 15 months at the North Pole, he puffed his cigarette and shrugged.

"Guess I wanted to."

Was it interesting?

"Yes."

See anything unusual? Mix considered.

"Walrus."

— F. M.

**QST**

W1TS circa 1923

# Ham Radio Aids Nonstop Solo Flight

BY JEAN A. GMELIN,\* W6ZRJ AND ROBERT C. SMITHWICK,\*\* W6JZU

**D**URING the past several decades, amateur radio has shown an ability to provide communications during national disasters and emergencies. While such contributions to our nation are important, there are other contributions of amateur radio that are also of service to the public interest, including such things as amateur third party message work, radio communications for expeditions, such as the recent work at Antarctica; and communications services of one sort or another for various public agencies and organizations.

Such a communications service was given the past summer during the record-breaking solo nonstop light plane flight from Manila to Pendleton, Oregon, by Captain Marion L. "Pat" Boling, a commercial airline pilot.

Such flights take a great deal of planning, and Boling spent almost a year working with the Beech Aircraft Corporation, working out the details of the venture and making practice flights.

Boling, who lives in Palo Alto, California, is a close friend of co-author Dr. Robert C. Smithwick, W6JZU, of Los Altos, California, who spends much of his operating time on 20-meter s.s.b. Some two months before the proposed flight time, Boling visited W6JZU and gave him much detail of the flight plan, which called first for a flight across the Pacific, island hopping to Manila, the starting point of the long flight back. Not much arrangement had been made for radio communications, other than the equipment in Boling's Beechcraft Bonanza. After some thought, W6JZU suggested ham-band skeds from the various islands on the trip out to Manila as the perfect way for Boling to talk with his family in Palo Alto.

Shortly before the flight, Boling again visited W6JZU and brought with him officials of the

\* 1089 Huntingdon Drive, San Jose, Calif.

\*\* 23625 Wooded Glen Way, Los Altos, Calif.

Beech Company who were helping with the flight. With such interest shown, W6JZU started setting up amateur skeds with stations on the various Pacific islands that were to be used as stop-over points on Boling's trip out.

W6JZU runs a Hallcrafters HT-32 and HT-33 combination at one kw., into a tri-band beam. The receiver was an SX-101, and he had no trouble in first contacting KH6AHQ in Honolulu, the first stop-over point. Other proposed stop-overs were Wake, Guam, and Manila, the starting point for the trip back.

Wake and Guam proved no more difficult than KH6-land, thanks to the cooperation of the Pacific Net on 14,256 kcs. W6JZU contacted KG6AHU, PN net control, and arranged the Guam schedule. As luck would have it, when W6JZU asked for a Wake Island station, KW6CE checked in and offered his services. As it turned out, KG6AHU did not actually handle the Guam traffic when Boling arrived later. Traffic was handled by KG6NAA located right on the Guam air field where Boling landed.

At 1800 PDST July 14, Captain Boling arrived at Honolulu from California, and upon arriving at his hotel was able to talk with his family via KH6AHQ and W6JZU. Other schedules were kept during Boling's two-day stay.

On July 17, Boling flew the 2300 miles to Wake. W6JZU was in contact with KW6CE on Wake when Boling came in for a landing. Immediately upon arrival at Wake, Boling was again in contact with his XYL, Joyce.

Ham radio also helped when Boling made ready to leave Wake. For some reason, the flight to Guam had not been cleared with the Navy department. Boling talked with the Beech Company at Wichita, Kansas via W6JZU, and the necessary clearance papers were sent out by special airline delivery from Washington, D. C. When Boling left Guam for Manila, there was no further direct contact with him by amateur radio. However, W6JZU kept constant contact with KG6FAF who kept up with Boling's progress via a MARS sked with Manila. Pat had been held up by a typhoon and W6JZU was able to relay the news of his safe arrival to Boling's family, who were anxiously awaiting the news.

When Boling left Guam, W6JZU began to try to find a way to keep up with the progress of the return flight through amateur radio. Since Boling is not a ham, and carried no amateur gear, there could be no direct contact via amateur radio. However, the proposed flight path was right up

Mrs. Pat Boling talks with her husband as W6JZU looks on and controls the audio.



the Aleutian Island chain where a number of KL7s are in operation. W6AEW, a United Airline traffic dispatcher in San Francisco, contacted W6JZU with an offer to help with traffic via various KL7s at Pacific NW Airways stations from Japan to Seattle along the proposed flight path.

KL7FLA, near the North Pole with an IGY team, knew many amateurs in the Alaska area and helped set up schedules for the flight. Stations included KL7AZN, Adak; KL7AWR, Kodiak; and KL7BYN, Anchorage. By now what had started out as a few phone schedules had turned into a major communications project, with W6JZU putting in long hours of operating time and keeping a number of schedules with stations throughout the Northern Pacific. The various news services by this time were interested in following the story of Boling's flight, and since communications to the various points along the route were very difficult, the newsmen began to rely on W6JZU for up-to-date information.

The relatively short (1593 miles) flight to Manila was the most hazardous of the trip out. Severe head winds, the aftermath of a typhoon, made flying extremely difficult and tiring. Poor visibility and gusty winds forced him to fly at altitudes ranging from as low as 600 feet above the water to 16,000 feet above. He was met and escorted the last few miles by four Bonanzas, two twin Bonanzas, and an F86 jet interceptor (flying with gear and flaps down). Pat Boling descended on the Philippines and was welcomed by a crowd of some 5000 people at the airport.

Boling left Manila for the long solo flight at 1509 PDST, July 30, and W6JZU received the news minutes later via KG6FAF and MARS. W6JZU kept in constant contact. It was at this time that K2OHB/KL7, at Cold Bay, overheard these QSOs and offered assistance. Since he works for the Northwest Air Lines, he was able to pick up information from various sources and relay progress reports to W6JZU, who relayed the information on to Boling's family, Beech officials who were anxiously awaiting the outcome, and to the various news services.

W0MGG/KL7 at Shemya also broke in to offer help and relayed information that he was talking to Boling who planned to land at Boise, Idaho. This was because Boling ran into icing conditions along the way and was delayed slightly.

KL7BYN in Anchorage checked the weather over the Aleutians while KL7AWR in Kodiak and KL7AZN at Adak secured the latest information on the winds aloft from the CAA and relayed it on to Pat on the airways frequencies. South of Cold Bay, Alaska, it was very cold,

below freezing outside at 6000 feet, and the wing surfaces began to ice up. Boling ran into a cloud condition that intensified this icing and he tried to "get on top of it", but it rose right up with him. About this time things began to happen. He had no de-icing equipment. The engine did not like the cold and began running rough. Pat had no alternative but to descend through all this "stuff" to try to get underneath it before the plane went out of control. During this activity Boling made preparations to ditch in case the worst happened. Luckily at 1500 feet it began to rain and the icing cleared up. Through all this, for the first time, Pat detoured to the east to get over land, over Queen Charlotte Island, in the event that he had to make an emergency landing. This, of course, plus the rough engine and the unplanned-for climb cost him many gallons of precious fuel.

W6JZU kept a constant contact with Boling's progress throughout the long flight. Boling arrived over Seattle at 1140 PDST, August 1. He flew over Yakima, and then to Pendleton, Oregon, where he landed to set an official single engine light plane distance record of 6856.32 miles non-stop. His fuel tanks were nearly dry. The official recorded time was 45 hours, 52 minutes. This broke the previous record, held by the late Bill Odom, by 2000 miles.

Pat was out of communication range, or at least unable to copy any signal, for long hours at a time. He transmitted his position report blind every hour, and strangely enough most of these PX reports were heard and recorded despite the fact he was not receiving confirmation. At times he relayed his PX reports on v.h.f. to passing Northwest Airline planes who in turn relayed the information.

While the amateur communications involved are probably not a first, it is a probable near first for such a bulk of s.s.b. communications work. Much of the news of Boling's progress that appeared in newspapers across the country came via W6JZU's station.

A number of amateurs throughout the Northern Pacific Area gave assistance to W6JZU. Among the most outstanding were KG6AHU, KW6CE, KH6AHQ, KC6NAA, KG6FAF, KL7FLA, KL7AZN, K2OHB/KL7, W0MGG/KL7, KL7BYN, and KL7AWR. W6AEW came over and helped as an assistant operator at W6JZU. QST

Pat Boling and his Bonanza.



## Silent Keys

It is with deep regret that we record the passing of these amateurs:

W1CPK, Paul A. Carroll, Reading, Mass.  
 W1NRG, Erwin D. Bischert, Meriden, Conn.  
 ex-KN2DSY, Mary Martin, Bronx, N. Y.  
 W2HLL, Rev. Joseph L. Jarvis, Barrytown, N. Y.  
 W2ITJ, Stephen M. Bedell, Ozone Park, N. Y.  
 K2IZG, Richard B. Hill, Sayville, N. Y.  
 K2KUI, Ivar S. Wiman, Madison, N. J.  
 W2PKQ, James V. LaRussa, Batavia, N. Y.  
 W2RWZ, William Goldstein, Forest Hills, N. Y.  
 K2VLF, John C. Hoffman, Clifton, N. J.  
 W3AAX, Francis E. Burke, Pittsburgh, Pa.  
 W3KCL, Kenneth R. Sweeney, Camp Hill, Pa.  
 W3MS, Armand H. Mayer, Eric, Pa.  
 W3TKN, Thomas S. Bray, Havertown, Pa.  
 ex-4AI, H. E. Bussey, Atlanta, Ga.  
 K4BO, Roy C. Ehrhardt, Chester, Va.  
 K4IKH, Col. Herman L. Purkhiser, Falls Church, Va.  
 K4VPB, John G. Lamie, Saltville, Va.  
 KN4VVZ, Thomas L. Passons, sr., Cookeville, Tenn.  
 KN4YCJ, Thomas Erik Oberg, Arlington, Va.  
 W5IPE, Robert A. McCulloch, Wharton, Texas  
 W5JQD, T. Bruce Craig, Lubbock, Texas  
 W5PFD, Clifton C. Ferguson, jr., Jackson, Miss.  
 K6DCT, Allen B. Flowers, San Pedro, Calif.  
 K6IPQ, Arthur Edward Ziesing, Culver City, Calif.  
 KN6OMF, Louis Dorin, Long Beach, Calif.  
 W6QKP, Charles W. Tessier, Stockton, Calif.  
 W6UII, Leroy C. Nimmo, Los Angeles, Calif.  
 W6UOD, Jess H. Green, Hawthorne, Calif.  
 W7OLF, Stephen W. Conish, Elko, Nev.  
 W8LS, John A. Kramer, Charleston, W. Va.  
 W8TSK, Robert V. Lukes, S. Charleston, W. Va.  
 W9DVI, Otis A. Howard, Ziegler, Ill.  
 W9FNF, Charles E. Strecker, Danville, Ill.  
 ex-W9LQ, Carl W. Dean, Indianapolis, Ind.  
 W9VO, Richard J. Lyons, Libertyville, Ill.  
 W9CBL, Lester Dent, La Plata, Mo.  
 KH6ALX, Sammy M. Kuahine, Molokai, Hawaii  
 KH6BWG, William O. Kupele, Molokai, Hawaii  
 LU3HR, ex-LU2CW, Ricardo G. R. Radaelli, Cordoba, Argentina  
 ZL3AR, David W. Buchanan, Ashburton, New Zealand.

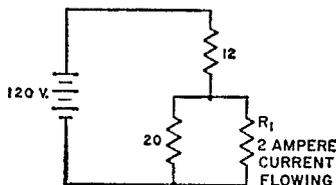
## L. Boyd Laizure, WØRR

Amateur radio has lost another long-time League member and former ARRL director with the recent passing of L. Boyd Laizure, WØRR. He had served the League as director in 1924 and 1925.

He retired from government service as a radio operator about two years ago, but had continued to be an active amateur. He had served as president of the Heart of America Radio Club in 1956, and had attended a meeting of the club only a few days before his death.

## Quiz

Bob Eldridge, VE7BS in Vancouver, recalls a problem from RAF school that was somewhat similar to the January, 1959, Quiz. In the circuit below, what is the value of  $R_1$ ?



You were on the nose last month if you found  $R_1 = 9416$  and  $R_2 = 5584$ .

## 25 Years Ago this month

June 1934

... The editorial of twenty-five years ago mentioned that some sources felt that the frequencies above 60 Mc. might someday prove so worthwhile that they would be parceled out neatly to the various services.

... The second ARRL Field Day contest was announced. ... W1DF described a simple two-tube receiver, while W1AL wrote about the RK-20 and some suitable circuits. The RK-20 was a nifty suppressor-type screen-grid tube which was first described in the May 1934 issue.

... W5VU described a crystal-lock system for having crystal control and high power, a method for low-cost conversion of high-powered oscillators to crystal control.

... W2BSL showed a medium-power 56-Mc. transceiver. ... W. M. Smith discussed automatic gain control with diode detection.

... K7BWZ (an Alaskan call in those days) told how he put together a flea-power transmitter from a weird collection of junk.

... W2AOE described a ham station analyzer, a device for making various r.f. and a.f. observations around the shack.

... This issue also carried a six-page report on the 1934 meeting of the ARRL Board of Directors. One of the principal items of business was the change to the by-laws which limited voting to those members who were licensed amateurs. The Federal Radio Commission was asked to open all amateur frequencies above 56 Mc. to mobile operation and was also asked to assign exclusive amateur segments at 112, 224, 448, 896 and 1792 Mc.

... W2AIS and W2AKF described an ultra-midget transmitter housing a 10-watt r.f. section plus power supply all in a  $5 \times 5 \times 6$  metal box.

... A west-coast technical man, W6CAL, had an article "Simplifying Split-Stator Final Amplifiers."

... And lots more. All in all, a real dandy issue.



# YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,\* W1QON

## RESULTS: TENTH ANNUAL YL-OM CONTEST

AS PREDICTED, scores were higher in this year's YL-OM Contest than in any of the previous nine YLRL-sponsored parties. And, as usual, everyone participating, from the first-time contestant to the veteran top scorer, seemed to have one fine time.

YLRL vice president and chief log-checker Gladys Eastman, W6DXI, relayed comments from the YLs and OMs which read like a mutual admiration society's resumé of a friendly fray.

YLs W5DRI and W1RLQ and OMs K6SXA and W8AJW were also among the top winners last year. Dena Morgan, W5DRI, captured first place phone honors for the second consecutive year. John Siringar, W8AJW, has been a top-YL-OM contest scorer since 1952.

Cups have been awarded to the YL and OM first place phone and first place c.w. winners. Certificates have been awarded to second and third place phone and c.w. winners and to the highest scorers in each district.

Here are the top winners. Congratulations to all.

### YL

First place c.w. ....	W2MWY	38,018*
Second place c.w. ....	KL7ALZ	37,584
Third place c.w. ....	W1RLQ	35,010*

First place phone. ....	W5DRI	70,088*
Second place phone. ....	K5BNQ	52,800*
Third place phone. ....	W5ERH	47,570*

### OM

First place c.w. ....	K6SXA	2,931*
Second place c.w. ....	K9ALP	2,138*
Third place c.w. ....	W5DQK	2,103*

First place phone. ....	K9ALP	7,031*
Second place phone. ....	K6SXA	5,536*
Third place phone. ....	W8AJW	4,995*

### YL C.W.

No. of Sections				No. of Sections			
Call	Contacts	Worked	Score	Call	Contacts	Worked	Score
W1RLQ	389	72	35,010*	W2MWY	411	74	38,018*
W3SLS/L	256	42	13,440*	K2JYZ	186	50	11,625*
W1COL	157	45	8,831*	K2ULP	215	29	7,794*

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

No. of Sections			No. of Sections				
Call	Contacts	Worked	Score	Call	Contacts	Worked	Score
K2UTS	124	31	3,844	W7HXE	154	36	6,930*
W3CUL	392	49	24,610	W7PUV	142	38	6,745*
W3JWM	320	46	18,400*	KN7BQM	73	29	2,646*
W3TSC	225	42	11,813*	W8QQQ	331	60	24,825
K3CRE	227	37	10,499*	W8HAY	167	40	6,680*
W3UTR/3	136	34	5,780*	W8KLZ	23	10	288*
K3EHZ	101	33	4,166*	W9MLE	205	41	8,405
K4JYQ	212	52	13,780*	W9USR	137	40	6,850*
K4SAF	138	31	5,348*	W9YT/			
K4TFL	89	33	3,671*	K9BRJ	100	34	3,400
W6QYL/4	50	25	1,250	W9MYC	77	25	2,405*
				W9OAZ	19	14	266*
W594D	343	56	19,208	K0IKL	361	47	21,209*
K5LIU	269	46	15,468*	K0EDH	316	50	19,756*
W5WXY	119	35	4,165	K0GIC	187	39	9,116*
K5PFF	75	26	2,438*	K0LYV	100	33	4,125*
W6WDL	185	42	9,713*	Q2YL	81	29	2,936*
K6OWQ	116	38	5,510*	KL7ALZ	464	81	37,584
W6PCA	119	35	5,206*	K6QPG/			
K6KUP	63	27	2,126*	KW6	8	6	60*
W6EHA	36	20	900*	SP5YL	47	24	1,410*
K6SYR	22	14	387*	VE2AOB	50	19	1,188*
K6HOL	15	10	188*	VE5DZ	229	43	9,847
W7PTX	209	45	11,756*	ZL2JO	45	34	1,688*

### OM C.W.

W100S	39	22	858	W1NJL	13	8	130*
W1BGA	34	20	680	K1CAK	9	5	56*
W1MLX	27	16	543*	K2DSW	60	28	2,100*
W1SAD	23	18	518*	K2RIU	52	25	1,625*
W1FO	25	16	500*	W2MTA	50	26	1,625*
W1LQ	22	17	468*	W2FLD	44	26	1,430*
W1LQQ	21	14	368*	K2UUT	40	26	1,300*
W1OPZ	22	13	358*	W2EMW	42	24	1,260*
W1NLM	23	14	322	W2SAW	47	26	1,222
W1AZW	18	13	293*				



Call	No. of Sections Contacts Worked	Score	Call	No. of Sections Contacts Worked	Score
W2CVW...44	22	968	W8AQ...56	26	1,820*
W2NY...32	21	810*	W8YGR...48	25	1,500*
K2GTC...29	21	761*	W8UMP...48	23	1,380*
K2PFC...34	20	680	W8JIN...54	25	1,350
W2LHL...26	17	552*	K8GHG...45	23	1,294*
W2DUN...23	17	489*	W8APN...41	22	1,128*
K2MTJ...19	11	261*	K8GWK...37	22	1,018*
K2PTU...14	12	168	K8ERO...37	19	703
W2DTL...10	10	125*	W8NAN...31	18	698*
W2CJM...10	9	90	W8KKV...21	17	510*
K2EBO...7	5	41*	W8DEZ...13	12	195*
K2OEG...7	5	41*	W8LSJ...13	12	156
W2L GK...5	4	25*	K8JLP...8	6	60*
K2UZJ...2	2	5*			
W3MDO...57	28	1,995*	K9ALP...59	29	2,138*
W3ARK...56	29	1,614	W9DYG...62	25	1,938*
W3ETW...49	22	1,348*	W9BZW...57	27	1,924*
W3MFW...43	21	1,290*	W9LNQ...57	27	1,924*
W3VTT...38	23	1,080*	W9RKP...48	24	1,440*
W3FOX...43	24	1,032*	K9PJN...51	25	1,275
W3JO...30	22	825*	K9BLY...44	23	1,265*
K3ALL...30	21	630	W9NLF...42	23	1,208*
W3ADE...25	16	500*	W9GWO...40	23	1,150*
K3AHT...25	15	469*	K9ELT...30	20	750*
K3CXX...22	16	440*	W9C...31	18	698*
K3DHX...24	14	420*	K9JUU...29	18	653*
W3CDG...23	14	403*	W9WCS...34	18	612
W3UIU...8	4	40*	W9YDQ...22	16	440*
			K9KNT...16	11	220*
W4JUL...43	23	1,236*	K9ASF...14	10	140
K4HEX...40	22	1,100*	K9ICG...9	7	79*
K4RJM...40	21	1,050*			
W4GHK...37	21	971*	K9PIE...49	26	1,274
W4ZQK...34	18	765*	W9GAX/8...35	20	875*
K4PHY...30	17	638*	W9EQN...21	16	420*
W4CNZ...26	18	585*	K9QLY...8	8	64
W4KMS...26	18	585*			
W4GOJ...20	14	350*	G3WP...3	3	11*
W4SOT...16	11	220*	HB9TT...5	5	31*
W4FT...8	8	90*	HER...3	3	11*
			PIAGA...12	12	165*
W5DQK...58	29	2,103*	KP4KD...19	13	309*
K5JCC...57	26	1,482	LA6U...3	3	11*
W5KEA...44	22	1,210*	OH2RD...2	2	5*
W5VZU...33	20	825*	OH3RA...2	2	5*
W5AWT...36	22	792	OH3TH...3	3	11*
K5OCX...22	15	412*	ON4EG...3	3	11*
W5ZAL...19	14	333*	SM5BPJ...2	1	3*
K5PFL...8	7	70*	SP5ZA...8	5	56*
			VE1IDB...12	10	120
K6SXA...67	35	2,931*	VE2AIP...18	10	225*
W6KAO...46	21	1,208*	VE2AJD...3	3	11*
K6EIE...25	18	562*	VE2AQO...17	13	276*
K6CJF...25	16	500*	VE2AL...25	15	188*
K6BFZ...15	10	187*	VE3AJJ...39	22	1,073*
K6GLS...9	7	63	VE3AZX...31	18	698
			VE3CWE...13	9	146*
W7EZX...28	19	665*	VE3DDU...26	17	553*
W7VII...27	20	540	VE3DLS...14	11	193*
K7APJ...22	15	413*	VE3DYI...18	12	270*
K7BSR...14	11	193*	VE5NL...7	5	44*
W7WRT...14	11	193*	W92NA...12	8	96

## YL PHONE

Call	No. of Sections Contacts Worked	Score	Call	No. of Sections Contacts Worked	Score
K1DGZ...402	53	26,633*	W3JST...81	26	2,106
W1RLQ...355	57	25,294*	W3GTC...76	16	1,520*
W1ICV...260	40	10,400			
K1ADR...129	32	5,160*	K4JFF...408	54	27,510*
W1UKR...53	16	1,060*	K4JGA...381	57	21,717
W1MDB...75	10	938*	W4QNI...365	53	19,345
			W4BL...330	42	17,325*
K2JYZ...127	30	4,763*	W4WYR...317	43	17,039*
W2EWO...105	32	4,200*	K4ANY...294	42	15,435*
W2OWL...26	13	423*	W4WPD...210	40	10,500*
W2AKM...26	1	33*	W4KZT...198	34	8,425*
			W6QVL/4...44	21	924
W3TNP...369	44	20,295	K4WCZ/		
W3UTR/3.114	35	4,988*	W4EQ...36	10	360

(Continued on page 176)

## All Ready?

The mere mention of Field Day should catapult you into action, if you haven't already laid your plans for that challenging week end coming up fast June 27 and 28.

Last year several YL clubs operated FD, some participating as a club for the first time. Reporting encouraging success and large doses of fun were the GAYLARKs (Gulf Area YL ARK), Camellia Capital Chirps, San Francisco YLRC, Women Ham Operators of Texas, and the Women Ham Operators of Tarrant County, Inc. A number of YLs operated individually and reported their FD doings back to us.

This year we'll be standing by for a mail pouch full of feminine FD tales and pictures to prove them!

## Coming YL Get-Togethers

### Eleventh ARRL National Convention

The eyes of the ham world will be on Texas, Galveston specifically, the week end of June 19-21 when thousands of hams converge for the eleventh national convention of the ARRL. Something to intrigue everyone is the keynote to all convention activities, from a wide range of technical sessions and forums to a gala beach party on the balmy shores of the Gulf of Mexico. Last month's QST outlined general convention plans, including a schedule of prices on page 70 and pictorial previews on pp. 68-69.

A program designed to make licensed YLs feel especially glad they came has been excitingly planned by members of the GAYLARKs (Gulf Area YL ARK) under the direction of President Lillian Beebe, W5EGD. A breakfast with YLRL forum, a special hobby display booth, hospitality room and ham station are just a few of the highlights arranged for the licensed YLs, while still leaving plenty of time for them to take in various ARRL and technical sessions. In fact, GAYLARK strongly urges YL attendance at such sessions in keeping with our special prerogatives and obligations as amateur radio operators.

Time is short. Requests for reservations or information should be sped to the Galveston County ARC Convention Committee, Box 73, Route 1, Galveston, Texas. CU there!

### ARRL New England Division Convention

We predict new superlatives will be coined to describe the convention for all New England hams to be held on Labor Day week end, Sept. 5 and 6 at the new Statler Hotel in Hartford, Conn. If you enjoy getting together with ham friends from all over W1 land in slightly elegant, exceptionally comfortable surroundings (at modest cost), then make your Labor Day date now. The Hartford County ARA is the sponsoring club. Details of the YL program will be given here next month.

Gem Bach, W5DJC, XYL of Norman Bach, W5DJD, chairman of the coming 11th National ARRL Convention, is shown operating the Galveston County Amateur Radio Club station W5KMK in the lobby of the Galvez Hotel at the recent Southwest Electronics Conference in Galveston.

QST for



Perhaps ham radio is often "sold" to newcomers by means of a picture and a few words of description. The YLs in the photos shown here represent different age groups and positions in life. We think each in her own way could sell amateur radio to newcomers merely by the example she has unknowingly set.



K9OHK, Mrs. Maryanne Hogan of Peoria, Ill., is sightless and in her sixties. "Polly," as she is known on the air, lost her sight a few years ago and was having a difficult time finding a hobby in which she could participate. An appeal to the Peoria ARC resulted in code and theory classes and a Novice then General Class license. She received much help from interested amateurs and others throughout the country, including the Radio Library for the Blind, the American Foundation for the Blind, and The Braille Technical Press. Polly is constantly amazed at the friendliness and helpfulness of the amateurs she has met and feels that amateur radio has truly given her a new lease on life. K9OHK operates 15 and 75 meters s.s.b., using an HT-32 and an RME-4350 receiver equipped with a braille dial.

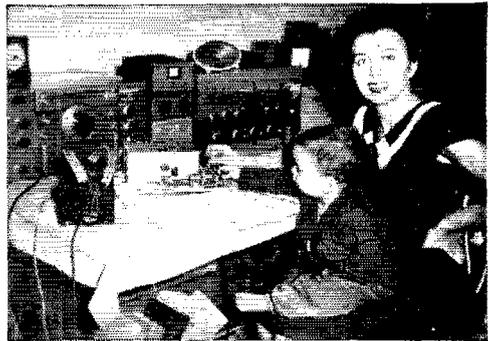
W7VWU doesn't usually wear a crown and a gown when she is on the air, but upon being crowned Home-Coming Queen of Eastern Washington College of Education (Cheney, Wash.), Terry Hansen was quite entitled to look as regal as she does here. At present the charming college junior is too busy with scholastic and cheer-leading activities to spend much time on ham radio, but after she gets her degree in education next year she hopes to put W7VWU on the air more often.



Petite Miss Kathy McQuigg, KØLWT, of St. Louis, Missouri, became interested in ham radio at age seven, when she learned to copy code at 5 w.p.m. At 12, she got her Novice license. On her 13th birthday in August, 1958, she passed the General Class exam and has since been active on several bands in accordance with the pressure of eighth grade. Kathy's ambition is a career in electronics.



San Diego grandmother Mrs. Edith Coleman decided that a ham ticket would allow her to talk to her son W9HAT and three grandchildren in Wisconsin. She enrolled in an evening class at a local high school and persevered until the call K6UHI was hers. Her proud OM not only gave her an NC-303, a Viking Valiant, and a Gonset Tri-Bander plus a four-week tour of the Hawaiian Islands, but he also enrolled in the same high school course himself!



Betty Aylor, W3SIS, now operating portable one at Westport, Conn., got her license as the result of the "influence" of her husband ham. Licensed in 1952 about the same time her first child was born, Betty concludes that after seven years and three children, amateur radio fits very well into her household. "You are confined to the house with the children anyway, and amateur radio is armchair traveling. While ironing, cooking, and cleaning, I keep on the HRO-60 and try to answer CQs, if at all convenient."



CONDUCTED BY EDWARD P. TILTON,\* WHDQ

As reported in May *QST*, ARRL filed comment in support of Docket 12728—the FCC proposal to open the 144-Mc. band to Technician Class licensees. The ARRL statement (page 84) is brief; when you file in favor you merely state that you concur in the arguments advanced, either entirely or in principle. FCC's reasons for proposing this move are given in *QST* for March, page 66.

Also in May *QST* is the text of the ARRL filing for reconsideration of the FCC action in Docket 12185—the proposal to set aside segments of the 50- and 144-Mc. bands for c.w. emission exclusively. (Surely everyone connected with v.h.f. knows by now that FCC moved to make exclusive c.w. subbands available, but not at the low edges of the bands, as originally requested by ARRL and proposed by FCC.)

The latter filing is much more involved. When you argue you have to marshal evidence, and go into details. Please go back to page 84 of May *QST* and read the second filing, so that you will know why the request was made, whether you buy the idea or not. The first requisite for successful operation of a democratic system is an understanding of the issues, not an emotional "We want (or don't want) this!" approach.

The ARRL positions on these controversial issues represent the workings of a democratic system. They are earnest efforts to find the best way through a maze of conflicting opinions. There are strong feelings on both sides of both proposals, but unfortunately there is often more heat than brain power expended in arguing their merits. We are not predicting how the issues will be resolved, but as part of a democratic system we are making plans to do the best we can for the future of amateur radio in the v.h.f. field, either way.

The ARRL stand on these issues may seem to some to be a straddle, for in one case the wishes of practically every Technician are followed, and in the other a position is taken that is violently opposed by many Technicians. Actually, if the actions are taken according to ARRL wishes (the comment date has been extended to August 3—see p. 72 this issue) the world above 50 Mc. will have an unparalleled opportunity for growth, in size and in stature.

Everyone expects a boom in 2-meter interest, if that band is made available to Technician operators. It is up to us, and *this includes the Technicians*, to see to it that this growth is not made at the expense of the gains we have achieved on 50 Mc., and on 220 Mc. and higher

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

### 50 Mc. WAS

1 W8ZJB	17 W8OGW	33 W8PFP	49 W8FKY
2 W8BJV	18 W7ERA	34 W8BJ*	50 W8LPD
3 W8CJS	19 W30JU	35 W2MEU	51 W8ZTW
4 W5AJG	20 W6TMI*	36 W1CLS	52 W6CGG
5 W9ZHL	21 K6EDX	37 W6PUZ	53 W2RGV
6 W9OCA	22 W5SFV*	38 W7ILL	54 W1DEI
7 W6OB	23 W8ORE	39 W8DDX	55 W1HOY
8 W8INI	24 W9ALU	40 W8DO	56 W6ANN
9 W1HDQ	25 W8CMS*	41 K9DXT	57 W1SUZ
10 W5MJD	26 W8MVG	42 W6ABN	58 W1AEP*
11 W2IDZ	27 W8CNM	43 W6BAZ	59 W5LFH
12 W1LLL	28 W1VNH	44 VE3AET	60 W6NLZ
13 W8DZM	29 W8OLY	45 W9JFP	61 W7MAH
14 W8HVW	30 W7HEA	46 W8QIN	62 W8ESZ
15 W8WKB	31 K8GQG	47 W8WNN	63 W2BYM
16 W8SMJ	32 W7FFE	48 K9ETD	64 W7ACD

\*49

VE7CN	45	XEIGE	30	LU9MA	26	LA7Y	20
KL7AUV	44	KH6CTC	30	Z83G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	21	JA8AO	18
VE2AQM	38	PZ1AE	28	SM6ANR	24	JA8BU	17
KH6UK	37	SM6BTT	28	CO6WW	21	JA1AAT	17
EI2W	37	CO2ZX	27	LA9T	21	JA1AUH	16
VE4HS	41	ZE2JV	26	SM5CNN	20	ZE2JV	12

bands. The nature of this growth is of vital importance. If it is largely an influx of people who lack the urge to progress technically and in operating skill, or people who do not understand the basic responsibilities that rest on the shoulders of every holder of an amateur license, then the doubling or tripling of our v.h.f. population in the next few years that is foreseen by many will have been a hollow victory indeed.

Perhaps a reminder is in order that every Technician gets his license through the cooperation of a holder of a General or higher-class license. When you are asked to help a newcomer get a Technician ticket, bear this in mind. How well you get him ready may contribute to the trend our v.h.f. bands will take in the years to come. Only you can be sure that he will make his start in the game in a way that will reflect credit on his sponsor, and on the v.h.f. fraternity as a whole.

Looking at the second matter, the segments for exclusive use of c.w., it is going to be more important than ever that newcomers to the game have an understanding of the very real advantages of c.w. in v.h.f. and u.h.f. communication. At the current state of the art, at least, no operator can more than scratch the surface of the opportunities for interesting work on 50 Mc. and higher bands without the ability to use the code effectively. Newcomer or oldtimer, we will be doing less than our best for the advancement of the art if we do not see to it that the c.w. bands, when and if they are made available, are used to their fullest extent.

This means more than just using c.w. for DX

This is the group of Massachusetts hams that showed up at the Air Force Cambridge Research Center on Saturday, April 25, to receive IGY certificates for their participation in the ARRL-IGY project. For further details on the project, refer to the article on page 48 of this issue. Pictured here (left to right), seated; Mason Southworth, W1VLH; Gordon E. Hopper, W1MEG; and Dr. Wolfgang Pfister. Standing; George Grammer, W1DF; Joseph Callahan, K1DIO; John Huntoon, W1LVQ; Albert Watts, W1GRT; William Curn, W1ELP; Donald Brown, W1JSM; William McCormick, W1AHE; Harold Jensen, W1LUW; Joseph Boudreau, W1NMQ; William Rosner, W1RFU; Paul Day, W1PYM; and Richard Bolt, W1DGA. W1VLH was present at the ceremony in his capacity as ARRL-IGY Project Coordinator, while W1DF and W1LVQ represented the League. Dr. Pfister is Chief of the Ionospheric Characteristics Branch of AFCRC.



shots when the band is open. It means setting up your station for c.w. operation, and then using it regularly for that mode. It means answering stations you hear calling on c.w., whether or not they represent some choice new DX, or a state not previously worked. One of the principal arguments used against the proposal for exclusive c.w. segments in the high-priority portions of the bands is that they will be largely unused. Only by frequent and consistent use of c.w., dead band or open band, will the accusation be disproved.

All this is written before we have any inkling of the final fate of the two dockets concerned. This will soon be out of our hands and yours. What definitely does rest with us is how well we will exploit the opportunities these two proposals afford. Amateur radio, and certainly that portion of it concerned with the world above 50 Mc., is not a hobby for people who cannot or will not learn through hard work, study and experience. If we do not continually demonstrate alertness and a sense of responsibility in the use of our frequencies, we could wake up some grey morning and find that we no longer have them.

### Here and There on 6 and 2

DX activity was light on 50 Mc. during April, on the whole, but transequatorial circuits showed some life. KH6CTC, Kailua, Hawaii, worked LUs March 29, 1230 to 1500 HST. At 2210 the same night VK4s came through, and at 2250 ZL1AVZ, above 51 Mc. (ZLs now have only 51 to 53 Mc.) ZL signals lasted until after midnight, and then VK9XK was in. VK4 signals were heard every night, March 29 through April 5. Another good South American opening came the afternoon of the 5th, with LU, CX and CE working into Hawaii. The LUs were heard working Cuba, Mexico, Brazil and W4CQP. HC1FS was worked at 1515 HST April 6, and VK4ZBE at 2235. VK4s were in again for 2 hours beginning at 2130 on the 7th. Both Japan and Argentina were in around 1500 HST on the 8th, when these antipodal countries were working each other. VK9XK was worked at 2255 on the 9th. At 2330 Esther was working mobile with a local station, and was heard by VK9XK. VK4ZAX was worked by KH6CTC at 2230 on the 13th.

W4FNR, Ft. Lauderdale, Fla., worked his first African April 3, but it was a crossband QSO. Ab called ZE3JU on 10, switched to 6, and came through in Southern Rhodesia with an S9 signal at 1947 GMT.

Here's a rare one, reported to be on 50 Mc.: HC1FS tells us that FM7WW, Martinique, should be on 6 by now. We've had no reports on him, however. DX note for next fall, if not before: The Finnish amateur society reports that they will have the use of the 50-Mc. band through at least the end of 1959.

Six-meter DX worked recently from Okinawa, as reported by W5SWV, who is also KR6DS: DU1GF — 50.245, VK4NG — 50.238, VK4ZBE — 50.205, VK4HD — 50.038, VS6CJ — 50.09, YU2RM — 50.09, VK9XK — 50.006, VK4ZAD — 50.138, VK6RO — 50.145, DU9VVL — 50.096, W7YGL/KG6 — 50.365.

A station scheduled to be on 144 Mc. during the ARRL Field Day that southerners may want to keep a lookout for will be operated by W5KTD, W5ML and W5SUM. They will be on a high hill 5 miles east of Vivian, La., with a 300-foot antenna tower to give them added elevation.

Two more v.h.f. club certificate awards: The Cowtown 6-Meter DX Club of the Fort Worth Texas area offers a nicely printed certificate to 6-meter operators who work their members. Stations within 100 miles of the courthouse in Fort Worth must work 15 members. Stations outside this range need work only 10. This information and sample certificate came from K5BBG, 905 Crestview Drive, Arlington, Texas, president of the newly-formed club.

The Phoenix V.H.F. Club also has a beautiful bit of wallpaper for anyone who works 10 or more of their 50 members. Only contacts made since Jan. 1, 1959 may be counted. Send list of stations worked, giving time and date, to W7GGJ, Secretary, Phoenix V.H.F. Radio Club, P. O. Box 6602, Phoenix, Arizona. Club meetings are held the first and third Wednesdays of each month at Red Cross Headquarters 329 N. 3rd Ave. On other Wednesdays the club net holds forth at 1900 on 50.34 Mc.

Going to the Syracuse V.H.F. Roundup Oct. 10? From the Philadelphia area? If so, you may be interested in a transportation deal being promoted by W3TDF. Ray has taken in these affairs for the past couple of years, and has found them well worth the trip, but it has been a costly and rather tiring business to drive up for a one-day hamfest. He has, therefore, investigated the cost of a chartered bus, and reports that if a full load of 41 passengers can be lined up, the round trip will cost only about \$8.00 per person. This will be in air-conditioned reclining-seat busses of brand-new design. For further information, send a stamped self-addressed envelope to W3TDF, P. O. Box 31, Langhorne, Pa.

What is the upper limit of frequency for ionospheric

propagation? Nobody knows, precisely, and now and then we get reports of reception that indicate that our present ideas about this could be in error. Example: On March 27 at 1520 CST, W5LFM, San Antonio, Texas, heard an f.m. signal with Spanish speech on 151.5 Mc. The signal was in for about 4 minutes. Cal suggests that this might have been the third harmonic of a TV relay station in Mexico City that is heard on 50.5 Mc. whenever there is sporadic-B skip to that area. No 50- or 144-Mc. signals were being received at this time, but this was during a period of violent solar disturbance. Anyone like to explain this one?

## 2-METER STANDINGS

Figures are states, U.S. call areas, and mileage to most distant station worked.

W1REZ	30	8	1175	W6NDE	11	5	625
W1AZZ	34	7	1205	W6SVY	10	3	1289
W1KCS	24	7	1150	W6SWV	10	3	600
W1RFU	23	7	1120				
W1AJR	23	7	1130	W6NLZ	12	5	2540
W1HDD	20	6	1020	W6WSQ	12	5	1300
W1MNN	20	6	900	W6DNG	9	5	1040
W1WZY	19	6	875	W6AJJ	6	3	840
W1CRQ	18	6	900	W6ZLL	5	3	1400
W1FAO	17	6	820	W6MMU	3	2	950
W1ZJO	17	6	860				
W1CLH	17	5	150	W7VMP	15	5	1280
				W7JRG	10	4	1040
W2NLY	37	8	1290	W7LHJ	4	2	1050
W2CXY	37	8	1360	W7JJP	4	2	900
W2ORI	37	8	1250	W7JU	4	2	353
K2GQT	30	8	1200				
W2AZL	29	8	1050	W8KAY	38	8	1020
W2BLV	27	8	1020	W8WXV	35	8	1200
K2IEJ	25	7	1060	W8PPT	24	8	985
W2AMJ	25	6	960	W8LOF	33	8	1060
W2DWJ	23	6	860	W8RME	32	8	910
K2HOD	23	7	950	W8SVI	30	8	1080
W2FAP	23	6	755	W8SFC	30	8	1000
W2SMY	22	6	940	W8LFD	29	8	850
W2CEH	22	8	910	W8EHW	28	8	860
W2LWI	21	6	700	W8WRN	28	8	680
W2RXG	20	6	700	W8BAX	27	8	960
W2UTH	19	7	880	W8DX	26	8	720
W2RGV	19	6	800	W8LCC	25	8	800
W2WZR	18	7	1040	W8JPM	15	7	940
W2ESK	18	5	850	W8GFN	23	8	540
K2RLG	17	6	980	W8NOH	21	8	975
				W8LCY	21	7	610
W3RUE	30	8	975	W8RLN	21	7	610
W3GKP	27	8	1020	W8AG	19	6	750
W3KCA	28	8	1110	W8GTK	18	7	550
W3TDF	28	8	915				
W3SGA	26	7	700	W9KLR	41	9	1160
W3EPH	22	8	1000	W9WOK	40	9	1150
W3EYF	22	6	650	W9CAB	33	9	1075
W3KMK	21	8	1030	W9AAG	32	8	950
W3LNA	20	7	720	W9REM	31	8	850
W3LZD	20	7	650	W9ZIH	30	8	830
				W9LVC	27	8	950
W4HJQ	38	8	1150	W9EQC	26	8	820
W4RHK	35	9	1280	W9ZHL	25	8	700
W4ZXI	34	8	950	W9BPP	24	7	1030
W4AO	30	8	1120	K9AQP	24	7	900
W4MJJ	28	8	850	W9PBP	24	8	820
W4UMF	28	8	1110	W9LFL	22	7	825
W4VLA	26	8	1000	W9KPS	22	7	690
W4EYV	25	8	1040	W9EAM	19	6	800
W4VNH	24	8	850	W9ALU	18	7	800
W4JJC	23	6	725	W9CUX	18	7	800
K4EUS	23	6	765				
W4VVE	21	6	720	W9SMJ	29	9	1075
W4IKZ	20	6	720	K9EMQ	29	7	1110
W4OLK	20	6	720	W9HID	27	7	830
W4AIB	19	7	840	W9HFB	27	8	1060
W4CPZ	18	6	650	W9GUD	25	7	1065
W4TLY	18	7	1000	W9RUF	23	7	900
W4RFR	18	7	820	W9QDH	22	8	1240
W4MFD	17	6	750	W9INL	21	6	830
K4YUX	16	8	830	W9UOP	21	7	900
W4LNG	15	6	1080	W9TGC	21	7	875
W4RMU	13	6	920	W9RYG	17	8	925
				W9IFS	16	6	1100
W5RCI	34	9	1215	W9IC	13	6	1240
W5DFU	25	9	1300				
W5LFG	25	7	1000	VE3DIR	28	8	1100
W5AJG	23	8	1360	VE3AIB	26	8	910
W5KTD	22	8	1200	VE3BQN	19	7	790
W5JWL	21	7	1150	VE3AQQ	17	7	800
W5FPZ	16	8	1300	VE3DER	16	7	820
W5VKH	15	5	720	VE3AOK	13	5	550
W5MI	15	5	700	VE3EB	14	8	715
W5SFC	12	5	1390	VE7FJ	2	1	365
W5HEZ	12	5	1250				
W5CVW	11	5	1180	KH6UK	1	2	2540

## The World Above 220 Mc.

Running the 220-420 box for a couple of months is having the desired effect. Quite a few fellows have written in to say, "Hey — I've got more than X states on 220!" Well, how were we to know? Thanks for sending in the complete and

up-to-date information, gang, and keep the entries and corrections coming. Our first listings had to be incomplete, and often based on old reports, but from here on we will carry only listings that provide the dope we need to make the boxes interesting and useful. You'll note a lot of changes in that direction this month. And say — aren't there more than 9 stations on 420 who have records worth listing? Figures in the box are the states, U. S. call areas, and the distance to farthest station worked — just as in the 144-Mc. standings.

Anyone for s.s.b. on 220 Mc.? The success of the sidebanders on 144 Mc. has led to considerable talk of sideband possibilities for 220 and even higher bands. With crystal-controlled converters the receiving problem should be no more troublesome on 220 than on 144, and the gain in signal-to-noise ratio available with s.s.b. techniques should extend the reliable voice range on 220 at least as much as it does on 144, which is plenty.

One long-time 144-220 man who is going to s.s.b. on both bands is W3LZD, Dunmore, Pa. Ted says that A3 is almost out of the question in his congested neighborhood, at least with high power, and W3LZD has been a gallon man from 'way back. He is converting for s.s.b. and c.w. only, on both 144 and 220.

Ted also passes along some news of interest regarding 1296 Mc. He says that W3ARW has crystal-controlled gear for 1296 Mc. just about set for the W3KX/3 operation in the June V.H.F. Party. We know what's up here: W3KX/3 to W1MHL/1 and W1BJ/1 in New Hampshire has been easy on 220 and 432 Mc. in several past contests. We'll wager that 1296 Mc. is a secret weapon being readied to break the scoring and section-multiplier barrier at W3KX, a leader in v.h.f. contest scoring for years. Remember that W1BJ/1 had crystal-controlled gear at Mt. Kearsarge last September!

Suggestion for high power on 1296 Mc.: W3LZD recently obtained some 6161s on the surplus market. The 6161 is coaxial triode with a 250-watt plate dissipation. It takes its full rating (1600 volts at 400 ma., for c.w. or f.m.), up to 900 Mc., and 71 per cent of this at 1400 Mc. As a grounded-grid doubler, a 6161 should be capable of delivering 100 watts output on 1296 Mc., which should make a lot more noise than the best 2C39 jobs we've had yet on this band. Full operating characteristics are in the RCA Tube Handbook, HB-3, Vol. 9-10.

## 220- and 420-Mc. STANDINGS

220 Mc.							
W1AZK	9	3	412	W3ZRF	5	3	112
W1HDQ	11	5	450	W4UBY	7	5	320
W1OOP	12	4	400	W4UMF	11	5	420
W1RFU	11	5	480	W5RCI	6	4	400
W1UEG	11	4	385	K6CTG	2	2	240
W2AOC	13	5	450	W6MMU	2	2	225
K2AXQ	8	3	230	W8LPD	6	4	480
K2CBA	8	5	315	W8PT	5	3	350
K2DIG	4	3	140	W8RVI	6	4	520
W2WJF	13	6	740	W9EQC	7	4	740
W2DZA	12	5	410	W9IC	5	2	340
W3AEG	4	3	180	W9OVL	5	2	290
W3LCC	8	5	300	W9UED	4	4	605
W3LZD	14	5	425	W9ZIH	5	2	270
W3UJG	11	5	400	VE3AIB	5	3	350
420 Mc.							
W1HDQ	8	3	210	W2DZA	5	3	130
W1RFD	8	4	410	W4VVE	6	4	410
W1OOP	9	3	300	W5RCI	4	3	340
W1UHE	3	2	450	W9CAB	5	-	355
W2BLV	11	5	360				

W2DZA, Teaneck, N. J., has had a d.s.b. setup on 220 Mc. for some time. Alex says that results have been good locally, and he is waiting for a shot at more distant stations. So far he has used only a pair of 6A K5s, but an 832 amplifier should be on before this is read.

This should be the year for DX on 220. The past several months have shown steadily increasing interest, and there are good stations well spread over the country. When tropospheric or aurora openings show on 144 Mc. let's be sure that we have activity on 220, and that we know where to look for DX. Most eastern stations operate on the low edge, but there is agitation for 222 Mc. for a national DX frequency. There is no equipment reason why this should not serve as well as 220.01 Mc. (Two megacycles at 220 Mc. will not show too markedly on your antenna

(Continued on page 160)

# How's DX?

CONDUCTED BY ROD NEWKIRK,\* W9BRD

## Where?

In times gone by, determined wanderers found it fairly easy to get lost somewhere. The world was wondrously wide and relatively uncluttered. You saved up a small stake, packed your bag, and picked your paradise, your very own "new one." But now? Ah, wilderness — here's what one saddened student of the remote has to report on the demise of an ancient calling. . . .

## Exit Beachcombers

As a lover of far, deserted places, I find that one of the most dismaying books I have read recently is a fat tome called the *Official Airline Guide*. If anyone doubts that the world is small, crowded, and choked with exhaust fumes, he has only to look into this book of more than 800 pages of airline schedules in small type.

For example, I have long cherished a place called Rottneest Island off Australia as ideal in name and isolation if I were disappointed in love or running from a posse. But now! For a mere \$7.60 a plane will take anyone there from Perth in 20 minutes, any day of the week. Scratch Rottneest as the end of the world!

The fact is all the far places have become near, the lovely beachcombing islands are overrun with airstrips, the enchanting *vahines* run dress and curio shops and have no time for *amor*, and the sands are posted with "Private — Hotel Guests Only" signs.

Boro Boro, that beachcomber's vision, is serviced twice a week by air — and a bus, not native carriers, takes you to the airport. Dar-es-Salaam is no longer a place of desperate adventure, ivory trading, and stolen love in a sultan's harem. It is a DC-3 gas stop.

All darkest Africa is lit by the blinking lights of milk-run planes. It is not right that a Viscount should call regularly with traveling salesmen at get-away-from-it-all spots such as Mgulani, Ndola, Bulawayo or Mombassa. But it does — and every day, too.

The same is true the world around, from Bukavu to Goma, from Mossamedes to Daia Does Tigres (what a name!). The truth is there is no longer any place in the world to where a man can escape. Space travel has come just in time.

Before long the last refuge of the bum and embezzler will be the lonely islet moons of Saturn — but that won't last long, either. Interstellar Express will run a local excursion on Wednesdays and Saturdays with stopover privileges, and some enterprising Martian will have a chain of motels, hot dog stands, and Howard Johnson restaurants. Then where will we escapists go?

— Herb Daniels, "The Modern Almanac," Chicago Tribune

This state of affairs bodes well for ham countries totals, however. And there are a few optimists who hold that certain unhabituated refuges still await persistent seekers.

In his recently published *Report from Practically Nowhere* (Harper, 232 pp.) author-traveler John Sack offers a "timely, authoritative assessment

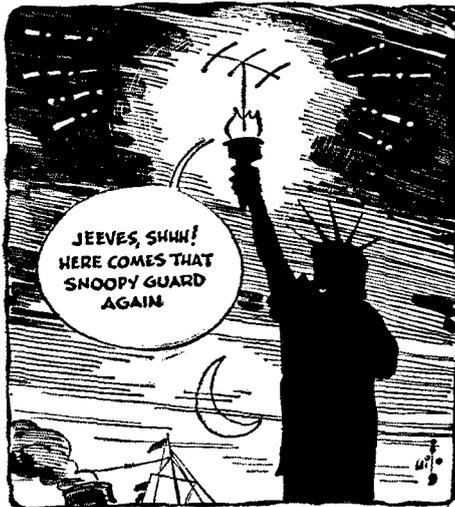
of thirteen of the most unimportant nations on the face of the earth." In addition to such gems as Punial, Sharja and Swat, OM Sack turns up a real cutie labeled "S.M.O.M." The place is presumed to be the world's smallest independence, a sovereign half acre abutting on a Rome haberdashery.

Visas, anyone?

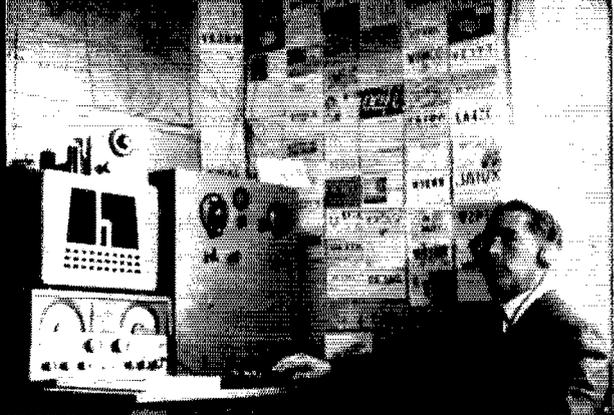
## What:

Would that friend Sack toted a ham rig along so he could do up his boondocks bit right, eh? . . . Spring was most accommodating to North American DX devotees from 10 through 80 meters. (We almost froze to death but that's of no importance.) Over-all conditions compared favorably with a year ago on the higher frequencies; 40 and 80 were much improved, and there never has been a more toothsome batch of DX available. As indicated in the "Whence" sector, numerous DXpeditionary undertakings are afoot to help spice up the summer season now at hand. Here's a cross-check of less transitory items recently reported worked, heard, heard worked or heard called by "How's" ionospheric investigators. . . .

20 c.w. interested W1s AZW (151/144), IJY TS YIS (118/105), K1s CDN (129/70), GUD (59/29), W2s CVW GVZ JBL, WA2CCC (144), K2s AYC (111/86), RQC (76/91), UYG, W3LOS (93/75), K3AHT, K4s IEX JCS PHY (122/98), PQR RJM, K5s ESW HFT LGH, W6s JQB KG NTR, K6s ALH (119/68), LAE (153/128), LXS ULO, K7s AWH (78/61), CXZ, W8s KX YGR, K8s IQQ (118/90), JZZ, W9s JIN PJT UBI, K9s ELT (93/60), JJR (83/55), JQA KDL, W0DEI (154/138), COZUS, I1ER, KH6PM, KL7PI, VE1s 1PQ (240), 3LIL (76/47) and 7CQ mainly because of BV1s US 13 G.M.T. USB (60 kc. above the lower band limit) 12, CE6AC (61) of Easter Isle, CN6 2BK 8BK (15), 8BP, CP3CD, CRs 4AX (16), 1, 5AR 20, 7CI 7CR 9AH 12, 9AI, CTs 2AI 2BO (7) 0, 3AB 0, CX1NE (50), DM2s AGH 6, ANG KWN 5, DU1s 1DR (40) 13, 6IV 17, EA8s BC BF BK CG (80) 7, ET2s KY VB, F2CB/FG of Corsica, FA3 3DU 8XS/sh 22 in the Sahara region, FB8XX (45) 4, FF8CC, FG7s XC XE, FK8AT, FM7WP, FO8s AC AG AP (30) 3-5, AU (100) 4-7, FO8ATP (30) 3-5, FY7-YF (50) 12, GD8UB (45) 23-0, HA1s 1KSA 2MF 5AM 5BU 5DH 5-17, 5KAG 5KCU 5KDF 8KCU 90X 0HN 5, HB4FE (70) 7 of the Swiss military, HC1s 1XJ (6), 3TH 4IE 5HN (69), HH2LD (15), HKs 3TH 0AI of San Andres, HSIC 13, IT1TAL, JA1s 1BAQ 1BLM 1BSO 1CG 1VX 2BL 2LC 2WB 3FT 3SJ 3TR 3UI 4CF 5AB 5AF 5AI 7AD 8AA 8AH 9AA 0AD mostly between 11-13, JT1AB (61)



\*4822 West Berteau Avenue, Chicago 41, Ill.



CP3CD of 12,000-foot-high Oruro is one of those rare code-inclined Bolivian DXers. Victor really moves around on 20 meters with his homegrown 100-watt and folded dipole. (Photo via W1ICP)

12-16, JZ6s DA (65) 12, HA, K6QPG/KW6, KAs 2UW 17, 8KW (60) 12, SRA (50) 12, 9MFM (25) 12, 6LJ (30) 12-14, KC6s JC (18) 10, TM (18) 10, KGs 1BB (80) 0, 1BO 1EM (90) 23-6, 6AAAY (40) 12, KJ6BV (80) 3, KM6s BJ BL, KR6s FM FZ 17, GY, KV4s AA (80) 23-1, AQ (90) 13, BO (30) 2, KW6CQ (58) 5-6, KX6s AF CN (20) 12, CO 12, CW, LUIZA of the br-r-r south, LX1DP (25) 21, LZ1s AF (30), KBL 4, UR 4, OA4s AGI FM, OD5s AI (70) 3, CI 6, OQ5s BC (58) 16, IG, OX3s BQ RH UD, OYs 1J 7ML 7, PJ2s ME (53) of Sint Maarten, CP 6, Fernando's PY7AFN, PZ1AM, 2, RAEM of Moscow (2) 3-4, SM5WN/LA/p 17, SUIs IM (50) 2, MS, SV0s KX 2, WP 5, TA3s AA (42) 22, USB (4) 3-4, TF3s AB KG, TI2s PZ WD 5, WR, UAs 1KAE/6 11 of the Russian antarctic, 2DN 9KAG (75) 5, 9KCA 15, 9KCK 2, 9KRU 9YJ, 9CF 9CN 9FR (85) 12, 9FS (49) 11-13, 9KAR 2-3 of Dickson isle, 9KCK (80) 12, 9KOA (65) 14, 9KQB 9KUA 9KUV (40), 9RQ, UB5s CZ EF KAD LR, UC2s AA AD 12, AR 4, KAC OM, UD0s AM AX 4, FB (25) 21, UF6s AC (45) 4, AE (80) 21, DD 22, KAF 2-4, UG6s AG (3) 3, KAA 22, U8KAE 1-3, UJ8KAA, UL7s JA 13, KAD (35) 11-12, KBK (71), UM8s DX KAB, UN1s AE 6, AN (50) 2, UO5s BM 7, KAA 2, PK (62) 5, UP2s KNP 7, NW 7, UQ2s AB AJ 6, AN 5, AS KBR (73), UR2s BU (112), KAE 5-6, KCA, VK7Z's potent 10-wattner, VK9s AD (50) 20 of Norfolk isle, JG 6, NT 12, RR (25) of P.T., XK 11, VK0CC (80) 12 of Macquarie isle, VPs 2KR 3YG 5AB of the Caicos, 5BL (2), 5KS, 6AF 6LN (89), 7BT 8EG (52) 1, SEP (10) 1, 9EN, VQs 2AB (75) 15, 3CF (15) 19, 4KRL 20, 6LQ (51) 2, VRs 1B (83) 7-10, 2DA 3B, VSs 1BK 1FZ (16) 11, 1HX 1JP 15-18, 1JW (78), 5JA (95) 12, 6AE 11, 9GN 9OM (50) 0, VU2s AJ (60) 13, AL (80) 1, BS DR 16, JG (75) 1, LL (25) 12, XW8AI, XZ2TH, YA5AR (80) 0, YJ1-DL 11, YO3s CM 5, RI 6, YV 4AU (1) 5, 5ABF (61), 5AO (80), 5EZ (20), 5GO 4, ZBs 1FA 23-2, 21 (31), 2R 12-13, ZC4s AM 16, LL (65) 22, PC 23, ZDs 1GM 2GUP (16) 6, 6NJ 7SA (20) 0-2, ZEs 1JV (49), 5JA (95) 15, 8JB, ZKs 1AU (11) 6, 2AD (52) 4, ZM6AR (30) 4, ZP9AY, ZS9M, 3V8AC 23, 4SHNG (71) 1, 4X4s GY JR (10) 2, KF KK, 5A5TO (82), 9G1CF 21 and 9M2FR (46) 16.

**20** phone probers are modest this month but Ks 2SFA\* 5ESW 6RAH 9JZR 9KDI, CO2US (106 worked), VEs 1PQ\* (about 100 worked on sideband), 3EIL and CO2-US (106) come through with CN8JE, CR6AK, HHZJK (190) 1, HL2AM (285) 11, KAs 2LD1 (175) 5, 8AR, 9CG (160) 6, 9LJ (165) 15, 9IM (160) 15, KC4USH (270) 7, KGs 1FD\* 1FR 5, 4AL, 6AFA (160) 7, KR6AM (185) 16, UC2KAB (155) 21, UQ2AJ (190) 5, UR2s BU KAA (180) 5, VPs 2DX 3HAG (155) 3, 6FO 4, 7CA 9E1 4, 9H 3, VS1s GZ (130) 15, JG (125) 15, W4JRD/KS4, XE1JK, YO3CV (160) 22, 9G1BQ\* (305) 0 and 9M2DW (125) 15, the asterisks denoting single-sideband protagonists.

**15** c.w. smarts under the stinging r.f. of W1s AZW IJY TS, K1s CDN GUD, W2s BVE CVW ETU (74/43), HTH, K3DPO, K4s IEX OTG/6 PHY (122/98), RJM TEA VJD/3 (48/16), K6s ESW LGH MHG, W6KG, WA6CPI, K6s LAE LXS OQT, K7s ABV (111/78), CXZ, W5YGR, K8JZ, W9s JVN ZTK (49/25), K9s ELT GDF GSG ISF JVR JQA JZZ, W0EJL, K0s OVR PFF, VEs 1PQ 3EIL, KH6PM, 11ER and CO2US whose dispatches to Jeeves specify 21-Mc. code activity by V1UB5V (50) 8, CNs 2AY 2BK 8GE (26) 18, 8JE (100) 18, CO2QR, CR5AR, CTs 1UF 2AI 3AB, CX7CO, DM2AGK 18, EAs 8BF 9AP, E1s 1K 4A, ET2VB (50) 19-20, F9QV/CF (175) 20-21, FA9VE, FK7XE (60), 19, FO8AC (60) 7, GC3HFE, HAs 1KSA 15, 5B1 8CG SWS, HC1LE, 11H2HB, HSI s C 20, SD, ISICXF (20) 17, 1T1s AGA 2, GO, JA s 1GC (40) 15, 1VW 3AF, K6TSQ/KG6 (50) 22, KAs 2BE (50) 15, 2CB 8KW, KC4-USV (28) 20, KG1s AQ (15) 15, EM, KH6CH/KG6, KM6BL (10) 3, KR6s AK BF, KX6s CO (80) 21, CW, LJ2F (35) of Norway, OA4AGI, OD5CI 19-20, OQ5s CP 2, HU IG, PJ2s CE ME, SM5WN/LA/p, SPs 2CO (30) 13, 2EQ 3PL 9RF, SV0s WP (25) 22, WY, TF3KG, UAs 2KAW 9DN (50) 3-11, 9KHA 9OI 9VB 9KAR 9KSA, UB5s KCF LR MF, UC2s AA AX (48) 17, UF6AB (48)

20, UL7s GL (60) 9, JA (45) 3, UO5AA (60) 15, UP2KCB, UQ2s AN AS, UR2s KAA 15, KAE 15, KCA KCB, VE0NI (50) 11, VK9XK, VP s 2GD (90) 13, 3AD 4KR 5FP 7BT 8CV 9BO, VO s 2AB 3CF 4FM (40) 12, 4GQ 21, 5EK, VR1B (67) 3, VSs 1EB (57) 15, VS9s AD 0, MB, W5BD/mm off the Azores, WA6BRB/mm near Mexico, XEs 1AX 4, 2OK 9NHD (10) 23, 9PRR (70) 8, XZ2TH (25) 18-19, YO3ZA (90) 14, ZC4s IP 20, RP, ZD7SA (45) 2 and 23, 3A2AD, 4S7s AB NG (47) 0, 4X4s BB DH JR JU LH KK (80) 5, 5LWP/mm, 5As 3TQ and 5TO, Summer's 21-Mc. prognosis is arrived at by K4VJD/3: "This much is predictable: It will be unpredictable." How true.

**15** phone fits the same forecast, naturally, and already is easing off. K1CDN, W2KKT, K2s RQC SFA\*, K4s IEX, PHY TEA, K5s ESW LGH, K6s LAE OQT, W9JLH, K9s GSG JJR JQA and CO2US do this month's reportorial honors with AP2AD 5, GO5CN, CX1NE, EA8CF ELs 3A (230) 3, 9K, FG7XE (202) 14, HG1s AGI 3, IF, HHs 2Z 5RL, HK1EQ, HL9Ks (315) 4, HP1LA, JA4BB, K6QPC/KW6 (320) 5, K6G4AM, KJ6BV (370) 6, KR6CG (245) 4, KX6CM (346) 5, LX1DE (170) 14-15, OE5HE, OD5AB, SV1AE, TGs 7AB 9FS, TI2AB, TF5-WDD\*, VPs 1OLY (210) 17, 2DA 2SL 3MC 5AB (230) 4 of the Caicos, 5FP 6ZQ 9ES, XEs 1AAH 2CY, XZ2SY (189) 19, YN1s ARM HW SV (218) 4, YV5AEC, 3V8AO and 5A5TO, this (\*) indicating a.s.b. work.

**15** Novice dispatches are numerous. Perhaps the lads are taking our advice to make DX hay while the sunspots shine. Anyway, WV2s BQX (16 countries, 4 continents), CJO (15 and 4), KN5TTE, KN6s RMJ TUN, WV6s CPI (now a WA), CRQ, KN7GCK, KN8NHC, KN9s REV and RKF (now N-less) keep busy with GE1AD, CN8JX, a flock of DLs, DU7SV, F3EG, GC3HFE, GMs 3DUM 6KI 8FM, HB9EU, JA s 2JW 3BP 9FV 9GC, Ks 21VJ/VE8 6T9SQ/KG6, KG4AI, KLF7AO, KM6BJ, KR6BF, KZ7LSN, LA3DB, LU9DL, LZ1KNE, numerous OH OK and ON4 trophies, PY7AN, SPs 5AA 7HX 8HR, SV0WAE of Rhodes, UAs 4LE 0KFG, UB5LR, VKs 1RG 4FE 5NO, VPs 5KS 9EN, VSIGZ, W5FNB/KL7, WH6s DAK DBF, WL7s CRJ CRZ CUW, WP4s AOD APN AQB, W6CW6 of Wake Island, XE1s AA1 AAH, YV5BF, ZC4IP, a quantity of ZLs and ZS6AQ. You don't necessarily need a beam, either, for we note that much of the preceding was worked with nondescript long-wires and lowly dipoles.

**40** c.w. will remain alive right through the static season for those who thrive in the barrage. W1s IJY TS, K2ALA, K3AHT, K4s MIOF RMJ, K5s ESW JVF, W6KG, K6D.V, K7s CAD (14/6 on fony), CXZ, W9s JVN PJT, K9s ELT KDI, W0QQI, CO2US and VE1PQ braved the crackles for CO2s QR (3) 3, US W1, C1T1T, DU s 1GF 7SV, EAs 8BF 8, 9AP (2) 5, E19N, F9QV/FC, HH2HB (2) 11, JA s 1AEA 1APD 1BF 1BS 1BXF 1BXS 1BZS 1CKD (8) 11, 1LR 1PS (4) 11, 2BS 2WJ 3AF 5AI 6YB 8AE, KG1AQ, KM6BL, KR6s AK BF, OE8KI (1) 4, OX3AN, SL3AG of the Swedish military, TG8AA, TI2PZ, UAs 3DR (5) 0, 9KCK 9KFG 9KIA 9LS, UB5ZE (1) 23-0, UO5IT, VERAY of the far north, VK9XK, VPs 5FP 7BT 9BO 9CR, VR2s CC DA DK, XE2s HU 3, OK, YO7EL (5) 1, YV5HL (11) 10, quite a few ZLs and 5A2CV (5) 0. . . . . On the 7-Mc. phone front CO2US and K4MOF account for GN8JE (100) 8, EA8CF, G3BD, GW4CF, TF-2WCY, VK2ID, W4JRD/ KSA, XE1Z (100) 8 and LZ31D. . . . . Forty-meter Novice DX-hunters are on the increase if we can judge from communications filed by WV2s CIA CJO, KN5QWR, WV6-CRQ, KN9s REV and RKF who made off with KH6s CFA DKA 9, KL7AIZ, VK3XB 8-9, WH6s DBF 9, DDB 9, CVD 9, WL7CYN and WP4AOV.

**10** phone fans W1PRR, W2JGF, K2s ALA RQC, W4YQV (140/128 on the band), K4s IEX JOS KSV, K5s ESW IIX LGH, W9LXW, K9s JVR JQA, W6QGI (234), CO2US and GC2RS swept up CO2DD 13, CP1CD, CR7s CO EO, CTs 1GJ 1IW 14, 2AC 2AI, CX1AK, EA8CM,

FA2VB, FF8BL, FM7WQ, FO8AX, GC2RS, HA9OZ, HC1RY, HH2s CL Z (45) 20, HP1AC, HR2MT, JA4HM, K6QPG/KW6 (845) 21, KAs 2UF 4CG 8CT, KR6s CG CS DB DS DZ, KX6s AF CM (805) 21, KZ5US, OD5BN, OE2JE, OQs 5NC 0PD, PJs 2AO 2CE 3AG 21, SP9DT, SV9WB (300), TT2s CMF OE PI, UAs 1CK 6KOB 9CM 9KKB, UB5KCA, UO2AB, UR2BU, VE8s BE NH TO, VK4s CR EL FH MF, VPs 1RL 2DA 2LO 2LS 2SL 5AB 5CB (490) 22, VO2s 2JB 2SB 4RF 5FS 8AV, VR2BC, VU2CQ, XEs 1AE 2BM, XO8AG of Chile, XW8s AL AM AN AO, YN4s CB DLS (400) 22, HC 0, YO2KAB, YS1s IM (400) 23, O, YV5HL, ZBs 1NR 2A, ZDs 2CKH 2GUP 6DT, ZE7JK, ZK2AB, ZLs 1ASF 1LY 2JL 2PS 2UD 3HA, ZP5JX, 4X4s KJ and JK. . . . W7PNN was aroused by our s.s.b. inquiry on 28-Mc. DX. He finds the medium quite productive in "the world's worst QTH," scoring with CO2YZ, three DLs, HC1AT, KB6BK, KC6AO, KGs 1DT 6FAE, KM6s BH BI, KX6BP, VE2AGV/VE8, W9NGC/KL7, ZSs 1FD and 6AHW. Roger uses a Heath SSB-10 to drive his Viking II, the latter modified to his own specifications.

**10** c.w. hangs on desperately as the m.u.f. slides downhill. W1JY, K1s CDN GUD, W2s BVE CVW (100), K2s RQC UYG ZXW, K4s MOP RJM, K5ESW, W6KG, W8s KX YGR, W9PJT, K9s ISP JJR JQA JZZ, W0DEL, CQ3US and IER grabbed CE3AG, CN8JE 19-20, CT2AI, CXs 1NE 2AZ 2BT, E19N, ET2KY 16, FO8AC, FO8AP, HA5 5BW 5KAG 5KDQ 18, 8WS, the tough little 7-watter of HB9XA, HC1XJ, HK5SG, HZ1AB, IT1PA, JAs 1BKV 0, 1VX 2BL 23, 2YT 23, 3JM 0, K6QPG/KW6, KGIAR, KM6BL, KR6AK 23, KX6s AF CW, OA4FA, OE1LR, OD5CI, OH9NG 18, PA2s AX ME, SPs 6JU 8CK 9DT, SV9WP, TF3PI 16, UAs 1TQ 6LF 9SB 0CI 1, 0CN 0, 0KFG 0, 0KIA 00M 2, UC2AX, UO2AS, UR2s KAA KCA, VK5QR 3, VPs 2LO 5FP (10) 23 of Turks, 7BT, VO2GW, XE2OK 23, YV5AEA, ZC4IP, ZD7SA 23, ZLs 1ATF 3, 2AXU 3, ZP9AY, 4X4GM and 5A3TQ 16-20.

**80** c.w. closes our "How's" Bandwagon trek for this month in the absence of 160-meter advices. On 3.5 Mc. we find W1s TS YIS, K2DDK (26 on 80), W6KG, W9PJT and K9JZZ crashing the atmospherics for DL8DL (20) 5, E19L, GM3HLQ, GW3MXX 3, JA3JM 12, KH6s AFIAYG IJ MG 8, KM6BL 10, KR6AK 14, LA6U (1) 5-6, OK2LS (15) 5, PY7AN, SM8YF/mm off Curacao, SP3DG, W9KLD/KL7 8, XE2OE, YU1FYZ (5) 3, ZL3s JT and QX, Goodwood!

### Where:

**Europe** — "Received my DL4IJ ticket on the 5th of November, 1958, and I believe they reissued the suffix too soon. Just received 43 QSLs from the local bureau for the fellow who signed DL4IJ in 1956 and '57. Sure would like to keep 'em; there's rare DX in that batch! If the operator concerned will forward me his present address I'll see that he gets these cards." The address for the current DL4IJ appears in our February '59 column. And a plea to licensing authorities to let call signs cool off before reissuance appears in our June

1958 offering in large-type type . . . . . S.w.l. A. Rugg of Quebec identifies G8ATH as a former ZB2A and DL2XS operator in addition to the info to follow. . . . . F7CV (W4ZJY) assures 100 per cent QSL for his Continental DX work in due time. . . . . K3DPO reminds us to remind you that Hungarian stations often receive cards through Central Radio Club, P. O. Box 185, Budapest IV. . . . . That LJ prefix mystifies many. It's used by Norwegian school, military, etc., installations and the Norwegian Radio Relay League can guide cards in. . . . . "SM5AHK surely is a snappy QSL manager for SM5WN/LA/p. Got a card back in eight days after QSO by supplying enough IRCs for self-addressed air mail." So applauds W1AZW. . . . . K4JYQ reports UO5AA catching up on things in the QSL department. . . . . IT1TAL, doing confirmation duties for IT1ZGY's Pelagian Islands project, wants s.a.e. for direct reply and will answer other applicants via bureau. . . . . K2SFA reports the closing of TF5WDD in mid-April for return to the address that follows. . . . . LZ1AF, via K2UYG, pleads for patience concerning his QSL backlog now estimated at 1500. Dimiter claims that Radio Sofia duties keep him hopping.

**Asia** — W6ZEN had hoped to arrange QSL services for AC4AX so that he could be more active, but Tibetan political developments have obscured the outcome of Floyd's effort. . . . . BV1USB's QSL route is sought by W3JKO. "He gave me 'APO 140, San Francisco," but my card made the rounds with a lot of notations on it to the effect that there is no such APO." . . . . . "In thirteen months as KA2BE I've gathered some 1200 QSLs. I return to K8BGI now after striving to QSL 100 per cent from Japan. If anyone has been missed he should reapply at my home QTH." Bud also signed KA3s BE and GG for spell before becoming KA2BE. . . . . W8NYG writes from Korea and HL9KJ, "There has been bootlegging of HL calls including HL2AM and we'll try to keep the gang posted on such developments." . . . . . OD5AA and 3W8AD are one and the same faker, according to Michigan observer M. Eilers who now awaits KN8 credentials. . . . . WGDXC hints that W5KF may be of assistance in running down HZ1AB verifications. . . . . XW8AL assures WIPRR of thorough QSL intentions.

**Africa** — CR4AX and VQ4AQ are additions to the rambling roster of W2CTN QSL-service clients appearing on page 74. May QST, Jack emphasizes the necessity of self-addressed stamped envelopes for his favors and also points out that QSLs are available only after receipt of appropriate log transcripts from the DX stations concerned. "Any delay in contest QSLs comes about because most contest logs are shipped to me via surface mail." Incidentally, Jack's local Post Office branch is changing location to a point only 500 feet from the W2CTN shack. Logistical necessity? . . . . . The V-P (Mass.) DX Club stresses the self-addressed envelope requirement where W8EWB's ZD3W QSL services are concerned. . . . . The Misaken QTH heretofore associated with 3V8AC is declared invalid, WA2CCC suggests you try the address in the list that follows.

Be there a ham with soul so dead who never to himself has said: "What a spot for Field Day!" W6PHF (FO8AW) recently dropped in on FO8AC at Papeete and snapped our QTH of the Month, one truly DXotic. That's Georges bidding welcome.





Ten-meter specialist 9G1CO uses a homespun sender, AR-88 receiver and two-element spinner with telling DX effect. Dennis is acquiring a sterling QSL reputation for his Accra activity. (Photo via K2POO)

**Oceania** — Also add KW6CP to that W2CTN QSL-agency rundown. . . . "I had a QSO with KC6JC on April 7th and he described how a load of mail and other cargo had to be jettisoned by a Truk-bound aircraft in distress. Cav suspects that many QSLs destined for KC6JC were lost and that some of those who mailed cards to him preceding that date may have to try again." This from W3JKO. . . . "Regarding bogus KH6SS/KS6, K6LKV returned QSLs to senders where s.a.s.e. were supplied and notified the remainder via hamgrams. . . . More about ZK2AB's hurricane harassment as mentioned in "Whence" last month, this from 'Chas. via W6ZEN: "I feel rather badly about the lost and destroyed QSLs. What with pirates using my call and other complications people are going to feel that they never will get cards from me. I'll try to figure out something to fix things up, possibly with your help." . . . . KM6BL advises, "My operations on Midway will come to a halt after one year and nearly 9500 QSOs, I'm due to depart in early July for reassignment in the States. In view of the fact that my next QTH won't be known for some time I request that all correspondence and QSLs be forwarded to K0GZLN." . . . . WGDXC advises that VK5-AB handled QSLs for JZ0PC and the former JZ0PB — can't help you on the present 'PB. The Gulf gang's *DX Bulletin* also states that W5UX's VS4BA logs cover the period March 1958 to March 15, 1959; s.a.s.e. and full QSO data in GMT are musts. . . . K8CFU is told by VK2ANB (ex-VR3A) that Ray will have his Fanning logs and cards available soon for liquidation of all VR3A QSL debts.

**Hereabouts** — KP4KD is astounded at the number of DXers who slip up when converting their local times to Greenwich. Check your GMT status by cocking an ear to the automated timechecks of WVV, lads. Ev also comments, "As usual in those brawls, I received a quantity of cards from fellows who 'thought' they worked me in this year's ARRL DX Test — but didn't." . . . . K9ELT's card to "XP5A" via XE1DY bounced like a K9 off a hot soldering iron. . . . OA4FA shut down temporarily while arranging for the addition of a fifth harmonic. K2AYC finds Jorge some 400 QSLs in arrears but his intentions are honorable. . . . PJ2ME, via K2AYC, reports that 700 Sint Maarten verifications recently headed Statesward. With K2SWZ's valuable assistance Vince hopes to clear up his QSL debit and soon. . . . K2POO, like many others, includes photos with his important outbound QSLs and he's convinced that the personal touch pays off. Jack's 76/70 batting average would seem to bear this out. . . . G8KS writes, "Reference my QSL managership for Ronald Pinder, VP8-EG, of Signy Island, South Orkneys, I have been receiving considerable mail via an old G8KS address with considerable delay." The *Call Book's* spring number has the proper QTH. Further from G8KS: "I endeavor to maintain a weekly schedule with Ron at which time he passes to me the calls and reports of the stations he has worked during the previous week. The usual postal arrangements will apply for overseas amateurs." Meaning, of course, the inclusion of IRCs and s.a.e. for direct reply, others going via the bureau route. The first batch of G8KS-handled VP8EG pasteboards went out early in April. . . . W8KX is given to understand that some pervert has arrogated the FB8AC call from time to time. . . . K6BX feels that fellows who do QSL favors for overseas DX should keep close liaison with Jeeves & Co., especially when terminating their services. (In self-defense they usually do!) Long-term arrangements occasionally require repeated listings in our directory because they're necessarily "unofficial" and so rarely picked up by the *Call Book*. Keep us posted, if you will, Samaritans. By the way, Ks IGUD 2UYG and 4RJM volunteer their services as QSL agents for deserving rare DX. . . . JDXRC reminds us that Argentine outpost suffixes go like this: ZD ZE ZF ZG South Orkneys; ZC ZO, South Shetlands; ZI ZJ ZK ZL South Sandwich. . . . NCDCX learns that the call PJ2MB has never been assigned. Sint Maarten legitimates now include PJ2s MC NE and MF. . . . K6LAE finds that VP5AB of South Caicos

responds direct on receipt of two International Reply Coupons. . . . Help yourself to the month's agglomeration of new and/or revised postal pinpointings:  
 AP5HQ, I. Ameen, 8 Div. Sig. Regt., Quetta, W. Pakistan  
 CR4AX (via W2CTN)  
 CR9AI, J. Maria, P. O. Box 233, Macao (or via HKARTS)  
 CR9AM, M. Sousa, P. O. Box 111, Macao  
 EL4A, Ken Bale (W7VCB), LeTourneau-Liberia Ltd., Roberts Field, Liberia (or via W7PHO)  
 ex-EQ3FM (to ET3FM)  
 ET3FM, F. Murphy, 9432nd TU Comm. Unit No. 3, APO 813, New York, N. Y.  
 ex-F7AY (to W7LBN)  
 FM7WP, A. L. Petie, Paradise, Fort-de-France, Martinique  
 FORAX (to WA6DFH)  
 FP8AB (to K2JGG)  
 FY7YE (via W5JLU)  
 HC1SK, P. O. Box 69, Quito, Ecuador  
 HC1XJ (via K8CZJ)  
 HC4IE, Box 30, Maanta, Ecuador  
 HC5TL, P. O. Box 1366, Cuenca City, Ecuador  
 HH2HB, Box 235, Port-au-Prince, Haiti  
 HH8GA, G. Abbes, Box 900, Ciudad Trujillo, D. R.  
 HK5SG, Diego Garces Soto, P. O. Box 892, Cali, Colombia  
 HL9KJ, Dec-RD-DC, APO 301, San Francisco, Calif.  
 HP3CC, Box 167, David, R. P.  
 HS1E, Box B, APO 74, San Francisco, Calif.  
 IT1TAI, D. Marino, Box 300, Palermo, Sicily  
 IT1ZGY/ip (via IT1TAI)  
 JA5AI (via K2QXG)  
 JTIAB, Bohous, Box 369, Ulan Bator, Mongolian Peoples Republic  
 ex-KA2BE (to K8BGJ)  
 ex-KA5CW (to W8GMX)  
 KG1AQ (via W6UED)  
 KG1BG, APO 23, New York, N. Y.  
 KG1FD, Box 204, APO 121, New York, N. Y.  
 ex-KM6BL (via K0GZLN)  
 KW6CP (via W2CTN)  
 OE1WG, W. Gallia, Wien 21, Slingerdorf 1, Austria  
 ON4KT, C. Ted Teesdale, 57 rue Theodore Roosevelt, Brussels 4, Belgium  
 PZ1AM, A. Meubelman, Box 12, Coronie, Surinam  
 SUIMS (via W6QNA)  
 SV8WG (via V1AA)  
 TA3USB, APO 224, New York, N. Y.  
 TF3PI, P. Grondal, Laugarnesveg 54, Reykjavik, Iceland  
 ex-TF5WDD, 1314 W. Cypress, Pensacola, Fla.  
 UA3GI, Eugene Kondratiev, Post Box 491, Moscow, U.S.S.R.  
 UA9AA, Radio Club, Chelyabinsk, U.S.S.R.  
 UO5AA, Valentin P. Glushkov, P. O. Box 1, Kagul, Moldavian S.S.R.  
 VE2AUU/VE8, Al. Epstein, c/o Federal Electric, Montreal Airport, Montreal, P. Q., Canada  
 VK9AD (non-W/Ks via VK5AB, W/Ks direct)  
 VP4DW (via KV4A.3)  
 ex-VP5OP (to VE1PV)  
 VP5KS, U.S. Naval Facility, Navy 104, FPO, New York, N. Y.  
 VP8EG (via G8KS)  
 VP8EF (via G3JAF)  
 VP9EL, F. J. McClure, Oleander Corners, Middle Rd., Paget East, Bermuda  
 VO4AO (via W2CTN)  
 VO4RF (via RSGB)  
 VR1B, ex-VK1AC-VK0AB (via VK2EG or WIA)  
 ex-VR3A, R. J. Baty, VK2ANB, Lot 9, Samson Rd., St. Ives, N.S.W., Australia  
 VS4BA (via W5UX; see preceding text)  
 VS5AD, P. O. Box 124, Seria, Brunei  
 VS5JL, c/o BPM Ltd., Seria, Brunei  
 VS6BJ (via HKARTS)  
 WIUDX/KH6, J. Gregal, Qtrs. t-351, Ft. Shafter, APO 958, San Francisco, Calif.

**XE0NHD** (to W9NHD)  
**XW8AO**, Marion Heinze, USOM-I-PEO, Box L, Navy 150,  
 P.O. San Francisco, Calif.  
**ex-XZ2HP-VS7PH** (to G3ATH)  
**YA5AR**, Box 13, Kandahar, Afghanistan  
**YN1LC** (via YN1LB)  
**ZB1FA**, Sgt. R. Conway, ComCan Signals, Sqdn. A, BAPO  
 512, Malta  
**ZD3E** (via W8EWB)  
**ZD7SE**, P. O. Box 94, St. Helena, South Atlantic  
**ZE8JB** (via R5SR)  
**ZM6AR** (via ZL2LB)  
**ZP5MQ**, F. Novinger, c/o U.S. Embassy, Asuncion, Para-  
 guay  
**ZS4TA** (via SARL)  
**3V8AC**, Ali Guediche, Radio PCE, rue Pasteur, Sousse,  
 Tunisia  
**4S7FJ**, P/Sgt F. Johnstone (G3IDC, ex-VS1FJ), Sgts.  
 Mess, RAF Staging Post, Katunayake, Ceylon  
**4S7FM**, RAF Ekala ARC, Katunayake, Ceylon  
**15LWP/mm** (via CX2BT)  
**9M2MA** (via VS1HU)

Your benefactors in providing the foregoing are W1s  
 GKK PRR TS UED, W2s GRD HTH JBL JGF KKT,  
 WA2CCC, K2s IBW SFA UYG, W3s BCY JKO, W4JIL,  
 K4s IEX JOS JYQ KSV MOF PHY TEA VJD/3, K5s  
 BSW IIX MHG, W6s HOC JQB KG NTR PHF, K6s ALH  
 LAE OQT, W8KX, K8CFU, W9s JIN LNQ K9s ELT JQA  
 KDI, W9QGI, K9s OVR PFF, KH6PM, KL7PI, VE3EIL,  
 WP2AB, A. Rugg, DX Club of St. Louis, Northern California  
 DX Club, Southern California DX Club, VERON  
 (Netherlands) DXpress, V-P DX Club (Mass.), West Gulf  
 DX Club and Willamette Valley DX Club. Got fresh  
 "Where" data to help the boys along? Flip us a slip with the  
 tip.

### CAUTION

Under this country's treaty obligations and on  
 formal notice received from other nations, FCC-  
 licensed amateurs are warned to engage in no com-  
 munications with stations in the countries listed  
 below. This is in accordance with FCC Public  
 Notice of December 21, 1950 (p. 23, Feb., 1951  
*QST*), and as since revised.

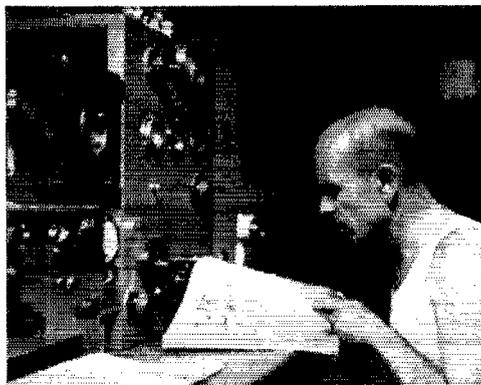
*Cambodia (XU), Indonesia (PK, YB-YH), Iran  
 (EP-EQ), and Vietnam (XV, 3W).*

For those whose *QST* files do not go back to  
 1950 we will gladly supply, upon request, literature  
 describing the circumstances of this prohibition.

### Whence:

**Asia** — VERON of Holland rather shakes us with the in-  
 telligence that 9N1s AA AB AC and AD are reported li-  
 censed in Nepal. . . . HL9KJ is a fresh Korean entry op-  
 erated by W8NYG (ex-SV0WX-KR6MN-SV0WD) and  
 W9ACC (formerly portable-KL7-VE8) around 14,170 and  
 21,255 kc, on phone, 14,040 and 21,060 on c.w., with an

**UA3FM** and very-YL Carol occasionally try their phone  
 luck on the North Atlantic path near 14,100 kc. (Photo via  
 W7DJU)



**EA6AW** is famed as a 14-Mc. c.w. regular among the  
 Balearics gang. Arcadio's informal attire is just the thing  
 in Palma de Mallorca, prime Mediterranean holiday  
 resort. (Photo via W1PH)

Elmac 50-watter . . . . . W2HTH, through K9GDQ,  
 tells us of AP5B/YA's planned mid-May 21-Mc. activation  
 . . . . . XW8AK booms through on 28,325 kc. around  
 1600 GMT for K5ILX at rare intervals. Neighbor XW8AL  
 works the same band from 1300 to 1600 and a couple of other  
 XW8s concentrate on 28 Mc., too. With ten softening up for  
 the summer these Laotians may slide down to 15 . . . . .  
 The 487 gang wasted no time in firing up after the lifting of  
 Ceylon's temporarily imposed hamming prohibition and the  
 return of impounded gear around April 1st. W2HTH helped  
 487NG celebrate the event on 15 c.w. while 487ET spread  
 the good word on 20 . . . . . K2ZBE tells CO2US of the  
 South India Phone Net that holds forth around 7095 kc.  
 Such local lights as XZ2KM chime in . . . . . New liberal-  
 ized ham exams commenced in April out Japan way. K6IDV  
 notes a consequent booming of the morning 7-Mc. JA popu-  
 lation . . . . . K2ZBE comes back to K8BG1 after a pleas-  
 ant 140/111 Tokyo DX career. "Nailed all states but South  
 Carolina. Just couldn't seem to hook that one, even in phone  
 and c.w. ARRL Test sessions. I must thank the gang for all  
 the enjoyable contacts and I'll be seeing them from Wright-  
 Patterson Field." Bud is anxious to try a triband cube  
 quad as K8BG1/8 . . . . . Asian gleamings via DXCSL,  
 HKARTS and VERON: MP4BCN (ex-ST2NG-ZD3G) ex-  
 pects to try his DX luck from Qatar and other near-by areas  
 from time to time. . . . . TA3s AA and USB are talking  
 Turkey on 20 and 15 . . . . . VS6CO leaves Hong Kong for  
 the U.K. and possible Canada relocation. Colleague VS6DLJ  
 also departs the Orient and expects a tour of DL2 duty after  
 his British holiday.

**Africa** — VQ1AQ interests W2CTN with these porten-  
 tuous words: "In 1960 I will be on six months leave. I am hop-  
 ing to call at such rare islands as VQ7, VQ9 and any others  
 which I can make en route — Mafia, Zanzibar and the  
 Comoros. It's a long way off; I will let you know further  
 details when the time draws nearer. VQ8AB (ex-VQ8CB)  
 works in the same department as myself and Lenny knows  
 quite a few commercial operators on small motor vessels who  
 are interested in ham radio. We have been in touch with  
 some of these chaps, hoping to get them to come on the air  
 as amateurs from such rare islands as Agalaga, St. Brandes,  
 the Aldabras and other places in the Indian Ocean." . . . . .  
 EA8GF mentions probable Ifni maneuvering by EA8IS and  
 buddies next month . . . . . Ex-FM7WT advises K9DQI  
 of his imminent French Somaliland activation . . . . . The  
 FT3FM now frequenting 14-Mc. c.w. and phone regions in-  
 forms WIGKK he signed EQ3FM in 1949 and '50 . . . . .  
 K6ALH finds ZE3JO interested in possible early Z89JO  
 action . . . . . W2CTN notes that 9G1BQ gives 7-Mc.  
 s.s.b. an occasional whirl . . . . . Neighboring 9G1CF  
 heads home to England this month, according to WA2CCC  
 . . . . . From K2UYG: "VQ4ERR writes that his plans for  
 a Seychelles DXpedition are definite and he sails for VQ9  
 on August 17th to arrive the 20th, target fire-up date the  
 21st." . . . . . W7VCB pushes buttons at EL4A these days.  
 "I hope to be on 20 and 40 with a kilowatt, lower power on  
 other bands. I'll be traveling a lot but I expect to help put  
 Liberia on 80 and 160, too. Will also check on Togo and Portu-  
 guese Guinea possibilities." . . . . . CR7BN publishes an  
 ambitious *Manual do Principiante* (Novice Handbook) with  
 24 pages of DX data — prefixes, countries lists and the like  
 — also describing the WCR7A (Worked CR7 Award)  
 . . . . . Snippets from VERON and WGDXC: VQ8AD,  
 active on 15, also schedules FR7ZC regularly near 7030 kc.  
 . . . . . ZD9AB likes 14,185 kc. from 1800 to 2100 GMT on

Mondays; ZD9AF uses 10 and 15 between 1600 and 2000 when duties permit. . . . EA0AF regularly appears on Sundays around 14,055 kc. at 1630 GMT. Near-by EA0AB likes a shot of 10 phone on occasion. . . . ET2s KY and US intended to follow their planned FL8 operations with a spell of ET3 fun.

**Oceania** — Tarawa's VR1B (VK3IB, ex-VKIAC-VK0AB) haunts the low edge of 14 Mc. around 1000 GMT and tries 28 Mc. at 2300. W6NTR observes that Chas. is a cagey one, listening for his own DX and pouncing on it before pile-ups develop. . . . W9EVI, now up to 240 after his KS4BB adventures, noticed CR10AB knockin' 'em dead on phone around 21,240 kc. with a solid 3-element-type signal. A few of the Darwin VK5 brethren would like to try their hand at such a Timor trip. . . . KH6OR has a fine chance to make good on ZM7 aspirations, according to W9EVI.



KR6MI of the Third Marine Division at Camp Kinser keeps liaison with numerous Stateside stations on 15 and 20 phone. Here chief op Vince schedules K6DG while sidekick Jack revises the posted sked list. KR6MI's traffic commitments naturally are interspersed with lively "first KR6I" onslaughts.

Mac also notes that Lord Howe's VK2FR is back at it with potent a.m. around 14,125 kc. . . . "VR6TC is in New Zealand for six or eight months to receive medical attention for chronic appendicitis," notifies W4AJ. "Tom will return to Pitecairn in early 1960." . . . W1UED relays W1UDX/KH6's offer of skeds with Fort Shafter on 15 and 20, phone or c.w. . . . K6JVF was ZL1AFZ's first U.S. Five on forty. Dave also reports a new Fiji 7-Mc. convert, VR2CC. . . . VK5FM tells W8KX of his interesting BC-station duties at Crystal Brook. . . . "I worked nearly 9500 stations since commencing Midway operations a year ago. W.A.S., W.A.C., DXCC and WBE have resulted." This from KM6BL who soon will be signing a W/K/WA-type call. . . . K7GCO reports that ZL3VB's Chathams operating opportunities are restricted by a family of five youngsters, duties as the islands' postmaster, meager diesel fuel supplies, and food-gathering responsibilities which include a heavy gardening routine. Jack has fifteen months of his three-year Chathams hitch remaining, however, so there's plenty of time to work ZL3VB. . . . S.W.L. A. Rugg found former ZL1PL-ZL3LV now signing VE6VO. . . . More on ZK2AB's hurricane aftermath from W6ZEN: "To his surprise, after drying the receiver and transmitter in the sun with fingers crossed, he found the things would work. But ZK2AB expects plenty of trouble because everything is corroded and rusty. His meters are shot, so he loaded up for an hour's QSO with me by drawing pencil arcs." . . . Oceania odds and ends courtesy DXCSL, VERON and WGDXC: CR9AI intended to try some CR8 DXing after his April Timor trial. . . . KH6AIQ has Palmyra KWM-1 intentions for May. . . . VK6DL anticipates a month of Coocs-Keeling VK9DL action on phone and c.w. YJ10M closed his New Hebrides log with a PA0FX QSO and then became VR2DO.

**Europe** — K6ALH says DL9PF is aiming for Luxembourg DXpeditionary action early this month, this to be followed by an Andorra adventure in late July. . . . OY7ML tells K2UYG he's interested in homebrewing some s.s.b. gear patterned after W2EWL's famous QST version. . . . OH2WW, at 131/106, mentioned dire need of a Mississippi contact while QSOing W8KX. . . . HB9RK becomes USKA awards manager and welcomes communications concerning the Helvetia-XXII diploma. . . . UA4IF's ham career commenced in 1928 under the call 3EB. He informs W6YK of his current 197-country DX total and mentions working 207 countries previously as

UH8AF, Prewar, as UA1AP, he reached the 87-country mark. UA4IF claims many QSOs with Delaware but no QSLs to show for it. . . . W6YK and others opine that Russian amateurs now appear to be taking the offensive in gathering QSLs for ARRL and other DX certifications. . . . GC2RS reports GC3LXK wowing the Stateside s.s.b. gang as the sole C.I. sidewinder steadily available. . . . ITIZGY took only c.w. gear along to the Pelagians in late April but he intended to respond to calls from hungry phone-only fellows. . . . Items on Yanks in France from F7CV (W4ZJY): F7FO watches for QSLs to confirm a quick s.s.b. WAC and schedules ET2US faithfully. . . . F7CD nervously awaits a few DXCC-clinching pasteboards before heading back to Tennessee. . . . KN4FJC is a newcomer to the F7 scene. . . . F7CV is giving sideband a whirl but failed to corner any YLs during this year's YLRL YL-OM Contest. "Maybe they were up on 15 or 10 — my receiver doesn't hit those bands." . . . "UR2AR is working on a new 813 rig and expects to be back on the air shortly. In the ARRL Test he operated UR2KAA along with UR2CW and ex-UR2AE to the tune of 2300 contacts." This from K2AYC who will become a Six ere long. This 1959 Test note affirms observations by ARRL contest specialist WIZDP that the U-men were really out for points this time. . . . The Swiss Shortwave Service transmits a ten-minute "DX Corner" every Friday. Drop an inquiry to the outfit at Neuenasse 23, Berne, for details, times, and so forth. . . . OVSV (Austria) soon will award its No. 100 AHCH (Amateurs Help Children) DX diploma, a certification for working and confirming various numbers of OE stations in steps of 10. Check with Hermann Gmeiner, SOS-Kinderdorf, Imst, Austria, for detailed data. . . . The Bordeaux Wine Contest — a DX affair, not a tipping competition — will take place on the 20th and 21st of this month when certain Bordeaux F's will seek to work hams in continental U.S.A. on 14, 21 and 28 Mc. This deal coincides with the Bordeaux International Fair. The merit awards are interesting — rush inquiries to F8BT. . . . Continental tidbits thanks to DXCSL and WGDXC: It's San Marino on c.w. and s.s.b. next month for W0UQV and friends if all goes well. . . . W/K contacts are said to be sought by 3A2BF around 0700 GMT, 14,080-kc. phone.

**Hereabouts** — "Weird, disturbing and interesting," comments W9WKU regarding his own recent echoes experience on 20 phone. "At 1616 GMT on the 6th of March I called KZ5JF with no luck; he was on 14,180 kc. and I was at 14,204 with my beam pointed 160". Concluding a final attempt, I tuned to my own frequency after about a 30-second interval and heard my own signal calling KZ5JF and signing. I immediately called again; after another 20- or 30-second pause I heard part of my transmission once more coming back. I tried it a third time but heard no more." It was snowing at the time, incidentally, with a huge storm centered some 50 to 100 miles to the south of W9WKU. . . . Through ARRL DXCC Deskman W1WPO, G8KS reports friend VP8EG by no means inclined to tolerate boorish pile-up antics. "He is new to the game and very keen to give as many amateurs as possible a 'new one' so we must not drive him off the bands." . . . W1ZD and XYL didn't meet up with the quantity of VP8 and LU "Z" amateurs they had hoped to greet during their business-pleasure voyage to the far south in February. Outposts of differing nationalities in that area apparently are just as unsovereign as ever, much of the territory still in hot dispute. "In Deception Island harbor we did run into K4MKN, a bacteriologist researcher aboard Argentine icebreaker *Chiriguano*, who has a 90-watt sideband rig along. He doesn't get much of a chance to operate, however, since the other operators take a dim view of his interfering with them. Nevertheless we managed to raise OK1FF and K6QKH for brief contacts." . . . K4JOS and others recommend PJ3AG for your world-wide YL collection. Harvey finds Zita on ten phone around 2400 GMT. . . . Reference last November's "How's" intro on Yanks missing in the China Sea, G. Everett Farmer of Signal Mountain, Tennessee, advises he still has no word as to the fate of his son. . . . K2JGG expects to put FP8BA back in action for three to seven days in the first week of July. Tom seeks to borrow sideband apparatus for the jaunt. . . . Need Prince Edward Isle for your WAVE? Well, W1QMS/VE1 will be available there during the second week of July on 20 and 15 phone. . . . Also mark your calendars for the ARRL Southwestern Division Convention's DX Breakfast, the 26th of next month at Pasadena. A gala program is in the works; check with K6CYO for specs. . . . KP4AIO reached the 201-country rung with Serrana Bank and yearns to try his own DX luck on Mona Island, a point 'twixt Haiti and P.R. . . . The farther you are from Oregon, the fewer contacts you will need to qualify for membership in the OCC (Oregon Centennial Club), a certification sponsored by the Astoria Radio Club (W7QXS) in conjunction with celebrations of Oregon's 100th year of statehood. KN7HDB can supply detailed information. . . . KP4KD was relieved to hear from W1BDI that ARRL does not sanction "broadside" multiQSOs between a rare DX station and numerous callers. This is because many resultant exchanges become essentially one-way deals through lack of proper

(Continued on page 162)



# Correspondence From Members -

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

QST — 59

Box 738  
Crestline, California

Editor, *QST*:

I've just finished selling my car and house and have hocked my XYL. Now where can I put in an advance order on the "QS-59" model "A-1-F"?

— James Gove III, K6IEB

P. O. Box 177  
Evans, Colorado

Editor, *QST*:

I certainly enjoyed the article in April *QST* on the new QS-59 receiver. You did a wonderful run-down on it and I agree with your findings. It is truly a wonderful piece of equipment and should provide another excellent source of prestige for the amateur with a lucrative income and a desire for the very best ham gear in the world.

You did not, however, get the only pilot model for testing, as I have an uncle who is chief engineer at Ribmaster Electrical Implement Corp., who make the QS-59, and through him, I was fortunate enough to get one of the pilot models at a discount. Since it was a special deal, cash was required and it only cost a mere \$31,616.18, which is very reasonable considering the many features offered in the QS-59.

Again, I want to thank you for a very thorough report on the Ribmaster QS-59, and, to date, no release time has yet been set for delivery to the general public of this superlative receiver.

— Bill Skipper, KØARG

5902 North 67th Street  
Milwaukee 18, Wisconsin

Editor, *QST*:

Traditionally, XYLs (even those with ham tickets) aren't generally conceded to be technical whizzes, and I'm no exception — but by the time I'd finished reading your article on the QS-59 receiver I was positive that the whole thing was a gorgeous pipe dream.

— Edith Roush, K9DCC

Apt. 12, 543 Cedar S.E.  
Albuquerque, New Mexico

Editor, *QST*:

About a week ago the fishing season opened in New Mexico, and you took first honors: you hooked one sixty-five inches long, weighing one forty-five, on a newsprint line two thousand miles long. I accepted completely the story on the QS-59. It was only after calling my good friend K5DSB that I was disillusioned, not to say disenchanting. He informed me concerning your wily way on April first, but waxed enthusiastic about the QS-59, saying, "This is the receiver amateur radio has been looking for — it eliminates the operator."

After about twenty minutes I regained my equilibrium and enjoyed the story even more; keep up the good work.

— John T. Morris, KN5REP/6

15 Bronxville, Road  
Bronxville 8, New York

Editor, *QST*:

I have read with considerable interest your description of the new QS-59 receiver in the April issue.

It may interest you to know that I have had in operation for some time a receiver of similar design, though far more advanced in its operating potentialities.

The feature that will be of most interest to your readers is the dual panoramic scanner that tells you not only where you've been, but where you're going.

I use a backward-forward heterodyne sweep operating in the upper light band. This, as you can see, is merely an extension of the upper-lower sideband principle, and any amateur worth his salt should be able to duplicate it from parts in his junk box.

I must concede that the "have been" position of the front-panel control is of no great value, except for hams with short memories. But the "coming events" position if

fabulous. Being forewarned is to be forearmed, and knowing whom you're going to work five minutes hence allows sufficient time to contrive an unlikely story to keep the QSO going.

— Bud Muhleman, W2ZQJ

316 East 9th Street  
Owensboro, Kentucky

Editor, *QST*:

Well, you've done it again, Congratulations!

Larson E. Rapp completely clobbered me — but I will say that this is the first time in six years. The job was so complete that I didn't catch on until, after completing the article, I looked in the masthead to see who "L.E.R." was! The auto-tuning and memory service device touch was just right; as I read it I thought: "How ridiculous — but some of these DX bugs really go for things like that." And the "around-the-world-echo" bit makes me groan in retrospect! The comment on the probable cost of \$40,000 puzzled me, but did not give the show away; I merely thought that it was an odd touch of facetiousness not exactly in keeping with *QST*.

You realize the full import of this confession, of course: If I had never heard of W1OU before I never would have caught on! In "Dragnet" terms, I never did recognize the m.o. — merely spotted the alias as a known criminal.

Touché.

— S. E. McCallum, K4URX

## CITIZENS SENSE

5532 East National  
Fresno 27, California

Editor, *QST*:

A letter from W2HQQ in March *QST* suggests that we should all drop everything and get on eleven meters.

Before everyone starts a mad rush for this inviting bit of spectrum, I hope there will be some serious thought and reading of the rules governing this new Citizens band.

This band was meant to be used by those who have need for occasional short-distance communication in the conduct of personal or business affairs. Although the rules do not specifically say so, it is very obvious that it was not meant to be a "CQ DX" band. Yet if you listen on that band you will hear quite a number citizens band licenses calling CQ, and who appear to be hams by the way they operate. Obviously, they have not read or else choose to ignore the warning on the back of the citizens band license which says: "Don't make unnecessary transmissions. Remember that Citizens radio communications are in a 'party line' system which requires cooperation of all users." If we want to call "CQ DX with the beam pointed southwest," let's do it next door on ten meters.

This, in my estimation, is a very serious situation. If it continues it could result in more strict rules for the now almost-unrestricted 27 Mc. band. I hope that *QST* and the ARRL can stop the stampede.

Hams getting on the eleven-meter band should do so as citizens and not as hams. I have my application in for a license for this service but I do not intend to call "CQ Baltimore" on it — for that I will go back to the ham bands.

— Howard L. Smith, W6COU

(See page 9 — Ed.)

## OUTSIDE LOOKING IN

10556 Wilkins Avenue  
West Los Angeles 24, California

Editor, *QST*:

For the past three years I have worked at the General Telephone Company of California at Santa Monica. Everyone of the 26 engineers I worked for was a "ham." In order to get a word in edgewise or to be able to converse sensibly without feeling like a "black sheep" the only thing left for me was to learn the code and become one of these people

(Continued on page 166)



# Operating News



F. E. HANDY, WIBDI, Communications Mgr.  
GEORGE HART, WINJM, Natl. Emerg. Coordinator  
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards  
LILLIAN M. SALTER, WIZJE, Administrative Aide  
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., Phone

**Nuclear Powered Communication (W8NPC).** A new "first" in our amateur bands was the 29.06-Mc. operation of W8NPC from Cleveland, Ohio, during the Atom Fair, Apr. 5-10, deriving its power exclusively from a four-pound battery of radioactive isotopes. W3VZD, W3AZY, K3ICG, W3MOW, W4BBL and K9LSO handled the transmitter, the latter using c.w. working out as far as KP4ACF (Apr. 10). W8NPC was heard by K5RXY (Texas) on a sked set up by W8BAH Apr. 8. Lots of voice work with local W8s was recorded and K8ABA relayed NPC directly to ARRL, the *Plain Dealer*, and others. As we get the story the 5-inch battery delivers 60 watts in the form of heat. Three watts at 2½ to 3 volts are obtainable from a thermocouple, this convertible to 24 v. using transistors. This gave the rig around 1-watt input, and an estimated ½-watt to W8NPC's 3-element beam.

**Field Organization Doings.** There are now 1009 Full Members in the average-sized Section of ARRL. The personnel of the typical section consists of one SCM and SEC, 25 Emergency Coordinators, two Route Managers, two Phone Activities Managers, 20 ORS, 15 OPS, 7 OBS, 6 OES, and 12 Official Observers. During '58, SCM elections were completed in 35 of the 73 ARRL Sections. In the balloting twenty new SCMs were named and 15 were re-elected for an-

other two-year term. The per cent return in SCM elections ran from 35% in Ohio to 68.2% in South Carolina. In the quarterly CD parties for all appointees there were new records in radio interchanges. W6YMD's score ran to 381,096 and W4DCQ (phone) 41,170. W4KFC made a new all-time high of 848 contacts (47-per-hour) in October and W4DCQ had the top for phone with 179 contacts in the January activity.

**June V.H.F. QSO Party to Determine Section Winners.** There's time, if you act promptly before June 13-14, to request the log forms for this activity from the ARRL Communications Department. The contest is between you and other v.h.f. operators in your area, for the Section Award. While the January "VHF SS" caters more to home stations, the June Party makes for a better chance to operate from some of the hilltops in one of the peak months for v.h.f. DX. New QSO records and ARRL sections worked are an inevitable result! See the full announcement elsewhere in this issue.

To take part in any ARRL test where you are working for a Section Certificate, it is short and quick to use the right name for the sections (complete list on page 6, each *QST*) as part of your exchange of information. In the v.h.f. party the names of sections exchanged must be receipted for by both operators before either may claim contact points (rule 2). In this month's v.h.f. test, work as many v.h.f. bands as you can. This helps both in the number of contacts and the multipliers (Sections).

**ARRL Field Day — June 27-28.** The League's FD from the very first has had that objective, to stress the testing of your emergency equipment. The Field Day has become a favorite club activity, also an operating contest between groups having the same size and number of transmitters, and a challenge to all concerned to improve equipment availabilities and operation and standings over what one has done previously! Basically every amateur can *prove his ability* to maintain communications when the chips are down by completing as much as *one* emergency-powered contact.

The rules for the ARRL Field Day are detailed elsewhere in this *QST*.

You can go out for the field test with a radio club and be assured of a top experience shared with a lot of other amateurs. Or you can go afield alone or with one other operator for another class of entry. To prove you can establish reliable communication from field locations under handicaps and organize as a team to do a real operating

## A.R.R.L. ACTIVITIES CALENDAR

June 3: CP Qualifying Run — W6OWP  
June 13-14: V.H.F. QSO Party  
June 17: CP Qualifying Run — W1AW  
June 27-28: Field Day  
July 2: CP Qualifying Run — W6OWP  
July 18-19: CD Party (c.w.)  
July 23: CP Qualifying Run — W1AW  
July 25-26: CD Party (phone)  
Aug. 5: CP Qualifying Run — W6OWP  
Aug. 21: CP Qualifying Run — W1AW  
Sept. 3: CP Qualifying Run — W6OWP  
Sept. 16: Frequency Measuring Test  
Sept. 19-20: V.H.F. QSO Party  
Sept. 21: CP Qualifying Run — W1AW  
Oct. 7: CP Qualifying Run — W6OWP  
Oct. 10-11: Simulated Emergency Test  
Oct. 17-18: CD Party (c.w.)  
Oct. 20: CP Qualifying Run — W1AW  
Oct. 24-25: CD Party (phone)  
Nov. 5: CP Qualifying Run — W6OWP  
Nov. 7-8, 14-15: Sweepstakes Contest  
Nov. 18: CP Qualifying Run — W1AW  
Dec. 2: CP Qualifying Run — W6OWP  
Dec. 17: CP Qualifying Run — W1AW

job is worth while. Don't forget the class for *mobile rig entries*, too. We hope that there will be very many reports of a full-fledged or even a brief test of mobile or portable work in the FD with individual completely-transportable equipments. We want constantly to encourage as many amateurs as possible to habitually use such small transmitters as are "portable" as regular station adjuncts to keep schedules and report into nets, keeping their operators part of the group who render more than casual communications service to the fraternity and the public. Here's to a successful workout in the FD. Have fun, and report your results.

—F. E. H.



This is summer (well, almost) and a lot of people will be doing a lot of traveling on a lot of busy roads. So let's talk about mobiling, and forgive us if we get personal for a while so we can describe some of our own mobile experiences and pleasures; not that they are extraordinary, but there is just a possibility that some of you have never considered some of these features.

To begin with, our mobile rig is nothing special. The transmitter runs almost 50 watts, the receiver covers all bands from broadcast through ten meters, the antenna is a quarter wave on ten, centerloaded for other bands. At the moment we have nothing on six or two and know we're losing out on some fun thereby. Probably a pretty typical mobile outfit. One thing we have done that not all mobileers do is put a keying jack in the transmitter. This we use quite often.

For example, since we come from Pennsylvania, there are about a dozen trips down there and back every year. Having another rabid amateur in the family helps, but a good friend would do just as well. W3NF and WINJM keep in touch during most of these trips — first on 80 or 40 meter c.w., then on ten phone as the distance narrows. C.w. contact is nearly always solid, regardless of the distance, even though signals are sometimes weak. Ten phone starts being effective at about 30 miles, and of course improves as the distance decreases. We'd feel greatly handicapped without these contacts during our travels. It enables the family to know where we are, how we are doing, our probable arrival time, weather conditions, road conditions, traffic conditions — and if they need something, we can conveniently stop and pick it up on the way. Even more important, if something should happen for which we would need assistance, they know just where we are. As the distance gets shorter, the women can get a head start on the female yakkity-yak that is always a promi-



The AREC of Alexandria, La., held its first meeting with officials on Mar. 16. Among those amateurs who attended, left to right in the photo, were K5EFS, W5GKT, K5SYD, W5YUT, K5EFO and K5SJL. Officials were pleasantly surprised at facilities which already exist.

nent part of these week ends. This sort of thing is so commonplace now that everybody in both families just takes it for granted and would sorely miss it.

On the trip to Chicago for the national convention two years ago we were on the air almost the whole way and back. Last year on the trip to Washington we took separate cars (W3NF and WINJM) and maintained contact all the way, arranging common stopover points for meals, an outdoor picnic, and keeping tabs on each other's exact location in case of trouble. When we got lost in Baltimore, a local amateur appeared on the frequency to direct us out of our difficulty. When we got close to Washington the convention station zeroed us in to the hotel and we made specific arrangements on when and where to meet. Seldom in sight of each other, we might as well have been riding in the same car.

So far, we have been lucky — no accidents, no flat tires, no troubles, only the routine stops for gasoline, food and rest. Now and then another station will appear on the frequency and we have chatted far and wide. But had any emergency arisen, we would have been in a position to help each other or help others.

It seems to us that with so much mobiling going on during the summer, a more concerted effort ought to be made to get together so that we can help each other when or if we get into difficulties, and so that we can help others that we might meet on the road. For example, it is not unusual to come across a bad accident which has just happened. We report such incidents in this column quite frequently, but the only time we hear about them is when a call for help gets results. We wonder how many such incidents occur in which an amateur calls frantically for assistance but is not answered? Probably plenty.

So let's do something about it, fellows. Let's do our mobiling on the national calling and emergency frequencies, and let's listen on those frequencies both on the road and at home. In this way, those of us on the road can keep in touch with fixed stations and with each other and those of us at home can be ready to jump in and assist if we are needed. Our statistics show that ten meters is still the favorite amateur mobile band, so let's keep 29,640 kc. jumping. Fixed tuned receivers are excellent for monitoring, and a squelch is a big help. On other bands, fix your mobile so it will operate on the national calling frequencies (see box for complete list) if it will not already do so, on whatever band or bands it works. If we'll all work toward this end our mobiling will be more fun and of greater value to everybody, including ourselves.

Amateurs in Delaware County, Ind., handled traffic for the Nickel Plate Railroad on Jan. 21, enabling the railroad to reroute and move four trains that otherwise could not have run because of storm conditions. W9GSY and W9DOK were contacted on the Indiana Phone Net by W9BGF in Paxton who was looking for a Muncie station who could contact the dispatcher in Muncie. While W9GSY handled

### NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

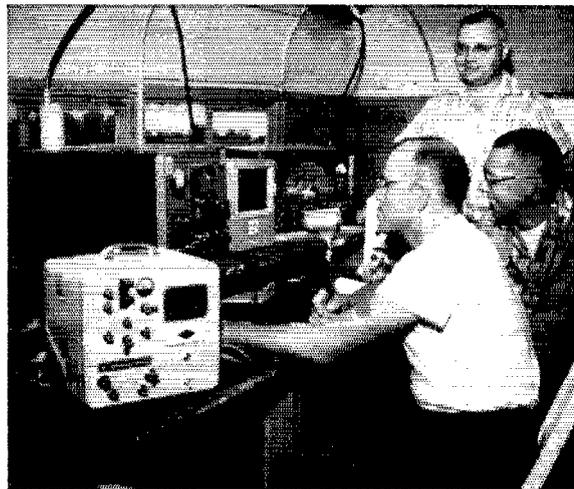
3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be vacated immediately to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: c.w. — 3535, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.



The communications bus of the Lincoln, Nebr., c.d. was used in a recent drill covering the entire county. Ten mobiles participated. The photo on the left shows the bus with some of the gang standing around. On the right is a shot inside the bus showing some of the new equipment installed, with WØKVM, KØHPT and WØFTR doing the operating.



some of the traffic via landline, W9DOK contacted W9NQB on six meters, who went to the dispatcher's office in his six meter mobile. There contact was made by radio, W9NQB to W9DOK on six, W9DOK to W9BGF on 75, and several messages were handled, allowing the trains to roll.

More on the January floods in Ohio: On Jan. 21, Southwestern Ohio was hit by heavy rains and winds which caused extensive flooding and damage. The Queen City Emergency Net was called upon to assist the Red Cross by providing communications where phone lines were down, W8VYL, net control station, was activated at 1700, and ten and six meters were active almost continuously until late the following day. The net was the only link into several areas. Mobiles were in operation in the Northside, Newtown and Loveland areas until communication was restored. Loveland was especially hard hit, and six meter mobiles were active in that area until late Jan. 22, with K8GYK acting as NCS. — W8JSP.

Newfoundland amateurs were of assistance on Feb. 16 when a severe snowstorm knocked out communication between Carbonear, Bell Island and St. John's. A station was set up at the General Hospital in St. John's by VO1FB and 3750 kc. was continuously monitored. Traffic was handled until late in the afternoon of Feb. 18, when communications facilities had returned to normal. Amateurs were alerted again on Feb. 19 as the snow turned into rain and hurricane-force winds, but no further emergency communication was required. VO1CZ gives the following list of amateurs who took part in the operation: VO1s AO FB BU BJ AK FD BY DN AI BD DT DP ER EZ CY DG CB AB CZ, K8JQO/VO1, W2ZRZ/VO1, KØHFB/VO1.

An extensive brush and grass fire near Oklahoma City on March 14 gave some of the local amateurs an opportunity to do their stuff. W5UGM first reported the situation over the air, and soon some of the mobiles were on the way to lend a hand. W5OQT went on the air as a fixed station, working with the mobiles for about five hours. The mobiles reported to the fire-fighting officials and were set to work watching the fire from various vantage points so that buildings and property in the direction the fire was taking could be protected. They also helped with control of traffic so that heavy equipment and fire fighters were not interfered with by sightseeing vehicles. Mobiles taking part included W5s UGM AZO UYQ and K5LDF. Fixed stations were W5OQT and W5DRE. — W5UYQ.

The St. Petersburg Amateur Radio Club handled communications for the annual St. Petersburg-Havana Yacht Race on Mar. 14 through 16. A station using club call

W4GAC/4 was set up at the St. Petersburg Yacht Club, and CO2UG/2 set up a station at the International Yacht Club in Havana. Regular schedules were made for the duration of the race. Reports compiled at the St. Petersburg end by members of the Race Committee, who kept an accurate check of the position and progress of the boats through reports from Coast Guard helicopters, patrol boats and other spotters, were relayed to CO2UG/2 from W4GAC/4. CO2UG/2 sent information on the arrival of the boats in Havana Harbor which was relayed to the Race Committee for compilation of reports and handicaps. The activity went off with hardly a hitch, with twelve amateurs taking part. All operation was on 40-meter phone.

Twenty-eight amateurs of the Cuyahoga County (Ohio) AREC took part in the annual Heart Fund drive on Heart Sunday, Feb. 22. Ten mobiles, with police officers riding shotgun, picked up \$160,000 at 40 collection stations. The center of attraction at collection headquarters was the amateur station setup, where both visitors and workers were able to follow the progress of the mobiles over the city streets and listen to the dispatching. Direct contact was maintained with police headquarters by means of a portable station in the police dispatcher's office. Two net controls were in the field to maintain reliable contact with the mobiles at all times. — W8AEU, EC Cuyahoga County, Ohio.

February reports were received from 27 SECs, representing 8987 AREC members. This is one more SEC report and over 2000 more AREC members than were accounted for in February of last year, this despite the fact that two SECs submitted no AREC membership totals with their reports.

**NATIONAL RTTY CALLING  
AND WORKING FREQUENCIES**

3620 kc.                      7140 kc.

These frequencies are employed throughout the  
United States by amateurs using radioteletype.

Shall we break 30 next month? Sections reporting: NYC-LI, Ga., Wyo., N. Dak., Mich., Mont., Minn., Colo., N. Mex., W. Mass., W. Va., N. C., W. N. Y., E. Bay, E. Fla., Maritime, Ind., San Joaquin Valley, S. Texas, Ala., Vt., Wash., Wis., R. I., Santa Clara Valley, Nevada, Ore.

## RACES News

An ice jam below Moline, Ill., caused backup flooding of the Rock River in Rock Island on Feb. 27, precipitating a civil defense alert in that city. Nets were activated on six and ten meters, W9OWN and W9RYU carried a six meter portable aboard an amphibious vehicle which was evacuating hundreds of people from areas of potential flooding. K9GIJ was also on hand, providing liaison on six meters from state police and sheriff's patrol cars. K9EUF patrolled the south of the river. W9ICZ was net control station at Rock Island with W9OWN as alternate.

Since most of the houses still had telephones, the amphibious vehicle would request NCS to call a particular house to find if the people therein wanted to be evacuated. K9s CHZ EXB and AKS were taking readings of the gauge on Rock River bridge and keeping headquarters informed. Other RACES operators assisting were W9s DGV JDD, K9s IDN HCW IYN and GLA. All are members of the Emergency Radio Communications Ass. — W9RYU.



The Albuquerque RACES group, having proved that their evacuation areas could be covered on ten meters, on Mar. 13 set out to prove that it could be covered on two. W5FAG set up at San Ysidro and K5HMIN at Bernardo. Contact was successfully made between the two stations, and 14 other stations were also contacted. The following morning W5LFH went to Moriarity, K5IVZ and K5CQH went to Bernardo and W5WNL and K5DJU went to Laguna. Adverse weather conditions hampered operations and forced the abandonment of prearranged schedules, but contact between all points was found to be possible and all points were audible and readable in Albuquerque. In some cases the distances involved reach over 70 miles. Tenelement vertical beams and eight to fifty watts output were used at most locations.

## TRAFFIC TOPICS

This month we're going to devote some space to the individual traffic handlers, to summarize the year 1958 as far as individual records are concerned. This is based entirely on the BPL, and in order to keep the number of points from becoming astronomical we have, for each year since the end of World War II, awarded each trafficker *BPL points* on the following basis: four points for "making" BPL, regardless of the traffic total, plus one point for each full hundred traffic counts in the monthly BPL total. Thus, if a station makes BPL with a total of 500, he gets four points for making BPL plus five points for his total, or a total of nine points. If he makes BPL with a total of 124 originations-plus-deliveries, he still gets the four points for making BPL, plus one point for his traffic count. Clear?

On that basis, W2KEB is the "traffic champ" for 1958, having accumulated 478 BPL points during the year. The issue was never in doubt, Georgie having sprung into the lead with her January total and stayed there throughout the year, far outdistancing her nearest competitor. This was the third straight year that W2KEB has been "traffic champ," having accumulated totals of 345 and 282 in 1957 and 1956 respectively to place tops during those years as well. In second place was W3CUL with 302 points. Mae has the distinction of having made BPL 14 times in 12 months by virtue of having made it twice from her Florida location in addition to making it every month from home.

The competition in the top ten is rough. The rest of the list includes W7BA (282), W0BDR (248), W0SCA (246), W8UPH (178), W0PZO (167), W0LGG (164), W0CPI (161) and W9NZZ (156). Space does not permit a further listing of the many fine traffic men (and gals) who ran up good-sized BPL point totals during the year, but we can list the top dog, and his BPL point total, for each call area: First, W1UEQ (144); Second, W2KEB (478); Third, W3CUL (302); Fourth, W4PL (119); Fifth, W5RCF (155); Sixth, W6GYH (140); Seventh, W7BA (282); Eighth, W8UPH (178); Ninth, W9NZZ (156); Tenth, W0BDR (248).

This isn't just a list of calls, *these are traffic handlers!* You don't place anywhere near the top of the BPL pile without handling heaps of traffic. All kudos to this list of traffic champions throughout the years we have kept these records: 1947, W4PL; 1948, W7CKT; 1949, W6CE; 1950,

W6CE; 1951, 1952, 1953 and 1954, W3CUL; 1955, W0BDR; 1956, 1957 and 1958, W2KEB.

Everyone who has made BPL since 1946 has an entry on our records, indicating his BPL point total, except that we don't include multiple-operator stations or stations not owned and operated by individuals. The old saw "Here today and gone tomorrow" does not apply to this list. If you make 25 or more BPL points over a five-year period you're on the list for keeps. Only if you have fewer than that and are inactive in BPL for five years do you lose them. Thus, this list grows. Since the very purpose of keeping these records is competitive, you may be interested to know who heads it. Actually, some of those who do haven't hit the BPL column for several years, and just ride on their past records; but what is also interesting is that seven of the high ten for 1958 are also among the high ten for 1947-58 inclusive — which shows that when you get into the habit of handling seeds of traffic, you don't get over it quickly, as a rule. Here are the first 25 in the "all time" (post-war) list: W3CUL (4070), W4PL (1779), W7BA (1556), W0SCA (1528), W0BDR (1434), W2KEB (1376), W3WIQ (1184), W0CPI (1066), W9NZZ (1057), W6KYV (1017), W9JUIJ (982), W7CZY (885), W9DO (819), W6GYH (816), W6CE (815), W0TQD (809), W7PGY (797), W0PZO (617), W2RUF (553), W4PJU (522), W2KPV (511), W0QXO (479), W0GAR (454), W0ZJO (453), W7IOQ (447). If some of these calls don't sound familiar, it's because you haven't been handling traffic for more than a few years.

We feel that organizational rather than individual achievements are the most important, but those "iron men" (and women) who plug away year after year in the traffic field certainly deserve some credit, for they add not a little to the stature of the radio amateur for his traffic-handling activities. Two of the above (W9NZZ and W3CUL) are Edison Award winners, and others have received commendations. So just this once, each year, let's take off our hats to the people who handle most of the traffic and who spend long hours at it each night at the expense of goodness knows what, or whom.

*Net Reports.* Slo Speed Net reports 31 sessions, in which net manager K0AGJ was NCS for 28. Hudson Traffic Net had 31 sessions, 216 check-ins, cleared 179 messages. North-Texas-Oklahoma Net handled 252 messages with 1087 check-ins. Transcontinental Phone Net reports 31 sessions and a traffic total of 3996.

*National Traffic System.* The Communications Manager's annual report to the Board of Directors says, in part: "No system is worthy of the name if information on it cannot be centralized, coordinated and evaluated." Your NTS is what it is to a great extent because of the fact that it has a central coordination and evaluation point — because information on it is made available at that point and for that purpose. Mind you, this is not the *only* requisite of system, but it is one of the several essential ones.

Some of our NTS people do not seem to subscribe to this — or if they do, they do not follow through on it. Actually, this is a mild gripe, because all in all NTS does very well in reporting. We thought those of you who are lax might want to know that you are holding up progress. We won't name names; it is not necessary. You know who you are, from net control stations up to and including the Transcontinental Corps. It takes you a couple of minutes and costs three or four cents. Can do? Funny thing, all surveys show that NTS is gaining strength and prestige every year, and yet we keep on griping at you guys. Guess that's because we want NTS to be better. Don't you?

The counting of traffic in nets is not quite the same as the counting of traffic handled by an individual station (see *Operating an Amateur Radio Station*, p. 12). The net traffic count is the number of message handlings completed during the net session. That is, a message transmitted by a net station and receipted for by another net station is counted *one* in that net's traffic total. There seems to be some misunderstanding about this, but what could be simpler? The individual station's traffic count has nothing to do with it. The net control station keeps the count and reports it at the end of each net session to the net manager, who totals it up for the month and reports it to headquarters. You do *not* count traffic that is not actually handled during the net session. You do *not* add up the individual net stations'

traffic totals. You do not count traffic that is reported but not handled in the net. If you have been doing this wrong, please correct it in future reports.

March reports:

Net	Ses-sions	Traffic	Rate	Aver-age	Repre-sentation (%)
EAN.....	28	1486	.980	53.1	98.8
CAN.....	31	1811	.856	42.2	100.0
PAN.....	31	1691	.813	54.5	100.0
1RN.....	31	755	.465	24.4	93.5 <sup>1</sup>
2RN.....	62	633	.425	10.2	97.4
3RN.....	62	576	.366	9.4	94.6
4RN.....	61	793	.358	13.0	68.9
RN5.....	62	1209	.487	19.5	93.4
RN6.....	62	1288	.508	20.8	93.5
SRN.....	55	263	.172	4.8	91.5
9RN.....	58	908	.467	15.6	82.3
TEN.....	89	1101	.509	12.4	63.9
ECN.....	40	141	.237	3.5	63.3
TWN.....	31	460	.269	14.8	76.1 <sup>1</sup>
Sections <sup>2</sup> ....	742	5343		7.2	
TCC Central	62 <sup>3</sup>	1161			

Summary....	1445	19119	EAN	12.4	EAN/PAN
Record.....	1450	20030	.980	13.9	100.0
Late Reports:					
SRN (Feb.)..	53	328	.212	6.2	86.2

<sup>1</sup> Regional net representation based on one session per night. Others are based on two or more sessions.

<sup>2</sup> Section nets reporting: S. Dak. 75 Meter, S. Dak. 40 Meter, S. Dak. CW; SCN (Calif.); CPN & CN (Conn.); BCEN (B.C.); FPTN & Gator (Fla.); TLCN (Iowa); Tenn. Section; SCN (S. C.); VN (Va.); WVN (W. Va.); SMN (Md.); KPN, EKPN, KYN (Ky.); AENP, AENO, AENT & AENB (Ala.); MJN, KMJ, MSPN, MSPN Noon (Minn.); Iowa 75 Phone.

<sup>3</sup> TCC functions reported, not counted as net sessions. Well, no records broken this month. One regional net and one TCC Area failed to report, and another TCC Area did not report its countable traffic. Section level reporting was low by comparison this month, too. Added together, they spelled the difference, even though there were some missing reports last March, too. Let's make up for this small deficit in future reports.

W8SCW points out that all EAN regions are 100% in attendance for the first three months of 1959 except ECN, which missed two sessions in March. W9DO says that the QRN is here; a CAN certificate has been awarded to W9DYG. W6PLG is back on the job on PAN, but has to take it easy; PAN started meeting at 2000 PST on April 26, when "daylight saving" (bah!) time went into effect. W2PHX submits his first report for 2RN and reports things going smoothly except for a sudden rash of people who want to be relieved of EAN liaison jobs. W3UE reports that 3RN is getting better representation from Pennsylvania and that credit for this is primarily due to the efforts of W3AXA in E. Pa. and W3KUN in W. Pa. North Carolina is now 100% in 4RN, the only section to hit all 4RN sessions in March. RN6 now meets at 1900 and 2100 PST in order to adjust to the new PAN schedule. W7GMC has resigned as RN7 manager. ECN is having the usual trouble with Maritime representation.

*Transcontinental Corps.* Our new TCC-Pacific manager is W6EOT, who made his first report for March activities. Cecil takes over this job from W6BPT at a time when things get tough on the transcontinental circuits, so give him all the support you can. On the TCC-Central front, W0BDR reports that one of our old stand-bys, W0SCA, is having eye trouble and is temporarily kaput. We hope to have Doc back with us soon.

March reports:

Area	Func-tions	(%) Successful	Traffic	Out-Of-Net Traffic
Central....	62	96.8	2330	1161
Pacific....	112	95.5	2576	....
Summary..	174	96.5	4906	1161

The TCC roster: Eastern Area (W3WG, Dir.) — W1s AW NJM TUW, W2VDT, K2s UTV SIL MES, F3s LXU COK WG, K4KNP, W9DO, Central Area (W0BDR, Dir.) — W0s LCX BDR LGG, Pacific Area (W6EOT, Dir.) —

W5DWB, W6s EOT HC ELQ, K6s DXX CPQ LVR HLR GID, W7s ZB VIU GMC BDU, K7CWV, W0KQD.

**BRASS POUNDERS LEAGUE**

Winners of BPL Certificates for March traffic:

Call	Orig.	Recd.	Ret.	Del.	Total
W2KEB.....	173	1586	1476	236	3471
W3CUL.....	252	1895	1097	273	3017
W0BDR.....	107	1404	1273	31	2815
W7BA.....	31	992	943	42	2013
K2UTV.....	192	666	633	33	1524
W9IA.....	52	720	710	6	1488
W0LGG.....	44	616	648	23	1331
K5FGF.....	1149	90	54	5	1278
W8UPH.....	21	555	510	42	1128
K2TEZ.....	265	416	120	211	1012
K2SIL.....	16	487	449	30	962
W0LCX.....	34	467	452	15	968
W5RCF.....	32	440	405	35	912
K1CIF.....	65	468	367	3	903
W9NZL.....	238	318	2	316	874
K1BCS.....	131	351	308	41	831
W9DO.....	18	391	41	368	818
W0CPL.....	2	405	369	36	812
W7PGY.....	36	392	352	29	809
K6YBV.....	78	381	332	14	805
W4PL.....	25	415	345	10	795
W6EOT.....	9	392	346	37	784
K4QLG.....	479	144	25	119	767
K0KBD.....	26	347	336	10	719
K6GK.....	30	280	220	180	710
K4ELG.....	24	326	284	36	670
W5SMK.....	28	313	309	4	654
K4VLD.....	33	311	304	4	652
W0BLL.....	1	321	314	5	641
K6DYE.....	4	299	308	4	615
W00ME.....	53	279	271	8	611
K50EA.....	52	265	228	36	581
KN9JU.....	27	28	160	126	571
W6GQY.....	124	173	191	80	568
W2RUF.....	24	321	95	125	565
K4JRH.....	25	281	218	37	561
W5CEZ.....	18	284	241	14	557
K0EVC.....	20	267	197	70	554
W0QDY.....	205	192	97	49	543
W9DYG.....	30	260	226	25	541
W1AWA.....	27	347	143	17	534
W9IDA.....	8	261	255	0	524
W9ZYK.....	18	246	175	77	516
W0KQD.....	75	231	182	14	510
W3UE.....	3	247	223	8	509
W9TT.....	55	232	131	86	504
W7ZB.....	10	249	238	6	503
Late Reports:					
K5FGF.....	316	95	34	27	972

**More-Than-One Operator Stations**

Call	Orig	Recd.	Ret.	Del.	Total
K5WSP.....	387	901	886	15	2189
W4PFC.....	21	537	526	11	1095
K4WCC.....	148	235	166	15	564
K5USA.....	48	38	41	12	556
KG1DT.....	153	180	49	128	510

**BPL for 100 or more originations-plus-deliveries**

K6GZ	292	K0LIN	124	W7VTU	104
W48HJ	279	W3TNN	121	WYBAZ	103
K3WBJ	208	W8DAE	116	W5HFN	101
K0DCW	178	K1CMS	113	K1JAD	101
W18MU	143	K4ZMT	112	K288X	101
W9ETM	134	W9KCN	110	Late Reports:	
K1ADH	128	K8LTK	110	K0DYG (Jan.)	116
W7YHS	124	K2VVL	110	W1HKA (Feb.)	100

**More-Than-One Operator Stations**

VE3NAR 209 VE3VHF 178

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K1CIF, K1JAD, K2QHR, W4GXR, K4KNP, K4UBR, K50EA, K6LVK, W9DYG, K9LXD.

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.

**CODE PROFICIENCY PROGRAM**

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying in from W1AW will be made June 17 at 2130 Eastern Daylight Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted June 3 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. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

<i>Date</i>	<i>Subject of Practice Text from April QST</i>
June 1:	<i>A Selective 21-Mc. Converter, p. 11</i>
June 5:	<i>The Audofit, p. 16</i>
June 9:	<i>C. W. Monitor for the Mobile, p. 18</i>
June 11:	<i>Coaxial Cable Attenuation, p. 20</i>
June 15:	<i>Turnstile for Two, p. 29</i>
June 18:	<i>Simulated Emergency Test — 1958, p. 48</i>
June 24:	<i>Portable and Mobile Rules, p. 54</i>
June 29:	<i>The QS-59 Communications Receiver, p. 67</i>

### ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

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

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

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

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

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

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

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

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

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

— F. E. Handy, Communications Manager

<i>Section</i>	<i>Closing Date</i>	<i>SCM</i>	<i>Present Term Ends</i>
Yukon*	June 10, 1959	W. R. Williamson	Mar. 17, 1949
West Indies	June 10, 1959	William Werner	Aug. 10, 1958
Nebraska	June 10, 1959	Charles E. McNeel	Apr. 15, 1959
Oregon	June 10, 1959	Hubert R. McNally	May 28, 1959
Mississippi	June 10, 1959	John Adrian Houston, sr.	May 29, 1959
Saskatchewan*	June 10, 1959	Lionel O'Byrne	June 10, 1959
Oklahoma	June 10, 1959	Richard L. Hawkins	Aug. 9, 1959
Maine	June 10, 1959	John Fearon	Aug. 9, 1959
Manitoba*	June 10, 1959	James A. Elliott	Aug. 9, 1959
Southern	June 10, 1959	Herbert C. Brooks	Aug. 26, 1959
New Jersey			
Alaska	June 10, 1959	Eugene N. Berato	Resigned
West Virginia	July 10, 1959	Albert H. Hix	Sept. 18, 1959

San Joaquin Valley	Aug. 11, 1959	Ralph Saroyan	Oct. 10, 1959
Indiana	Aug. 11, 1959	Arthur G. Evans	Oct. 14, 1959
East Bay	Aug. 11, 1959	B. W. Southwell	Oct. 14, 1959
San Diego	Aug. 11, 1959	Don Stansifer	Oct. 15, 1959
Utah	Aug. 11, 1959	Thomas H. Miller	Oct. 28, 1959

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

### 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.

Colorado	Carl L. Smith, W0BJW	Feb. 11, 1959
British Columbia	Peter M. McIntyre, VE7JT	Apr. 10, 1959
Michigan	Ralph P. Theureau, W8PX	Apr. 10, 1959
Wisconsin	George Wolda, W9KQB	May 12, 1959
Connecticut	Victor L. Crawford, W1TYQ	May 23, 1959
Eastern Pennsylvania	Allen R. Breiner, W3ZRQ	June 15, 1959

In the Maryland-Delaware-District of Columbia Section of the Atlantic Division, Mr. Arthur W. Plummer, W3EQK, Mr. Thomas B. Hedges, W3BKE, and Mr. George Knopf, W3YYB, were nominated. Mr. Plummer received 359 votes, Mr. Hedges received 267 votes and Mr. Knopf received 97 votes. Mr. Plummer's term of office began March 21, 1959.

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

One of the requirements for ARRL affiliation of bona fide amateur radio clubs is 51% membership in the League. When a club comes up with 100% membership, we think they deserve some special recognition. Accordingly, we present herewith the first 1959 list of such clubs, based on information submitted in the club annual questionnaire form.

As additional questionnaire forms are received indicating 100% ARRL membership, these clubs will be noted and included in an additional listing later this year. Clubs reporting favorable results of ARRL membership drives being conducted currently can also be included if they qualify. Each club listed below and in the subsequent listing will receive a special certificate recognition as a 100% ARRL club. This certificate will look good on the clubroom wall and makes a permanent record of the high standing of the society in its support of the League.

- Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.
- Amateur Radio Club of Savannah, Savannah, Ga.
- Amateur Radio Club of Selma, Selma, Ala.
- Amateur Radio Transmitting Society, Inc., Louisville, Ky.
- Batavia Amateur Radio Association, Batavia, N. Y.
- Central Illinois Radio Club, Bloomington, Ill.
- Central Kansas Radio Club, Inc., Salina, Kans.
- Chicago Radio Traffic Assn., Chicago, Ill.
- Chisholm Trail Amateur Radio Club, Inc., Duncan, Okla.
- Door County Amateur Radio Club, Sturgeon Bay, Wis.
- The DX Club, Lansdale, Pa.
- Electric City Radio Club, Great Falls, Mont.
- Fountain City Radio Club, Knoxville, Tenn.
- Harlo Radio Club, Harlowton, Mont.
- Helix Amateur Radio Club, El Cajon, Calif.\*
- Hi-Plains Amateur Radio Club, Plains, Kans.
- Kerrville Radio Club, Kerrville, Tex.
- Keystone Amateur Radio Club, Springtown, Pa.
- Lower Columbia Amateur Radio Association, Longview, Wash.
- Mason County Amateur Radio Club, Ludington, Mich.
- Maui Amateur Radio Club, Kahului, Maui, Hawaii
- Military and Amateur Radio Club of Ohio State University, Columbus, Ohio
- Montevideo Radio Club, Montevideo, Minn.\*
- Montgomery County Amateur Radio Emergency Corps, Inc., Hillsboro, Ill.
- The Old Dominion Amateur Radio Club, South Boston, Va.
- Orange Amateur Radio Club, Inc., Orange, Tex.
- Green City Emergency Net, Inc., Cincinnati, Ohio
- Rome Radio Club, Inc., Rome, N. Y.
- Sheridan Amateur Radio League, Sheridan, Wyo.

South Lyme Beer, Chowder and Propagation Society, South Lyme, Conn.  
 South St. Louis Amateur Radio Club, St. Louis, Mo.\*  
 State Line Radio Club of New York and New Jersey, Montvale, N. J.  
 Sussex County Amateur Radio Association, Newton, N. J.  
 Terry County Amateur Radio Club, Brownfield, Tex.  
 Totah Amateur Radio Club, Farmington, N. Mex.  
 Vanderburgh Amateur Radio Emergency Service, Princeton, Ind.  
 Victor Valley Amateur Radio Club, Victorville, Calif.  
 West Essex Amateur Radio Society, W. Caldwell, N. J.  
 York Road Radio Club, Inc., Elkins Park, Pa.

\* Additions to 1958 Honor Roll (1958 questionnaire received too late for December listing).

### CLUB COUNCILS AND FEDERATIONS

Affiliated Council of Amateur Radio Clubs, Inc., Lyman Rinker, W7AZD, Secy., 3734 N.E. 66th Ave., Portland 13, Ore.

Chicago Area Radio Club Council, Inc., Leo Knoelke, K9GTS, Secy., 631 Ferdinand, Forest Park, Ill.

Indiana Radio Club Council, Inc., Fred Sawyer, W9FJI, Secy., 526 South Gibson, Princeton, Ind.

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids, Mich.

Ohio Council of Amateur Radio Clubs, Karl H. Kanalz, W8THX, Secy., 225 Tibet Rd., Columbus, Ohio.

San Diego Council of Amateur Radio Organizations, Inc., Patricia J. Muelheim, W6GGX, Secy., 4275 Del Mar Ave., San Diego 7, Calif.

### YOUR NET DIRECTORY

Compiling the net directory is a big job each year, especially if it is to hit distribution early enough in the fall to be of real use. Want to help? Here's how:

1) Watch for full details in Sept. *QST*, then get your net registered *right away*. August 1 is the nominal date to begin re-registration, but the first *QST* net list is in the November issue (deadline, Sept. 15).

2) Include *all* the dope we ask for, and give it in just the form requested. This means reading the instructions carefully. Using the regular card form (CD-85) is a big help and makes your job easier, too.

3) It helps to designate one person to register the net, so we won't get a flock of registrations for each net, each one reading a little different; this wastes our time and causes delays in getting the directory printed up.

4) Inform us promptly of any changes or corrections.

5) Register your net separately from other correspondence. We can't promise to dig net info out of bulletins, SCM reports or other material.

If you'll help in the above ways, we're going to make a superhuman effort, this year, to get the printed net directory in circulation by Dec. 1.

### HIGH SPEED CODE PRACTICE

Code practice at speeds of 15, 25, 35, 45 and 55 w.p.m. is continuing on 7120 kc. each Sunday at 2030 EST (0130 GMT), sponsored by the Connecticut Wireless Assn., Inc. WINJM is primary station, but during summer months other stations may be used. Also, although 7120 kc. is the primary frequency, other frequencies and other bands may be used if facilities are available any particular Sunday evening. So, listen on 7120 kc. starting at 2015 EST (0115 GMT) for complete info on what stations are transmitting and on what frequencies. Text at 15 and sometimes at 25 is mixed numerals and letters from tube tables. Text at higher speeds is plain language. Usually practice starts with the lower speeds, but sometimes the procedure is reversed, starting at 55 w.p.m. instead of 15.

The next C.W.A.-sponsored high speed code test is scheduled for Sept. 13, same time and same frequency. Speeds for that will be 40, 45, 50 and 55 w.p.m. Better start practicing *now*, OM, if you want to win that high speed certificate in the fall.

### WIAW OPERATING NOTE

The complete summer schedule of the ARRL Headquarters station appeared on pp. 102-103 of last month's *QST*. See that issue for information on when to visit WIAW, have a QSO, or copy the various bulletin transmissions that are made daily on phone and c.w.



John Rafferty, W3GGH, was honored in his 50th Year of amateur radio at the annual dinner of the Bucks County Amateur Radio Club of Bristol, Pa. Director Crossley is here shown making the award of his Old Timers' Certificate, club president W3JFI and XYL in the foreground.

### Briefs

The Golden Triangle Amateur Radio Club has started a radio chess net. To receive rules and schedule, send 25¢ to GTARC care of YMWH, 315 South Bellefield Avenue, Pittsburgh, Penna.

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Coinciding with Oregon's 100th year as a state, the Astoria Amateur Radio Club is sponsoring a contest requiring 100 contacts with different Oregon hams during the year 1959. If interested, write for details to R. T. Carruthers, jr. KN7HDB, P. O. Box 1231, Warrenton, Ore.

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Our prediction concerning a possible U.S.S.R. World Wide Telegraphy Contest (p. 10, last month) was right as rain, for complete rules were received from Central Radio Club on April 27. On that date W1AW began transmitting special bulletin number 494, this carrying complete details. The contest ran from 2100 May 9 through 0900 May 10, Greenwich Mean Times, and logs were due at Box 101, Moscow, right afterwards.

Also on the foreign contest front, OH2XK announces that SRAL, the Finnish IARU Society, will sponsor a Scandinavian Activity Contest September 19-20 and 26-27. Watch *How's DX?* for the dope.

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Processing of the 1959 ARRL V.H.F. Sweepstakes Contest has been slowed by logs from which calls, sections, score data, and other information required by the rules was omitted. Nevertheless, final results on the January 10-11 activity are tentatively scheduled for July *QST*. Stand by, please.

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Final standings on the February 13 Frequency Measuring test are also coming up in next month's issue.

### DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Roncador Cay & Serrana Bank. U. S. controlled territory located approximately 200 miles east of Puerto Cabezas, Nicaragua, this addition is made by virtue of points 1, 2 and 3 as explained in May 1955 *QST*, page 88.

DXCC credit will be given starting August 1, 1959 for creditable confirmations dated on or after November 15, 1945. This is to permit foreign amateurs to start receiving credit at the same time as those in the U. S. A. Confirma-

tions received prior to August 1, 1959 for this country will be returned without credit.

Reference is made to previous announcements in July, 1958, and January, 1959, *DXCC Notes* concerning DXCC

credit for confirmations from ZLIABZ. The earlier decision has been modified. Consequently, ZLIABZ confirmations which show 3.5-Mc. to 3.6-Mc. contact, regardless of date, will be acceptable for DXCC crediting.

## DX CENTURY CLUB AWARDS

### HONOR ROLL

W1FH.....294	G3AAM.....289	W6GFE.....287
W6AM.....294	W2AGW.....289	W8KT.....287
ZL2CX.....290	W6SYG.....289	W2BK.....287
W8HWG.....293	W6CUI.....288	W6MX.....286
PY2CK.....292	ZL1HY.....288	W3BE8.....286
W3HGD.....292	G2PL.....288	W4DMD.....286
KV4AA.....291	W9YFV.....287	W8KDP.....286
W9NDA.....291	W8DZZ.....287	W6ADP.....286
W8JN.....290	W1ME.....287	W7AMX.....285
W8BR.A.....290	W2QJ.....287	W6EBG.....285
W3JNN.....289	W9RBL.....287	W7GUV.....285
W5ASG.....289		W5ADZ.....285

### Radiotelephone

PY2CK.....292	VQ4ERR.....279	W8KML.....274
W8GZ.....284	W3JNN.....279	W6YV.....273
W1FH.....282	W8BF.....279	W6AM.....272
W8HWG.....282	ZL1HY.....277	W9NDA.....272
Z86BW.....282	W9RBL.....275	CX2CO.....270

From March 1, to April 1, 1959 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARL Communications Department to the amateurs listed below.

### NEW MEMBERS

W6OSU.....171	W3ZHQ.....104	W7BGG.....101
VE2II.....169	W5OJL.....104	W8HM.....101
W5BRR.....159	K6CQE.....104	W9ETN.....101
IJKDB.....156	G3HQX.....104	K9KDI.....101
DI3WA.....134	OH3TY.....104	FA1PD.....101
SM7BY.....115	SM5AWJ.....104	G2AMV.....101
W2KHT.....114	W7RQL.....104	G3AHE.....101
K8LFY.....112	VS1BB.....104	G8DI.....101
OH3TT.....112	4X4KK.....104	KM6BL.....101
W6TWT.....111	K2UKQ.....103	K0IMP.....101
SM5NG.....111	W6JNX.....103	W1Y3E.....100
K2CQP.....110	W6NLL.....103	W2PFC.....100
W3GAZ.....110	H31HL.....103	W3HQO.....100
W7EMY.....109	H21LD.....103	K5CSA.....100
W8ESG.....108	W1YZL.....102	K5IZM.....100
G2AOL.....108	DL3BE.....102	K5JZY.....100
W7QNL.....107	ZS6IW.....102	W6WLO.....100
W9GVZ.....107	W6NLD.....102	W2PFC.....100
W9LJ.....107	W3AHP.....101	G3GMY.....100
OK1PD.....105	W4KPK.....101	KX6ZB.....100
HA6UF.....105	K4ICK.....101	OK2FK.....100
W3VDV.....104	W7ABO.....101	PY3XE.....100

### Radiotelephone

PA0FX.....126	W4VZU.....103	W1LY.....100
W2YOG.....124	W4BZY.....102	W1PCQ.....100
LA4HF.....121	PD7D.....102	W1RFB.....100
ZL1A.....116	VE3RE.....102	K4JQR.....100
K2EWB.....114	W8LJZ.....101	W4ASG.....100
W1VRK.....104	W6INL.....101	K9GFV.....100
CE3JE.....104	W6JWL.....101	G3JCO.....100
W4MS.....103	SM5KG.....101	VE1ADE.....100

### ENDORSEMENTS

W4TM.....282	W6TXL.....253	W2CWK.....280
W2QHH.....280	W8QJR.....253	W3IMV.....280
W4DQH.....280	W2BRV.....252	W6KBU.....280
W8UAS.....280	W2DEC.....252	W6NHA.....280
W9HUZ.....280	G3DO.....252	W8VDJ.....280
W9KOK.....280	W1MV.....251	W8BCL.....280
CE3AG.....280	W6NGA.....251	C86BX.....287
W6LVH.....277	W9QDZ.....251	W4AZK.....286
W7EZA.....273	W6BEST.....251	W5LDS.....286
W22D.....271	W4AAU.....250	K6ENL.....286
W3EVW.....271	W6NW.....250	W1ICP.....284
W5KC.....271	W9UXO.....250	W6DRP.....284
W6LDD.....271	W9WHM.....250	W3RNP.....282
W6QVZ.....271	W2ZGB.....249	W6RFB.....282
W8TMA.....270	W6CLB.....249	W8MDE.....282
H89A.....270	W4CFD.....243	W4BQY.....282
W0DAE.....269	W2GVZ.....241	K4LNM.....282
W7ENW.....268	W5OG8.....241	W5LGG.....282
W9AMU.....266	W6ID.....241	W8UIG.....282
W9DU.....266	W6DLK.....241	W6RBL.....281
W4QCW.....265	W2BR8.....240	W7GHR.....281
W4HA.....264	K2OEA.....240	PA0FX.....281
W6NTA.....264	W2YTH.....240	W1TX.....280
W6LV.....261	W4CYY.....240	W2MUM.....280
W6TYQ.....261	W6CAE.....240	W28SC.....280
W2CNT.....260	W6OMF.....240	Z14H.....280
K2GMO.....260	W1FZ.....235	W6SQP.....280
K6ENX.....260	W5FXN.....235	W6ZVJ.....280
W8SYC.....260	W7HKT.....234	W7AUS.....280
DI7AA.....260	W6RFB.....234	W8YCR.....218
W4EPA.....259	W3WGH.....233	ON4DM.....217
W8KPL.....256	W29UC.....232	W8HJA.....280
W1ZW.....256	W9SFP.....232	W7BGH.....216
W4GXB.....255	W6ANF.....232	W6NGG.....215
W8PUD.....255	K16PM.....231	W9DYG.....214
W9YSX.....255	SM7OY.....231	W1NLM.....213
W5UX.....264	ZL2EP.....231	W2DSU.....211

W6PLK.....211	W1008.....171	VE7CE.....133
TG9AD.....211	W9HQF.....171	W6CBE.....131
W1RGA.....210	W1AW.....170	W8VOV.....131
W2ESO.....210	W2AXR.....170	VE7EH.....131
W2HTL.....210	W3AYD.....170	W1C8C.....130
P46TAU.....210	W6GSL.....170	W1FGA.....130
V3E8S.....210	FQ8AP.....170	R2MCR.....130
ZL3GU.....210	IS1FIC.....170	K2SHZ.....130
W9KA.....204	W8JSU.....166	K2UPD.....130
W9RQM.....202	I1UA.....164	K2VUI.....130
W9WFS.....202	K9RCO.....163	W9FYM.....130
K4GFE.....201	W60FP.....162	W6SLB.....130
K2JG.....201	K2JGG.....161	Q13AB.....130
W5DA.....200	W9WHY.....161	SM5KG.....130
W8WFB.....200	4X4CJ.....161	G2AFQ.....127
W9ROU.....200	VE2WA.....160	W5OVE.....126
W9MLY.....200	V82YA.....160	W4JJL.....125
KR6AC.....200	V85HB.....160	W9TFA.....125
V33PK.....200	W1EFPQ.....158	K2YOR.....124
VE7VC.....200	W5BLA.....155	W4QCJ.....124
W2AYO.....199	W8WB.....155	W2KIR.....123
W9QNO.....196	W8YCP.....155	W3HTF.....123
W8WT.....192	VE6JR.....155	K4QIJ.....123
W9PQA.....192	W2PTD.....154	W10HA.....121
W9YAN.....191	W1ACB.....153	W4JCB.....121
W2BUI.....191	OH2LX.....153	W9QPL.....121
SM5BCE.....191	W1JTD.....152	K4DKE.....120
VE3DKY.....191	W1RWS.....152	K5BDO.....120
K2LWR.....190	W6FLT.....152	W6JH.....120
W2PZI.....190	W2ZY.....151	W10HA.....120
W3DEK.....190	K4DQI.....151	W91WX.....120
W3MJP.....190	G3DQC.....151	W0VFE.....120
W3MLW.....190	ZL31A.....151	CR7BN.....120
K4HFS.....190	W10OA.....150	G3KZI.....120
W5DA.....190	W3MQC.....150	K4QMR.....119
W9PQU.....190	W9GVF.....150	W6FBT.....116
W3GQ.....189	G3GIC.....150	W7PFC.....116
W1ZDP.....187	VE3EO.....150	W4AMC.....114
W3AOH.....184	W3KHU.....146	K51TX.....113
W2QKJ.....182	W38KQ.....141	W2WMG.....112
W6MUF.....182	W91QF.....141	K61NS.....112
W1QMM.....181	DJ3KR.....141	SP5BH.....111
W4EJ.....181	W4YHF.....140	W8HJH.....111
W5PM.....181	W5AUJ.....140	K0ESH.....111
W6RAN.....181	K6KII.....140	W2BAC.....110
W9NN.....181	W6MUM.....140	K4QMR.....110
W6PNN.....181	W7YOA.....140	W4UFC.....110
W0VYK.....181	W81BX.....140	K68JH.....110
W1Y5F.....181	W9PTN.....140	K88JH.....110
W9ALI.....180	W91SV.....140	W7CMO.....110
W9GFF.....180	SM5LS.....140	W71AM.....110
W9HX.....180	VE2DR.....140	W7PJK.....110
W2ROM.....178	W9VZP.....138	W7RYS.....110
W2ROM.....178	W6KXG.....135	W7PFC.....110
ON4MS.....177	K6TXA.....135	W9GHK.....110
W9OTS.....173	W3MSR.....134	W9VHZ.....110
W6ZMX.....172	W6CY.....133	K0ITF.....110
PY5UG.....172	W8TQY.....133	KH6EQ.....110

### Radiotelephone

W8QJR.....251	CE3DY.....186	ON4MS.....156
W8UAS.....244	W4CFD.....182	W5JCY.....151
W3GHD.....240	W5GNG.....182	W8MNS.....150
CO2BK.....238	W1EZF.....181	W3AOH.....146
T12HE.....236	W1DCE.....180	W3CQ.....144
W5KBU.....230	W7EMP.....180	W1008.....142
G3DO.....230	W8PUD.....180	OE3ME.....142
HB9J.....223	G3BID.....180	W2QKJ.....141
W8JN.....221	W8TMA.....177	MP4HBW.....141
W5ASG.....220	W8BQC.....174	W4QCW.....138
Z11KG.....220	W8JNM.....173	W1YH.....134
W5YLL.....217	W0HP.....170	W3WGH.....133
W2WZ.....216	W0QVZ.....170	G51N.....132
VE3QA.....216	FA2CB.....170	W0MLY.....131
W4TO.....213	ON4YI.....170	W1BAN.....130
W4RSP.....210	W6FUB.....167	DL6PC.....130
TG9AD.....210	W8BFB.....164	G2AFQ.....127
W4EFE.....208	K61AS.....162	W2DSU.....125
ON4DM.....206	I1UA.....161	K5FEA.....124
T12LA.....203	K6FVR.....160	W3FCN.....123
W9JF.....201	W9PQA.....160	CE3AG.....117
W2ZX.....201	DL7AA.....158	W2EGC.....113
W8CLB.....201	W2D8C.....156	VE5VJ.....113
CR6LE.....194		W10HA.....111

### U. S.-Canada Area and Continental Leaders

W4TO.....283	VE2WW.....240	VE7ZM.....269
W9ELA.....277	VE3DF.....230	VE5AA.....195
K11A.....262	VE4XO.....180	VO1DX.....211
VE1EP.....220	VE5JV.....173	4X4DK.....276
VE1PQ.....220	VE6NX.....241	Z86BW.....282

### Radiotelephone

W2BXA.....249	W0AIV.....233	VE5RU.....156
W4HA.....241	KL7AFR.....190	VE8NX.....132
W4DQH.....241	VE1NH.....122	VE7ZM.....241
W5BGP.....241	VE2WW.....176	G2PL.....260
W7PHO.....242	VE3FK.....224	4X4DK.....268
	VE4RP.....162	

• 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. Mesrov, W3JNQ—RM: AXA, PAM: TEJ. The PFN meets every night Mon. through Fri. at 1800 on 3850 kc. E. Pa. meets every night Mon. through Fri. at 1830 on 3610 kc. DVB resigned as SEC and KFI resigned as EC for Lancaster Co. DJW has been using a tape recorder for his OBS skets. GYP caught the measles during the c.w. DX contest. New officers of the LRTS are MZL, pres.; ATW, vice-pres.; IYF, treas.; OY, secy. Officers of the newly-formed Elizabethtown ARS are SOM, pres.; MFV, vice-pres.; K3EJAI, secy.; UOU, treas. The Delaware Valley ARC conducts code and theory classes under the direction of President UZO and Treasurer APD. ADE has a new HQ-160. UIU competed in YL-OM Contest. K3AHT attended the ESN Convention and has a 35-w.p.m. sticker. JPV made WAS. EU has an option to buy a 32-acre antenna farm. K3ANU was in the YL-OM Contest. FKE was QRT because of the flu. WHK attended the ESN Convention also and handles his traffic on holidays only. CUL has a sked with Greenland, which has best 100 per cent. date, but took time off from traffic to compete in the YL-OM Contest. NF has a new 600-watt p.p. 813 final. FCI is waiting to enter college in September and plans to operate from Beach Haven again for 2 meters and hopes to have it ready for the June V.H.F. Party to operate from Vermont. K3DZN has a new 40-meter dipole. CMN still is collecting coins while trying to debug his rig. KJJ reports organization of a new club in the Tamaqua Area. K3DZB curtailed his QO work because of school. EAN has worked about 115 USSR stations this year. MGP received a W-Conn Award. HNK is moving to Philadelphia. The Carbon Co. RACES Net meets Mon. and Thurs. at 2000 on 145.380 Mc., according to BNR. K3ALD made DXCC. BES rolled up 800 contacts in the c.w. DX Test with a new Mosley tri-band beam. His first QSO with a DSB 100 was with Gen. Hap Arnold. PLS made WAS with a Mississippi card. JGW added a 4th harmonic to his family—a YL. YA was guest speaker at the Bucks County ARC Banquet. Traffic: (Mst) W3CUL 3017, IVS 168, K3AHT 125, ANU 110, W3ZRQ 105, K3ANS 81, ASH 81, W3WIF 77, ZLP 68, WHK 61, VR 52, K3BKT 46, W3BFF 44, BUR 36, FKE 36, TEJ 34, UIU 29, HNK 28, K3DFS 22, W3MDM 22, NF 19, K3CVH 15, DZB 12, DZN 12, ALD 9, W3DHA 8, OUV 7, PDJ 7, K3AFW 6, W3NQB 6, ADE 4, AMC 4, GIU 4, ELI 3, FCI 3, BES 2. (Feb.) W3WHK 25, K3GTZ 1.

**MARYLAND-DELAWARE-DISTRICT OF COLOMBIA—SCM,** Arthur W. Plummer, W3EQK—Asst. SCM Delaware: Ray DeCourcelle. 3DQZ. SEC: PKC. YVB is no longer SEC, so contact PKC on SEC matters. Section nets: MDD 3650 kc. M-S 1915; ALEPN 3820 kc.; 1-WF 1800, SS 1300; Del FN 3005 kc. Sat. 1830; Md. 6-Meter EN 50.2 Wed. 2100; BEPN 3825 kc. MWF 1830, SS 1330. Present RCARA officers are MKS, pres.; PZZ, 1st vice-pres.; MUA, 2nd vice-pres.; CJM, secy.; FWP, treas. BUD has joined Army MARS. CN is now mobile Elmco-wise and not operating from home too much. MSR reports a new cubical quad tri-band up on the tower that blew over in January. CDQ still is ragchewing her way along. TN made his highest BPL total yet—174! JME reports the BCEN meets at 2130 the 3rd Mon. of each month on 29.25 Mc. EKO reports he will be on all c.w. bands with a kw. rig. CBJ soon will be a new AREC member. GXP is the call of the Fort Howard Amateur Radio Club at Fort Howard Veterans' Hospital and the club soon will be on the air with a KWS-1 and a BC-610

converted to s.s.b. BVL reports that B&ORR certificate No. 3 went to FFO. The B&ORRARC now has a net that meets Wed. at 0800 on 3925 kc. JST was guest speaker at the WAYLARC March meeting. At the April meeting held at the home of RXJ the guest speaker was 4TVT, who spoke on Trinidad. AKB reports working seven days a week but did manage to get on the air for the LO Party and worked around the country on 80-meter c.w. in about two hours. RXJ learned a lot about gold- and uranium-mining from a ZS6 recently. UTR reports that K0LVV plans to move from Iowa to Dallas this summer. TSC has qualified for WAC on 20- and 40-meter c.w. RV, of the Air Force, is awaiting a KL7 call. ZA still is in Saigon and awaiting a new call. He will return in June for three months, then will go back to XV5-Land for two more years. DHQ should be in operation soon with RTTY. ECP has been visiting Down South. MKS was guest speaker at the newly-formed Free State Amateur Radio Club at Fort George G. Meade. K3BEG, of which NNM is pres. LUL has great plans for this year's Field Day for the CARC. K3DNU is having a ball on s.s.b. IRA worked Canton Island on 20-meter s.s.b. Chris is the reason for the big smile and the cigars at YVO's. BDY is the proud papa of Gosnet Twins, and incidentally this is the first time Al has made this column since 1930! CAY is waiting for his 75S-1 and 32S-1. YFF will be entering medical school in September. JCL is the proud owner of a KW1 converted to s.s.b. Incidentally, fellows, activity in s.s.b. in Baltimore is booming. PRL is now pres. of the NFARC and YVB is vice-pres. Lots of the boys are readying their mobiles for spring and summer operation. Hot coffee and buns are always on tap at JCL's place, which has become a place to congregate and chew the rag, especially on Saturdays. A transmitter and receiver are there for those who wish to operate. EQK wishes to take this opportunity to thank all those who voted for him as SCM for the Md.-Del.-D.C. section for the next two years and will do his level best to serve you promptly and satisfactorily. Thanks again all of you. Traffic: W3UE 509, K3WBJ 282, W3TN 174, BUD 156, PQ 78, AHQ 67, QCW 41, CN 32, WSE 5.

**SOUTHERN NEW JERSEY—SCM,** Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW, W2YRW and W2ZL. Endorsement this month: W2BEI, Audubon, as ORS and OPS. We hear two new NJN members this month—K2PGB Hopewell and K2LEM in Trenton. K2OOK's air time is limited because of college. W2ZI reports the following newly-elected DVRA officers: W2JBF, pres.; W2BZJ, secy.; W2UAE, vice-pres.; and W2WOA, treas. K2PTJ reports increasing activity on the Del. Valley 2-Meter Traffic Net. K2CPR, Pennsauken, has received the following awards: H-22, WAGM, WAZ and 5-band WAS; he also has a DXCC total of 248/238. K2SOW is attending college at Exeter, N. H. W2HDW, Somerdale, is rebuilding and will be back on NJN soon. Congrats to W2RXL, NJN manager, on another fine net bulletin. The net needs more QNs from the southern counties. Burlington Co. Radio Club members recently visited the new county RACES Headquarters station in Mt. Holly. W2DMR, Palmyra, and ZL3JO continue their nightly 10-meter sked. W2OUY is being transferred to RCA, Somerville. Ken will be missed at SJRA. W2QBII, *Harmonics* editor, recently made a trip to California and visited the North Hills Radio Club. The Gloucester Co. Radio Club membership is increasing. Contact K2JJC for information on the meeting place and date. K2CPR, W2KFC and K2YBN, Official Observers, are doing fine work. K2HOD, Delanco, continues to add support to his efforts to obtain favorable legislation to obtain call letters on our auto tags. Traffic: (Mar.) W2RG 172, W2BZJ 138, K2JGU 133, K2OOK 30, W2ZI 21, K2PTJ 20, K2CPR 7, W2BEI 4, K2SOW 4. (Feb.) K2OOK 5.

**WESTERN NEW YORK—SCM,** Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVT and W2LXE (v.h.f.). NYS c.w. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800. NYSTEPEN on 3925 kc. at 1800, NYS C.A. on 3509.5 and 3993 kc. at 0900 Sun. TCPN 2nd call area on 3970 kc. at 1900. IPN on 3980 kc. at 1600. We are pleased to announce appointment of K2EED as EC for Warren and Washington Co. and K2PII as EC for Essex Co. K2LGIJ was endorsed as OO. Congratulations to K2SIL, W2RUF and K2SSX on making the RPL in March. An NYS c.w. certificate was earned by K2IIVN. The Six-Meter Mobile Assn. of W.N.Y. (Buffalo) has announced the following new mem-

# PACIFIC NET RE-ESTABLISHED

*Another in a series of informational articles presented by The Hallicrafters Company as a service to amateur radio.*

**T**HE Pacific Traffic Net was re-established a few months ago for the purpose of passing traffic to and from the states. This enables members of our armed services and others presently at the overseas commands to talk to or to pass messages to their loved ones, friends or to mend important personal problems at home.

**T**HE Pacific Net meets seven nights weekly at 0700 GMT on 14,240, with KX6BT on Eniwetok Island acting as present Net Control Station. The Net is represented by Hawaii, Guam, Caroline Islands, Kwajalein, Midway, Johnston, Okinawa and others who serve many thousands of square miles in the Pacific. The Net passes traffic and accepts traffic for necessary delivery from any station to any address in the Pacific area.

**T**HE Net is capable of handling considerably more traffic than it is currently accommodating, and we would like to invite hams everywhere to take full advantage of its facilities. Any station with traffic for the Pacific area may pass this traffic on to us for necessary action and delivery accordingly. The Net welcomes these messages from any and all stations.

## **ANNOUNCING — HALLICRAFTERS SSB—VHF CONTEST WINNERS!**

Congratulations to the following named hams for submitting the winning entries in Hallicrafters' SSB-VHF Contest:

J. W. Brantner, W8BCK  
FPM-200

Donald W. Richards, W7UPF  
HT-33A

Robert W. Dorn, W8SQK  
HT-32A

Jack C. Baker, KL7SC-W7SXT  
SR-34

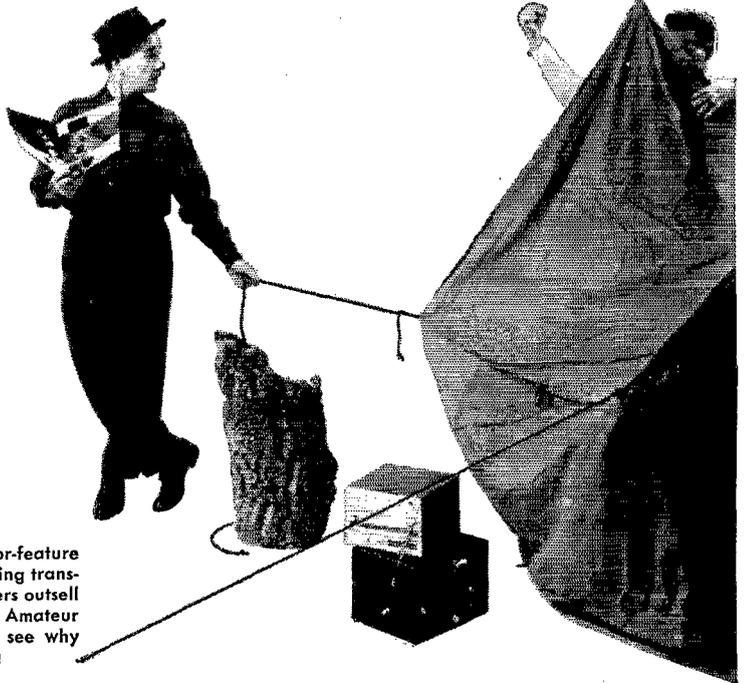
Wendall S. Johnson, KH6CZC  
SX-101

**T**HE Net does not discourage those who desire contact with us only for the purpose of obtaining a new country, although we request that these stations stand by until the Net has handled its traffic. The Net will be more than happy to stand by for DX Hunting stations when the Net has completed its traffic. The Net would appreciate comments, information or calls of any stations in the states interested in handling traffic for the Pacific Net, or from those of you who would like to pass traffic to us for handling on a regular basis. All correspondence may be forwarded to L. F. McCullough, DET COMBARPAC, Navy #3080, FPO San Francisco for necessary action.

L. F. McCULLOUGH, KM6BL  
for *The Pacific Traffic Net*

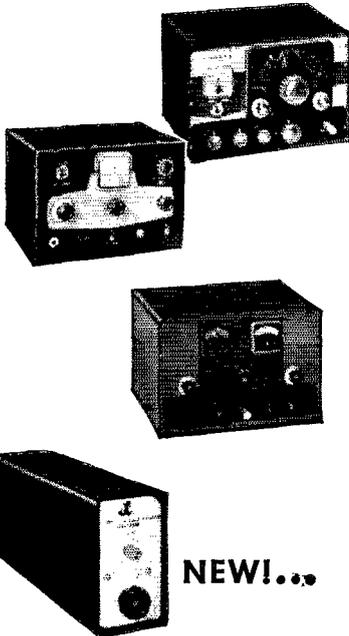
*Buel Gallagher Jr.*    *W. J. Hallegan* W9AC    for **hallicrafters**

WHETHER THEY OPERATE PORTABLE . . . OR FROM THE HOME QTH . . .



**NEW CATALOG!**

Yes, dollar-for-dollar and feature-for-feature you'll get more of everything in a Viking transmitter . . . that's why Viking transmitters outsell all others! Write for your free Viking Amateur Equipment Catalog and you'll soon see why your best transmitter buy is a Viking!



**NEW!...**

**"NAVIGATOR" TRANSMITTER/EXCITER**

More than a novice transmitter—serves as a flexible VFO-Exciter with enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input—6146 final amplifier tube—wide range pi-network output. Built-in VFO or crystal control—bandswitching 160 through 10. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No.	Amateur Net
240-126-1..Kit .....	\$149.50
240-126-2..Wired and tested .....	\$199.50

**"ADVENTURER" TRANSMITTER**

Perfect for novice or experienced amateur! 50 watts CW input— instant bandswitching 80 through 10 meters. Crystal or external VFO control. With tubes, less crystals.

Cat. No.	Amateur Net
240-181-1..Kit .....	\$54.95

**"CHALLENGER" TRANSMITTER**

Ideal for fixed station or portable use! Fast, easy tuning—excellent stability and plenty of reserve drive. 70 watts phone input 80 through 6; 120 watts CW input 80 through 10 . . . 85 watts CW input on 6 meters. Wide-range pi-network output—effectively TVI suppressed—excellent keying system. For crystal or external VFO control. With tubes.

Cat. No.	Amateur Net
240-182-1..Kit .....	\$114.75
240-182-2..Wired .....	\$154.75

**"6N2" CONVERTER**

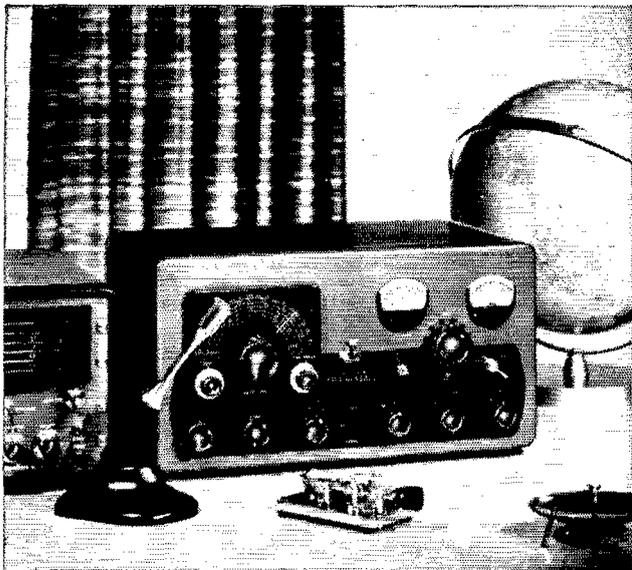
This compact Viking "6N2" Converter provides instant front panel switching from normal receiver operation to either 6 or 2 meters. Maximum sensitivity and low noise figure . . . offers excellent image and I.F. rejection. With tubes. Available kit or wired in either 26 to 30 mcs., 28 to 30 mcs., 14 to 18 mcs., or 30.5 to 24.5 mcs. ranges. Specify range desired.

Kits .....	Amateur Net \$59.95
Wired Models .....	Amateur Net \$89.95

**E. F. JOHNSON COMPANY**

2807 SECOND AVENUE S.W.

# Viking Transmitters outsell all others!



**600 watts CW . . . 500 watts phone . . . 500 watts SSB\*!**  
**More than one-half kilowatt of power**  
**and operating convenience!**

**"FIVE HUNDRED" TRANSMITTER** — A complete 500 to 600 watt transmitter for the 80 through 10 meter amateur bands, the Viking "Five Hundred" is superbly engineered and designed throughout for outstanding operating convenience and flexibility. Two compact units: RF unit is small enough to place on your operating desk beside your receiver — power supply/modulator unit may be placed in any convenient location.

All exciter stages ganged to VFO tuning — operates by either crystal or built-in VFO control. Instant bandswitching 80 through 10 meters — effectively TVI suppressed — high gain push-to-talk audio system — low level audio clipping, 600 ohm phone patch input is independent of audio gain control — speech filter restricts frequency response to 200-3500 CPS for maximum communication effectiveness with minimum bandwidth. Final amplifier uses a Type 4-400A high efficiency tetrode. Pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. Complete with tubes, less crystals.

Cat. No. 240-500-1..Kit.....\$749.50 Amateur Net  
 Cat. No. 240-500-2..Wired and tested.....\$949.50 Amateur Net

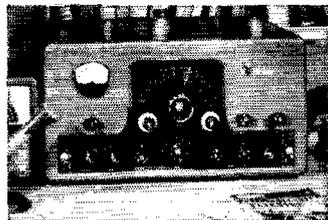
\*With an auxiliary SSB exciter



**"RANGER" TRANSMITTER/EXCITER**

This popular, superbly engineered transmitter also serves as an RF/audio exciter for high power equipment. 75 watts CW or 65 watts phone input. Built-in VFO or crystal control—instant bandswitching 160 through 10. 6146 final amplifier—wide range pi-network output. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No. **Amateur Net**  
 240-161-1..Kit .....\$229.50  
 240-161-2..Wired and tested..\$329.50



**"VALIANT" TRANSMITTER**

Here's effective power, wide flexibility, and many unique operating features combined in a compact desk-top transmitter! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Bandswitching 160 through 10. Built-in VFO or crystal control. Final amplifier utilizes three 6146 tubes in parallel—wide range pi-network output. With tubes, less crystals.

Cat. No. **Amateur Net**  
 240-104-1..Kit .....\$349.50  
 240-104-2..Wired and tested..\$439.50



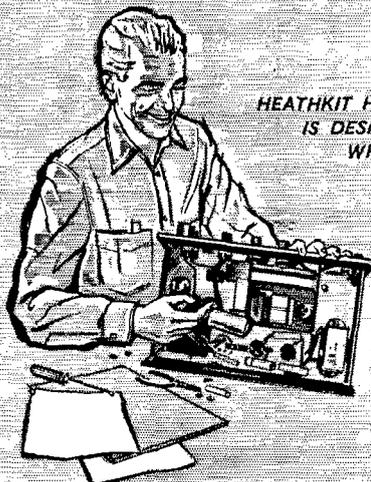
**FIRST CHOICE AMONG THE NATION'S AMATEURS**

**WASECA, MINNESOTA**

# BUILD YOUR OWN



# HAM GEAR



HEATHKIT HAM EQUIPMENT IS DESIGNED BY HAMS WHO KNOW YOUR PROBLEMS AND NEEDS.

PROVEN, "ON THE AIR" PERFORMANCE



### "SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.



HEATHKIT VHF-1 \$159<sup>95</sup>



HEATHKIT DX-20 \$359<sup>95</sup>

### DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan

 a subsidiary of Daystrom, Inc.

# Mobile Gear...for the Ham on the Go!

## "CHEYENNE" MOBILE HAM TRANSMITTER KIT

All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.



HEATHKIT MT-1  
\$99<sup>95</sup>



## "COMANCHE" MOBILE HAM RECEIVER KIT

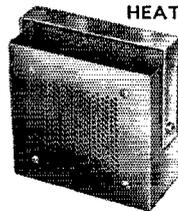
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube super-heterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



HEATHKIT MR-1  
\$119<sup>95</sup>

## MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.

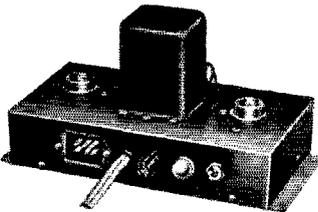


HEATHKIT AK-7  
\$5<sup>95</sup>



HEATHKIT AK-6  
\$4<sup>95</sup>

HEATHKIT MP-1  
\$44<sup>95</sup>



## MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9½" L. x 4¾" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

## MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

## POWER METER KIT

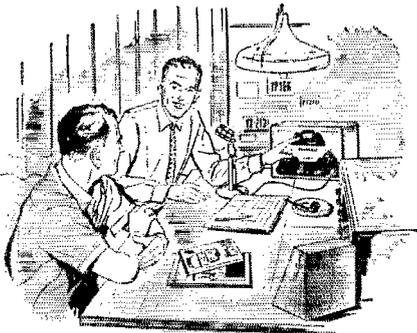
This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT  
PM-2  
\$12<sup>95</sup>





# COMPANION UNITS



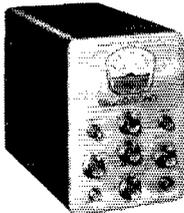
HEATHKIT TX-1 **\$234<sup>95</sup>**

## "APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

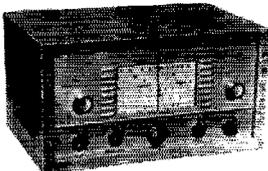
## HEATHKIT SB-10 SINGLE SIDEBAND ADAPTER KIT

**\$89<sup>95</sup>**



Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. **\$8.95**.



## HEATHKIT AR-3

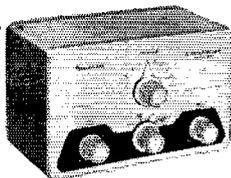
**\$29<sup>95</sup>**

(less cabinet)

## ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. **\$4.95**.



## HEATHKIT QF-1

**\$9<sup>95</sup>**

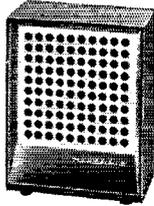
## "Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

# OF DISTINCTIVE QUALITY

## ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive 3/8" ply-wood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.



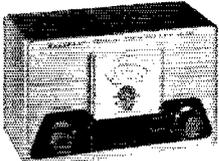
HEATHKIT AK-5  
\$995



HEATHKIT RX-1 \$27495

## "MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandwidth. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



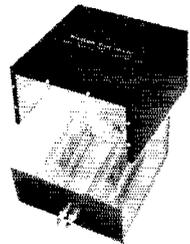
HEATHKIT AM-2  
\$1595

## REFLECTED POWER METER KIT

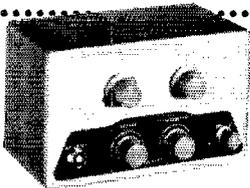
The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

## BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



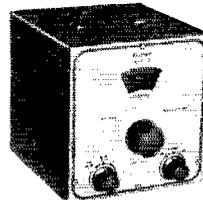
HEATHKIT B-1  
\$895



HEATHKIT VX-1  
\$2395

## ELECTRONIC VOICE CONTROL KIT

Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

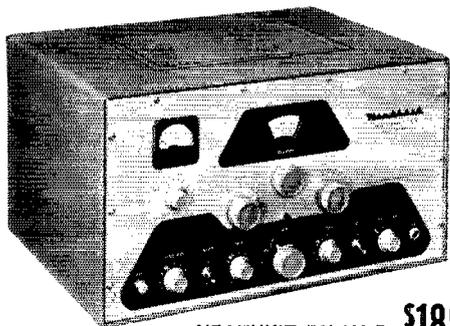


HEATHKIT VF-1  
\$1950

## VFO KIT

Far below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

# Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B \$189<sup>50</sup>

## DX-100-B PHONE AND CW TRANSMITTER KIT

A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

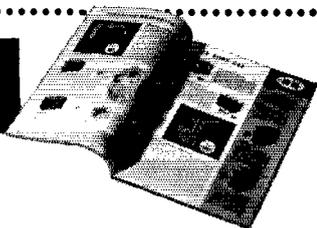


HEATHKIT DX-40 \$64<sup>95</sup>

## DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob bandswitching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

**Free** Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



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*pioneer in  
do-it-yourself  
electronics*

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All prices and specifications subject to change without notice. Please include postage on orders to be shipped parcel post. 20% deposit is required on all C.O.D. orders. All prices are NET F.O.B. Benton Harbor, Mich., and apply to Continental U.S. and Possessions only.

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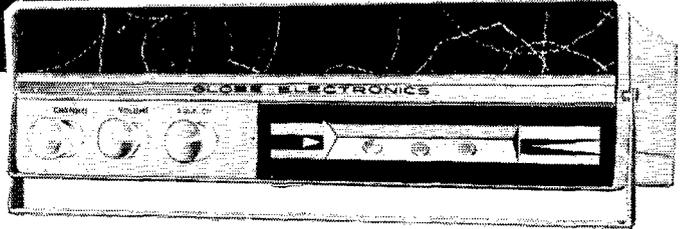
QUANTITY	KIT NAME	MODEL NO.	PRICE

Leo I. Meyerson, WØGFQ, World Radio, Says:

**PAY ONLY \$13<sup>00</sup> DOWN AND OWN THIS BEAUTIFUL BRAND NEW Citizens Broadcaster CB-100**



25 Hams here offer you the best of personalized service. We make same-day shipment from the center of the USA. Easy terms with only 10% down payment. Country's highest trades made. Fast turnover guaranteeing latest serial numbers. All these features and more you'll find when trading with "the house the hams built"



**ANYONE CAN USE! NO EXAMINATION REQUIRED**

- ★ Universal operation. One unit works on 115V AC or 12V mobile. Operates in Home, Office, Car or Field. No tests or examinations required \* Any citizen over 18 years of age may use any of the FCC-assigned 22 channels in the 27mc range (11 meters) for transmitting and receiving.
- ★ EXCLUSIVE! Channel switch allows choice of three channels for operation. Receiver and broadcaster units are tuned to same channel simultaneously.
- ★ Operation extremely easy; only three controls; Channel, Squelch and On/Off/Volume. Squelch control subdues background noise for muted standby operation. Offers push-to-talk operation for instantaneous transmission or reception.
- ★ 10 Tube Receiver/Transmitter is crystal controlled for stable operation. With proper crystals, all channels are covered. Tested pairs available for any channel.
- ★ Power Input: — 5 watts. AM modulated. Compact: — only 3½x13x10½" Light weight, 9 lbs. Meets all FCC requirements.
- ★ Modern "living room" design. Carrying handle also acts as tilt stand for fixed operation or mounting bracket for permanent installation, making the Broadcaster extremely versatile.

\* Simply fill out FCC Form 505

**\$1300** Down **\$107<sup>3</sup>** Per Month, or

**\$129<sup>95</sup>**

**NEW 6 Meter CONVERTER**  
FOR FIXED STATION OR MOBILE USE

Improved circuit for higher gain; better signal-to-noise ratio.

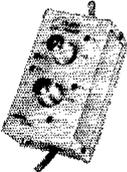
Completely shielded.

Highly stable, crystal controlled oscillator

Printed circuit for ease in kit assembly.

For most receivers on market today; B plus requirements 150-250V at 15-18MA. Provisions for changing filaments for 6 or 12V operations.

Only 3x5½x4½"; complete with tubes and cable. Available: 6PMC1 for 10-14Mc; 6PMC2 for 600-1600Kc.



WIRED: **\$299<sup>5</sup>** KIT: **\$219<sup>5</sup>**

**SAMPLING OF LATE RECONDITIONED EQUIPMENT**

Haltercrafters 553-A receiver	.....\$ 69.95
National NC-98 receiver	.....\$119.00
National NC-125 receiver	.....\$139.50
National NC-300 receiver	.....\$299.00
H-W TB550 & ac PS (80-2 meter)	.....\$ 97.00
Heath Q multiplier	.....\$ 9.95
Globe Scout 680-A transmitter	.....\$ 89.95
Globe Chief 90A transmitter	.....\$ 49.50
Heath DX-35 transmitter	.....\$ 52.50

Net: **\$495.00**

**\$22<sup>28</sup>**

per mo.

with **\$4950** down

**NEW Globe Champion 350**

- ★ All modern design new cabinet
- ★ New filtered keying circuit virtually eliminates key clicks.
- ★ Improved VFO circuitry for greater stability
- ★ Tailored for more "power punch" in the voice frequency range.
- ★ Adjustable bias control for SB operation
- ★ Improved shielding for TVI-protection and stability, eliminating RF feedback.

The new Globe Champion 350 is bandswitching 10-160M, 350w CW, 275w AM, 450w SSB (PEP), with any 10w external exciter. Extensively TVI-suppressed, filtered and bypassed. High level class B modulation maintained without usual clipping distortion with commercial type compression circuit. Pi-Net output circuit 48-300 ohms, built-in VFO, push-to-talk, antenna changeover relay. Final tubes air-cooled. Single knob bandswitching. Cabinet 12x21½x17".



Rush your FREE Catalog  and complete info on new  Champ 350,  Citizens Broadcaster,  6M Converter

Send Latest Reconditioned Equipment List

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City & State: \_\_\_\_\_



Q-6

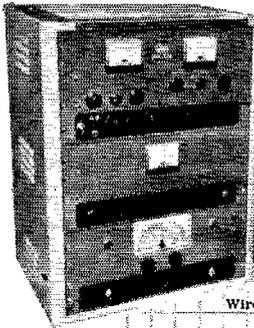
WORLD'S MOST PERSONALIZED RADIO SUPPLY HOUSE

**World Radio**

LABORATORIES  
PH. 2 0277

3415 W BROADWAY COUNCIL BLUFFS IOWA

## Known World-Wide by its Audio



### Globe King 500C

Built-in antenna relay, built-in VFO, separate power supply for modulator. Commercial type compression circuit. Grid block keying for signal clarity. Pi-Net matches most antennas 52-300 ohms. Optional crystal operation. SSB input & operation with 15-20w external exciter. 31x22x14 3/4" cabinet designed for TVI-suppression.

Wired & Tested: \$795.00

Completely Bandswitching, 10-160M, 540w AM & CW; 700w max. on DSB or SSB (PEP), with 15-20w external exciter.

## New Citizens Broadcaster CB-100

11 M TRANSCEIVER  
FOR USE BY ANYONE  
NO EXAMINATION  
Just fill out FCC Form 505



Complete with Xtals. for One Channel & Mike \$129.95

For home, office, car, boat, field, etc. 115VAC or 12V mobile. Exclusive 3-channel selection switch and button light indicators. Squeech control for muting background noise. 10-tube receiver/transmitter, xtal. controlled. AM modulated. Meets all FCC specs. Compact: 31x21x13 1/4"; 9 lbs. Carry handle for tilt stand or permanent mounting.

### Speech Booster FCL-1



Wired & Tested: \$24.95  
In Kit Form: \$15.95

Peak limiting audio preamplifier that clips and filters speech frequencies exceeding pre-set amplitude. Increases modulation intensity for most penetrating audio. Includes harmonic suppression. Plugs directly into Scout & Hi-Bander. Adaptable to other Xmtrs.

### Power Attenuator PA-1



Wired & Tested: \$10.95

General purpose attenuator for excitters up to 70 watts input. Suitable to attenuate drive between many exciter-amplifier combinations. Standard coax input and output connectors. Tap switch to select any of three attenuation positions or straight through.

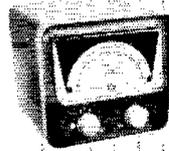
## Tops on 6 and 2M



Wired & Tested: \$149.95  
In Kit Form: \$119.95

### Globe Hi-Bander

60w CW, 35w AM input on both 6 & 2M. Single control bandswitching. 4-stage RF section allowing straight through operation. Good harmonic and TVI-suppression. 2nd stages metered. Provisions for mobile use. 52-72 ohm coax output. New duo-band final tank circuit eliminates switching. Variable antenna loading control. Reserve power socket on rear chassis apron for accessories.



Wired & Tested: \$59.95  
In Kit Form: \$49.95

### Globe VFO 6-2

Perfect zero beat. Built-in power supply with voltage regulation. Ideal for driving 6 and 2-meter transmitters. Temperature compensated for utmost stability. Excellent for use with Hi-Bander. Approx. 50V RF output in 8-9 mc. range. 13:1 tuning ratio, king-size tuning scale. Sideband stability.

Wired & Tested: \$29.95  
In Kit Form: \$21.95

Model GPMC

### 6M Converter

New, improved circuit for higher gain, greater signal/noise ratio. Printed circuit for ease in kit assembly. Models for fixed or mobile stations or 12 Volt filaments. I.P. output of 10-14 mc. on fixed, 600-1600 kc. on mobile model. Highly stable, completely shielded, crystal controlled, complete with tubes, crystal, cables. 3x5 1/2 x 4 1/2".

## 90w CW



Wired & Tested: \$74.50  
In Kit Form: \$59.95

### Globe Chief 90A

Completely bandswitching 10-160M. Compact (8x14x9"), well-filtered, with built-in power supply. Pi-Net matches most antennas 52-600 ohms. Modified Grid-Block keying. Provisions for VFO input & operation. Can be converted to fone with Globe Models UM-1 or SM-90 Modulators. Shielded for TVI-reduction. Kit contains all tubes, pre-punched chassis, etc.

## Modulates RF inputs to 100w



Kit: (less tubes) \$34.95  
In-Wired Form: \$49.95

### Universal Modulator UM-1

Class A or AB-2 modulator, driver for higher power modulator, or PA amplifier. Matches output impedances 500-20,000 ohms. Carbon or crystal mike usable. Supplies up to 45w audio with proper output tubes. Provisions for addition of external meter for monitoring modulator cathode currents; for remote control of modulator. Perforated steel cover, \$3.00 extra.



In Kit Form only: \$11.95

### Screen Modulator SM-90

Ideal for use with Chief, but instructions for use with similar CW Xmtrs. Permits radio-telephone operation at minimum cost. Self-contained. Printed circuit board, all parts and complete instructions.

Visit Your Favorite Distributor for Details!

#### OTHER TOP FLIGHT GLOBE PRODUCTS

globe champ, w/t: \$495.00; sidebander dsb-100, w/t: \$149.95, kit: \$119.95; globe linear la-1, w/t: \$124.50, kit: \$99.50; vfo-755a, w/t: \$59.95, kit: \$49.95; vox, w/t: \$29.95, kit: \$19.95; qt-10, w/t: \$9.95, globe matcher sr. at-4, w/t: \$79.50, kit: \$69.50; globe matcher jr. at-3, w/t: \$15.95, kit: \$11.95; globe scout 680a, w/t: \$119.95, kit: \$99.95; power booster pb-1, w/t: \$21.95, kit: \$14.95.

**GLOBE**  
electronics  
3417 W. BROADWAY  
COUNCIL BLUFFS, IOWA

WE'RE ON THE MOVE WITH THE

HY-GAIN

# Trap Traveller

MOBILE • PORTABLE • DIPOLE • BEAM  
for 10, 15 & 20 Meters



Says Leo I. Meyerson, W0GFQ

Now in stock, these great new Hy-Gain Trap Travellers. May we suggest you read carefully this material and then order directly from World Radio, "the house the hams built".

### EASY TO BUY

10% of the purchase price will put this equipment in your possession. Then small monthly payments (we finance our own paper), and it's all paid for before you realize it. Buy now.

### LARGE STOCKS

Not only Hy-Gain, but other leading national lines are in stock here at "the world's largest distributor of amateur radio equipment". Drop us a special card about trade-ins.

### PERSONALIZED SERVICE

25 hams with the earnest desire to serve you make for the personalized service of World Radio known around the world. We're here to be of service to you in any way we can.

### AUTOMATIC LOADING COIL NO. T-3

The Trap Traveller Mobile Automatic Band Loading Coil, Model T-3 may be used with any standard 3-foot base and 5' whip, or with Hy-Gain's telescoping base section and top whip assembly. Air foil design, only 1 1/2" wide by 4 1/2" high.

Hy-Gain telescoping base section and top whip assembly, Model TBW; fits all standard mobile mounts. 5' top whip, when used with Trap Traveller coil telescopes from 8' 4 1/2" down to 3'. Positive grip, knurled knob connections.

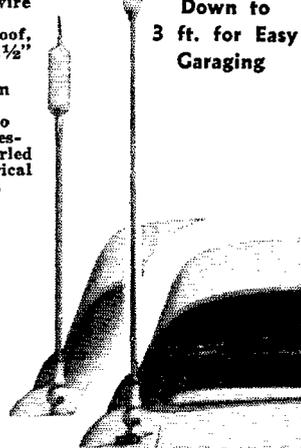
\$14<sup>95</sup>

\$15.00

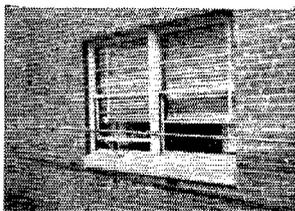
- ★ Automatic 10, 15 and 20 meter operation with ENTIRE WHIP OPERATIVE on all three bands for MAXIMUM EFFICIENCY.
- ★ Unique three band frequency selective circuits select proper amount of inductance for high efficiency CENTER LOADED whip operation on 15 and 20 meters. Loading coil is automatically shorted out for full sized quarter wave whip operation on 10 meters.
- ★ Coil is high Q air wound of No. 14 copper wire on ribbed high impact styron form. Entire assembly is enclosed in completely weatherproof, air tight plastic cover. Air foil design only 1 1/2" wide and 4 1/2" high.
- ★ May be used with any standard 3' base section and 5' whip, or Hy-Gain's new telescoping base and whip assembly. Telescopes down to only 3' for easy garaging. base spring necessary. Especially designed high pressure knurled knobs maintain perfect mechanical and electrical contact in telescoping sections when whip is fully extended.
- ★ Designed for 52 ohm Coax, SWR less than 2:1 on all bands.

Extends to 8 ft.

Telescopes Down to 3 ft. for Easy Garaging

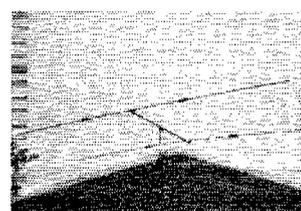


### Portable MICRO-DIPOLE KIT



Trap Traveller Dipole Kit requires two 3-band loading coils and makes into mid get high efficiency dipole for 10, 15 & 20M. Mounts anywhere; matches 52 ohm coax; low SWR, all three bands. 16 ft. overall when extended. Sections collapse to 3 ft. for easy carrying. Complete with all hardware (less the two loading coils). Wt.: Only 3 1/2 lbs. Model TDK: \$9.95.

### Portable MICRO-BEAM KIT



Trap Traveller Beam Kit requires four 3-band loading coils and makes into world's first miniature 2-element, 3-band portable beam. 18 ft. overall when extended, boom 8 ft. long. Collapses into 3 ft. package for easy transportation. All elements, boom, aluminum. All hardware included (less the four loading coils). Wt.: Only 9 lbs. TBK: \$19.95

### UNIVERSAL MOUNTING BRACKET

Uniquely adjustable screw driven clamp mechanism with 2" mast for mounting the Trap Traveller Dipole or Beam almost anywhere. Adjustable through a 90 degree arc from vertical to horizontal. Wt.: Only 2 1/2 lbs. Model UB: \$9.75.

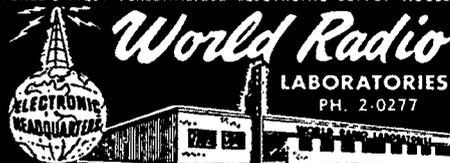
### CONVENIENT PLASTIC CARRY BAG

Attractive and convenient plastic carrying bag with full-length zipper holds either Dipole or Beam when collapsed. Plenty of space for Trap Traveller coils and Mounting Bracket in addition. Model TCC: \$6.95.

LEO: PLEASE SEND FREE CATALOG! ENCLOSED IS MY CHECK FOR

T-3 LOADING COIL,  TOP WHIP TBW

WORLD'S MOST PERSONALIZED ELECTRONIC SUPPLY HOUSE



- COMPLETE TRAVELLER
- MICRO-DIPOLE KIT
- MICRO-BEAM KIT
- ACCESSORIES

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY & STATE: \_\_\_\_\_



QH-6

3415 W BROADWAY COUNCIL BLUFFS IOWA

RADIO SHACK EXCLUSIVE!

SALE! SAVE \$36.39!

NC-66 reg. \$129.95

RDF-66 reg. 39.95

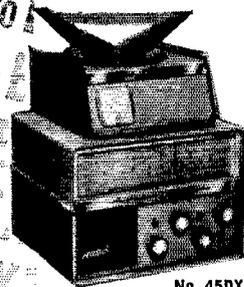
Eveready 5MR  
Flashlight reg. 2.49

Marine  
Electronics  
Handbook reg. 3.95

retail value 176.34

Sale 139.95

Save 36.39



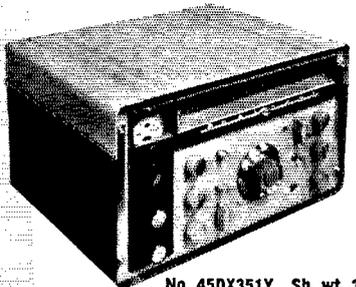
No. 45DX380 Sh. wt. 25 lbs.



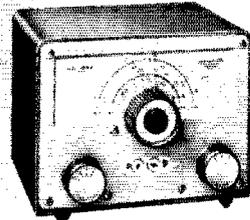
No. 45DX368Y Sh. wt. 35 lbs.



No. 45DX367Y Sh. wt. 35 lbs.



No. 45DX351Y Sh. wt. 35 lbs.



No. 45DX370Y  
Sh. wt. 6 lbs.

# 20% EXTRA CASH

for your old equipment in trade  
on any of these brand new

## National

receivers

Think of it! 20% OVER-ALLOWANCE  
ON TOP OF RADIO SHACK'S  
USUAL UNBEATABLE ALLOWANCE!

SEE HOW RADIO SHACK SAVES YOU 20% MORE!

Usual liberal \$60 allowances now \$72!

Usual liberal \$100 allowances now \$120!

Usual liberal \$200 allowances now \$240!

Hurry . . . offer ends soon!  
Trade by mail today!

## NC-66 3-Way Portable Receiver with RDF-66 Direction Finder

Amateur, marine and shortwave reception!

Ideal for outboards,  
pleasure cruisers, fishing boats!

Rig lets small craft plot position and homing course simply and accurately. The Receiver operates anywhere, uses AC, DC or batteries. Has ferrite loop and whip antennas, 2-stage amplifier, CW oscillator, speaker, phone jack, 5-band dial, metal cabinet with handle. RDF-66 mounts on or near NC-66.

~~\$176~~ Sale **\$139<sup>95</sup>**

Without trade: \$14 Down, \$11 Monthly

## NC-109

No other general coverage receiver  
priced so low!

Exclusive Microtone crystal filter!

Has separate product detector for CW and SSB, big "S" meter, 4-band coverage (540 kc to 40 mc), phone, CW or SSB, slide-rule dial, 11 tubes, metal and chrome cabinet. 16 $\frac{1}{2}$ " x 10" x 10 $\frac{1}{2}$ "

Net **\$199<sup>95</sup>**

Without trade: \$20 Down, \$13 Monthly

## NC-188 Receiver

Low-budget, high quality special!

4 general coverage, 5-band amateur ranges!

Covers 540 kc to 40 mc; phone or CW. Separate tuning capacitors, knobs and scales for general coverage and bandspread. Slide-rule dial, "S" meter, gray metal and chrome cabinet. 16 $\frac{1}{2}$ " x 10" x 10 $\frac{1}{2}$ "

Net **\$159<sup>95</sup>**

Without trade: \$16 Down, \$12 Monthly

## NC-300 Receiver

Top in sensitivity!  
Greater stability!

10 dial scales covering 160 to 1 $\frac{1}{4}$  meters convertible to special 30-35 mc tunable IF. Slide-rule dial easily readable to 2 kc, 3-position IF selector.

~~\$399~~ Net **\$329**

Without trade: \$33 Down, \$19 Monthly

## VFO-62

For 6 and 2 M Bands; Full Coverage!  
All-New! Versatile! Self-Powered!

Front panel crystal socket allows instant selection of crystal without changing transmitter connections. Plugs into 117 VAC outlet; draws no power from your rig. Rugged gray plastic cabinet. 5 $\frac{1}{2}$ " x 6 $\frac{1}{2}$ " x 5 $\frac{1}{4}$ "

Net **\$69<sup>95</sup>**

Without trade: \$7 Down, \$7 Monthly

**FREE! 24 Pg Bargain Circular: Save! Save!** Latest circular shows detailed photos and descriptions printed in beautiful rotogravure on fine glossy paper of hundreds of exclusive HAM — HI-FI — RECORD — TAPE — and TOOL buys. Send for yours today.

# RADIO SHACK

CORPORATION Dept. 6D,  
730 Commonwealth Ave., Boston 17, Mass.



Please quote allowance on my present equipment

Model \_\_\_\_\_

I would like to trade for the following National

Model \_\_\_\_\_

Please send FREE Bargain Circular.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**FILL IN AND MAIL TODAY!**

## EASY-PAY-PLAN

**WITH TRADE:** Use your present equipment as down payment.

If the price of the equipment you want is ..... \$200.00

And the trade-in allowance on your present equipment is 96.00

The balance would be 104.00

And payments only \$10 monthly

**WITHOUT TRADE:**

If new equipment price is \$200 ..... down payment is \$20  
and monthly payment is \$13



# National

Symbol of reliability and performance for  
more than 40 years. . . .

NATIONAL radio equipment is standard on  
8 out of 10 U.S. Navy vessels, conclusive  
proof of outstanding quality and depend-  
ability!

**TRADE AND SAVE BY MAIL AT RADIO SHACK!**

Our 3 great stores and huge mail order plant are as close  
as your front door. The most modern electronic mailing  
system in the world sends your order on its way the same  
day it is received.

# RADIO SHACK CORPORATION

167 Washington St., Boston 8, Mass.

730 Commonwealth Ave., Boston 17, Mass.

230-240 Crown St., New Haven 10, Conn.



# IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a \$16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California  
January 31, 1959

GOTHAM  
1805 Purdy Avenue  
Miami Beach 39, Florida  
Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,  
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BVIUS	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VK9CJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PA0FAB	YNTJW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZCSAL
HE9LAC	PY0NE	ZE1JV
HP1LO	SM5AQB	ZK1BS
ITMV	SP6BY	KH6MG/ZK1
JATANG	TI2LA	ZK2AD
JZ0HA	UA1AU	ZL1ABZ
W1AW	UA0KKB	ZL3JA
KB6BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZS1OU

## SOME QUESTIONS AND ANSWERS

Why are all Gotham beams of the Yagi type, all metal, and grounded at the center? Answer: To get the maximum strength for the minimum weight, to get maximum efficiency, and to avoid the use of wood, tuning stubs, traps, or other substitute devices, all of which are undesirable and unnecessary. In addition, grounded beams are lightning-proof and protect your home.

How do Gotham beams gain compare with higher priced antennas? Answer: No beam, regardless of price, can give more gain, for a given boom size, than a Gotham beam. Obviously, the more elements, the more gain. Our gain figures are published in our literature, and are available, free, on request.

Why is the Gotham price so very low? Doesn't the low price mean a lack of quality? Answer: The Gotham price is low because we sell in quantities and make only a fair profit on each antenna. We do not add on a tremendous overhead and engineering charge. As for quality, we have always used the best materials, and every antenna is doubly inspected before shipment. Thousands of Gotham antennas are in use the world over.

What is the difference between the Standard and the Deluxe beams? Answer: The Standard beams in the 6, 10, and 15 meter bands use 5/8" and 3/4" tubing elements; the Deluxe models for these bands use 7/8" and 1" tubing. In the 20 meter beams, the Standard beams have a single boom, while the Deluxe beams use twin booms. All 20 meter beams use full 12 foot booms. In the 20 meter beams and in the Twobanders and Tribanders, only 7/8" and 1" tubing are used.

Is it advantageous to use a Gotham Twobander or Tribander beam? Answer: Hundreds of these beams are in daily use. They are compromise beams, but by having each element a full half-wave, their gain figures are more than reasonably good. Of course a single three element beam on a single band will outperform a Tribander on that band, but the Tribander permits beam operation on three bands.

Do the Gotham verticals perform well on all bands? Answer: Yes, thousands of ham users attest to their efficiency on all bands from 6 to 160 meters. Reports of tremendous DX on low power are common.

Are mounts supplied with the vertical antenna? Answer: Yes, four mounting straps for side mounting are furnished with each vertical.

Are radials needed with a Gotham vertical? Answer: No, except a few rare locations. 99% of the installations are done without radials.

How much power can be used with a Gotham vertical? Answer: Anything up to the legal limit.

Is much space required for installing a vertical? Answer: No, only a few square inches are needed.

Can you give details on the loading coil used in the Gotham verticals? Answer: Yes, it is made for us by Barker and Williamson. It is 3" in diameter and exceptionally rugged. No other loading coil in the antenna industry has a higher Q.

Do you need a separate loading coil for each band? Answer: No, a V160 loading coil will cover 160, 80, 40, 20, 15, 10 and 6; a V80 loading coil will cover 80, 40, 20, 15, 10, and 6; a V40 loading coil will cover 40, 20, 15, 10, and 6 meters.

What antennas are best for a novice? Answer: The V80 vertical and the S153N beam are the most popular choices.

Why should a ham buy a Gotham antenna? Answer: The tremendous progress of the amateur radio art makes it imperative that hams graduate from the antiquated antennas of years past to a modern antenna system. We will be glad to send, free of charge, our technical literature on our 50 antennas, or you can order for immediate shipment.

73,  
GOTHAM

**FREE literature? YES**  
**FREE specifications? YES**

**FREE beam gain calculator? YES**

**OR ALL THREE AND IMMEDIATE SHIPMENT**  
**IF YOU ORDER FROM THIS LIST OF 50 ANTENNAS**

*Airmail Order Today — We Ship Tomorrow*

**GOTHAM** Dept. QST

**1805 PURDY AVE., MIAMI BEACH, FLA.**

Enclosed find check or money-order for:

**TWO BANDER BEAMS**

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value!*

- 6-10 TWO BANDER.....  \$29.95
- 10-15 TWO BANDER.....  34.95
- 10-20 TWO BANDER.....  36.95
- 15-20 TWO BANDER.....  38.95

**TRIBANDER**

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.

- 6-10-15 \$39.95  10-15-20 \$49.95

**2 METER BEAMS**

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

- Deluxe 6-Element 9.95  12-El 16.95

**6 METER BEAMS**

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

- 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**

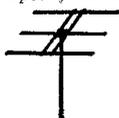
Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

- 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

**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



**15 METER BEAMS**

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

**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**

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## THE AMERICAN RADIO RELAY LEAGUE

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## Station Activities

(Continued from page 98)

bers: K2JSF, K2HWF, K2BUK and K2PLU. Two honorary members are K2HUK and W2LXE. K2QJJ was appointed Radio Chief of Kenmore and Tonawanda, Erie County Civil Defense. The RAWNY's board of directors elected K2UVN, pres.; W2SSC, vice-pres.; K2GBY, treas.; and K2KQC, secy. K2VAW is sporting the Collins "S" line and new TA-33 beam. K2MXA has finished a low-noise converter for 2 meters. K2GGA has been concentrating on Aurora on 2 meters. He also is on 220 Mc. K2RWV has a new three-element 15-meter beam. W2DEW is on the air with an SX-101 and a DX-100. W2BB has the "S" line. W2UVE now has 213 countries confirmed. K2QPC passed the General Class exam. K2CUQ has a Grandmother's certificate. K2DBB has a Seneca transmitter on 6 meters. K2MES joined the Air Force and is in Texas. K2ECK is back home after his tour with Uncle Sam. K2ICK and K2MHC are now s.s.b. K2DPA attends Houghton College and operates K2GGG. W2PVI is rebuilding the shack. The Syracuse V.H.F. Club elected K2PKL, pres.; W2YR, vice-pres.; W2OGY, secy.-treas.; and K2EPG, act. mgr. W2EMW reports working SM5WN/LA/P for No. 236. W2COB copped the high phone score in W.N.Y. in the Jan C.D. Party. He claims there's no competition. Any challengers? W2TPV, 16 years old, received his 35-w.p.m. sticker. W2BPU is working DX on 15 meters with a DX-20 and an SX-99. W2BPZ is going s.s.b. K2MUG is going mobile. K2JZM had transmitter troubles. K2UZJ received Gay-lark Certificate No. 73 (!). W2RQF now is s.s.b. on 80, 40 and 20 meters. K2TQC now is at 127 countries. K2RIT was named to the RARA executive committee. The Smithsonian Institute has called on the AWA for advice on exhibiting ancient gear. The curator came to Rochester to talk to experts W2QY, W2ICE and W2GB. Traffic: K2SIL 982, W2RUF 565, K2MES 327, W2EZB 264, K2RTN 232, K2SSX 221, W2TPV 168, K2QDT 132, K2JBX 130, K2UZJ 117, K2AOQ 110, K2KQC 86, K2IYP 78, W2PGA 72, W2RUT 67, K2RWV 41, W2MTA 40, W2RCR 39, K2DPA 37, K2QQU 35, W2ABL 30, K2OFV 28, W2RQF 26, K2TDV 22, W2FEB 21, W2BLO 17, K2YPY 10, W2GXE 5, K2EQB 4, K2RIT 4, K2TQC 4, K2JSF 2, K2DXV 1.

**WESTERN PENNSYLVANIA**—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA, RMs: GEG, NUG and LXU. PAMs: AER. It is with great sadness that we report the death of AAX. Frank was one of the founders of the Amateur Transmitters Assn. of W. Pa., the first amateur radio organization in the Pittsburgh district. He also was the "Loose Coupler" of the Pittsburgh Area Branch of the Quarter Century Wireless Assn. Our deepest sympathy to QPJ, his XYL. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The Penna. Fone Net (PFN) meets Mon. through Fri. at 1800 EST on 3850 kc. We regret to announce the resignation of TOC as Phone Activities Manager. Thanks, Bill, for all your fine efforts and help this past year. K3DDP, now General Class, is on 75-meter phone. QYB is on s.s.b. The Butler County Party Line meets each Wed. at 2100 on 29.6 Mc. New officers of the South Hills Brass Pounders and Modulators are QNI, pres.; TFU, vice-pres.; K3HHX, treas.; Jack Hall, secy.; LFQ, WFR and GJS, directors; OMP, BL and LTH, trustees. KN3HLK is the son of TFU. The Copella family, K3DDH and son K3CMC in Elk County, claim that Sylvia, KN3IAO, is the first YL in the county? Any takers? New officers of the Conemaugh Valley ARC are LSE, pres.; PHH, vice-pres.; KUQ, secy.; WRC, treas.; WIY, MIM and PAE, trustees. ZWZ made WAC on 10 meters. K3ABN has a home-brew electronic keyer in operation. KN3HWT, on 15 meters from the Butler Area with an Eico rig, wishes a sked with a station in New Kensington. CA has a new Thunderbolt and a 75A-4. JWZ attended the New England V.H.F. Society Banquet. DTZ, General Class now, is building 420-Mc. gear. The Steel City ARC reports via *Kilo Watt Harmonics* that KHS is in Florida; K3EKL has a Communicator on 6 meters; TOB is working in Oswego, N. Y.; SDV is a saxophone player. Up Erie way: The RAE winter banquet was a huge success; NRU is working KG1DT on Ice Island in the Arctic. The Etna RC reports via the *Oscillator* that new Novices are KN3HZL and KN3HPE; ZFB has won the club's first Statewide Achievement Award certificate. AOH now is an A-1 Operator. The Horseshoe RC reports via *Hamateur News* that new officers are MBB, pres.; ROA, vice-pres.; K3DEJ, secy.-treas.; KQD, act. mgr.; the beams of TXQ and ROA were damaged during a recent storm; EGY passed his 2nd-class phone exam; a new Novice is KN3HSQ; YHQ has a new HRO-60; LIV is doing swell job as net control on the c.d. net; K3DEJ has received his WTPA certificate. Traffic: W3KUN 300,

(Continued on page 118)

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Panel controls include: Main tuning, Bandsread tuning, Bandswitch, Audio volume, Sensitivity, Antenna trimmer, ANL on-off, xtal calibr. on-off, Phone-CW, Standby-Receive . . . signal strength meter . . . provision for internal crystal calibrator accessory, available as optional equipment . . . muting connections. Tube complement: 6BE6 (conv), 6BA6 (1st I-F), 6BA6 (2nd I-F), 6AU6 (3rd I-F), 6AL5 (det, AVC, ANL), 12AX7 (1st Audio-BFO), 6CM6 (2nd audio), 6X4 (rect).

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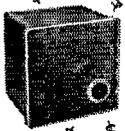
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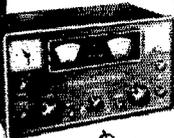
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## CENTRAL DIVISION

**ILLINOIS**—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME, SEC: HOA, RM: PCQ, PAM: RYU, EC Cook County: HPG, Section net: ILN, 3515 kc. Mon. through Sat. at 1900 CST. 9CPI, who is well known as handler of a great amount of traffic for the gang in this section, is moving to Texas. The Central Illinois Radio Club code class (Bloomington) graduated 13 Novices. New calls soon will be heard from that locality. K9GCN is now on 420 Mc. K9DTB is doing FB on the higher frequencies, especially on 6 meters. K9GUA is sporting new 10- and 15-meter quads. The SKEDS Amateur Radio Club is transmitting code practice daily on 29.1 Mc. at 1700 CST. A new Chicago Area call heard is KN9RAQ. K9JTV has completed his Apache and is waiting for the hard ones to come in. GFF has made his DUF-4, WAA and WAG awards. NN is enjoying his new Johnson Thunderbolt final. New officers of the St. Clair Amateur Radio Club (East St. Louis) are KFX, UWP, K9IBY, K9BTR, MIQ and K9BGL. UCZ is bringing in some fine DX on 10 and 15 meters. IDA reports that the S.S.B. Net handled 1222 messages in 22 days of operation and had 483 stations check in. The W9 QSL Bureau asks that all W/K 9s not having envelopes on file please send them to DSO. Many of the gang were very active in the recent high-water emergencies in the Rockford Area with both mobile and fixed stations. DRN took advantage of the Aurora opening on Mar. 26 and worked good DX. EU has worked 227 countries. K9CYZ finally is on RTTY with his Model 26. Fifteen new Novices are now on the air in the Kankakee Area as a result of the code class sponsored by the KARS. Officers of the Starved Rock Radio Club announced that the club's hamfest will be held at the same place this year and the date will be June 7. Officers of the West Suburban YMCA Amateur Radio Council (LaGrange) are K9IYV, K9OEF and K9LAE. KCX is now s.s.b. and handling it like an old pro. KQL is working the nets with a new Apache and it is only a matter of time before he will be s.s.b. K9OZM reports that new calls heard by him are KN9RDS, KN9RAQ and KN9RAT and that his new RME-4350A receiver brought them in. K9CIL has finished erection of his 70-ft. tower sporting a 10-meter beam. K9KYP and K9ICN are using Gouset Communicator IIIs and four-element beams. VER and KL7CRE recently were married and are off to a new home in W7-Land. The March issue of *Ham Gab* (Hamfesters, Chicago) had a full-page spread biography of HPG, Vice-Director of the Central Division. K9LTL has a new Viking Challenger and tri-band beam. UWP's new beam is a Hornet. SARA's (southern Illinois) membership is increasing rapidly and the club's weather net is operating very successfully. CSW and the North Central Phone Net handled 852 messages. RYU reports that the Quad City Amateur Club Hamfest will be held May 24. K9BIV is hunting v.h.f. with a new Heathkit Seneca. Traffic: (Mar.) W9DO 818, KN9OUU 571, W9IDA 524, USR 226, MAK 139, K9MHW 133, JSV 107, W9FAW 86, SXL 56, K9ISP 46, W9EU 35, K9GDQ 23, BTE 20, ERH 19, LXX 19, CIL 14, BIV 8, W9TZN 8, GFF 7, K9CYZ 5, W9NN 4, SKR 4, K9DUA 2, W9HKA 2, K9BLY 1, W9VQC 1. (Feb.) K9GDQ 21, KIL 20.

**INDIANA**—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA, SEC: SNQ, PAMs: BDG, BKJ and UXK, RMs: DGA, TT and VAY. Net skeds: IFN (a.m.) 0800 daily and 1800 M-F on 3910 kc; ISN (s.s.b.) 1830 daily on 3920 kc.; QIN 1900 daily and RFN 0700 Sun. on 3656 kc. Three new ECs are DGA for Vanderburg Co., K9IWW for Tipton Co. and JBQ for Clark Co. Other appointments were K9HMC and K9JKK as OPSS and W9YSX as OO. After doing a very fine job of organizing the sideband net, KOY has been forced to resign as PAM because of his work schedule. The new PAM is MEK, who helped KOY organize the net and has been active as NCS. A slow-speed section of QIN was started Apr. 27 and meets at 1800 CDDT on 3745 kc. Mon., Wed. and Fri. We are asking that crystals no longer needed by ex-Novices be contributed so that they might be ground to 3745 kc. to help out some of the newcomers. This net will not be limited to Novices. All are welcome to join in and help handle traffic. The spring IRCC meeting was held in Indianapolis Apr. 5. New clubs voted in were the Gibson County ARC, Randolph County ARA, Vanderburg ARES and Winslow ARS. Two new awards will be given by the IRCC for Field Day operation this year. The highest scoring station on 2 and on 6 meters in Indiana that submits a log to IRCC will receive awards. This is open to both clubs and individuals. Points should be counted according to ARRL rules. Clubs also should submit the log of their highest scoring transmitter on

(Continued on page 120)



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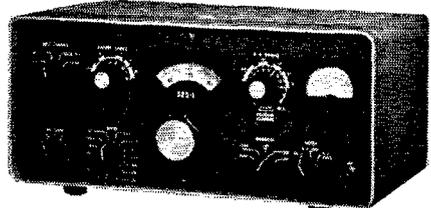
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any band for competition for the IRCC FD plaque. New officers of the Purdue ARC are WGC1, pres.; K9HJK, vice-pres.; and K9DOR, secy.-treas. MGQ is building a kw. with a 304TL in the final. K9JJC built a Knight V.F.O. and is active on 40 meters. K9BEB reports activity picking up on 6 meters in the Bedford Area. Net traffic this month: 1FN 439, QIN 343, ISN 110, RFN 110 and IMO 58. Those making BPL were ETM, NZZ, TT and ZYK. Traffic: (Mar.) W9NZZ 874, ZYK 516, TT 504, JYK 358, VAY 266, K9AY1 237, W9ETM 221, BDG 135, TQC 109, EH2, 10Z, SNQ 79, RTH 72, DGA 62, MEK 53, EJW 51, N1I 50, PMT 50, EGV 44, K9HMC 41, W9GJS 40, VNV 38, IMU 32, K9IXD 27, JKK 24, GBB 23, W9ZPP 23, SWD 22, DZC 18, YXK 18, K9PTS 17, W9CC 15, DOK 15, HUF 14, K9IHG 14, BSU 11, GPG 11, W9STC 11, ENU 10, K9KBW 10, W9QR 10, QOP 7, URQ 7, BDP 6, K9DWK 6, W9NTR 6, CXK 4, VQP 4, MGQ 3, K9GSV 2. (Feb.) W9GUC 2.

**WISCONSIN**—SCM, George Woida, W9KQB—SEC: YQH. PAM: NRP, V.H.F. PAMs: GFL and K9IQO. RMs: SAA, K9AEQ and K9ELT. RKP is now an OO. WIN certificates went to K9DAC and K9GYQ; WTL certificates to DQS, DUC, VCN, K9QBH and K9QLL. RQM received his 35-w.p.m. code sticker and 200-country DXCC sticker. Son K9N9PT received his 10-w.p.m. sticker. KON is handling traffic for KGI and KC4 on schedule on 20-meter s.s.b. BPL certificates went to DYG and KON. New calls in Spooner are KN9S RCI, REC, RED and RJA. YZG now is a DXCC member. K9GSC worked his first 18 countries during two week ends. Plan now to attend the combined Ground Hog Party and Wisconsin Section Fall Festival at Watertown Oct. 11. Meetings will be held for all phases of operating. The BEN Picnic date is July 12. Watch for more information on the above two activities. LJU and K9ENB are new DXCC members. The MIRAC now has 21 of its members in the DXCC. 140 signal discrepancy notices were sent out by 7 Wisconsin OOs during March. K9ACQ now has WAS, KN9PZP, of Racine, has a new Ranger on 80 and 15 meters. The Milwaukee club held its annual "Traffic Nite" with DYG as master of ceremonies and with GPI, Central Division Director, W9DO, mgr. of the Central Area Traffic Net, and K9B and K9DTK as guest speakers. High activity by the Milwaukee Emergency Corps is reported by RUF, EC and Radio Officer for Milwaukee County. The Madison Club furnished communications for the annual fishing perchere on Lake Mendota with fixed and mobile stations on 10 meters. UGT and ZZW acted as co-chairmen for the event. NIZ is working DX on 10 meters with 24 watts and an attic antenna. PJT and K9JWU have new beams. Here's wishing all of you a happy vacation. Traffic: (Mar.) W9DYG 541, K9DAC 486, W9KON 214, SAA 210, K9GYQ 184, DTK 136, ELT 85, W9KQB 65, K9IQO 55, W9IKY 47, K9AEQ 35, W9CBE 30, VHP 30, CCO 26, K9GSC 21, DOL 18, W9SIZ 17, VIK 16, K9ALP 15, W9WJH 15, K9LAX 12, ESN 11, PDJ 8, W9YZG 8, K9CEF 7, W9PJT 5, K9LXF 4, GDF 3, W9RQM 2. (Feb.) K9AEQ 26, W9KKK 10, K9GSC 7, W9RKP 6.

## DAKOTA DIVISION

**NORTH DAKOTA**—SCM, Harold Wengel, W0HVA. SEC: K0JLW. K0CNC reports that after the winter winds his Hy-Gain 2AV vertical antenna leans to the south. While waiting for a Heath Comanche to be delivered, K0LAI used a DX-20, home-brew modulator and Novice Q-5er with a folded dipole antenna to check into the No. Dak. 75-Meter Net. A new ham in the Jamestown Area is KN0SZG, Irvin Buck, of Streeter, N. D. He has joined the Jamestown Amateur Radio Club. AIU is using an HT-32 and a kw. amplifier featuring a 4CX1000A. He recently erected a Ganset Tri-band beam. It is 50 feet above the hill on which he lives. K0JLW has sold all his station equipment, but we hope to see him back on the air soon. Traffic: (Mar.) K0CNC 33, ITP 31, ATK 29, GGI 19, JLU 10, KJR 6, GRM 5, RLF 5, IQJ 4, W0BHF 2, K0IAB 2, AJW 1, LBD 1, MPH 1, PHC 1, PLY 1.

**SOUTH DAKOTA**—SCM, Les Price, W0FLP—Asst. SCM: Gerald F. Lee, YKY. SCM assistants: FKE and NEO. SECs: YOB and GDE. PAM: SCT. RM: K0BAMQ. The S.D. 75-Meter Phone Net which meets on 3870 kc, daily at 6:30 p.m. CST and 9:30 a.m. Sun., reports 38 sessions; K0BQR 5, GWA 5, CTZ 3, EXX 1, K0DUR 4, K0BAMQ 4, YVF 1, SCT 13, QNI 889, high 41, low 11, average 24.7; QTC 72, high 10, low 0, average 2.05; informals 94, high 6, low 0, average 2.61. The S.D. 40-Meter Net, which meets Mon. through Fri. on 7225 kc. at 12:15 p.m. CST, reports 24 sessions; K0LXH 17, K0BAMQ 5, SCT 2; QNI 521, high 29, low 19, average 21.7; QTC 87, high 14, low 0, average 3.625; informals 61, high 6, low 0, average 2.5. The S.D. C.W. Net, which meets Mon., Wed. and Fri. on 3645 kc. at 7 p.m. CST, reports 13 sessions; K0BAMQ 6, K0DYR 5,

SCT 2; QNI 81, high 8, low 3, average 6.23; QTC 12, high 3, low 0; informals 1. The Sioux Falls Novice Net (training and traffic) now operates on 3717 kc. Tue. and Thurs. at 7 p.m. CST. K0LXF sold his SX-99 receiver, then bought and built a Heathkit Comanche. EUJ has been doing some 10-meter work and is starting to check back into the 75-Meter Net. FFP has returned to the 40-Meter Net. SDP attended a cousin's wedding in Omaha. YVF, Lyle, and K0DHA, Lois, were off the net with transmitter trouble. K0ASQ helped fill the gap on nets for this Redfield couple. K0LKH is busy collecting QNLs. CAS is back on the 75-Meter Net. The evening net was saddened to hear of the sudden death of FWO, a long-time regular and dependable member from Sioux City, Iowa. Two new hams in Winner are KN0SZO and KN0SZI. Traffic: (Mar.) W0SCT 376, ZWL 211, K0BAMQ 168, W0DVB 92, CTZ 27, K0AIE 26, BYV 22, RKJ 19, W0FLP 12, K0KLR 12, W0FPF 10, K0LKH 8, WBW 8, BQR 7, DHA 7, PZI 7, LXH 6, DYR 5, DZG 4, DUR 3, W0FJZ 3, K0RQY 3, JAB 2, W0NNX 2, K0OMP 2. (Feb.) K0DYR 12.

**MINNESOTA**—SCM, Mrs. Lydia S. Johnson, W0KJZ —Asst. SCM: Rollin O. Hall, 0LST. SEC: TUS, RM: K0GCN. PAMs: QVR, TUS, TCK. Congratulations K0EWC on your first BPL with 604 points! Jim has worked 49 states on 3815 kc. KN0QLM passed the General Class exam and also received CP-15. Section net certificates were issued to KN0s QBI, QJW and K0LAX. K0BDD, ISV, FYT and TJA had their EC certificates endorsed. New ECs are YAC and K0MEQ. K0MEQ gave a short resume of amateur emergency communications at a c.d. meeting in Montgomery. ECs GER, VOA and WMA resigned. SEC TUS spoke at the Little Falls and Worthington Clubs. The Mankato ARC's new officers are K0EWC, pres.; K0JYC, vice-pres.; RNY, secy.-treas.; and K0QTF board member. K0DNM is studying the Russian language in an Air Force school. MBD went s.s.b. WMA worked KGHDT cross band using 75 meters to transmit. K0BNZ purchased a set of BC-611 walkie-talkies for emergency use. K0QIW has a new Valiant. KLG and TKX sold their Valiants. TKX is going to spend the summer in Europe. The Minneapolis ARC has a new club room at the YMCA on East Lake and Longfellow, and meets the 4th Fri. of each month. The St. Paul RC building-contest winners were K0DUO, K0QGN, K0IKR, EXC, and KN0RSJ, the XYL of EC THY. OVC and his XYL vacationed in W6-Land. PCV's name was found on the list of 450 P.O.W. of the Korean War. He has been missing in action since 1952. We hope that Mort is well and can return home soon. The New Ulm radio club meets twice a month in a public school. QVQ renewed her OPS appointment. DQL and KJZ had their ORS appointments renewed. Up to date, KMG awards presented total 68. K0IKU and JYJ are editors and publishers of the new section net bulletin, *Gopher Log*. These ten have worked 50 or more counties for WAM: K0MNY, K0IDV, K0EWC, K0MAH, K0KYK, FGP, KLG, LST, NNG, and OJG. Traffic: (Mar.) K0EWC 554, W0KJZ 245, K0IDV 240, ORK 202, W0OPX 73, RIQ 58, TUS 48, K0GCN 36, W0KLG 36, OJK 32, TWG 31, HEN 30, K0MPT 28, MAH 27, MIJ 27, W0KYQ 24, LST 21, K0EPT 20, HJC 20, W0KFN 18, AIW 17, K0KYK 17, KN0QLM 17, W0UMX 17, K0MNY 15, W0WMA 14, K0OIV 13, W0BUO 12, TCK 12, OJG 11, DQL 10, K0DID 8, QEK 8, W0PET 8, OOU 5, FGP 4, OET 4, K0MGT 1. (Feb.) W0DQL 11, K0GFS 6, BNZ 3, KN0QBI 1.

## DELTA DIVISION

**ARKANSAS**—SCM, Ulmon M. Goings, W5ZZY. SEC: K5CIR. PAM: DYL. RM: K5TYW. Our congratulations to K5IPS on making BPL again. The Logan Co. Emergency Net still is going strong each Sun. Interest and participation continues to grow. It seems things are happening with the Pine Bluff Club. FVM has a new XYL, besides having a pair of 6146s p.p. running a full ten watts. K5KGH has a new NC-303 receiver. K5THE has a BC-675. CAM has a BC-601 and like is real proud of it. K5QBQ has a new D-104 microphone and 6-meter rig. K5OXZ has an NC-100 receiver. K5JED and KMK, both in Blytheville, have new 20-A s.s.b. excitors. ZZY finally got up the 20-meter beam after dreading the job for a year. K5TYW has been appointed RM for Arkansas. John is a good c.w. man and sure knows how a c.w. net should be run. We hope all the hams will give him support in keeping the c.w. nets on the air. K5PYD recently had a "beam raising." The turnout of hams was good, so was the fish A.C. served. Traffic: (Mar.) K5TYW 122, HSJ 111, W5YHT 68, K5IPS 63, W5CEU 57, BYJ 41, W4OGY 52, W5ZZY 10, UED 4.

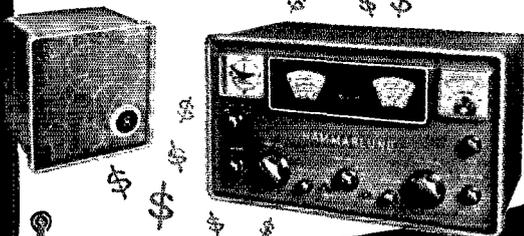
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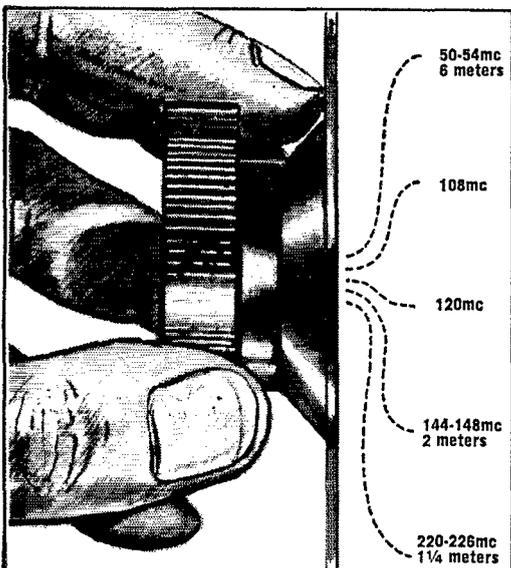
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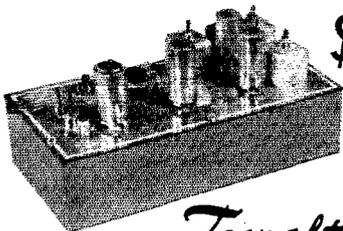
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**LOUISIANA**—SCM, Thomas J. Morgavi, W5FMO—a report from the Algiers ARC shows that activity has been high with eight new members. An Apache transmitter has been built, shifter drills are being conducted each week in conjunction with the Red Cross. BUK now has 161 countries worked and 131 confirmed; INL is fairly close with 108 worked and 71 confirmed. At a recent AREC meeting in Alexandria, K5EFS, the EC, was host to a gathering of practically all the hams in Alexandria and representatives from local broadcast stations, the T&P Railroad, the C.D. Director for the Parish, a representative from the Mayor's office, the Red Cross and others. Nets have been organized and details ironed out. Officers of the Jefferson ARC are QHP, pres.; GAD, vice-pres.; K5HEK, treas.; K5ZD, secy.; MXQ, K5AGJ and EBK, board of directors. PQD has undertaken to organize a communications set-up for Opelousas C.D. All amateurs in and around Opelousas should contact Paul for particulars. A fine letter from OES KTD was received on some 14-Mc. work between Monroe, Minden and Shreveport. Recently a request for an OO application was received from W5IOU/1, of Denham Springs, who is a freshman in E.E. at M.I.T. CEZ busted the barrier again with a traffic count of 557. MXQ, who recently acquired a Mosley beam, is now hunting for high-frequency traffic nets. The NITWITS met in Baton Rouge with GDY as host. The Carville project now is to get those Novices changed over to General Class. K5DMA is OPS. CEW has 248 confirmed. Traffic: W5CEZ 557, MXQ 158, K5DMA 8, W5EA 6.

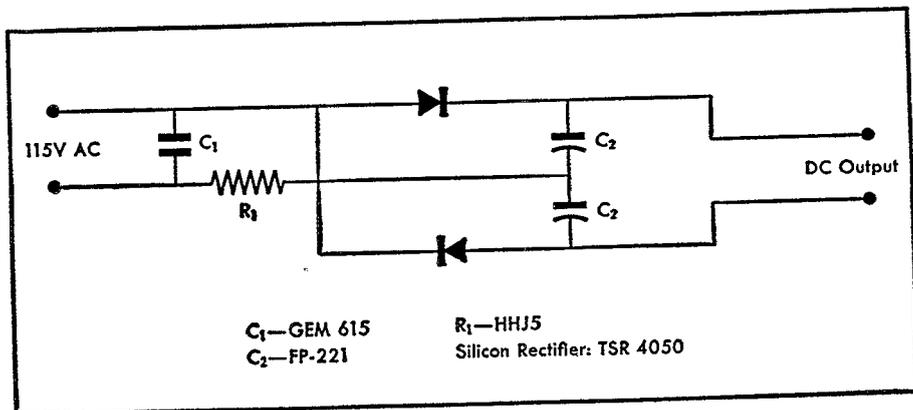
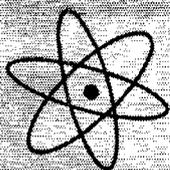
**MISSISSIPPI**—SCM, J. Adrian Houston, Sr., W5EHH. K5QNE, Hattiesburg, reports organization of The Teen Hams of the Deep South Club which holds weekly meetings. Membership is open to any teen-ager with a genuine interest in amateur radio. The club members are making plans to take part in Field Day activities. Officers are K5QNE, pres.; K5RRS, vice-pres.; K5SNO, sec.-treas.; KN6SVR, act. mgr.; K5RDN and KN5TOB, executive committee men. BV (ex-9BA), Biloxi, reports K5TQO (ex-9VMB) and K5TEB (ex-9TCX) work at Keesler A.F.B. K5TEB recently erected a Hornet tri-band beam. K5TKY is ex-9OHK from Belleville, Ill. K5TQM is ex-9ZLX from Mascoutah, Ill. K5IHQ reports the MMEN held 25 sessions and handled 25 formal messages and 45 informal messages. UXJ reports that 2-meter activity in and around Cleveland is rising. The Cleveland Amateur Radio Club recently received the call K5UFQ. K5DLN has a new radio shack in back of his radio and TV repair shop. K5LEA is on the air with a DX-35. Traffic: (Mar.) K5QNF 220, W5FPI 104, JHS 43, K5QNE 26, MFY 11, HAR 8.

**TENNESSEE**—SCM, R. W. Ingraham, W4UIO—SEC: RRV. RM: NHT. PAMs: UOT, PAH, VQE and ZZ. Congrats to BPT winners RCF and PL. Thanks to NHT, PAH and K4JNK for net reports. New officers of the Kingsport ARC are K4VVM, pres.; K4QNC, vice-pres.; K4GQX, secy.; HKU act. Officers of the Bays Mountain Club are TYT, pres.; K4VYN, vice-pres.; KN4YPE, secy.; K4VVM, act. Welcome to K4CNY, a newcomer in Chattanooga already active on the section nets. He runs a Globe Scout and is a fireman. JVM reports there are about 30 stations on 8 meters in Chattanooga. K4OUK has a new Apache. K4LPW reports he still is chasing DX but is becoming a 40-meter s.s.b. ragchewer. TDZ has a new crank-up tower. Thanks to K4ILU for his OO report and to K4KYL for his OES report. Traffic: (Mar.) W5RCF 912, W4FL 795, K4JNK 167, W4OGG 97, K4CNY 84, LSP 53, W4VJ 53, CXY 24, PEP 22, IGW 19, UIO 19, NHT 17, TZG 16, UVL 16, K4QEH 12, LPW 11, W4PQP 11, PAH 9, K4OUK 8, W4JVM 6, TDZ 6, VTS 3, ZBQ 3, EIN 2, K4KYL 2, W4LLJ 1.

**GREAT LAKES DIVISION**

**KENTUCKY**—SCM, Robert A. Thomason, W4SUD —Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RMs: K4AIS and LHQ. PAMs: GTC and K4MMW. S.S.B. PAM: MMY. V.H.F. PAM: K4LOA. We are sorry to lose NGN as S.S.B. PAM as he is leaving this section. His support of all the section nets will be missed. MMY has agreed to replace Bev. Your support of MMY will insure continual growth of s.s.b. for traffic nets. I believe KSN will be a valuable link in any future communication emergency. VJV will replace NGN as EC. Everyone might not have noticed that BAZ is steadily strengthening our emergency communication preparedness. All our section nets have benefited from the civil defense traffic originated by BAZ. New KYN members; K4TTZ. New KPN members: HI and K4RBH. March OO reports were received from ELG, EJA, K4BUB and GAG. KN7GIQ is looking for Lexington 2-meter activ-

(Continued on page 124)



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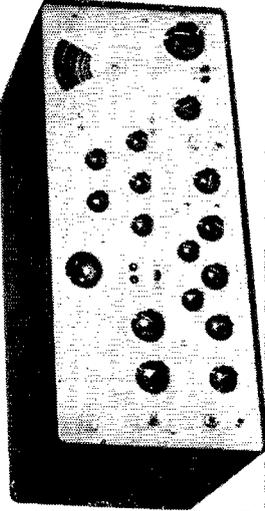
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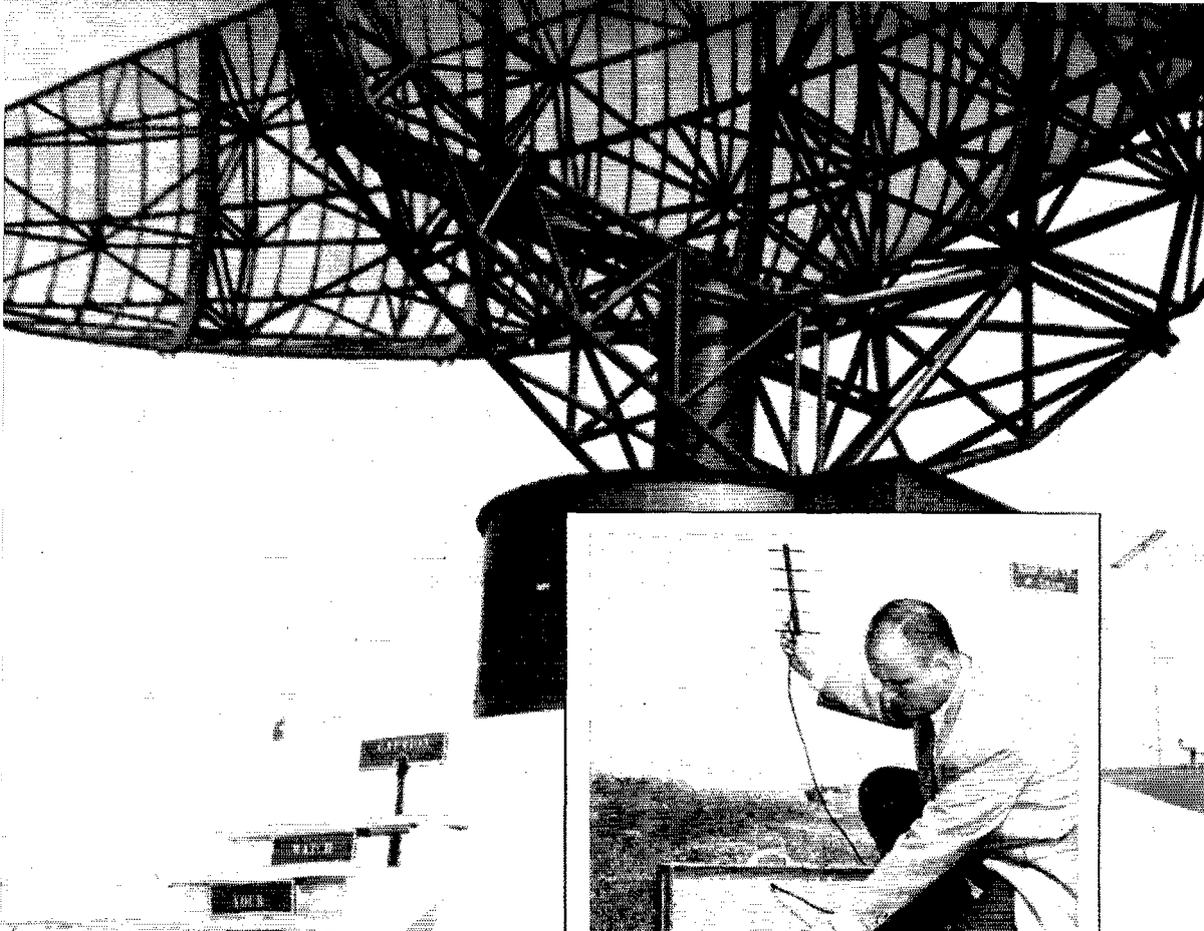
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ity. K4PNA is enjoying a new HQ-170: VDL obtained a 9RN certificate for 90 consecutive QNTs. JUI is putting his 13-year-old antenna system into shape. K4QHZ is active on section nets mobile. EC K4CC reports the Harlan Club has a new emergency communication truck. I would like to see several other areas follow their example. KKG worked K84BB DXpedition on 10-meter s.s.b. K4PPK has a big 300-watt signal active in Paducah. Another Kentucky QSO Party will be held in June with a Heath Q Multiplier as first prize. Traffic: K4YDL 852, ZNL 185, W4SUD 160, BAZ 159, K4AIS 156, CSH 92, W4GTC 75, K4MMW 57, SBL 42, VTY 40, W4NGN 37, KKG 36, NUQ 36, YVI 34, K4JOP 31, LHQ 31, CC 30, QCN 23, WBG 23, QHZ 22, 1FB 19, W4CDA 18, K4MPV 18, W4HWQ 16, K4SBZ 16, HOE 11, W4KJP 11, ELG 10, HTD 9, K4PNA 9, QYP 7, W4SZL 6, EJA 5, K4PPK 5, KIS 3, W4JUI 2, KN7GIQ/4 1.

**MICHIGAN**—SCM, Thomas G. Mitchell, W8RAE—SEC: 8YAN, RMs: OCC, FWQ, QQQ. Well, here I am for another report. To date your new SCM has not been selected, so I'm filling in again. I do want to take this opportunity to express my appreciation to all who have cooperated with me during the past four years. Without that cooperation we would not enjoy the smooth organization that we have in this section. Taking stock of these last few years it is gratifying to realize that we have made quite a good record. Our "working conditions" were improved by the license plate law modifications and by the change in the statute covering the installation of mobile equipments. Both of these were successfully legislated through the efforts of our very good friend HSG/MEX. His loss is still felt. The AREC is growing very orderly under the guidance of our energetic SEC and I'm sure that your continued cooperation with Don will see continued growth of that organization. Our traffic nets have maintained their high standards as shown in the NTS reports. All in all, I'm very proud to have been your SCM and will continue to feel that it has been an honor to serve. Thanks for your many letters and messages. Very 73 and the best of luck to all.—TGM/W8RAE. Traffic: (Mar.) W8OCC 205, QQQ 169, FWQ 130, YAN 130, K8IYN 129, W8JYJ 120, FX 94, JKK 75, RTN 75, NUL 71, K8AEM 40, W8NOH 31, K8GJD 30, W8TLJ 29, K8ABW 27, W8LLP 27, DSE 21, RAE 20, SCW 17, TBP 13, UOQ 12, MHZ 11, K8NAW 11, W8WXO 10, AUD 8, SJF 8, K8CKD 7, W8WVL 6, HKT 5, FSZ 3, FOV 2. (Feb.) W8NUL 51, TBP 43.

**OHIO**—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and VTP. PAMs: HZJ and WYS. New appointments: K8HGT as ORS, WYS as PAM. DAC and IUT joined "Silent Keys." WAB was in Nevada on business. The Columbus Alt's *Caroscope* informs us that UXJ spoke on "Electronics Part in the Electrical Utility." The v.h.f. group demonstrated a person-to-person QSO on television on 432 Mc. between DMR and KJJ as a possible "amateur first." Cuyahoga County's AREC furnished communication to the mobiles used to pick up the money at the end of the Mothers' March on Polio with the following taking part: AEU, BHR, CPP, EFB, LFY, LHX, NRI, NZI, PVC, SZU, TFR, TFW, ZFU, K8s AAP, ABA, HWI, DEJ, DPA, DNZ, ELX, GJW, GZQ, HVH, IHC, IJG, JHZ, JIC, KKO, KNG, KNH, KNJ, MBV and MBW. Toledo's *Shack Gossip* tells us that KN8GZV and KN8GZK moved to Arizona and are now K7CPZ and K7CPY. K8CRF and K8JDS are in the hospital. VJO is on 6 meters, KN8NQJ is a new YL ham. TZO is on 6 meters with a Seneca. HYE is mobile on 10 meters, UKX visited in Texas, K8LNX is a new ham in Attica, RER is back on 75 meters, the stork brought a baby boy to KKG, K8JKE and K8LVR received their General Class tickets. DAE sent in newspaper clippings from Cleveland papers on local amateurs—one to CTZ, who is blind; another on father-son team, GTJ and K8LEX; and the third on LIO, who acted as pivot man "Tinker-to Evers-to Chance," relaying traffic between two widely-separated Jesuit priests in the Antarctic. The Northeastern Ohio 50-Mc. Group Picnic will be held June 21 at Wadsworth Municipal Park. A 6-meter station will be set up to guide mobiles there. Major prizes will be a Seneca 8 and 2 transmitter and a National 303 receiver. Get your tickets from Rev. C. A. Borkey, K8LMG, 3156 Rosebay Blvd., Barberton, Ohio. New hams in Sandusky are KN8NXX with a DX-20 and an S-85, KN8NXO with a DX-40 and an S-38E and KN8MAZ with a new Mohawk. K8JPL is mobile. K8GIU has a new DX-100. Those taking part in the Trumbull County flood alert were AQW, BND, FBE, GGS, HCA, IRF, KCE, KFE, KGD, PTQ, QMS, RZK, TWO, UYX, WOL, K8s AZY, KFS, LCX and LSI received their General Class tickets. A new ham is KN8ORS. K8JUZ built 2- and 10-meter beams. GGS and K8EQN are on 2 meters. K8LCX has a new

(Continued on page 126)



**RAYTHEON FIELD ENGINEER REUBEN PULLEN, K6UPR, operating portable L-band jammer of his own design and diverting jamming signal toward Raytheon 40-foot antenna at long-range radar site.**



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 Exam: \*8010 x 18=144.180  
 Note—10 KC difference between the above  
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**Hermetically Sealed Fund.** .01 Tol.....ea. \$2.50

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**40 Met. 7150-7198**—Steps of 1 KC. FT-243 only  
**Dbl. to 40 Met. 3576-3599.** Steps of 1 KC. FT-243 or DC-34  
**15 Met. 5276-5312—7034-7083** Steps of 1 KC. FT-243

4035	4995	5880	6362	6815	7316	7558	7710	7875	8064	8283	8576
4045	5030	5995	6373	6825	7325	7567	7719	7884	8073	8292	8585
4050	5035	6000	6375	6830	7330	7572	7724	7889	8078	8297	8590
4055	5040	6005	6380	6835	7335	7577	7729	7894	8083	8302	8595
4110	5127	5925	6405	6857	7357	7599	7751	7916	8105	8324	8617
4115	5135	5935	6410	6862	7362	7604	7756	7921	8110	8329	8622
4165	5205	5955	6420	6870	7370	7612	7764	7929	8118	8338	8632
4170	5210	5960	6425	6875	7375	7617	7769	7934	8123	8343	8637
4175	5215	5965	6430	6880	7380	7622	7774	7939	8128	8348	8642
4180	5220	5970	6435	6885	7385	7627	7779	7944	8133	8353	8647
4185	5225	5975	6440	6890	7390	7632	7784	7949	8138	8358	8652
4190	5230	5980	6445	6895	7395	7637	7789	7954	8143	8363	8657
4215	5275	5985	6450	6900	7400	7642	7794	7959	8148	8368	8662
4220	5280	5990	6455	6905	7405	7647	7799	7964	8153	8373	8667
4225	5285	5995	6460	6910	7410	7652	7804	7969	8158	8378	8672
4230	5290	6000	6465	6915	7415	7657	7809	7974	8163	8383	8677
4235	5295	6005	6470	6920	7420	7662	7814	7979	8168	8388	8682
4240	5300	6010	6475	6925	7425	7667	7819	7984	8173	8393	8687
4245	5305	6015	6480	6930	7430	7672	7824	7989	8178	8398	8692
4250	5310	6020	6485	6935	7435	7677	7829	7994	8183	8403	8697
4255	5315	6025	6490	6940	7440	7682	7834	7999	8188	8408	8702
4260	5320	6030	6495	6945	7445	7687	7839	8004	8193	8413	8707
4265	5325	6035	6500	6950	7450	7692	7844	8009	8198	8418	8712
4270	5330	6040	6505	6955	7455	7697	7849	8014	8203	8423	8717
4275	5335	6045	6510	6960	7460	7702	7854	8019	8208	8428	8722
4280	5340	6050	6515	6965	7465	7707	7859	8024	8213	8433	8727
4285	5345	6055	6520	6970	7470	7712	7864	8029	8218	8438	8732
4290	5350	6060	6525	6975	7475	7717	7869	8034	8223	8443	8737
4295	5355	6065	6530	6980	7480	7722	7874	8039	8228	8448	8742
4300	5360	6070	6535	6985	7485	7727	7879	8044	8233	8453	8747
4305	5365	6075	6540	6990	7490	7732	7884	8049	8238	8458	8752
4310	5370	6080	6545	6995	7495	7737	7889	8054	8243	8463	8757
4315	5375	6085	6550	7000	7500	7742	7894	8059	8248	8468	8762
4320	5380	6090	6555	7005	7505	7747	7899	8064	8253	8473	8767
4325	5385	6095	6560	7010	7510	7752	7904	8069	8258	8478	8772
4330	5390	6100	6565	7015	7515	7757	7909	8074	8263	8483	8777
4335	5395	6105	6570	7020	7520	7762	7914	8079	8268	8488	8782
4340	5400	6110	6575	7025	7525	7767	7919	8084	8273	8493	8787
4345	5405	6115	6580	7030	7530	7772	7924	8089	8278	8498	8792
4350	5410	6120	6585	7035	7535	7777	7929	8094	8283	8503	8797
4355	5415	6125	6590	7040	7540	7782	7934	8099	8288	8508	8802
4360	5420	6130	6595	7045	7545	7787	7939	8104	8293	8513	8807
4365	5425	6135	6600	7050	7550	7792	7944	8109	8298	8518	8812
4370	5430	6140	6605	7055	7555	7797	7949	8114	8303	8523	8817
4375	5435	6145	6610	7060	7560	7802	7954	8119	8308	8528	8822
4380	5440	6150	6615	7065	7565	7807	7959	8124	8313	8533	8827
4385	5445	6155	6620	7070	7570	7812	7964	8129	8318	8538	8832
4390	5450	6160	6625	7075	7575	7817	7969	8134	8323	8543	8837
4395	5455	6165	6630	7080	7580	7822	7974	8139	8328	8548	8842
4400	5460	6170	6635	7085	7585	7827	7979	8144	8333	8553	8847
4405	5465	6175	6640	7090	7590	7832	7984	8149	8338	8558	8852
4410	5470	6180	6645	7095	7595	7837	7989	8154	8343	8563	8857
4415	5475	6185	6650	7100	7600	7842	7994	8159	8348	8568	8862
4420	5480	6190	6655	7105	7605	7847	7999	8164	8353	8573	8867
4425	5485	6195	6660	7110	7610	7852	8004	8169	8358	8578	8872
4430	5490	6200	6665	7115	7615	7857	8009	8174	8363	8583	8877
4435	5495	6205	6670	7120	7620	7862	8014	8179	8368	8588	8882
4440	5500	6210	6675	7125	7625	7867	8019	8184	8373	8593	8887
4445	5505	6215	6680	7130	7630	7872	8024	8189	8378	8598	8892
4450	5510	6220	6685	7135	7635	7877	8029	8194	8383	8603	8897
4455	5515	6225	6690	7140	7640	7882	8034	8199	8388	8608	8902
4460	5520	6230	6695	7145	7645	7887	8039	8204	8393	8613	8907
4465	5525	6235	6700	7150	7650	7892	8044	8209	8398	8618	8912
4470	5530	6240	6705	7155	7655	7897	8049	8214	8403	8623	8917
4475	5535	6245	6710	7160	7660	7902	8054	8219	8408	8628	8922
4480	5540	6250	6715	7165	7665	7907	8059	8224	8413	8633	8927
4485	5545	6255	6720	7170	7670	7912	8064	8229	8418	8638	8932
4490	5550	6260	6725	7175	7675	7917	8069	8234	8423	8643	8937
4495	5555	6265	6730	7180	7680	7922	8074	8239	8428	8648	8942
4500	5560	6270	6735	7185	7685	7927	8079	8244	8433	8653	8947
4505	5565	6275	6740	7190	7690	7932	8084	8249	8438	8658	8952
4510	5570	6280	6745	7195	7695	7937	8089	8254	8443	8663	8957
4515	5575	6285	6750	7200	7700	7942	8094	8259	8448	8668	8962
4520	5580	6290	6755	7205	7705	7947	8099	8264	8453	8673	8967
4525	5585	6295	6760	7210	7710	7952	8104	8269	8458	8678	8972
4530	5590	6300	6765	7215	7715	7957	8109	8274	8463	8683	8977
4535	5595	6305	6770	7220	7720	7962	8114	8279	8468	8688	8982
4540	5600	6310	6775	7225	7725	7967	8119	8284	8473	8693	8987
4545	5605	6315	6780	7230	7730	7972	8124	8289	8478	8698	8992
4550	5610	6320	6785	7235	7735	7977	8129	8294	8483	8703	8997
4555	5615	6325	6790	7240	7740	7982	8134	8299	8488	8708	9002
4560	5620	6330	6795	7245	7745	7987	8139	8304	8493	8713	9007
4565	5625	6335	6800	7250	7750	7992	8144	8309	8498	8718	9012
4570	5630	6340	6805	7255	7755	7997	8149	8314	8503	8723	9017
4575	5635	6345	6810	7260	7760	8002	8154	8319	8508	8728	9022
4580	5640	6350	6815	7265	7765	8007	8159	8324	8513	8733	9027
4585	5645	6355	6820	7270	7770	8012	8164	8329	8518	8738	9032
4590	5650	6360	6825	7275	7775	8017	8169	8334	8523	8743	9037
4595	5655	6365	6830	7280	7780	8022	8174	8339	8528	8748	9042
4600	5660	6370	6835	7285	7785	8027	8179	8344	8533	8753	9047

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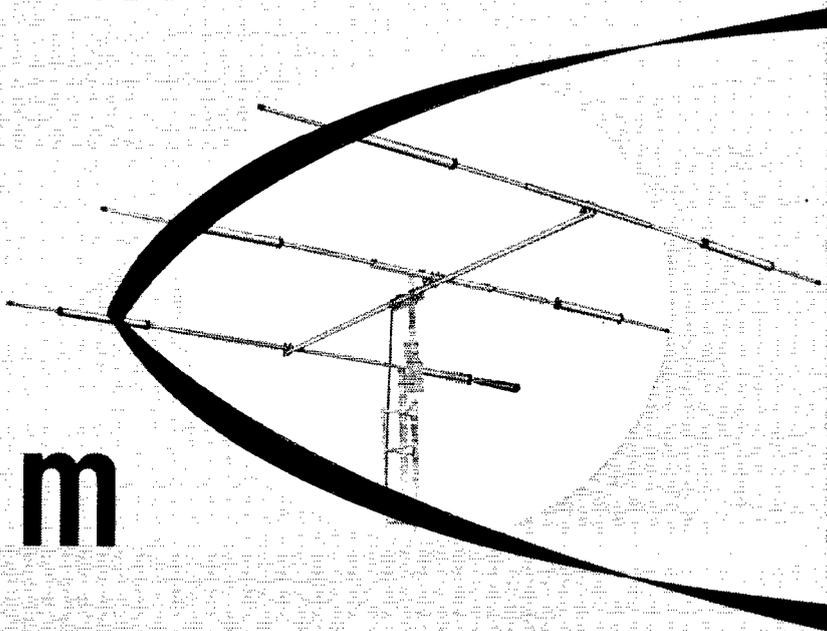
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10  
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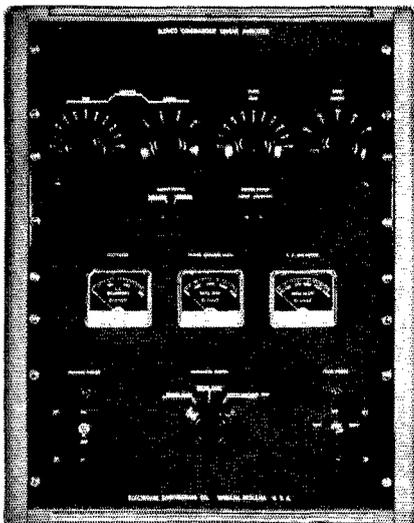
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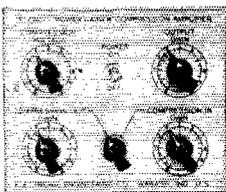
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time earning Worked All Mass., Worked Westchester Co., 2-Meter Century Club awards and snagging 74 countries. K2TBW is on the air from Lehigh U., W3AEO. K2TPU's sister, WV2BEA, is on 15-meter c.w. K2UBG is acting manager for the Mike-Farad Net. W2KTU earned the W-Conn award on c.w. New officers of the Stuyvesant HSRC are K2VDR, pres.; K2UMT, vice-pres.; K2KVL, secy, and W2TOX, trustee. K2PTS put a 522 on 144 Mc. The ARTS publication, devoted to RTTY, is very interesting. It brings to mind the fact that very few RTTY notes are received by the SCM. How about it, fellows? Any traffic reports, news, etc.? K2SJP joined Army MARS. WA2CDQ is on the air with a DX-20 and an S-85. K2SVY installed a complete Terraft installation for 6-meter mobile. W2VDT has now reached 107 countries worked and needs only a few more cards for DXCC. A line gathering was on hand for the Eighth Annual S.S.B. Dinner sponsored by the SSBARA, a very rapidly-expanding organization. W2JUP is off to South America for a three-year stay. K2YHD has a new DX-100. K2EYJ is in W6-Land. K2IRS is interested in raising minks for fun and profit. W2LXC is going mobile. W2NGU is returning to 20-meter c.w. It recently was necessary to mail 45 appointment expiration notices. This is time-consuming and takes valuable time from other work. Please check your appointment dates. If your report does not appear as expected in this column it is possibly because of a mix-up in mail brought about by a month's delay in my moving plans. Good luck to all on Field Day. Remember those messages to the SEC or SCM. BCNU from W2YKQ/2. Traffic: (Mar.) W2KEB 3471, W2VDT 298, K2VCO 210, W2EW 84, K2MIG 64, K2IRS 57, K2PHF 39, W2DRD 25, W2LGG 24, K2HVV 23, K2DEMI 20, K2RBS 18, K2VIX 8, K2YQK 4, K2AZT 3, W2JGV 2, W2MDM 2, K2MEM 1. (Feb.) W2OME 8.

**NORTHERN NEW JERSEY**—SCM, Edward Hart, jr., W2ZVW—SEC: W2HIN, RMs: W2RXL and W2ADE. PAMs: K2KVR and K2VAC. The New Jersey Net meets daily on 3695 kc. at 1900. During March NJN had 31 sessions with an attendance of 615 and handled 313 messages. The NJ6 Net, on 51,150 kc. at 2300, had 8 sessions with 215 stations and 115 traffic total. W2OPB tried working 2 meters in the back yard and got wet. W2RXL, manager of NJN, now is publishing a net bulletin. K2ZHK, manager of the New Jersey Slo Speed Net, reports an attendance of 71 in 22 sessions with traffic totalling 46. K2VVL made the RPL. K2VAB brags about his first PY contact. K2GIF has a new frequency-shift exciter. K2IZN/2 is active on NJN. K2MFF attended the IRE and ESN Conventions. WV2AYI hopes to start the Eastern Area Slow Speed Net soon. W2CVW has worked 100 countries. All he has to do now is get the cards. K2LXI is a new OPS. W2CFB is the proud owner of a new HQ-170. W2EWZ was visited by K2COY and visited K2VVL. K2MFX is putting up a 48-ft. tower for 2 and 10 meters. W2BVE has the RTTY receiver in action. K2UKQ placed fifth in the CD Party, her first try at it. W2VCZ is battling the bugs in the 833A final. K2PBP has a new beam, a new rotor and a new converter. W2GVU may be in DU-Land this coming winter. Watch for him. The Night Owl Net meets every Thurs. at 2100 on 29.0 Mc. Officers are K2MAH, pres.; K2UCY, vice-pres.; K2YNQ, secy.; K2OQS, treas. Officers of a new club, the Freehold ARC, are K2LIV, pres.; K2YXY, vice-pres.; W2SQN, treas.; WV2CPT, secy. The Garden State ARA began Novice code classes during March. K2SRD passed the General Class exam and is active on 40-meter c.w. W2PTS needs 5 more states for WAS. Traffic: W2OPB 184, W2RXL 170, K2ZHK 166, K2VVL 141, W2ZVW 128, K2VAB 108, K2GIF 70, K2IZN/2 60, K2YJH 59, K2EQP 58, W2EBG 36, K2MFF 34, W2ADE 26, WV2AYI 26, W2RZO 25, W2DRV 24, W2CVW 23, K2VAC 18, K2LWQ 17, W2RON 15, W2BRC 14, W2CFB 14, K2JTU 13, K2AGJ 12, WA2CCF 12, W2EWZ 12, K2MFX 12, K2VLU 8, W2KFR 5, W2BVE 3, W2CJX 2, W2NIY 2.

## MIDWEST DIVISION

**IOWA**—SCM, Russell B. Marquis, W0BDR—Asst. SCM: Walter G. Porter, #UJC. SEC: MG. PAMs: YUA and K0CIG. RM: LGG. Officers of the Ottumwa Club are KN0TLK, pres.; K0OCC, vice-pres.; KN0SVX, secy.; and SVB, treas. New appointments: GKN as OBS, ZVY as OO and K0DQI as EC, Renewals: BXG, VWF, PP and K0AHZ as OPS; MJH, EEG, KHN and K0BRE as ECs; AHZ as OO; and NYX as ORS. K0LHH and AGJ received TLCN Section Net certificates. QVA has a new HQ-160 and LJW has an HQ-170. BTR, BTX, VCM, FSO, K0JDK, AHZ, JTL, JVL and KN0QWO set up a complete station during the Red Cross Open House Day at Webster City. The 160-Meter Net Picnic will be held June 26 in Webster City. KN0TLJ is a new Novice in Ottumwa. EIC and FWO have joined Silent Keys. PP is operating d.s.b. on 40 meters. Anyone interested in a teletype club is invited

(Continued on page 180)

# TELREX MONARCH "TRI-BAND" Model TBS-626

Amateur Net **\$259.75** F.O.B. Asbury Park  
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## KING... of all Single-Transmission-Line Arrays!

Telrex... tuned, matched, and calibrated, for easy assembly (to your favorite band sectors) and specified Telrex performance at your site... without tuning or adjustments of any kind required or recommended! Model TBS-626 consists of 6 optimum spaced elements (two of which are "Tri-Band" elements) on a 26 ft. boom, providing optimum 4 element 10 meter and optimum 3 element 15 and 20 meter performance. Separate, properly spaced, reflectors, provide optimum F/B ratio on the 3 bands with no gain degradation!

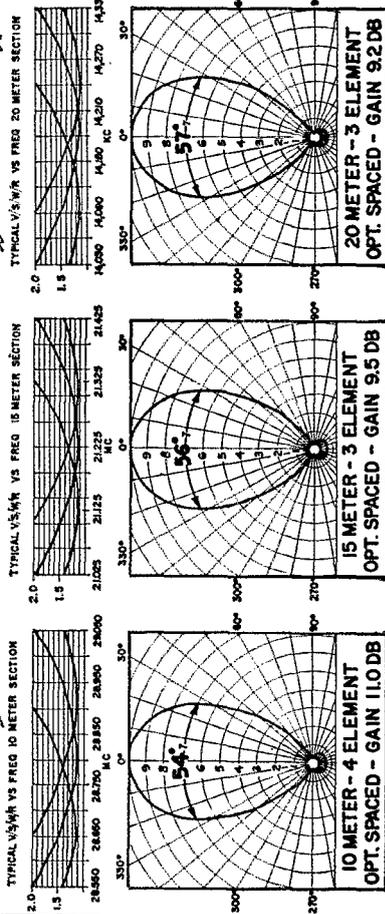
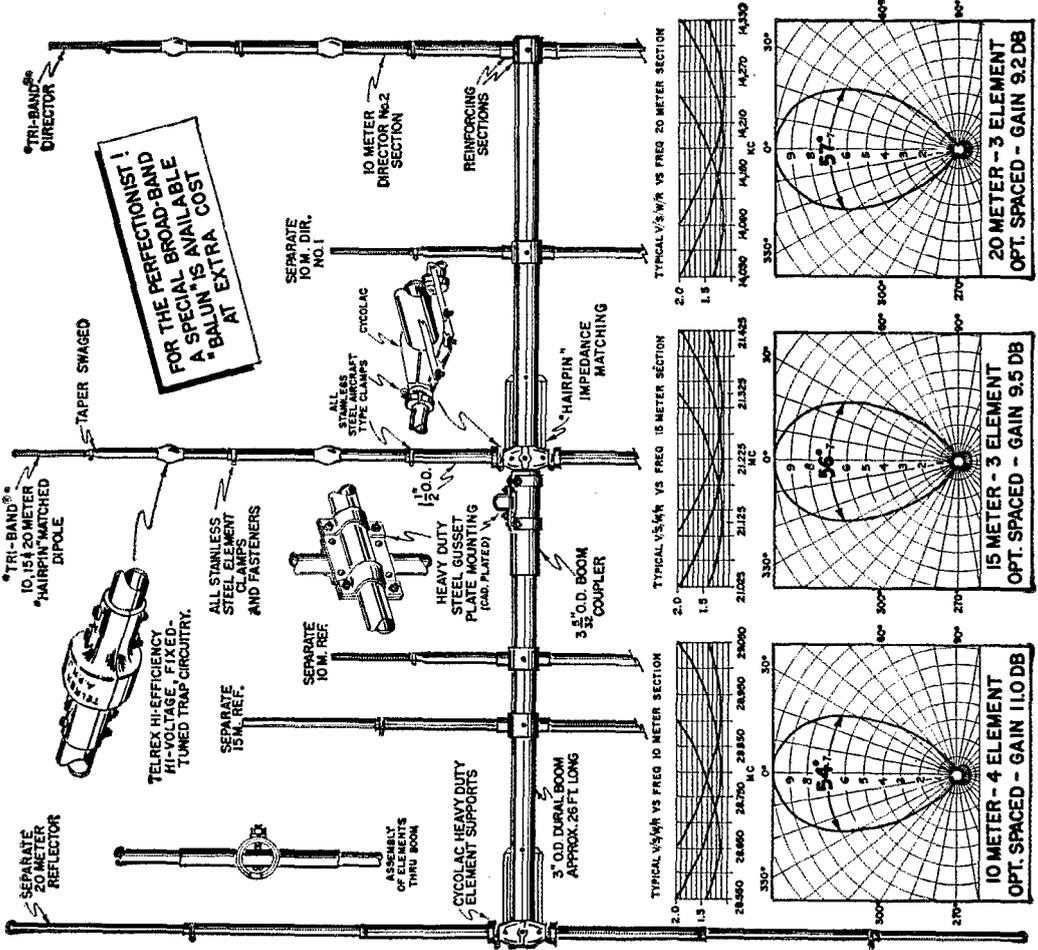
Model TBS-626 is destined to become a classic, and is engineered to provide maximum performance and satisfaction per dollar, per element. No finer single-transmission-line "Tri-Band" is possible! The following specifications, patterns, and V/S/W/R curves tell the complete story:

V/S/W/R at resonant point  
(using 50 ohm coax) ..... 1:1:1  
V/S/W/R bandwidth within ..... 1:1:1  
F/B ratio on 10, 15 and 20 meters ..... 1.5%  
20 meters ..... 28 DB  
Max. power rating .. 3KW 100% AM  
Boom length and diameter ..... 26 ft. x 3" O.D.  
Longest element length ..... 34 ft.-6" approx.  
Turning radius approx. .... 20 ft.  
NOTE: - Also available, lower cost Telrex "Tri-Band" arrays, designed to out-perform and out-last any so-called Tri-Bander on the market today! Order with confidence or send for data sheet of model in which you are interested:

**CHALLENGER SERIES TBS-416**..... \$159.50  
4 Element (16"x2" O.D. Boom) gain 8 db. Recommended Rotator—  
Telrex 175B  
**CHALLENGER SERIES TBS-308**..... \$99.75  
3 Element (8"x2" O.D. Boom) gain 5 DB. Recommended Rotator—  
Telrex 175B or CDR  
**CHALLENGER SERIES DTB-30**..... \$38.50  
Rotatable 10, 15 and 20 Meter "Tri-Band" Dipole, unity gain—  
bi-directional pattern. Any good TV rotator may be used.

141 MODELS TO CHOOSE FROM—\$5.95  
TO \$590.00.  $\frac{3}{4}$  METER TO 40 METERS

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**Telrex LABORATORIES**  
Communication and TV Antennas  
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**NOW! from E-Z WAY**

**THE Medalist '40'**

*Put your beam where you want it  
"the E-Z WAY!"*

- \* Put your Tribander at 41' in 70 mph wind (125 mph cranked down to 24').
- \* Tilts over for E-Z access to array.
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- \* E.I.A. TR-116 specs. Heavy wall structural steel tube legs, solid steel rod diagonal & horizontal bracing — arc welded.
- \* Safety rest locks tower at desired height. No weight on cables.

**MODEL RBS-40P.** Dip painted-7"x1.90" OD mast furnished. Am Net. **\$155.00**

**MODEL RBS-40G.** Hot dipped galvanized, stainless steel cables, 7"x1.90" OD mast furnished. Am. Net. **\$195.00**

**MOUNTING KITS:**

**MODEL GPK-540.** Featuring tilt-over "Wonder Ground Post" — no concrete required! Am. Net. **\$70.00**

**MODEL BAK-540.** Galvanized wall bracket & hinged base. Am. Net. **\$10.50**

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Write for Catalog No. H-100.2



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to contact NTB. LGG reports that the TLCN will go on summer schedule June 1. K0OID is a new TLCN member. LYV and LYX have moved to Texas. AEH is back from wintering in Arizona. K0QAI has received his General Class ticket. Traffic: (Mar.) W0BDR 2815, LGG-1331, LCX 968, K0CLS 264, W0GXQ 204, PZO 128, K0BLJ 112, AGJ 104, CYF 63, W0QVA 53, K0GXP 45, W0NGS 45, OFW 40, K0LHH 32, MMS 30, W0BXT 28, K0MMZ 26, MFX 22, W0SLC 21, K0APL 20, W0NTB 20, K0EXN 18, W0CGL 17, JPJ 14, UTD 14, K0KAQ 13, GOQ 12, JGM 11, W0MEL 11, VWF 10, YDV 9, K0QKF 8, W0RQA 8, BQJ 7, CHO 7, COD 6, K0QWM 6, W0SCA 6, K0IHC 5, QAI 5, BPR 4, KBX 4, W0EEG 3, PAN/0 3. (Feb.) K0CYF 38.

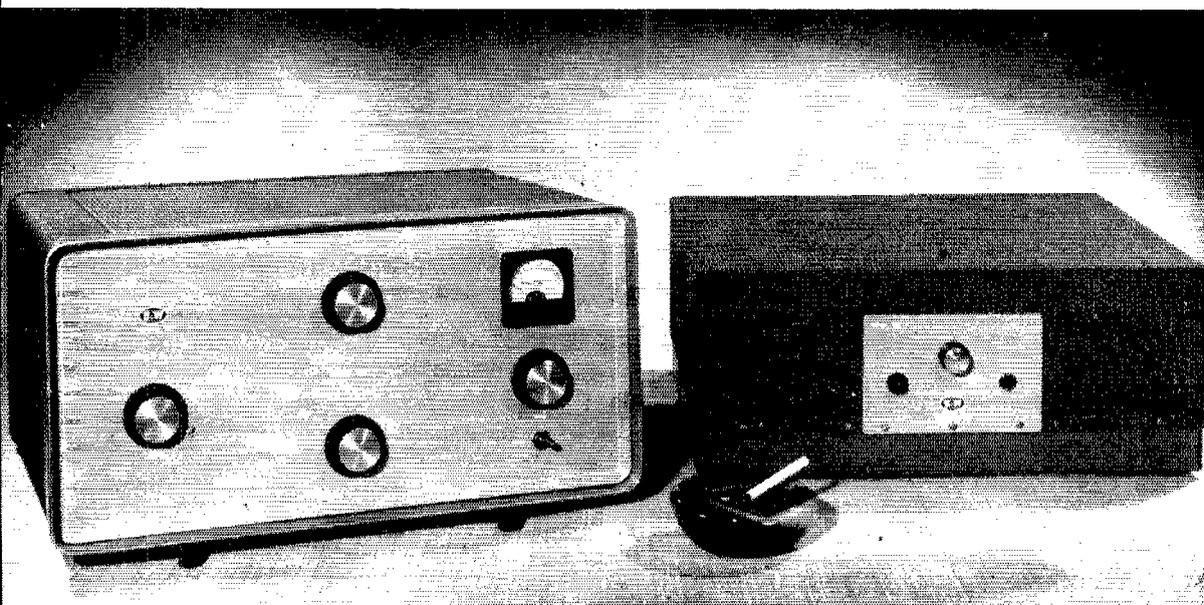
**KANSAS**—SCM, Raymond E. Baker, W0FNS—SEC: IFR. Asst. SEC: LOW. RM: QGG. PAM: LEW. V.H.F. PAM: HAJ. Appointments: LOW. Colby, has been appointed as Asst. SEC Kansas. Doc has a new HQ-170. ZUX is now EC for Zone 21. New OPSs are GJG, WFD, K0GIG and K0EFL. VGE has her new station set up and it is really nice. New calls in Goddard are K0EWW, KN0TBU Eileen and KN0TGS Nancy. K0DIW and other stations worked portable/mobile to help the boys get some hard contacts in the western counties on WAK. K0JVX advises he will have to curtail his activities because of school work. Nets: KPN Section Phone, 3920 kc., 0645 Mon., Wed., Fri., 0800 Sun. LEW manager; QKS Section C.W., 1830 daily, QGG manager. Your SCM was rockbound in the hospital for few days recently. NJX has a new 15-meter beam, IFR has a new beam. Some very fine club publications: *Hi-Plains QRM* by the Hi-Plains Club; *CKRC INK* by the Salina Club; *The Log* by the Flint Hills Club at Eldorado. Traffic: (Mar.) W0BLI 041, FNS 205, TOL 191, QGG 183, IFR 132, SYZ 110, SAF 106, K0JVX 101, W0RJE 88, K0HGI 34, W0UTO 60, K0BXX 55, W0WWT 51, K0BIX 47, W0ABJ 44, K0MIF 40, W0VUI 23, K0KMZ 22, W0TTG 20, LEW 19, K0LRL 18, W0BBO 14, SKW 14, GJG 11, LEA 11, WFD 11, FHT 10, K0JID 10, EFL 9, W0JDU 9, LOW 9, K0EMF 8, W0LIX 7, WIZ 7, FDJ 4, K0BIG 4, CUL 3, W0FHU 3, ASY 2. (Feb.) W0BLI 349, TOL 155, WWT 72, K0MRW 14, W0FDJ 8, RJF 8, TTG 6.

**MISSOURI**—SCM, C. O. Gosch, W0BUL—Net reports: MON, 3850 kc. 7 p.m. Mon. through Sat. Handicapper PN, QNI 56, QTC 75; MEN, 3885 kc. 6 p.m. Mon., Wed., Fri., 13 sessions, QNI 479. QTC 145. NCS OHC 4, OVV 1, VPQ 5, OMM 3. Appointments: SEC, K0LTP; PAM (E. Mo.), BVL; PAM (W. Mo.), OMM; Mgr. MEN, OMM; ORS, GEP; EC (Raytown, 6 meters), OMM. Endorsements: ORS, GCL; OFSS, BVL, OMM; ECS, TBI, OHC and DFK. PME reports observation of over one hundred discrepancies in the c.w. bands during the month. TLG moved to Iowa but is still active on MEN. WEN is building kw. rigs for both a.m. and s.s.b. K0IFM won two trips to Las Vegas at a home show. The ARRL Midwest-Central Division Convention will be held in St. Louis (Chase Hotel) Aug. 22 and 23. K0CNP is on 2 meters with an SCR-522. K0CHEZ received BSEE from Rolla and he and his XYL (K0DEY) are moving to Kansas. The Riverside ARC (St. Louis) is offering a certificate for QSOs with the St. Louis gang. K0OJC received a CP certificate. New officers of the Tri-State Radio Society (Joplin) are K0CCN, pres.; RIP, vice-pres.; PKI, secy.; K0JAY, treas. K0CVS is on 6 meters at a new QTH, WAP and K0ABK report activity on 8 meters. K0CFY has a new triband beam with F0 DX contacts. K0LIN had an FB QSO with VE4QX, who was using nine watts on 75-meter phone. K0CIX is secretary of a newly-formed Amateur Radio Technical Society of St. Louis. Traffic: (Mar.) W0CPI 812, K0KBD 719, W0BVL 185, K0BLN 210, ONK 160, W0OMM 146, OUD 88, K0OEP 86, W0KIK 76, K0OJC 76, W0VPQ 67, OVV 37, KA 32, K0CFY 22, W0GEP 15, WAP 14, ARO 12, TBI 11, MDG 9, QMK 7, BUL 5, K0LGG 5, IHY 4, W0GBJ 1. (Feb.) K0JPH 43.

**NEBRASKA**—SCM, Charles E. McNeel, W0EXP. My term as your SCM expires with this report and I would like to thank each and every one of you who have helped with my duties as SCM. The Western Nebraska Net reports via NIK NC, QNI 656, QTC 108. Those reporting 100 per cent during March were K0AIE, K0BMO, W0DVB, K0LEQ and W0NIK. The Nebraska 75-Meter Emergency Net is on 3983 kc, daily at 12:30 CST and ZWG, who has been elected to fill out the term as net manager, reports QNI 198, QTC 17. The Nebraska C.W. Net reports QNI 151, QTC 79. Traffic: (Mar.) W0RIN 250, NYU 203, K0DGV 179, W0NIK 98, ZWG 85, K0BDF 73, MRS 63, LIW 56, KUA 54, W0ZJF 46, K0HKI 41, CDG/835, W0VEA 35, OKO 34, VZJ 26, KDY 24, K0ELQ 20, MSS 20, GJR 18, W0HOP 18, BOQ 18, OCU 16, URC 15, PUT 12, ZOU 12, UOV 10, WZR 8, K0CBV 7, W0LJO 7, K0RPT 7, W0HTA 6, QKR 6, EGO 5, ATU 4, K0CYN 4, KJP 3, QLN 3, W0WKP 3, AFG 2, K0HVA 2, W0PZH 2. (Jan.) K0DGV 251.

(Continued on page 132)

# POWER... PACKAGED FOR TODAY'S AMATEUR



LPA-1 GROUNDED GRID LINEAR AMPLIFIER  
NET PRICE \$375.00 COMPLETE WITH TUBES

LPS-1 POWER SUPPLY  
NET PRICE \$205.00 COMPLETE WITH TUBES

Power—a full kilowatt with this smartly designed, excellently styled version of the famous B&W linear amplifier family! New compactness . . . takes up no more space on your table than a receiver. New features . . . for greater performance and flexibility than ever before.

Separately housed LPA-1 R. F. section employs two Type 813 beam power tetrode tubes, connected as high-Mu triodes in a grounded-grid circuit. Blower, filament and bias supply are included in this section.

High voltage power supply unit LPS-1 may be remotely located. Switching control panel is removable for convenient installation at the operator's location. Circuit consists of a full wave single phase bridge rectifier, using four Type

816 mercury vapor rectifier tubes. R. F. filtering protects tubes and prevents mercury vapor hash radiation.

The LPA-1 can be driven by most excitors in the 100 watt class, such as the B&W 5100/5100B series, Vikings 1 and 2, Valiant, Collins 32V, KWM-1, 32S-1 series, Heath DX100 and others.

A compact impedance matching unit, the B&W LPA-MU, is separately available. It provides for operation with fixed output excitors such as the Hallicrafters HT 32 Series and similar types. A similar unit, the LPA-MU-2, is also available for use with the B&W L-1000-A and L-1001-A.

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LPA-MU MATCHING UNIT  
LPA-MU-2

Send for this illustrated brochure in full color giving specifications and detailed descriptions of the new B&W LPA-1, LPS-1 and LPA-MU.



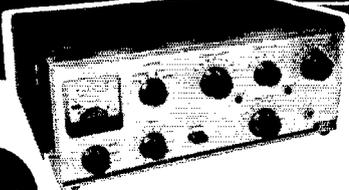
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OTHER B&W AMATEUR EQUIPMENT: Transmitters AM-CW-SSB • Single Sideband Generators • Single Sideband Receiving Adapters • Dip Meters • Match Masters • Frequency Multipliers • Low-Pass Filters • T-R Switches • R.F. Filament Chokes • Transmitting R.F. Plate Chokes • Audio Phase Shift Networks • Band Switching Pi-Networks • Cyclometer-type Counters • Antenna Co-axial Connectors • Baluns • Variable Capacitors • Fixed and Rotary Type Coils

**NEW ENGLAND DIVISION**

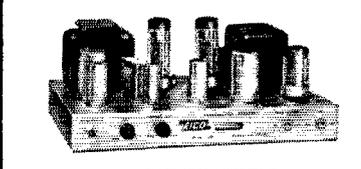
The specs are the proof... now your  
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**90-WATT CW TRANSMITTER . . #720  
KIT \$79.95 WIRED \$119.95**

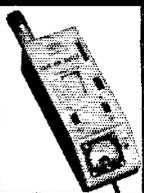
Conservative, highly efficient design plus stability, safety, and excellent parts quality. 80 thru 40, 20, 15, 11, 10 meters (popular operating bands) with one knob band-switching. 6146 final amplifier for full "clean" 90 W input, protected by clamper tube. 6CL6 Colpitts oscillator, 6A05 clamper, 6A05 buffer-multiplier, GZ34 rectifier. "Novice limit" calibration on meter keeps novice inside FCC-required 75W limit. No shock hazard at key. Wide range, hi-efficiency pi-network matches antennas 50-1000 ohms, minimizes harmonics. EXT plate mod. terminals for AM phone modulation with 65W input. Excellent as basic exciter to drive a power amplifier stage to max. allowable input of 1KW. Very effective TVI suppression. Ingenious new "low silhouette" design for complete shielding and "living room" attractiveness. Conservatively rated parts, copper-plated chassis, ceramic switch insulation. 5" H, 15" W, 9 1/2" D.



**NEW UNIVERSAL MODULATOR-DRIVER #730  
KIT \$49.95 WIRED \$79.95 Cover E-5 \$4.50**

Superb, truly versatile modulator at low cost. Can deliver 50 W of undistorted audio signal for phone operation, more than sufficient to modulate 100% EICO #720 CW transmitter or any xmitter whose RF amplifier has plate input power of up to 100W. Multi-match output xmr matches most loads between 500-10,000 ohms. Unique over-modulation indicator permits easy monitoring, no need for plate meter. Lo-level speech clipping & filtering with peak speech free, range circuitry. Low distortion feedback circuit, premium quality audio power pentodes, indirectly heated rectifier filament. Balance and bias adj. controls. Inputs for xtal or dynamic mikes, etc. Excellent deluxe driver for high-power class B modulation. EC083/12AX7 speech ampl., 6AL5 speech clipper, 6AR5 ampl. driver, 2-EL34/6CA7 power output, EM84 over-mod. indicator, GZ34 rect. Finest quality, conservatively rated parts, copper-plated chassis. 6" H, 14" W, 8" D.

**NEW GRID DIP METER . . . . . #710  
KIT \$29.95 WIRED \$49.95 including complete set of coils for full band coverage.**



Exceptionally versatile. Basically a VFO with micro-ammeter in grid; determines freq. of other osc. or tuned circuits; sens. control & phone jack facilitate "zero beat" listening. Excellent absorption wave meter. Ham uses: retuning & neutralizing mixers, power indicator, locating parasitic osc., antenna adj., correcting TVI, de-bugging with xmitter power off, determining C.T.Q. Servicing uses: alignment of mixers, IF's, as sig. or marker gen. Easy to hold & thumb-tune with 1 hand. Continuous 400 kc-250 mc coverage in 8 ranges, pre-wound 0.5% accurate coils. 500 uA meter movement, 6AR4(A) or 6Y4 Colpitts osc. xmit-operated set, rect. 2 1/2" H, 2 1/4" W, 8 1/2" L. Satin deep-etched aluminum panel, grey wrinkle steel case.

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**CONNECTICUT**—SCM, Victor L. Crawford, W1TYQ—K1JAD made BPL Fifty-six Connecticut hams attended the Seventh Annual Get-together at Waverly Inn. NJM, BDI and EFW gave talks. YBH received a plaque for outstanding work and participation in the Deep Sea Dragnet. UCA has a new jr. operator. OBR received the IRN Net certificate. YBH reports CPN handled 309 messages during 31 sessions, and had an average daily attendance of 30 stations. High QNI goes to K1AQE, 31; K1BEN, K1CEC, DAV, TVU, YBH, 30; VQH, 29; YOY, 28. New officers of the Waterbury ARC are HJG, pres.; PHT, vice-pres.; ANE, secy.; GTE, treas.; ILV, act. mgr. DDE has 2- and 6-meter Gonsets. FHP has a new tower and 44-element 2-meter beam. EQC purchased a 6N2. KYQ advises CN handled 450 messages, including 71 on the second session during 31 sessions for an average of 14.5 per session. Average daily attendance was 11 stations. High QNI goes to OBR, K1DHU, K1JAD and RFJ. K1AQE received the W-Conn award at a recent Torrington Jaycees meeting. URM is on s.s.b. NQL and WRO joined MARS. IOW, ex-3ADO, is on from Norwich. EXO has a new DX-100. OPB has a new SX-101. ECH has added WAVE and WBE awards. K1AQE has increased power to 500 watts. K1JRT is using a 6146 on 6 meters. A KX6 brought K1ACC to 82 countries. K1CKZ passed the commercial phone test. CHR worked a ZC4. HYF has a new 328-1. K1NJTU is active from Mitchell College. K1KEA is a new Novice in Torrington. FHP advises CVN handled 31 messages during 13 sessions with 156 total stations checking in. High QNI goes to ZUQ, 13; K1BMM, K1BML, FHP, JZA, 12; HJG, KIDDY, 10; AMJ, 8. K1BMM and K1BML, father and son, have a new Ranger. GNS has remodeled his shack. FOR is putting up a new 220-Mc. antenna. ZIG is on 220 Mc. using a 6360. K1HMU is getting set up for TV. K1K is building 432-Mc. equipment. K1IHA has a new Viking II. K1NJVS is a new Novice in Meriden. New appointments: K1JHM as OO, CSX as EC, CHR and ROX as ORSs. K1AZG and K1HMU as OPSS. Appointments renewed: KYQ as RM; EOR as SEC; K1CKZ, FOR and YOL as OESS; RAN as OO; AW, K1BEN and K1K as OPSS; AW and K1K as OPSS; WX as EC; AW and KYQ as ORSs. Reports received: OO from K1CKZ, MBX, VW; OES from K1CKZ, FOM, FOR, FVV, K1HMU, K1K, LGE and YOL. Traffic: (Mar.) W1KYQ 380, AW 292, YBH 228, FHP/MDB 119, OBR 158, TYQ 149, ROX 133, K1JAD 127, W1EFW 176, QJM 115, CHR 111, FHP 91, K1AAE 55, DHU 55, ACC 51, W1FYF 45, CUH 41, RFJ 41, K1CEC 36, W1BDI 32, K1AQE 31, CAK 25, W1HBB 22, K1CLX 18, W1K1K 13, E1H 11, K1CKZ 10, W1PFF 8, K1BML 5, D1Y 4, W1HJG 4, LV 3, TUW/1 3, ECH 2, HYF 2, JZA 2, YOL 2, K1BMM 1. (Feb.) W1DHP/MDB 234.

**MAINE**—Acting SCM, Charles F. Lander, W1QJA—SEC: QJA. PAM: VYA, V.H.F. PAM: JAIN. RM: EFR. Traffic nets: The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1700; the Pine Tree Net meets on 3596 kc. Mon.-Fri. at 1900; the Baryruad Net meets on 3960 kc. Mon.-Sat. at 0800. The 3rd Annual Hamfest will be held at Augusta June 14 with the usual fine time and swell dinner at 12:30. There will be net meetings as follows: Sea Gull at 9:30, Baryruad at 10:30 and RACES at 11:30. Any of the boys in Augusta will take your reservation, or your may write VXU, 151 Cony St. K1N1GTG, in Saco, now has his General Class ticket. COP, of Scarborough, is now on 2 meters. Please! Let's have reports from the ECs. Some of you fellows seemed to have slipped from circulation, so send reports to your SEC no matter how slight they may be. Keep your AREC forms coming, fellows, and we will try to get your membership cards back to you promptly. It was gratifying to find many organizations asking the aid of communication by ham radio during the recent alert. Don't forget to send your reports from the various areas on the alert, fellows. How about getting those traffic reports in just a wee bit earlier, gang, so that we may get them out in time? Thanks in advance. Traffic: W1GPY 211, QJA 116, CEV 77, UDD 48, K1DEG 43, FCV 22, GAV 22, BYE 12, W1OTQ 11, K1BDQ 8, BZE 7, W1BX 6, LXA 3.

**EASTERN MASSACHUSETTS**—SCM, Frank L. Baker, jr., W1ALP—New appointments: SZV and K1IMP as OOs. Appointments endorsed: UIR as PAM for the 2-meter band; SMO, FJJ, FRR and MIX as ORSs; FRR, HIL and RP as OPSS; FEJ and SPL as OBSS; NF as OO; SPL as Sector 1-C EC. TUP now is at Fort Monmouth, N. J. Heard on 75 meters: SGH, AJZ, SON, XZG, UMC, DY, RBN, EU, BAQ and K1CJM. K1NJUR has a DX-40 and an NC-188, On 2 meters: FMW, LAE, KLQ, K1N1HBV, JTF, K1DRO, IDA, K1IOE and K1N1JO. FVD is home from Arizona. H1O had a second operation. We are glad to hear that TA is coming along well. FI is still in the hospital. BGW has a new QTH. EUJ is working on a rig for 2300 Mc. NF worked KS4BB.

(Continued on page 134)

# For Hams who TRAVEL ... live in APARTMENTS

the New MOSLEY

## **Tote-Tenna** for 10-15-20 works GOOD anywhere!

here's  
why:

TOTE TENNA is a full electrical  $\frac{1}{2}$  wave-length on each of the 3 bands and is voltage fed through a frequency-sensitive tunable L network. This makes it possible to tune out reactance and achieve near-unity match under almost every conceivable condition of installation. High in the air—or near the ground . . . TOTE TENNA will put your signal out!

Superb engineering and craftsmanship make the TOTE TENNA a perfect traveling companion to the finest in portable/mobile rigs. Rated to 300 watts (AM), TOTE TENNA is also ideal as a "fixed station" antenna for low and medium power operation.

TOTE TENNA radiator opens to 14' . . . packs into space just  $4\frac{1}{2}$ " x 8" x 36". Truly portable! Sturdy window mount is quickly, easily installed without tools. Weather seal keeps out wind or rain so you can "ham" in comfort — anytime!

Radiator sections, of durable 61ST6 aluminum, are ingeniously connected by an interior spring and nylon cord arrangement that permits rapid and accurate assembly. No ground or radials are needed. You're on the air in minutes with TOTE TENNA!

MODEL TT-31, TOTE TENNA with Tuning Unit, Coax Line & Window Mount. Amateur Net, \$80.00

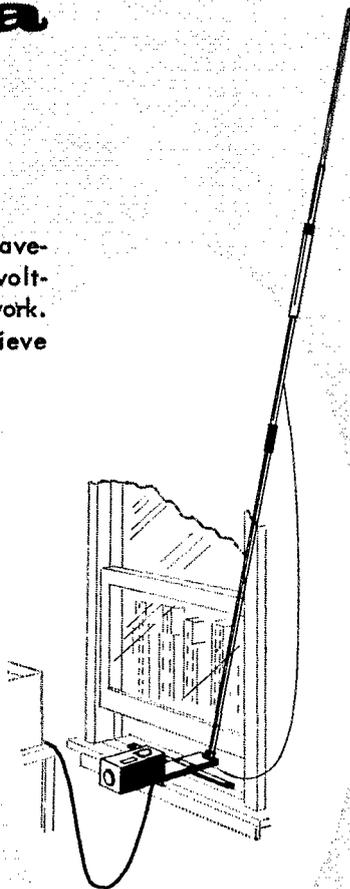
MODEL TT-31-A, Deluxe Carrying Case.

Amateur Net, \$27.45

MODEL RI-6, \*SWR Bridge. Amateur Net, \$47.65

MODEL TT-31-X, TOTE TENNA complete with all accessories listed above. Amateur Net, \$149.50

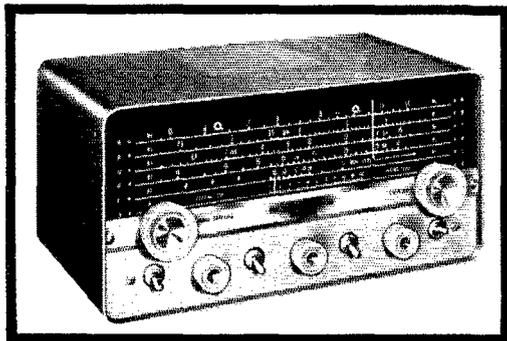
\* (Because TOTE TENNA is designed to be tuned for peak performance in varying locations, this can best be accomplished by tuning for lowest SWR. The MOSLEY Model RI-6 is a superior quality instrument featuring a side indicator meter and intended for continuous service at power ratings from 10 watts to 1 Kw. For 52 ohm line.)



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Among new equipment and top values, this handsome new Hallicrafters S-107 receiver is a *best buy* for you ... Broadcast plus 4 short-wave bands, including 6 meters, cover 540 KC-54.5 MC. Plug-in jack for your record player! Separate electrical bandspread with 0-100 logging scale plus calibration for the 6 meter band. Also boasts Receive-Standby switch; AM/CW switch; sensitivity control; noise limiter switch; 2 position tone switch; 5-position band selector switch; 5" PM speaker; jack for earphones; speaker-phones switch; terminals for doublet or single wire antenna. Audio output one watt. UL approved. Seven tubes plus rectifier: 6C4, 6BA6, 2-6BA6, 6H6, 6SC7, 6K6GT, 5Y3GT. Modern, streamlined gray hammertone steel cabinet with brushed chrome trim. 13 3/8" wide, 7" high, 8 7/8" deep. Shpg. Wt. approx. 18 1/2 lbs.

**Talk to Terminal.** Talk to Terminal about the S-107 and entire Hallicrafters line. Talk to Terminal about our unusual buys for all your Ham equipment. "You can always depend on Terminal for your best deal" ... 73.

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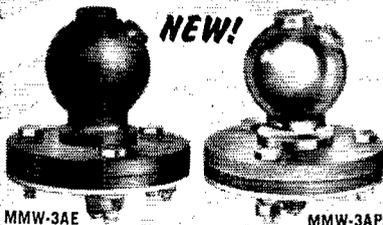
UIR has a 50th year QSL card. MME gave a talk at the Braintree Club. The South Shore Club met. TZ, LIY and K1BRE have been working K1L7s AIR, CKQ, FBC, FAK, BWK and SPN on phone. K1BBU has s.s.b. going. K1BUR made a flying trip to W6-Land. MD is on 10-meter c.w. YOR moved to Rochester. N. Y. JOT has 10-meter s.s.b. BIY and ZXG are mobile. AWA, K1ADH and CMS made BPL. UKO is going into the Lemuel Shattuck Hospital, Jamaica Plain, for about a year. NJL has a 1RN certificate as EMN representative and EAN liaison. K1DIO is working on a 220-Mc. rig. UIR says our 2-meter net has about 80 stations on the list with five on the Cape coming in. K1AII had his first QSO on 220 Mc. with YQH. K1HBY is active on 2- and 80-meter c.w. WU lost his Zepp in a storm. ZSD is very active. K1EBH is active in Chatham. K1EKE is moving to L. I., N. Y. New officers of the Hingham Club are K1BUR, pres.; K1BBU, vice-pres.; GRX, secy.-treas. The Chelmsford Club will have an auction and banquet. The Framingham Club had ICP, of ARRL, give a talk. RCJ showed slides about the club, which meets the 2nd and 4th Thurs, at the Civic League on Concord St. The ORA had Dr. Scott, of N. U., speak on "Transistors." OEF is asst. net manager for the EM2N. K1IGTX is going on 6 meters. LMZ has a Gonset on 6 meters. A1GQZ is back on 2 meters. OEF is trying out MUD's converter. K1JXY is K1GGW's brother. YVW has moved to Utica, N. Y. IPE is very busy at work. IN is calling a meeting of all Danvers hams to improve things for their net. WJZ has a new son. RP is on 75-meter phone. The T-9 Club held its annual meeting at the Commodore in Beverly. MX soon will have rigs on many bands. K1J spoke on mobile rigs at the North Shore Club. CUW has s.s.b. with his Gonset transmitter. UKR, net manager of the Deep Sea Dragnet, presented YBH with a special plaque for his long service. PU made the speech and ZTW/PR also gave a talk. K1IJZ is on 40 meters with an SX-99 and Lettine 210. K1JPB has an SX-99 on 40- and 80-meter c.w. NJ is waiting to get his call and license back. The Sector 2-D Net is now on 147,325 kc. and has a new Gonset 3 and a linear amplifier. OKI is building an 813 rig. BB is studying 100-meter DX propagation and has 1-kw. rig at his Maine QTH. PI is living in Newton with his daughter. UKO went into the hospital Apr. 6. Traffic: (Mar.) W1AWA 534, EUT 396, EMG 388, K1RPR 350, ADH 234, W1UKO 218, K1CMS 210, WINJL 194, QPU 178, K1BYL 149, W1EAE 139, K1DIO 133, W1OPK 131, K1DGI 104, W1MZL 104, HGN 93, K1BCL 84, W1UTR 50, ZSS 46, K1GYM 40, W1KRY 37, LGO 24, MIX 23, TY 22, AOG 17, K1AII 14, W1AKN 14, QFO 14, K1BFC 12, W1BE 11, ATX 10, SIV 10, UE 10, K1HBY 9, K1JML 9, EAV 7, W1DOM 6, GEK 6, WAW 6, WU 5, BB 4, HWE 4, K1IYZ 4, W1MER 4, RCQ 4, TQO 4, AHP 2, ALP 1, (Feb.) W1MIX 33, AOG 17, WAJ 1.

**WESTERN MASSACHUSETTS**—SCM, John F. Lindholm, W1DGL—Asst. SCM: Richard J. Kuhniger, 1KGJ. SEC: BYH. RM: BVR. PAM: MNG. The West Mass. C.W. Net meets on 3560 kc. at 1900 EST Mon. through Sat. The Mass. Phone Net meets daily on 3870 kc. at 1800 EST. The West Mass. Novice and Slow Speed Net meets Tue., Thurs. and Sat. on 3744 kc. at 1830 EST. BVR reports that we are getting a few good traffic men on the Novice Net; however, more check-ins are welcome. New Novices, please note. New appointees are NMQ as OES, DUP as OO and K1CAU as ORS. All stations interested in an official appointment are invited to contact the SCM. DGT scraped up some new countries in the DX Contest. K1LIJU and K1LIJV, of Springfield, have passed the General Class exam. AJX has built a Heath Grid-Dip Meter. ZPB is hot on the trail of WAS. K1CWS is working on a 150-watt homebrew rig. The Massachusetts Amateur Radio Club conducted its first hidden transmitter hunt; the 30-watt 6-meter rig, operated by BYH, DGL and KGJ, was found first by FOX and MDS. Additional hunts are planned for the future. Western Massachusetts should be well represented in this year's Field Day, according to reports received by your SCM, K1JHC and K1JGZ, of Leominster, are now General Class. AZW and WF picked up some new ones in the DX Contest. *Random Scatter*, of the BCARA, carried an excellent editorial on Novices. Might I add that the WMNN, see above, is an excellent activity in which the Novice may participate. Encouragement by other amateurs to participate in such activities would benefit the Novice. I'm sure. Traffic: W1DGL 260, K1CAU 215, W1BYR 163, KGJ 35, DNX 33, DZV 33, K1CWS 15, W1AGM 11, DUP 9, K1LIJU 8, W1AJX 7, OSK 3.

**NEW HAMPSHIRE**—SCM, Robert H. Wright, W1RMH—SEC: BXU. RMs: K1BCS and K1CIF. PAM: I1Q. V.H.F. PAM: TA. The NHN (c.w. net, 3685 kc.) would like more stations to check in from the main cities

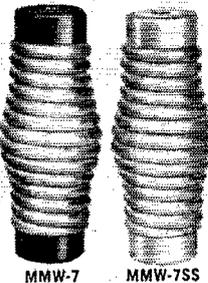
(Continued on page 136)

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**NEW!**  
 MMW-3AE Ebony Finish \$6.95 Polished Finish \$7.95  
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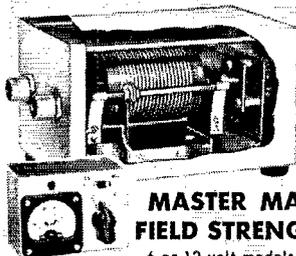
NO. B-1080

Positive action, just slide whip in or out to loading point and lock nut into position.

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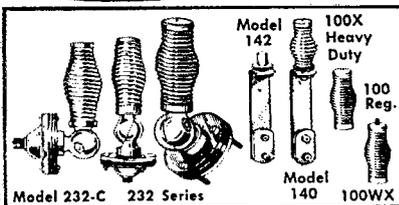
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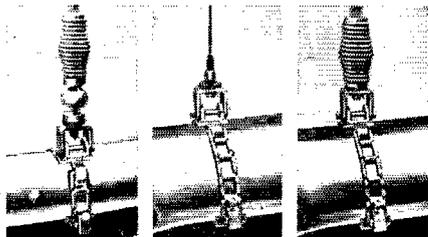
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136

in the State. Vandals recently broke into the Manchester Radio Club's club house on Mt. Uncanoonuc and caused \$400 damage to equipment. The Manchester Emergency Net is active Fri. at 1900 on 29 Mc. New ECs are ZFP, Merrimack County; HZN, Belknap County; RXA, Coos County; MUJ, Carroll County; QXP, Rockingham County; MCS, Grafton County; and KIBJD, Sullivan County. WBM is c.d. director of Dover. NOI was chosen Army MARS operator of the month for February. Welcome to new hams KNJYT, of Contoocook, and KNIKCD, of Concord. DUB has a 4X150 going on 432 Mc. MDP and RMH attended the first New England RTTY get-together at Boston Mar. 21. GSPN certificates go to MEV, GIB, KIDFM and KIHMG and an NIN certificate to EVN. Appointment: KICIF as RM. Endorsements: VBX as OO Class I, VAU as OO Class IV. KIHMG is holder of GSPN achievement award certificate No. 1. FTZ reports Army MARS activity in New Hampshire increasing with 32 members. Let's all make June 27-28, the biggest ARRL Field Day yet. Traffic: (Mar.) KICIF 903, BC5 831, KN11K 115, W1YHF 64, K1BOO 41, W1EVN 31, RMH 25, K1CSJ 24, DKD 12, W1BYS 9, FJ 8, CUE 5. (Feb.) W1HKA 190, K1AHE 74, W1BYS 4, VBX 2.

**RHODE ISLAND**—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMS: KCS and YRC. RM: BBN. Endorsements: YRC as PAM and LSP as OPS. The members of the Associated Radio Amateurs of Southern New England (ARASNE) have voted to sponsor a certificate award. This WRI award is to be issued to stations having confirming contacts with two stations in each of the five Rhode Island counties. Only contacts made on or after Jan. 1, 1959, will be considered. An applicant may submit confirmations of all c.w. or all phone contacts. QSLs should be sent with a self-addressed envelope to W1KUQ, secy., ARASNE, 54 Kelly Ave., Rumford 16, R. I. UHE worked OLO and K1EBC on 432 Mc. with excellent results. BBN participated in the c.w. portion of the DX Contest and worked 3 new countries. K1ABR is back on the air after rebuilding the shack. PPN and K1HZE have each built electronics keys. OMC is now a member of MARS. Welcome to new General Class KIKER of East Providence. SMU made BPL again this month. Traffic: W1SMU 490, VBR 121, BBN 83, TXL 54, LSP 24, YRC 14, K1HZE 10, W1DDD 7, WED 7, OMC 6.

**VERMONT**—SCM, Harry A. Preston, jr., W1VSA—SEC: EIB. RM: K1BGC. PAM: ZYZ. Asst. PAM: K1GLO. Frequencies used in Vermont: C.w. 3520, phone 3855 kc.; VTN, Mon.-Sat. at 1830 (c.w.); VTPN Sun. at 0900 (phone); GMN Mon.-Sat. at 1700 (phone); VTEPN, Sun. at 1700 (phone). KNJTM is the brother of K1HKI of South Barre. As reported in the April issue under traffic the credit of K1DQB actually belongs to K1BQB. Sorry, E1B hopes to have quad antennas up by May. EXZ, of Danville, worked K1CXX directly on other side of 6200-ft. Mt. Washington over what may be one of the best obstacle gain paths in New England. When in Morrisville, Vt., stop at K1JG's and see a neat-looking station. The International Field Day at Mallets Bay, Vt., will be held the second week end of August. The BARC, Inc., and the Middlebury Mike and Key Club are planning for Field Day. K1AUE is running a half gallon with an excellent signal. Visiting amateurs to Vermont will find the following frequencies monitored: 3855 kc., 145.8 Mc. in the Burlington Area. HRG has gone high power, 5000 watts to be exact but well within legal limits. His frequency is 60 cycles at 110 volts. Civil defense has a training net on Sat. at 1330 on 3993 kc. Traffic: (Mar.) W1OAK 231, K1BGC 40, BQB 30, W1EB 24, ELJ 23, FPS 22, UWS 20, K1GFB 17, W1VSA 17, K1JG 15, LM1 14, K1DQB 13, HKI 9, BOL 3, W1ZJL 3. (Feb.) K1BGC 36, DQB 11, AUE 4.

**NORTHWESTERN DIVISION**

**IDAHO**—SCM, Mrs. Helen M. Maillet, W7GGV. County c.d. directors and RACES coordinators in District 6 met in Rigby with State Radio Officer OCR to discuss c.d. communications set-up. March winds took VQC's antenna down. He's replacing with a vertical. Since his appointment as OO, interference is practically nil in the Moscow Area. High school stations K7DAX, Pocatello, and JFA/7, Driggs, are seeking other high school contacts. JFA and DUP are doing fine jobs instructing prospective hams. DWE's antenna fell down and he blew up his transmitter trying to load it. DHL's transmitter blew up also. DUP got a scholarship to study in Corvallis, Ore., next year. K7DUX has a new daughter. Idaho Radio Amateurs, Inc., set up plans for the C.D. Alert. Madison County was first in Eastern Idaho to have a station in the Court House for c.d. purposes. DWE is County Coordinator. WNR has an s.s.b. rig on the air. Traffic: (Mar.) W7HSV 33, WEY 33, BUY 23, VQC 20.

(Continued on page 138)

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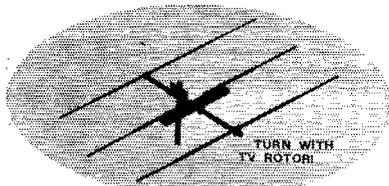
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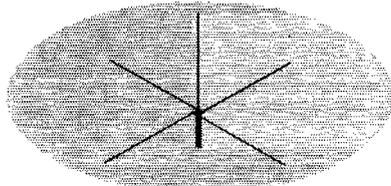
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**MONTANA**—SCM, Vernon L. Phillips, W7NPV/WX1—The MPN meets M-W-F at 1800 on 3910 kc. MSS meets T-T-S at 1900 on 3530 kc. IVD joined Silent Keys Mar. 30. Don suffered a heart attack while working in Glacier Park. YCQ has a new jr. operator. LOD moved from Bozeman to the Page Rest Home in Three Forks. YHB and YHC moved from Harlowton to Billings. YHS made BPL. K7CWA, K7CWB and K7CWF are new Conditionals at Wolf Point. K7DES is a new Conditional at Great Falls. New officers of the Old Faithful Radio Club are Bill Zinzer, pres.; K7CHA, vice-pres.; RZY, secy.-treas.; ZOH, act. mgr.; and K7CZQ, pub. chmn. EEO built a transistorized mobile converter. RZY and K7CHA have a new Viking Valiant. HJM and ZJZ vacationed in Arizona. The Central Montana Hamfest will be held in Lewistown June 6 and 7. The Malta Ham Picnic will be held June 21 (DXM, secretary). The Silver Jubilee of the Glacier-Waterton International Peace Park Hamfest will be held at Apgar July 18 and 19. Traffic: W7YHS 182, K7AEZ 107, EWZ 81, BYC 27, W7SEK 27, K7DVZ 14, W7TPE 11, EWR 8, NPV 8, OIP 6, K7CFA 4, W7XQZ 4, M1Q 3, TGM 2.

**OREGON**—SCM, Hubert R. McNally, W7JDX—The OSN is going great again but AJN, the RM, still is seeking more c.w. operators to fill out the net. BRATS for March were AJN, BVH, ZFH and ZB. The Ashland Radio Club's Dish Dinner held Apr. 4 was a swell affair. Sorry the SCM could not make it. GLZ is very active with the Columbia River V.H.F. Club, also with the Sea Scouts. EZH, new Clatsop County EC, sends in a nice report on AREC activity. The new SEC, UQL, has things pretty well in hand now that he has reports from almost all ECs. Plans are being made for an AREC net on 3875 kc. in Oregon and Red is busy working out the details. All AREC members are welcome to check in on the new net. GLZ is a new OBS and will be on 50 Mc. Beth, NJS, the PAM for Oregon, also is helping out with the new AREC net along with her many other duties. GWB, the EC for v.h.f. in Multnomah County, reports plenty of activity on 6 meters with an AREC net each Thurs. night. Looks like DEAM and JDX will have to chase those chinook salmon in the Rogue River again this spring. DIC was in Portland for one of the Portland Roses meetings. LT still is busy on MARS. ZB still is breaking traffic records. JDX and UQL are looking forward to seeing all the gang at the Roseburg Convention. Traffic: W7ZB 503, BDU 477, K7CLL 177, W7ZFH 82, RVN 51, BVH 45, LT 42, AJN 32, M1W 19, GLZ 14, OMO 14, GAJ 12, GNC 11, DIC 8, DEM 7.

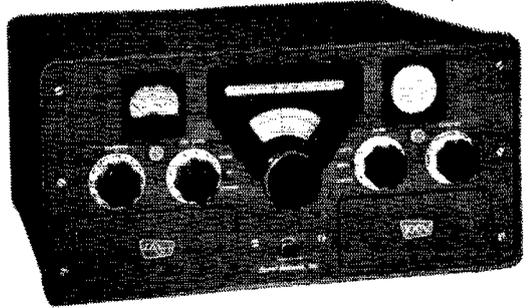
**WASHINGTON**—SCM, Robert B. Thurston, W7PGY—SEC: PQT, RM: AIB, PAMs: LFA and PGY. Washington nets: WSN, 3535 kc. 1900 PST Mon. through Fri.; WARTS, 3970 kc. 1800 PST Mon. through Sat.; NSN, 3700 kc. 2100 PST Mon. through Sat.; the QCWA Net 3950 kc. 1600 PST Sun. New officers of the West Seattle Amateur Radio Club are TWU, pres.; CWN, vice-pres.; PN, secy.-treas.; LCS, historian and program chairman. RGL transmits Official Bulletins on 3610 kc. at 1830 PST Mon., Wed. and Fri. KN7GCK is chasing DX on 15 meters with a Viking Ranger and an HQ-110. New Generals in the Tacoma Area are K7s GPJ and GPG. The Radio Club of Tacoma holds code classes for one hour each meeting night. BSW reenlisted in the Army. The Tacoma Annual Banquet was held Mar. 7 with 47 present. A new net is being proposed for teen-agers on 3810 kc. at 1900 PST Wed. through Sun. The Skagit Radio Club Banquet was held at Mount Vernon with 110 present. JWE is chasing DX on 20 meters. UWT received the WAS and WAWC awards. 1EU is using a new electronic keyer on NSN. WAH is having antenna troubles. AIB reports net attendance very high on WSN. K7GXQ moved to W6-Land. The Northwest Chapter of the QCWA's Semi-Annual Dinner Meeting will be held in Yakima June 13/14. New ORSs are DPW and KZ; a new OO in the Spokane Area is OBH. The following renewed appointments: YFO as OO, JC as ORS, DZX is chasing parasites in the 75-meter band. QLH is building a new shack. DPW is working full break-in now. AMC is complaining of blackouts on the band and thinks maybe he will use smoke signals. EKT acquired a 32V-3. GSP is attending U of W. EVU sends in a good OO report. CEV, of Spokane, won the 20-meter beam at the Skagit Banquet. LFA is putting up a tri-band quad. QLH is the new manager of RN7. The Spokane AREC assisted in the search for a missing child. K7ASY is active on 6 meters. All appointees are requested to check the expiration date on their certificates. OEX holds skeds with 9LLM/mm for traffic. JPH is working on the new power supply for the new final. The Washington Amateur Radio Traffic Net will hold its Annual Picnic and Hamfest at Cougar Inn on Lake Wenatchee the second week end of July. Contact GQP for further information. UVI is back in Monroe from KH6-Land. Most of the Washington gang are QRL on preparations for Field Day.

(Continued on page 140)

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THE VFO ITSELF.**



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**FREQUENCY COVERAGE:** 80 METERS — 3.5 to 4.5 Mc. 40 METERS — 6.5 to 7.5 Mc. 20 METERS — 13.5 to 14.5 Mc. 15 METERS — 20.5 to 21.5 Mc. 10 METERS — 27.7 to 29.7 Mc. A spare X position provides for the installation of broad-band coils for 160 meters, HAARS, etc. OR any 1 Mc. portion of the spectrum between 1.5 Mc. and 25.5 Mc. OR any 2 Mc. portion of the spectrum between 25.5 Mc. and 29.7 Mc. YOU DON'T SETTLE FOR HALF A LOAF OF FREQUENCY COVERAGE WHEN YOU HAVE A 100V!

**THE TUNING DIAL:** Band scales in the large slide rule window change with the band switch and are calibrated at each 100 KC point. Frequency is read directly in 1 KC increments by the circular KC dial without any computation whatever. Approx. 12 feet of bandspread on each band. A smooth running two-speed tuning knob allows fast tuning at 100 KC per turn and slow tuning at 750 CYCLES per turn. Calibration accuracy is 250 cycles between any two 50 KC points.

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**OTHER INDICATORS:** Below the meter a neon indicator provides a check on the operation of the NEW AUDIO LIMITER CIRCUIT. Below the scope a second neon indicator starts operating if you have the antenna or load mis-matched.

**NEW AUDIO FILTER-LIMITER:** The new filter is composed entirely of R-C components, yet has the steep side response and rejection characteristics of a four toroid tuned filter but without the usual harsh, ringing effects. Bandpass is 200 to 3700 cycles. This filter precedes the phase shift system and will maintain 50 DB SUPPRESSION OF THE UNWANTED SIDEBAND. The new audio limiter maintains audio drive to the balanced modulator WITHIN 1 DB, REGARDLESS OF HOW HARD THE MIKE IS HIT. IT'S IMPOSSIBLE TO OVER-DRIVE THE 100V BALANCED MODULATOR! Inverse feedback circuits allow 10 DB OF CLIPPING with negligible distortion.

**NEW PS-2 AUDIO PHASE SHIFT NETWORK:** A twelve cross-over point network is composed of heat-cycled components having .1% accuracy. Even changing the balanced modulator tubes has no effect on its maintaining 50 DB OR BETTER suppression!

**POWER OUTPUT:** The husky, ultra-linear type 6550 tubes in the final of the 100V will deliver 100 WATTS OF SINGLE TONE POWER, EVEN ON TEN METERS! AND WITHOUT GRID CURRENT FLOW. Two tone third order distortion products are down in excess of 40 DB. A new POWER OUTPUT CONTROL eliminates the need for power dividers when driving AB1 or AB2 linears, since power output is continuously variable from 10 watts to full output.

**SET AND FORGET CONTROLS:** These seldom used controls are all located behind the flip down magnetic doors on the front.

**GENERAL CIRCUITRY:** Crystal controlled master SSB generation is at 8 MC. VFO injection is 5 to 6 MC. Crystal controlled heterodyne oscillators operate into mixer stages for various bands. This system, originally developed by C. E. is today the standard of the industry. Blocked grid keying of mixers and final amplifier provides perfect CW and PHONE BREAK-IN.

**PHYSICAL DATA:** Panel is standard 19" width by 8 3/4" high. Finish is smooth grey. Attractive heavy duty rounded corner cabinet is 15" deep, is finished in grey wrinkle and has a latch type access lid. Shipping weight approx. 90 lbs.

MULTIPHASE 100V complete..... Amateur net.....\$595.00  
Easily removed from the cabinet for rack mounting.

### COMING UP! MORE SUPERIOR GEAR FROM C. E. THE SSB PIONEER

A NEW COMPANION RECEIVER: Which will TRANSCIBE THE 100V or separate the two VFO's at the flip of a switch. The 100V has the interlock control sockets built in.

A NEW 2500L BROADBAND LINEAR AMPLIFIER. Big brother to the famous 600L.

A NEW HETERODYNE CONVERTER: To cover all of the 2 and 6 meter bands with the 100V. Interlock control sockets are in the 100V.

MULTIPHASE



EQUIPMENT

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Chicago 13, Illinois

A subsidiary of Zenith Radio Corp.

WRITE FOR  
LITERATURE ON  
THE COMPLETE  
MULTIPHASE LINE

## A Word from Ward . . .



### YOU'RE ON THE BEAM— ANTENNA, THAT IS!

In every line of enterprise one name stands out as tops. In sports cars it's the Mercedes SLR. In violins it's Stradivarius. In electronic computers it's Univac. And in the field of Ham antennas—it's Hy-Gain.

In every case where one name achieved superiority, that name carried the day because the product behind it delivered the goods.

And exactly what does the Hy-Gain Antenna deliver? That's easy. Performance!

Want an antenna for 3/4 meters, 1 1/4 meters, 2, 6, 10, 15 or 20 meters? Hy-Gain's got it. Want a dipole job, a three-element beauty, or a whole slew of multi-band verticals? Hy-Gain's got it. Like an antenna you can put up—even if you haven't got a degree from the Massachusetts Institute of Technology? Hy-Gain's got it. Want the same antenna which one amateur (Lt. Col. Lloyd D. Colvin, W6KG) used in contacting 331 different prefixes located in 141 different countries? Hy-Gain's got it!

Now, with Summer coming up and time coming around to get your signal out, just remember this whenever you think of antennas:

Hy-Gain's got it—and Adirondack sells it. Period.

*Ward J. Hinkle*  
W2FEU

Before you buy or trade, wire, write,  
call or drop in to see WARD, W2FEU

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Phone: Victor 2-8350

Ward J. Hinkle, Owner

RMI is building a 6-meter converter and is going to re-wire the DX-100 for 6 meters. VARC had an amateur radio exhibit at the local hobby show. Traffic: (Mar.) W7BA 2013, PGY 809, QLH 444, DPW 402, DZX 386, APS 149, HUT 73, AMC 70, IEU 66, K7ETP 33, W7OEB 32, K7ABB 29, W7AIB 23, KZ 20, UWT 19, WQD 16, K7CHP 14, W7EKT 12, WAH 12, LFA 10, EKQ 8, REC 8, EVW 6, YFO 6, SYE 5, CZY 4, JWE 4, JC 3.

## PACIFIC DIVISION

A Pacific Division ARRL Bulletin is now transmitted by W6ZF, W6RNC and K6YBV. W6ZF, Sacramento, uses 3540 kc. c.w. tape transmission the 2nd and 4th Monday of each month 8 P.M., PST. W6RNC of Berkeley also sends taped bulletins at the same time every 2nd and 4th Wednesday. K6YBV's is voice transmission.

NEVADA—SCM, Charles A. Rhines, W7VIU—HWL, VJR, ZHW, K7AGZ and CMI all have new Mosley TA33 beams. K7CMI worked KC9CG and got Harold's club to donate some playing cards for use on Ulithi Atoll. SDE has formed the Army MARS V.H.F. net on 2 meters. The roster includes CX, PC, CZZ, MAH, HWL, OPY, EEF, ZHW, K7ANK, BJB, BIZ, FEP and AGZ. They have a 2-meter repeater under construction. Boulder City now has 15 AREC members with K7BVX as a new Asst. EC. V.h.f. man K6BPW has moved to Las Vegas. HOP is the new EC for Humboldt Co. VIU got his BERTA and Lads 'n' Lassies awards. He also made BPL IWT has his CP-20 award. K7GQL and GQM, Donna and Don Wiley, are on the air from Owyhee with a Globe Champ and an SX-101. There are now 40 AREC members in Nevada. Your SCM attended the Pacific Division Staff Meeting in Oakland. The Nevada State Net still is going and can use more of you. Traffic: W7VIU 404, IWT 16, JCY 1.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—Asst. SCM: Frank J. Pacier, W6VMY. SEC: W6NVO. PAM: W6ZLO. RMs: K6EWY and W6PLG. The North Peninsula ARC meets monthly in So. San Francisco. Contact W6QIE for details. The Santa Cruz RC is applying for ARRL affiliation. W6GIH demonstrated his electronic typewriter, code-sending, 124-tube monster for the Poothills ARS. The San Mateo RC promises the best hamfest yet on June 7. New AREC members include K6IMI and W6DFL. Code practice tapes are available for use with an ordinary tape recorder from W6OWP or his XYL, W6SXG. K6VQK vacationed in Arizona during April. K6OSX has a new Viking 500. W6CLT is building a modulation monitor scope. W6ASH reports 14 countries on 80-meter c.w. one night during the DX Contest. Also W6RFF and W6RSY report good DX on 80-meter c.w. W6GGQ now is operating on 2 meters. W6MXO, W6ZXS and K6DYX now have regular skeds with Hawaii. Late APO traffic can still make the MARS nets through Hawaii the same night. K6GID is enjoying the new RTTY set-up. K6GZ is going to get his RTTY traffic net going yet. Bee-keeper K6GPN makes one hobby pay for another. All his gear was paid for by the busy little stingers. Through this column your SCM tries to pass on bits of information and news of casual or general interest to fellow amateurs. Whether you hold an appointment or not your SCM would like to hear from you. If you think you can qualify for an official appointment, get in touch with any of the fellows listed at the head. Traffic: (Mar.) K6DYX 615, K6GZ 381, W6RSY 146, W6LKV 128, W6YBV 116, K6GID 80, W6ZLO 84, W6ASH 72, W6FON 60, W6DEF 43, W6QMO 42, W6OII 36, W6BMP 24, K6OSX 21, W6YZE 19, W6CLT 8, W6RFF 7, W6GGQ 1. (Feb.) W6ASH 58.

EAST BAY—SCM, B. W. Southwell, W6OJW—Asst. SCM: Mary Gwynne, W6PIR. SEC: W6CAN. ECs: W6LWV, W6ZZF, W6IUZ, K6EDN, K6JNW and K6QZG. W6BMW is working for V.O.A. at Dixon. K6GK is busy with traffic. K6DMW is on RTTY with 210 watts, 300 watts c.w. and s.s.b. W6IDY gathered 193,148 points in the C.W. DX Test. K6QHC still is in Navy Boot Camp and had a bout with bronchial pneumonia. New Novices in Berkeley are W6DVC and W6EBY. Ex-W6HMB finally passed his FCC General Class exam and is awaiting his new call with a Heathkit Apache, a Mohawk and a tri-band vertical. W6OJW got his Extra Class license. New AREC members in the Hayward Area are K6BDG, K6AUR, K6AHW, W6BRD, W6A6HF, K6HDG, K6SCP, K6HSL, K6LWA, K6YSS, K6TYX, K6QXK, K6AMA and K6VXX—a bonanza month. FB, EC K6JNW! The EBRC toured KGO-TV Mar. 13. New officers of the SARO for 1959 are W6NQJ, pres.; W6LCG, vice-pres.; W6YO, secy.; W6FZC, treas.; W6SPA, comm. mgr. The CCRC held its March meeting at the Marin Amateur Radio

(Continued on page 142)

# 10 db GAIN

BASE STATION TO VEHICLE  
IN BOTH DIRECTIONS

## STATIONMASTER

CAT. No. 201-509

### BASE STATION ANTENNA

The STATIONMASTER consists of a number of collinear radiating elements fed inphase and encapsuled in a continuous weatherproof Fiberglass housing and is capable of withstanding winds in excess of 125 m.p.h. The antenna termination is a standard type N male connector protected with a neoprene housing.

## CARMASTER

CAT. No. 181-509

### COLLINEAR GAIN ANTENNA

The CARMASER is a new development in vehicular antennas. It consists of two half-wave and one quarter-wave radiating elements, excited inphase. Catalog No. 181-509 is designed for cowl mounting. Cat. No. 181-509A Antenna has a 10" support tube extension for bumper mounting.

### ELECTRICAL SPECIFICATIONS

CAT. No. 201-509

Nominal input impedance..... 50 ohms  
 VSWR..... 1.5:1  
 Bandwidth.....  $\pm 0.5\%$   
 Maximum power input..... 150 watts  
 Omnidirectional gain..... 5.8 db  
 Internal feedline..... RG-8A/U  
 Frequency range..... 450-470 mc

CAT. No. 181-509

Nominal input impedance..... 50 ohms  
 VSWR..... 1.5:1  
 Bandwidth.....  $\pm 1.0\%$   
 Maximum power input..... 75 watts  
 Omnidirectional gain..... 4.2 db  
 Feedline..... 10' of RG-58/U  
 Frequency range. 450-470 mc

**INCREASE YOUR RANGE BY 30%  
 YOUR COVERAGE AREA BY 75%  
 WITH THESE TWO ADVANCED DESIGN ANTENNAS**

<sup>o</sup> Measured Values

*Communication Products Company, Inc.*  
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*Bonnafide Bargain*  
OF THE MONTH

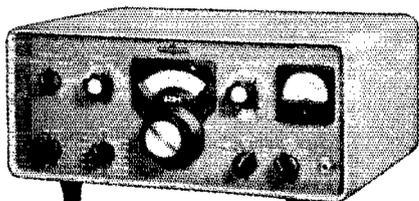


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SAVINGS on ALL your needs!

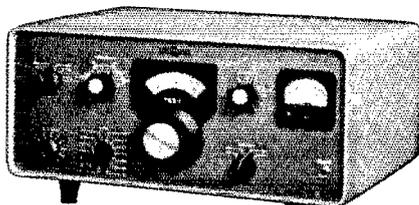
"The Equipment  
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COLLINS **S** LINE

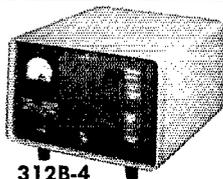
305-1—(Not pictured) Linear Amplifier  
\$1,470—10% down (\$147.00)



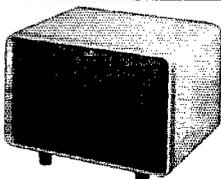
"Compact Styling  
... Advanced SSB Performance"  
**325-1 TRANSMITTER**      \$590  
10% down  
(\$59.00)



"Surpassing in Performance  
... Simplified in Operation"  
**755-1 RECEIVER**      \$495  
10% down  
(\$49.50)



**312B-4**  
**SPEAKER CONSOLE**  
\$185



**312B-3 SPEAKER**  
\$27.50

10% down (\$18.50)      10% down (\$2.75)

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Club. W6CKP has a new drug store in Walnut Creek, probably selling tranquilizers to DX men! W6LGW and his XYL spent 10 days touring Southern California. W6LKE is getting set for the ARRL Field Day. W6AIL is on 20-meter c.w. with one gallon. K6DQL is QRL house-remodeling. W6OJW is building a 28-Mc. rig for mobile. W6FAR has a new Eico 90-watt c.w. rig. K6FKX is building an s.w.r. bridge. K6POU is taking day and night courses at Diablo Valley College and says it sure cuts into hamming. W6OHR is building a new p.a. amplifier. K6KRF and K6KYT are working on 200-Mc. gear. W6IT is building a new ham shack. W6TKY and W6SRO are studying for the General Class license. K6ALFA, with Volkswagon 20-watt mobile, worked KL7BIN on 3995 kc. K6JPR made 1044 points in the RTTY Sweepstakes. W6GNW is on 40-meter c.w. K6DQM has a new s.w.r. bridge. The NCTA had a traffic breakfast at Red Coach Inn, Los Gatos. New members of the HARC are W6AWW, W6ACQP and K6JWM. K6TTY, K6QCS and W6GML are active on 28-Mc. phone. The XYLs of the HARC members held their March meeting in Castro Valley. There are vacancies in the East Bay section for all types of Communications Department appointments. A postal to the SCM will bring prompt information. Traffic: (Mar.) K6GK 710, K6DMW 97, W6JOH 78. (Feb.) K6OSO 85.

**SAN FRANCISCO**—SCM, Fred Laubscher, W6OPL—SEC: W6FEA, PAM: W6WJF, RMI: W6QMO. Most clubs report much activity in preparation for the coming Field Day. AJF has built several successful parametric amplifiers. BAZ is planning to move to Alarin County. GQA needs a new Observer certificate. K6BAQ is now most actively engaged as editor of the MARC paper, QSA-5. Uncle Leo, again K6BAQ, is planning the 25th Anniversary Edition in June 1959 of QSA-9. The Far West RC's Field Day location will be right on the Pacific Ocean at the south end of Humboldt Bay at Table Bluff Lighthouse (the furthest west Field Day location in the 48). W6YOM has been busy in the following nets: NCN, RN 6 and MARS. W6GQY has been needing his SCM to send him his BPL cards. Sor y Joe. Hope the virus-pneumonia is gone and all is well again. GQY is as busy as anyone could be checking into RN 6, PAN, TCC and TXN and working like mad handling much traffic. Wish we had more workers like him in our section. The SFRC held its annual auction Mar. 25. There were many goodies and a wonderful time was shared by all. The Mission Trail Net will hold its Annual Roundup in the San Francisco section at Panther Meadows, Mt. Shasta on June 20-21. W6CVJ is coming along nicely after his operation. K6ALF is counting the minutes until June 13 when he will walk down the aisle with our beautiful Rue Buckley (daughter of Wally and Rose Buckley of GGC fame). All our best to both of you swell kids! K6DJC got his 50th state for WAS via c.w. by working his dad. W6BIP/7, mobile in Fallon, Nev. Mendocino County is actively engaged in organization of an efficient emergency plan which will take in c.d., Red Cross, etc. The Cathay Radio Club is planning operations for Field Day. K6ANP, EC for the City and County of San Francisco, has been serving his community as TVI Committee chairman and is doing one fine job too. Len's work as EC has been truly outstanding. The Golden Garbage Can has his 28A teletype working like a charm and copying everything that comes along. Nice going, Wally! Traffic: W6GQY 568, W6YOM 155, W6GGC 24, W6BIP 16, W6LCF 15, W6OPL 15, W6BAQ 1.

**SACRAMENTO VALLEY**—SCM, Jon J. O'Brien, W6GDO—Asst. SCM: William Van de Kamp, W6CKV. SEC: W6SLR, RMI: W6CMA, PAMS: W6ESZ, JDN and PIV. New appointments: K6GOT, EC Yolo County; K6AAW and K6SXX, OBSs; W6MLN and YLH, OESs; K6EIL, OPS; K6JUD, OO; K4UPN/6, OO and OBS. The Sierra-Foothills Club of the Auburn Area meets the 1st Wed. of each month at the fairgrounds at 8 P.M. The president is K6ARR, W6WCA, W6W and K6UVE have new mobile rigs. W6AF is planning s.s.b. The new Yuba-Sutter Club officers are W6MLU, pres.; K6RDA, vice-pres.; W6YLH, secy.-treas. K6GSI is putting out an FB primer on transistors in the McClellan Club's *Marsgram*. W6ASI, W6BIK, W6DMA, W6ESZ, W6GDO, W6GGW, W6HSB, W6HTS, W6ILZ, W6MAP, W6NQH, W6YBU, K6BNB, K6DJE, K6DJP, K6ENK, K6EWE, K6GB, K6HHD, K6HOI, K6OCY, K6PWH, K6QIF, W6QKB, K6QPT and W6ALC have been active on RTTY in the Sacramento Area. W6MLN, Sacramento, has been working K6HMK in Acampo regularly on 220 Mc. W6DYF has new beams, mobile and Viking Challenger. The RAMS held a roller skating party at Sutter Creek, with over twenty mobiles participating in the run from Sacramento. K6RGN is building an 85 per cent transistorized mobile rig. W6OPY now has v.f.o.-wagon in his Volkswagen. The 1959 officers of the SARC

(Continued on page 144)

# "HAM-M" ROTOR by CDR

Install in any type of tower

## COMPLETE PACKAGED SYSTEM.

Nothing else to buy. Can be installed atop *any* tower, and inside most towers.

## EXTREMELY RUGGED.

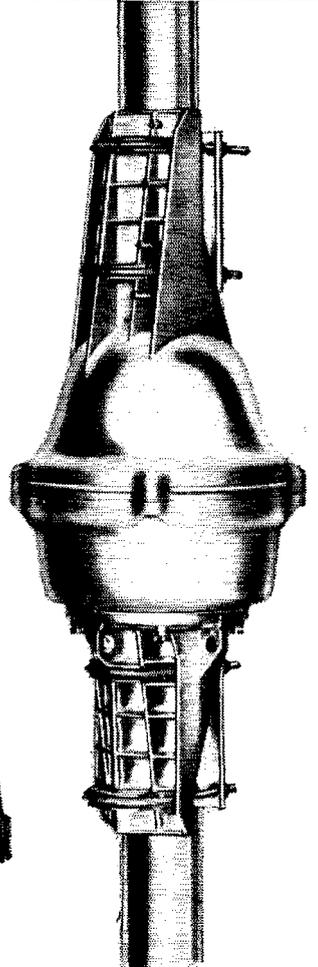
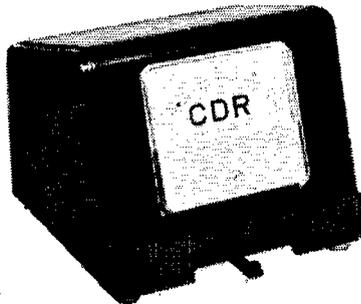
Extra heavy-duty. Thousands of "Ham-M" rotors are now in operation in every kind of climate, rotating every conceivable antenna combination. "Ham-M" is wind-proof, ice-proof, moisture-proof! Won't drift. Provides 3500 in.-lb. resistance to lateral thrust.

## FIELD KITS FOR EASY INSTALLATION.

North-Center Meter Scale kit. Base plate for internal tower mounts. Anti-meter flutter kit. Mounts on shaft or flat on plate in 30 minutes.

## WHY PAY MORE?

"Ham-M" is the pet of hams from coast to coast—and for good reasons! "Ham-M" gives better performance...holds heaviest antennas...stands up against the elements far better than other rotors, yet **COSTS LESS!** See "Ham-M" at your distributors: only \$119.50



**EXCLUSIVE OFFER:**  
**CDR "CALL-LETTERS"**  
**JEWELRY FREE!** Hand-some rhodium-finish tie-bar and key chain, both with your call-letters engraved **FREE** with your purchase of the "HAM-M." Both bear amateur radio emblem. Just *examine* the "HAM-M" and get both for only \$3.60 (tax included), a \$7.20 value for half price. See your CDR distributor for details.

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## HAM ANTENNA ROTOR

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# EXTRA HEAVY DUTY

## Hy-Gain

# Ground Planes

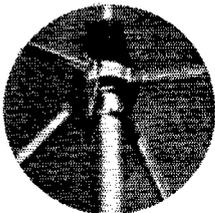
**COMMERCIAL - AMATEUR - CITIZEN BAND**

**Single or Multi-Frequency Operation.**

**100 MILE PER HOUR RATING**

These Hy-Quality, Hy-Gain Ground Planes are designed to cover all Amateur, Commercial and Citizens Band communications frequencies from 25 through 500 mc. Especially designed decoupling stub Add-On Kits available, making possible multi-frequency operation with a single feed line. The antennas and Add-On Kits are factory pre-tuned and complete with easy-to-follow directions for quick assembly on any single or multiple frequency (up to 4). Precisely adjusted drooping ground plane radials make possible perfect 52 ohm match. All hardware hot dip galvanized and ferrite treated for maximum weather ability.

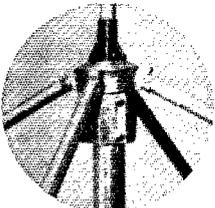
Input Impedance: 50 ohms  
Coaxial Termination: Type SO239  
Maximum Power Input: 1,000 watts  
VSWR: Less than 1.2:1 at Resonance  
Unity Gain



**MODEL GP-1**

**\$29<sup>95</sup>**

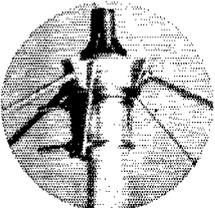
Radiator and ground plane radials telescoping  $\frac{3}{4}$ " and  $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated alloy. Heavy duty cycloac base insulator and heavy universal base casting. Fits all mast diameters up to 1 $\frac{1}{2}$ "



**MODEL GP-2**

**\$16<sup>95</sup>**

Radiator and ground plane radials telescoping  $\frac{3}{4}$ " and  $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated alloy. Polyethylene base insulator and heavy universal base casting fits all mast diameters up to 1 $\frac{1}{2}$ "



**MODEL GP-3**

**\$12<sup>95</sup>**

Radiator  $\frac{3}{4}$ " and  $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated aluminum alloy. Ground radials  $\frac{3}{4}$ " diameter solid aluminum rod.

**MODEL 2AK:**  
**\$7.50**

Attaches to Models GP-1 or GP-2 Hy-Gain Ground Planes, making possible low SWR single feed line operation on any additional frequency in the 50 to 88 mc spectrum.

**MODEL 3AK:**  
**\$4.50**

Attaches to Models GP-1, GP-2 or GP-3 Hy-Gain Ground Plane, making possible single feed line low SWR operation on any additional frequency in the 10s to 500 mc spectrum

WITH THE COMPLETE HY-GAIN LINE IN STOCK

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are W6HGW, pres.; K6IKV, vice-pres.; K6YII, secy.; K6IRI, treas.; W6RXG, sgt. at arms; W6HQF, club rep.; W6MIW, editor, W6SXI worked 10 new ones in the ARRL DX Contest for a phone total of 170. W6GHG has 283 confirmed, W6OWM 268. W6VEZ has a new Mosley fourteen-element 2-meter beam and will be looking for 2-meter DX. C.w. men are needed in NCN to represent our section. Traffic: K6YBV 805, W6CMA 70, K6EIL 33, K6SXX 12.

**SAN JOAQUIN VALLEY—SCM,** Ralph Saroyan, W6JPU—K6ZCD has a new SX-101 Mark 3A receiver. K6SEV received a white slip from the FCC, for second harmonic radiation. W6QON has rebuilt his 348 receiver for s.s.b. K6LJK got a KVM1 mounted in his Rancho. W6WKT was caught trying to double in a push-bull amplifier. K6AHQ got himself a grid-dep meter. W6POY is a new call heard on 75 meters. K6OER is running an Elmac and a transistor supply while mobiling on 75 meters. W6HYR has gone modern with a new "S" line gear, and is working DX like crazy. K6SNA got a job with ARRL in West Hartford. K6MDX is operating a ham store in Modesto. W6GIW gave 33 Boy Scouts a code class with good success. K6GOX is waiting for E skip on 6 meters. Downey High School in Modesto boasts 13 hams. The Delta Amateur Radio Club is getting set up for Field Day with new home-brew equipment on 6 meters and 220-Mc. WV6BTK and WV6BXH have taken the Tech. Class examination. K6CPQ built a 10-meter quad and is building a lw. linear for s.s.b. K6HAK is on 220 Mc. with W6MLN. K6HMK also is back on 75 meters and is working on 432-Mc. gear. The Stockton RACES plan has been approved and W6OVR is looking for operators in Tracy, Escalon and Ripon. W6DBH is the Checker King. W6YOU has moved to San Jose. K6LLJ got his General Class license. W6DVI has his linear amplifier working. K6TNZ has his 20A going again after slight modification to the mike jack. Traffic: K6CPQ 250, W6USV 20, K6AXV 1.

## ROANOKE DIVISION

**NORTH CAROLINA—SCM,** B. Riley Fowler, W4RRH—SEC: HUL, PAM: DRC. V.H.F. PAM: ACY. PNM has been appointed RM for the section. Effective liaison has been worked out between the various services in the State. Recently we forgot to include Guilford County in those counties with effective AREC-RACES 2-meter activity. Sorry, Guilford possibly has the oldest 2-meter activity in the State. BAW has met every session of the Tar Heel Emergency Net for one year, April 1, 1958—April 1, 1959. That is an excellent record. Congratulations. We need many more active "netters" in the State. PNM, RM of the NCN, desires more participation in the C.W. Net, which meets daily at 7 p.m. on 3509.5 kc. Please give this your every consideration. According to the net rolls of the various nets, we have direct communications into 95 towns or cities in the State. This is very good, but should be much better. We have no way of knowing the many towns reached via AREC-RACES nets, but we believe we have a very effective communications system. Sure, we need more AREC-RACES programs that actually drill each week, but that is coming along very nicely. You amateurs who ordered amateur license plates last year but failed to order this year, and 235 such plates have not been claimed, will not have a "tag" manufactured for your car next year unless you order your 1959 "tag" immediately. Traffic: W4GXR 491, RRH 15, BAW 14, BBZ 12.

**SOUTH CAROLINA—SCM,** Dr. J. O. Dunlap, W4GQV—SEC: K4PJE, RM: AVU. PAM: IIE. The N. Augusta-Helvedere ARC in March held a transmitter hunt and a club meeting and is beginning an FD transmitter as a club project. The S.S.B. Net had an attendance of 461 and a traffic total of 28. K4IIE had plenty of trouble with March winds and the antenna. CNZ has a new beam on 10 meters. KVF has earned a c.w. net certificate. New officers of the Aiken ARC are K4JNU, pres.; DHD, secy.-treas.; K4GX1, corr. secy.; Marcie Britt, act. dir.; KYN, club station dir. New officers of the Columbia ARC are K4DWE, pres.; UTJ, vice-pres.; RWN, secy.; TRX, treas. All members are teen-agers. UOQ is the new president of the Charleston ARC. The club is very busy preparing for the Charleston Hamfest to be held May 30-31. 1LXY is now 4FSV in Greenville. K4HDX now holds an A-1 Operator certificate. K4DFW is back on the air after transmitter trouble. New Novices are KN4ERU, ERR and FJP in Barnwell. KN4ZDE and ZEU are awaiting Conditional Class licenses. July 1 is the absolute deadline for new applications for ham car license plates. Traffic: K4WCZ 564, GAT 398, AVU 200, W4AKC 132, PED 75, K4BVX 71, W4CJD 69, DAW 53, CHD 52, FFH 50, KVF 42, K4IVI 33, BLF 27, PIA 15, HQK 14, IIE 13, W4CNZ 5, K4PIK 3.

(Continued on page 148)

# Transistor Power Supplies\* and Components

\* Complete Units

## D SERIES (Standard)

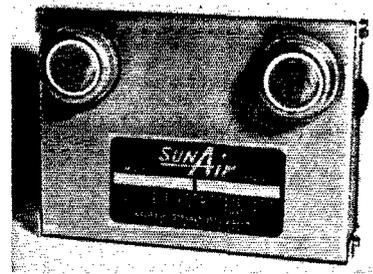
Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at 1/2 selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4 1/2" x 3 1/4" x 1 1/4" Wt.: 10 oz. 6- or 12-V Input: **\$39.95** 24-V Input: **\$61.95**

## DA SERIES

Continuous operation at 45 watts, 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4 1/2" x 3 1/4" x 1 1/4" Wt.: 14 oz. 12-V Input: **\$57.50** 24-V Input: **\$79.50**



# Toroid Transformers for Transistor Power Supply Application

## H SERIES

**H-6-450-1** Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.

**H-14-450-12** Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.

**H-28-450-13** Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.

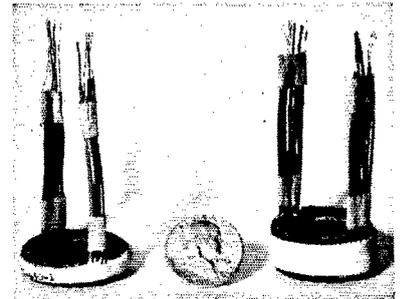
**H-6-100-125-150-D** Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

**H-12-100-125-150-D** Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

**H-24-100-125-150-D** Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **\$16.00 ea.**

With Encapsulation (3 ozs.). 1-10 units: **\$18.50 ea.**



## HD SERIES — 2000 CPS

**HD-14-225-300-2-D** Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

**HD-28-225-300-2-D** Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$18.50 ea.**

With Encapsulation (4 1/2 ozs.). 1-10 units: **\$21.50 ea.**

## HDS SERIES — 2000 CPS

**HDS-14-225-300-3-D** Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

**HDS-28-225-300-3-D** Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$21.50 ea.**

With Encapsulation (4 1/2 ozs.). 1-10 units: **\$24.50 ea.**

## 400 CYCLE SERIES

**14-115-1.5-400** Input: 12/14-VDC. Output: 115-V at 1.5 amp.

**24-115-1.5-400** Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **\$76.00.**

Matched Pair HD Transformers:

12/14-V operation—**\$11.00 per pr.**

24/28-V operation—**\$21.00 per pr.**

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Enclosed find:  check  cash  money order

**VIRGINIA**—SCM, John Carl Morgan, W4KX—Nets: VN, 3680 kc, 1900 daily; VSN, 3690 kc, 1830 Mon.-Fri.; VFN, 3835 kc, 1900 daily. You'll be glad to know that the Richmond ARC has accepted sponsorship of the 1959 ARRL Roanoke Division Convention, to be held at Hotel Jefferson in Richmond, the week end of Oct. 3 and 4. JJJ and IMP are co-chairmen. See you there. Fifteen-year-old K4CAN snagged a 40-w.p.m. certificate from the Conn. Wireless Assn.—with a "Stick" yet! His pappy, YE, says he was hard pushed with a mill. K4JJK reports the XYLs of the Roanoke Area hams have formed the "Widders Club" and seem to be having fun. Ken is looking for someone to draw a monthly cartoon for *Va. Ham.* Any volunteers? FOR made nationwide news wires when he boiled owl for 40 hours to help obtain a medicine shipment to France to save a critically ill French child. Welcome to Virginia to DVT, ex-K2GSJ. ZPE reports burgeoning interest in 2-meter activity in the Richmond, Petersburg, Hopewell Area using mainly 145.35 and 144.45 Mc. Also there is much v.h.f. interest in other sections of the State. K4HIA, now on RTTY, reports 27 contacts in the first 2 days. K4LPR says Norfolk is mobile happy. Often as many as 100 mobiles are on there. DX tests gave PNK eleven new countries for a total of 195. Rog says the new 75A-4 helps. CXQ has now WACed on 80 meters. OOL is threatening to use a bug! LW is on with super power, 70 watts! BGP, in the VFN report (which will appear in full in *Va. Ham*) says the deliberate QRMers appear to be wearying of that sport! Traffic: (Mar.) W4PFC 1095, K4ELG 670, W4QDY 543, SHJ 428, K4QLX 317, KNP 312, JKK 230, W4RHA 187, K4AET 161, ALEV 155, W4SNH 109, BZE 55, OOL 49, AIXU 39, K4QY 35, W4CFV 29, KX 21, BGP 20, K4HIA 18, JRE 17, IIP 16, W4ATQ 15, K4PEJ 14, M8G 8, LW 5, CXQ 4. (Feb.) K4ILP 10, W4MXU 5.

**WEST VIRGINIA**—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: HZA. PAM: GAD, V.H.F. PAM: K8LYU. RMs: GBF, FNI, PBO and VYR. Make plans to attend the All W. Va. Hamfest at Jackson Mills July 11 and 12. The Logan Radio Club has been formed with K8MHC, pres.; K8CMW, vice-pres.; and BZY, secy.-treas. The club meets once per week and has 20 members already. Other members are VEN, FJB, K8MGY, K8LXO, K8KVX, K8HTW, KN8OFB, KN8OFM, IBDI, of League Headquarters, visited the Charleston Club. West Virginia finally got the bill passed and signed for call letter auto license plates. MLT is to be congratulated on pushing this. We are indeed sorry to learn of the passing of LS and TSK. 3PZW stopped to visit HZA on his way to KS4BB. CSG is the new Kanawha Co. EC. PQQ visited several stations, including 6AM, while in Los Angeles for a month. KN8OHF and KN8OLO are new hams in Weston. NYH is back on the day shift and is more active now. K8CAY is now on 220 Mc. A new 6-meter net has been formed known as the Wood Co. 6-Meter Net. It operates on 50.1 Mc, and active members are IBF, K8OAK, KXQ, GWR, K8HYE, K8AIB, K8BOT, K8HKW and K8BSB. K8HRO has worked 38 states on 6 meters. IHY was home for the Easter Holidays. K8DDB is on s.s.b. K8HGM has a new 6-meter rig. DDQ is recuperating at home from a broken leg. FUM is the new Cabell Co. C.D. Communications Director. Traffic: K8JLF 304, KFK 165, W8FNI 122, PBO 89, HZA 55, K8CNB 52, W8BWK 49, NYH 33, K8CSG 7, GAG 7, AEN 6, BLR 5, GWV 5, HRO 5, IYU 3, DBB 2.

## ROCKY MOUNTAIN DIVISION

**COLORADO**—SCM, B. Eugene Spoonemore, W0DML—SEC: NIT. RMs: IA and QKD. PAMs: CXW and JR. OES: K8BTU, RRV and YJO are building an s.s.b. exciter. RRV, DTJ and IA soon will be on 2 meters. YJO, K8GBS and BTS are on 2 meters in Colorado Springs. OMN, DRY, YMP and K8TAP assisted with communications on the CB&Q Railway during the March blizzard. Plans are in the making for consolidating the Jefferson and Denver City and County EC areas. K8EDH and EDK have a new NC-303 receiver. K8ITT has a new Comanche completed. The Colorado Springs boys checking in on 3885 kc, were K8GBS, CEN, LZP, RNT, RKQ/B, BTS, LYT and W8CBG. HIR, MIQ, AGU and W7VMC/B, KTX and YAE are new LCARC directors. K8JSJ is operating mobile on 6 meters. K8JTZ and his XYL have a new baby girl. According to the *R.F. Carrier* K8RJD was voted into the WSRG as was one SWL. The boys have a new shack renamed the "Alcega" for rehabilitating tired and frustrated would-be geniuses or just plain "out and try" artists. K8CEN is building a d.s.b. and a 400-watt final. K8LYL made a hurried trip to Oklahoma because of illness in the family. LVS recently made a trip to South Dakota.

(Continued on page 148)

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**CHAMPAIGN**  
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**INDIANA**  
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 Graham Electronic Supply Ints.

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**BURLINGTON**  
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 World Radio Labs Inc.

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 Davis Electronic Supply

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**FOND DU LAC**  
 Harris Radio Corp.

**MADISON**  
 Satterfield Electronics Inc.

**MANITOWAC**  
 Harris Radio Corp.

**MILWAUKEE**  
 Amateur Radio Supply

**Radio Parts Co. Inc.**  
**SHEBOYGAN**  
 J. J. Koppell Co.

**WAUSAU**  
 Electronics Inc.

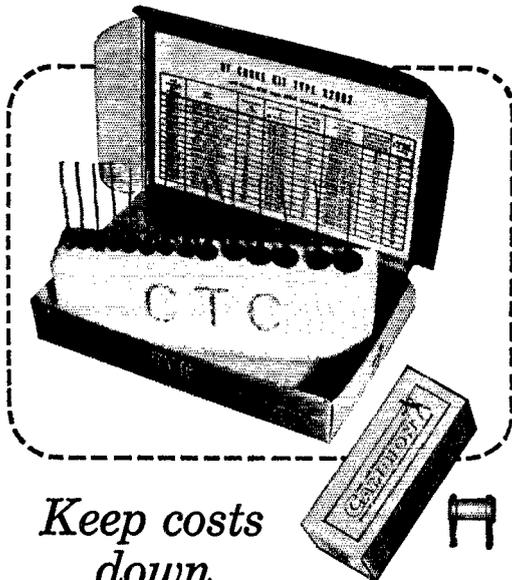


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**UTAH**—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 70CX. SEC: FSC. PAM: BBN. V.H.F. PAM: SP. RM: JBV. K7COK has been awarded a net certificate for the Beehive Net. BAJ reports that conditions were very favorable during the DX Contest. DHJ and AJB have maintained a schedule nearly every night for a year on 160 meters. Both stations are using emergency power. DEJ is at Capitol Reef National Monument and has a 1500-ft.-long wire with one end 1000 feet high on a cliff and the other end at the shack on the valley floor. GOW, at Bryce National Park, was heard on 160 meters. K7DKA has a new transmitter. ZSW, NLX, DQW, STI, WTW, FSC and VEO are experimenting with 2-watt 10-meter i.m. transmitters. AQE is working on 2-meter equipment. GDD has a 75- and 40-meter mobile transmitter built from Q8T. Traffic: W7OCX 199, QWH 10, ZWJ 7, K7AUM 3, W7BAJ 3.

**NEW MEXICO**—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: DWB. The NMEPN meets Sun., Tue., Thurs. on 3838 kc., Sun. at 0730, Tue. and Thurs. at 1800 MST. The Breakfast Club meets on 3838 kc. Mon. through Sat. at 0700 MST. The TWN meets Sun. through Sat. on 3570 kc. at 1900 MST. The EC Net meets Sun. on 3980 kc. at 1900 MST. The AREC Net meets Tue. through Sat. on 3980 kc. at 1900 MST. Please try to check in on as many of these nets as you can. We need more check-ins on nets from New Mexico. The C.W. Net desperately needs more activity from New Mexico. Albuquerque had 5 v.h.f. nets in March with a total check-in of 50. Two RACES nets had a total check-in of 16. Six Section Net certificates were issued for v.h.f. NQG gave two Conditional Class exams and has an NC-300 for sale. POI and CIN are active on 2 meters in Farmington. We now have 14 ECs, 4 ORSs, 2 OESSs, 2 OOs, 6 OPSs, 5 OBSs. New appointees are WOME as OBS, K5PRR as OBS, K5TQP as OES. We welcome two new hams to New Mexico: KL7CRE and his XYL, W9VER. Traffic: K5WSP 2189, W8OME 611, W5DWB 346, NQG 17, K5LWN 11, W5HJF 10, K5IQL 10, DAB 9, IPK 8, W5CIN 7, K5GYA 6, W5ESN 3, VC 3, ZU 3, K5DAA 2.

**WYOMING**—SCM, Lial D. Branson, W7AMU—SEC: CQL. KN7HPP is a new ham in Worland; KN7HLC is a new ham in Thermopolis. CQL, the SEC, is making good progress with EC appointments and we are getting good returns on AREC applications. LKQ is the new Official Observer for Wyoming. AMU will have more time for ham radio and fishing since his retirement. The Wyoming Hamfest will be held July 25 and 26 near Buffalo, Wyo. The Casper Radio Club has one-half hour code and one-half hour theory every Tue. evening and has 26 registered students with examinations to several for Novice and General Class licenses. The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fr. at 1830 MST on 3610 kc. Traffic: W7DXV 80, BFL 70, K8MBT 28, W7BHH 28, K7MDT 28, W7NMW 12, BKI 8, FSR 8, CQL 5, AMU 4, K7GEH 2, GTH 2, W7YWW 1.

## SOUTHEASTERN DIVISION

**ALABAMA**—SCM, Clarke A. Simms, jr., W4HKK—SEC: WJX. PAMs: DGH and K4BTO. RM: RLG. Congratulations to Harvell Tilley, elected the outstanding NCS of AENP for the first quarter of this year. AENB reported a traffic of 167. Welcome, K4CFD, back to Alabama and the c.w. net. DDY qualified for a net certificate. Welcome to KN4FPK and FPJ, both new in Decatur. BTN has been appointed Radio Officer for RACES in Walker Co. K4JSP is the new Asst. EC for Jefferson Co. TOI will write a column for the *Alabama Section Bulletin*, which has been forced to charge for subscription because of production costs. The Madison Co. AREC program is moving forward with a new EC. K4QJF has qualified as OO Class I. K4APM and RJM are new OOs and CFD is a new OBS. There are vacancies for appointment as Official Experimental Station. The phone nets reported 467 messages for March. K4JLE, LQM, UDK and K5LFS have earned net certificates with AENP. New additions—K4YEN, an NC-300; K4TGD, a new vertical antenna; ENO a Cosmophone. Check your appointment certificates. If it needs endorsement, mail it NOW. Traffic: W4RLG 380, K4PFM

(Continued on page 160)

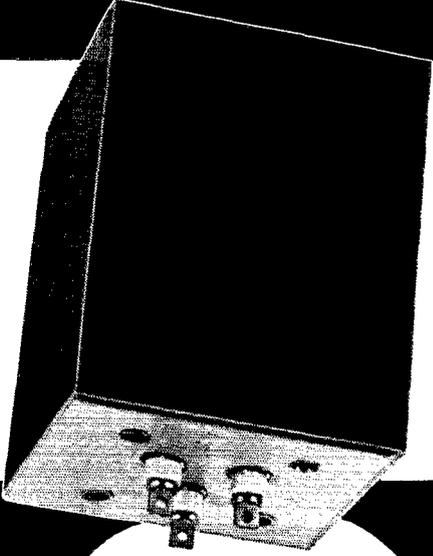
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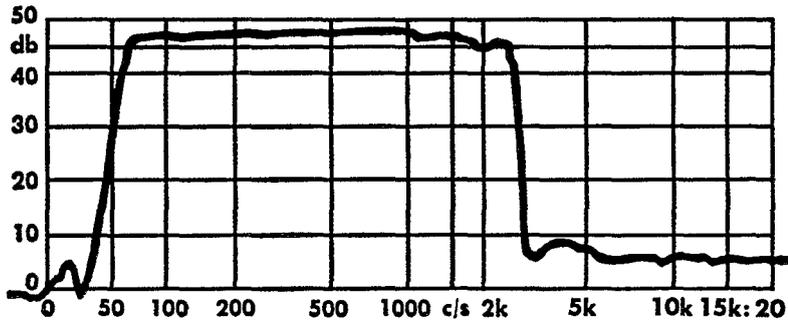
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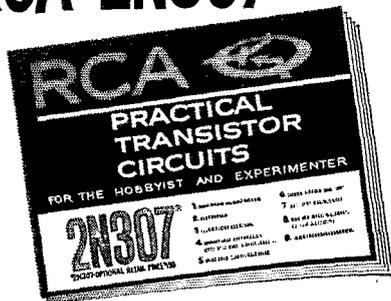
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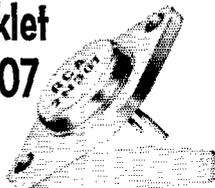
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**EASTERN FLORIDA—SCM.** John F. Porter, W4KJG—SEC: IYT, RM: K4SJH, PAMs: TAS and RMI. Section nets: FPTN 3945 kc, 0700 Mon. through Sat.; PMTN, 7230 kc, 12 noon Mon. through Sat.; TPTN, 3945 kc, 1730 daily; FN, 3675 kc, 1900 Mon. through Sat.; GN, 7105 kc, 1000 Mon. through Sat.; FEPN, 3910 kc, 1830 Tue. only. Support one of your section nets if you have the time. New Naples ARC officers are AZK, pres.; K4UGE, vice-pres.; K4MIBB, secy.-treas. A new ham in Naples is KN4FOM. QBO has a new NC-300. EFV received his CPC 35-w.p.m. DPD is working on a 2-meter reactance amplifier. LDM is in Thule, Greenland, but is sending in his traffic reports via LVV. K4LCD is now handling out-of-state traffic on the 20-meter S.S.B. Interstate Net. K4DRO received his CPC 35-w.p.m. K4KU is the first W4 to work WAS on 6 meters. UF received her Georgia Peach certificate. The Floridians have signed up over 18 new members this year. The meeting at the Orlando Hamfest was a big success and Dot was elected president. The North Miami High Radio Club, K4THJ, now has close to 10 members. New officers of the Winter Haven ARC are K4KDN, pres.; CCC, vice-pres.; CXP, secy.; K4CK, treas.; K4RXD, publicity. K4AKQ will be off the air for the next year if he follows his doctor's orders. The Fort Myers Amateur Radio Club, Inc., is issuing a certificate to any amateur radio operator who contacts five members of the club. QSL cards will be proof of contacts made and should be sent to: K4RTY, 1448 Byron Road, Fort Myers. PZT and AYD set up a booth at the Okechobee County Fair and handled traffic for the local folks. Your SCM attended the Orlando Hamfest and had lots of eyeball QSOs. Let's all make the Silver Spring Hamfest next. Traffic: K4QLG 787, SJH 561, W4FPC 442, K4KDN 325, OIE 207, BNE 166, LCF 153, LCD 138, W4PFF 120, K4ILB 117, W4LMT 107, IYT 103, K4ODS 97, W4KJG 88, K4AHW 73, BLM 67, MTH 57, COO 55, RNS 33, W4TAS 33, K4PAD 31, BY 27, W4LDM/KGI 26, K4MIBB 21, W4EHW 15, K4OSQ 15, SLR 13, W4SJJ 10, K4IWT 7, MTP 7, ANJ 6, W4DPD 5.

**WESTERN FLORIDA—SCM.** Frank M. Butler, jr., W4RKH—SEC: PQW, RMI: AXP and BYE. Perry: KQP reports increasing activity in Taylor Co., with YLP, ZWY, KN4YNH and himself active. The High School club has a complete station with the call DEG and would like contacts with other school radio clubs. Fort Walton: A new directory of more than 150 amateurs in Okaloosa County has been published by RKH. Application has been made for matching Federal funds to buy \$2000 worth of radio gear for Okaloosa County RACES. The Eglin Amateur Radio Society bought a 2-meter converter and is modifying an ARC-5 transmitter. BYE reports the NWFN is covering more and more of E, Fla. OJD, PVU and UBR were missed on the net in March. DQY is doing an FB job with the 3-4-5 News, a newsletter of activities of traffic men in the 3rd, 4th and 5th regions. NTS. K4MTZ has been appointed OBS, Tallahassee; GAA is active on the 75-meter nets, Pensacola; K4KQB is the new OBS for 6 meters. The V.H.F. Club has a permanent meeting place at the USO Club. The PARC has a new Viking Challenger. Parasitics has a fine column on doings of the XYLs. The NAS Club has changed its meeting times to 7:30 P.M. QAC and EQR now have emergency-power plans. Traffic: W4BVE 66, GAA 16.

**GEORGIA—SCM.** William F. Kennedy, W4CFJ—SEC: PMI, PAMs: LXE and ACH. RM: DDD, GCEN meets on 3995 kc, at 1830 EST Tue. and Thurs., 0800 Sun.; GSN Mon., Thurs. and Sun. at 1900 EST on 3595 kc., DDD as NC; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc.; MV as NC; ATL Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc.; KWC as NC; GTAN Sat. at 1000 EST on 7200 kc.; GPYL Net Thurs. on 7260 kc. at 0900 EST. K4CYV as NC; GAN on 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. KR has received the No. 1 certificate for working all 159 Georgia counties. K4UWJ is active on phone. The new chief operator at K4MCL is K7GXV. K4ZMT made BPL. K4PDY and his mother, KN4FGY, have gone to Germany. K4VHC/4 is planning to go s.s.b. in the near future. ETD is about to return to the air with another fine signal from his new QTH. K4LVE still finds time to handle a lot of traffic each month after getting the kids off to school. K4PHA turned in a nice traffic report. K4VCM has a nice new 300-watt grounded grid-final amplifier. FWH is doing a wonderful job reading bulletins each month. DDD is the new RM for the State of Georgia. LNG is getting on 220 Mc. K4KLD and FWH are on 220 Mc. K4TFY also is on 220 Mc. K4KZP was notified he placed first in the Mass. QSO

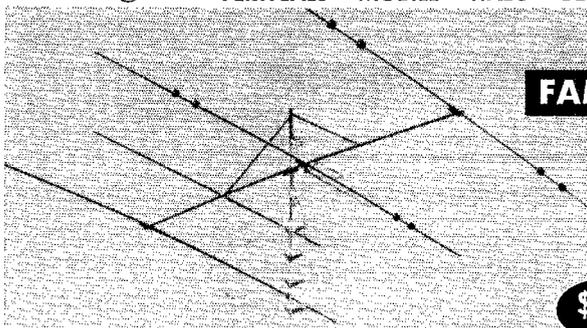
(Continued on page 162)

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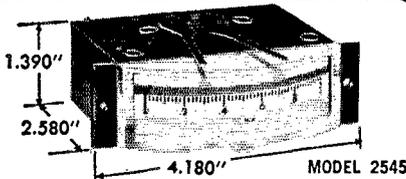
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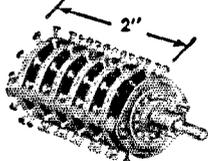


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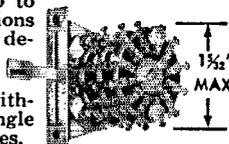
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Party. KN4ZYI now has a DX-100 and an HQ-110. K4LEM now has his Extra Class ticket. Traffic: K4UWJ 225, MCL 190, ZAMT 173, BAI 125, VHC/4 89, LVE 72, PHA 53, HBI 30, VCM 15, W4HJZ 12, W4FWH 6.

**WEST INDIES**—SCM, William Werner, KP4DJ—SEC: KP4AAA. The PARAC Annual Convention was attended by over 200. New officers are CK, pres.; MS, vice-pres.; URO, secy.; ABN, treas.; ADR, AAM, ACQ and CA, directors. D installed a rotator on the 10-meter beam and has a weekly sked with W6NUN in Los Angeles. AMG now has an HR-50. CK put up a tri-band quad on top of a 40 tower. HD is a civil defense communication officer and he and the c.d. director held a conference with PRARC officials to organize a RACES group using amateur equipment, and also an auxiliary group of operator/technicians to man c.d.'s island-wide v.h.f. system. The Colegio San Jose Radio Club, NY, has a 30-kva. emergency power plant in addition to a 1-kw. portable plant. AOD and WPA4OF are in charge. BV reports to the 3925 kc. Net after a five-year absence. WV ordered a Mosley Tribander TA-33 and SX-101 Mark III. AET has antenna trouble on 75 meters. AKH changed the feedline length to a 40-meter doublet so he can load the entire system on 75 meters. AKH uses a Command set as v.f.o. for DX-40. MP built a three-element wide-spaced 20-meter beam using a 4-in. 30-ft. boom. RA was in charge of the Boy Scout Jamboree. YP2KR, using a DX-20 with a 6L6 modulator, comes in fine on 40 meters here. KD and DJ have been reappointed ARRL Assistant Directors. BJ is visiting his brother, K4PUJ, in Washington. D. C. ACF will tour the States coast-to-coast. Notas de Mayaguez via WT: Dentro de pocos dias trasladaran para los Estados al colega AGO sentimos mucho su partida pues ha sido muy servicial. WT saldra pronto en 40 metros con un nuevo transmisor homemade a cristal. Los 3925 estan cojiendo vida, lastima que los muchachos no recuerdan casi de hacer preseucia los miercoles aunque sea para que el Net se va concurrido. Despues de larga tiempo en silencio se deajo escuchar DL (Diablos Locos). WT recivio la visita de W2HAA. CG salio en 40 metros despues de largo tiempo de silencio. Todos los KP4 de Mayaguez estan muy activos en 20, 40, 15 metros entre ellos esta CO eu s.s.b. Traffic: KP4WT 76, DJ 5.

**CANAL ZONE**—SCM, Ralph E. Harvey, KZ5RV—The canal Zone Amateur Radio Assn. was entertained by Al Miller and his two daughters at a recent club meeting. Al gave a talk on a recent trip up into the Cuna Indian country with colored slides of the various points of interest. The Crossroads Amateur Radio Club has acquired a new meeting place in Coco Solo and expects to start regular meetings soon. It is planned to hold Field Day there and invite all interested amateurs to participate. An interesting event in the Canal Zone was the visit of the Japanese Exhibition Ship the *Atlas Maru*. Aboard are all types of merchandise made in Japan. The electronic exhibit was very interesting and included all types of radio equipment. New calls: AK, DS, FE, HD, RF, RI and Novice GGN. Deletions: AC, AO, CAN, CB, CH, CW, DL, DM, FC, FD, FJ, FO, GR, HM, JK, JP, LB, PWN, RL and SNN. Traffic: KZ5UR 81, HQ 68, JN 45, CC 30, SG 20, RM 16, VR 15, RR 13, WF 12, HO 9, RV 9, LC 7.

## SOUTHWESTERN DIVISION

**SAN DIEGO**—SCM, Don Stansifer, W6LRU—The Convair Astronautics Radio Club has been assigned the call W6UUS in memory of George W. Peck, a former employee who held the call until his death in 1958. His widow has been presented a life membership in the club. Congratulations to W6EOT in Lakeside, who was recently elevated to the position of TCC Director, Pacific Area. Besides being a bang-up traffic man, Cecil also is ORS, RM for the section and EC for East San Diego County. The top traffic total from Orange County in March went to K6ZCR. K6BTO, OES in National City, now has a sixteen-element beam on 220 Mc. Welcome to the Newport Amateur Radio Society, the newest affiliated club in the section. The club is less than two years old, meets the 2nd and 4th Thurs. evenings at the Parks and Recreation Headquarters in Newport Beach. Officers are W6WPN, pres.; K6LL, vice-pres.; W6OVS, treas.; and W6WSW, secy. It looks like W6ZVQ took top honors in the ARRL contest on c.w., with W6RCD the top man on phone. W6LRU made over 200,000 points during the c.w. session with a new Apache. The April meeting of the San Diego DX Club was held at the home of W6BZE, top man in the club with 264 countries. New OO appointees in the section include K6BX, W6VIV, K6TFT and W6AVA. Traffic: W6EOT 784, K6ZCR 307, W6SK 102, W6ELQ 98.

(Continued on page 154)

# 9 NEW RIDER BOOKS

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navigation, computer applications, and actuators as well as their related components. In the second volume, devoted to radio telemetry and space techniques, testing and telemetering, space exploration by optics and electronics are covered. There is a fascinating coverage of satellite theory and practice, satellite monitoring and tracking, and applications of earth satellites. Navigation in space along with components and power sources for space applications are discussed. #229, 2 vols., soft covers, \$7.80 per set; #229-H, 2 volumes in single cloth bound edition, \$9.00.

**DESIGN OF TRANSISTORIZED CIRCUITS FOR DIGITAL COMPUTERS** by Abraham J. Pressman, M.S. Using "worst-case" design, this book explains how switching time and drive capabilities and requirements of all the essential digital computer building blocks may be calculated, and how these blocks may be assembled in chains to perform computer-type logical operations. Methods for performing computer logic to obtain maximum operating speed and pyramiding factor are analyzed in detail. #215, \$9.95.

**PRINCIPLES OF TRANSISTOR CIRCUITS** by S. W. Amos, B.Sc. A remarkably lucid presentation of transistors, the fundamental theory of their operation and how to apply them in circuitry for amplifiers, complete receivers and other equipment. Starting with the basic principles of transistors, semiconductors are clearly defined and explained. The point-contact transistor and junction transistor are covered. The book covers common base amplifiers, common emitter amplifiers, bias stabilization, small signal amplifiers, large signal amplifiers, and transistor superheterodyne receivers. #241, \$3.90.

**LOW FREQUENCY AMPLIFIERS (Electronics Technology Series)** edited by Alexander Schurr, Ph.D. The principles and circuitry involved in the amplification of low frequency signals is presented in a thorough, easy-to-understand manner. Starting with the principles of amplification, the book covers low frequency voltage amplifiers, single-ended power amplifiers, push-pull and transistor amplifiers. #166-30, \$1.80.

**FUNDAMENTALS OF RADIO TELEMETRY** by Marvin Tepper. Telemetry makes possible the collection of data on which the improvement of existing rockets, missiles and aircraft is based. This exciting book explains its purpose and explores its techniques. Special sections are devoted to missile and satellite telemetry and hardware, and to data recording and processing. Specially prepared illustrations. #225, \$2.95.

**ENCYCLOPEDIA ON CATHODE-RAY OSCILLOSCOPES & THEIR USES** (2nd edition) by John F. Rider & Seymour Usan. The second edition of the fabulously successful book—has been greatly expanded to include many new types of oscilloscopes and their applications. It is completely up-to-date!

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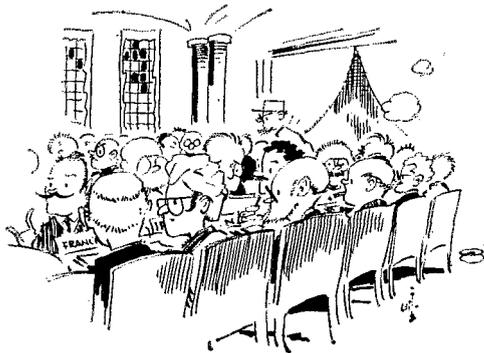
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# Are You Represented?



**7** THROUGH your membership you can be represented at the forthcoming International Radio Conference. The decisions of this conference will determine what frequencies will be available to you in the coming years.

**S**INCE November, 1956, the Department of State, and representatives of numerous U. S. radio services—military, commercial and private—have held a series of preparatory meetings in Washington. Officials of the ARRL have been and will continue to be in attendance at such meetings to speak for the amateur. It is your membership which will assure you that your interests will be fully represented.

**A**s an individual amateur, none of us could carry much weight at the Geneva meetings this coming August. Together we can do far more. Let your voice be heard—through the ARRL—at the conference table. It's your job to become an informed member of the League!

QST and ARRL Membership \$4  
\$4.25 in Canada, \$6 elsewhere

**THE AMERICAN RADIO  
RELAY LEAGUE, INC.**  
West Hartford 7, Connecticut

**SANTA BARBARA—SCM.** Robert A. Hemka, K6CVR. The Santa Barbara Radio Club had K6BE as a speaker. His subject was "Noise Found in Resistors." The talk was enjoyed by all. Coffee and donuts were served after the meeting. WA6CMC and W6HUT just completed installing the Gonset Twins in WA6CMC's boat. His boat also will have radar and ship-to-shore telephone. W6OUL reports his beam was down because of high winds, but is on 80-meter c.w. The Missile Amateur Radio Club is the new club at Vandenberg Air Force Base. The president is Tech/Sgt. Howard D. Riddle, K6RXD. Meetings are held the 4th Thurs. of each month at 8 p.m. at the Mesa Service Club. W6BZP and his family will be leaving soon for Germany and will remain there for about a year. Duffy will be there to study for his doctor's degree. Traffic: (Mar.) K6BVA 45, W6OUL 10, K6CVR 2, W6DTY 2.

## WEST GULF DIVISION

**NORTHERN TEXAS—SCM.** L. I. Harbin, W5BNG —Asst. SCM: E. C. Pool, 5NFO, SEC: K5AEX, PAMs: BOO and IWQ, RM: ACK. The Division extends its deep sympathy and regret to the family of former SCM, T. Bruce Craig, W5JQD (Apr. '05—Mar. 27, '59). His devotion to amateur radio was boundless. Currently Asst. Dir. and Coms. Dir. of the Lubbock c.d. group, he had served as SCM, SEC, EC and OO, sparked AF MARS (Army MARS earlier), was past pres. of the South Plains Amateur Radio Club and had just been commissioned Lt. Col. Texas State Guard. Hams in the Panhandle of Texas made a good showing with their Weather Nets by helping the Weather Bureau keep track of the many cyclones and tornadoes during the windy month of March. The U.S. Weather Bureau sponsored a meeting of the hams in the Panhandle at Amarillo for the purpose of informing the hams of what they could do to assist the Bureau during severe weather. Many hams showed their interest by attending this meeting. K5AUZ has 139 countries confirmed. K5LDZ has a new Ranger We are happy to welcome K5GEC back on the air after a long stay in the hospital after the Brownfield explosion. KVI reports going on a new job with banker's hours. GY reports new recruits on the c.w. nets. PVT won a ham at the Midland Swapfest. What is so odd about that? Well it turned out to be a live pig. K5SUDP and K5SUF6 are new hams in Lindale. K5DNQ reports "going great guns on 15 with 15 countries confirmed." K5MIQT is building a modulator for his ARC5 and will be on 75-meter phone soon. GNE built a new mobile to use while in New Orleans for two weeks on Navy Reserve duty. NFO has added a new ham shack and den to his house by converting his garage. K5BTZ went to the hospital for emergency appendectomy. Traffic: W5SMK 654, KHK 202, GY 162, K5IPG 103, J8N 89, W5BOO 75, K5ACD 68, IDZ 64, HGL 60, ETX 59, PNV 59, W5BTH 50, K5JEK 47, DOI 25, W5CF 20, VFM 17, SQY 16, K5GEC 12, W5KYM 8, K5DNQ 4, AUZ 2.

**OKLAHOMA—SCM.** Richard L. Hawkins, W5FEC —SEC: K5KFS, RMs: JXM, K5JGZ. PAMs: MFX, DRZ, VCJ. The Kay County ARC is now an ARRL affiliated club. The NORA's charter meeting was held Mar. 20 with Vice-Director W5KY presenting the ARRL charter. K5INC is on 2 meters with a Seneca rig. New officers of the Sand Springs ARC are IER, pres.; K5LAD, secy.-treas, K5BHT is moving to Tennessee. JWA is back in Bartlesville. MMD, RRM and K5BBA were lucky enough to QSO K54BB, K5BNQ and IWL are building a citizen-band rig. New additions to the Bartlesville gang are CQB and K5PWP. PML/DL4SS rotated back Stateside and will be stationed in Arizona. The Lawton-Pt. Hill ARC had a lot of traffic from the Easter Pageant this year. CZB and AZO got an FB write-up in the Sunday edition of the paper for their part in the storm warning net. Several of the Oklahoma City mobiles proved their worth in both the grass fire and the Wilson Co. explosion. June 10 is the closing date for nominations for a new SCM; let's have several nominations. Oklahoma's Ham of the Month: CCK for her good operating and traffic activity. Traffic: K5USA 559, W5DRZ 420, FEC 414, VVQ 153, K5MBK 115, CAY 112, W5HFN 102, JXM 75, MFX 66, KY 44, PNG 32.

(Continued on page 156)

# TOWERS

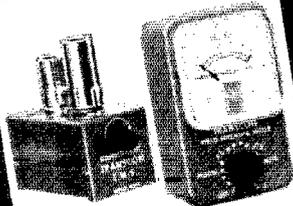
**ALL THE WAY - IT'S EZ WAY**

See Page 130

**WORLD RADIO LABORATORIES**  
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Can be installed in any car radio rapidly. 6AL5 and 12AX7 tubes. DC power input: 150 V. DC to 225 V. DC. Filament: 6 or 12 V. Adjustable squelch control. Size: 2 1/4" x 2 1/2" x 4"

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Same as used in W2EWL SSB Rig—March 1956 QST. Three sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22000 ohms. (By using center taps the impedances are quartered. The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x 3/4" w. x 3/4" d. New and fully shielded.

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A high quality instrument made by international Instrument Co. (Model 100). Only 1" in diam. Ideal for limited space applications & transistorized circuits. A natural for transistorized grid dip oscillator as described in June '58 QST.

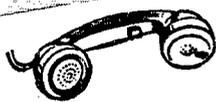
Amateur Net \$3.95 ea. 2 for \$7.50

2" round 0-500 microamperes. Bakelite case. Made by G. E. and Dejur.

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Push-to-talk butterfly switch. Handy units for use in mobile, CD units, ham use, etc. Complete with rubber covered cable and plugs. Wt. 3 lbs.

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**P & H COMPRESSOR-AMPLIFIER**

It's a fact - 100% modulation on most ham rigs is a "sometime thing". Uncontrolled, instantaneous audio peaks can ruin an otherwise clean signal. THERE'S A SIMPLE SOLUTION - Install a P&H compressor-amplifier in the mike line of any AM, SSB, DSB or PM transmitter - Adjust audio gain for full 100% modulation and forget it! TALK POWER IS UP - FLATTOPPING IS GONE. The net result is the CLEANEST, MOST POTENT AUDIO your rig is capable of. Single knob control. Works on AVC principle - like broadcast compressors. TWO MODELS: The AFC-1 (3x3x5") requires an external power source and has a built-in 90-3500 cycle band pass audio filter. . . . sells for only \$29.95. The AFC-2 (5x5x7") has a built-in power supply, a switch controlled (Broad-Medium-Sharp) audio filter and costs you only \$49.95. Also available the AFC-2CW, a sharp filter model for CW reception or mike input on filter exciters.

If you are interested in what either of these "Little Grey Boxes" can do for your phone signal. . . . Or what smooth, instantaneous, non-blasting phone and CW reception you can get from that older model receiver with a P&H compressor in the speaker line. . . . See your dealer, or drop a card to DEPT. R-11.

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**32V3-75A3  
CABINETS**

10 1/2" x 19" Panel Space.  
13 1/2" Clear inside depth.  
21" x 12 1/2" x 14" overall.  
Sturdy, Shielded, Attractive. In Black or Gray Wrinkle. (Specify Color)

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K5DJA 20, ELG 20, W5MGK 20, K5INC 19, MZM 19, W5COCK 17, WAF 17, VLW 16, K5CBA 15, W5HIM 15, BBA 14, UCT 13, EHC 10, GOL 9, K5JOA 8, MFK 8, EZM 7, BNQ 4, W5IER 4, K5DUJ 2. (Feb.) K5MPK 14.

**SOUTHERN TEXAS-SCM.** Roy K. Eggleston, W5QEM-SEC: QKF. PAM. ZIN. RM: K5BSZ. The 7290-ke. Traffic Net had 42 sessions, 789 messages and 1372 stations checking in. K5LIU is moving to a new QTH with no trees to block antennas and almost enough room for an antenna farm. Glad you and the OM are back in Texas. All you ham granddads should contact K5GAL and join the Granddads' Ham Club. AOK made a flying trip to W6-Land. K5GTO is a new OO in El Paso. One of the best articles on amateur radio that I have read in a long time is entitled "The Reason Why," published in the *Auto-Call*, 3NL editor. This article should be read by all amateurs. AOK is the new EC for Corpus Christi and Nueces County. K5OEA is inoble with a home-brew 6146 rig. AIR is getting a new ham shack. Hurry and get back on the air. Jerry, K5RYS is mobile around El Paso, and also is a new OBS. Listen for him Mon, on 29,640 ke, at 2000, also Wed, and Fri, at the same time, except on 29,000 ke. The high winds in Southern Texas have been given the beams and antennas a rough time. Traffic: (Mar.) K5FGF 1278, OEA 581, W5ZLN 117, K5SPD 111, W5LVC 106, K5MWH 62, W5DYV 19, QLT 4. (Feb.) K5FGF 972, W5HKE 71.

**CANADIAN DIVISION**

**MARITIME-SCM.** D. E. Weeks, VE1WB-Asst. SCMs: A. D. Solomon, VE1OC and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include MA as EC. Belated congratulations to VO1DQ and his XYL, VO1DK, on the arrival of a new harmonic. The Halifax Club held a special civil defense course for radio operators with 30 in attendance. Instructors included WL, QV and GC. New calls heard include AGX, SV and OL. LZ's recent trip to Florida provided a work-out for his KWM-1. He maintained almost daily contact with Halifax through DD, DQ, EK, LY, OC, TA and WL. W2ZR/X/VO1 will be returning home shortly after a lengthy stay at Pepperrill. Bob has been very active while in Newfoundland, including a term as secretary of SONRA. His many friends wish him good luck. Are your Field Day preparations completed yet? Let us hope conditions will be better than last year. The Halifax Club announces that the Convention will be held at St. Mary's University, Sept. 5, 6 and 7. See you there? Traffic: VE1ADH 44, VE8NI 33, VE1VN 26, EK 8, OM 6, AEB 4, ES 2.

**ONTARIO-SCM.** Richard W. Roberts, VE3NG-The Toronto Sportsman Show and several club banquets helped the traffic scores. EII has certificate No. 1 for W.O.C. (Worked Ontario Counties), 2ABR and 2DB, along with 2CI, visited Kingston and Toronto. AJR was operator at the Windsor Open House. CLF is a new ORS. AEZ has an SX-100. ES was on in the DX Contest. BUR visited N.Y.C. for Easter. VD will be on again soon. DWI has a new Apache. AOE has a new QTH in Hamilton. AHH is back on the air on 20 and 75 meters. TX is rebuilding. BOV has fully recovered. COK and HF are hot operators in North Bay. ELC will be in G-Land in July. TO's QTH is now Hamilton. DTO was a visitor to VE6-Land again. BFF is on 15-meter phone. EIA is on amateur TV from Hamilton. Any others? The Sarnia ARC has two secretaries, one for VE-Land and one for its members in W-Land. Is this Canada's only international club? CFR has a new Pacemaker. The ARRL Ontario Convention will be held in London, Ont., Oct. 16 and 17, 1959. More details later. ALV, APO and APJ are new hams in the Soo Area. DYR has a new tower. AXH is on 144 Mc. DGW now has WAS, WAC, WAVE and WACAN awards. DGW is going high power. CAB is back on his feet. CJJ is in the hospital in Kingston. Also, CHF is in the same spot. CO was guest speaker at the Niagara meeting. EGN is now in Unionville. HB won a receiver at the Nortown Dinner. NG was guest at the West Side Dinner. North Bay will hold its annual affair about June 28 to 28. TX has information or write EAW, CEC, DJE and their XYLs attended the Nortown Dinner. JA, former SCM of Ontario, was quite ill in England after landing there for a holiday. Flash! MR is en route to Cocos Islands for a DX-pedition and will be on 14-Mc. s.s.b. and c.w. Traffic: VE3NAR 428, VHF 358, BZB 208, DPO 170, NG 149, NO 108, EII 106, AML 96, ATO 79, DCX 78, DUU 71, BUR 65, CFR 61, GI 59, CLF 46, BJV 38, EIH 34, EIK 29, DH 27, KAI 24, DZA 23, DWN 16, RV 15, AOE 12, DLG 8, CE 6, UW 3, VD 1.

**QUEBEC-SCM.** C. W. Skarstedt, VE2DR-Traffic nets: c.w., OQN, 3535 ke. at 1900; Quebec Fone Net, 3760 ke. at 1845. Greetings to the following newcomers: ASB and VG, Verdun; ME, Richmond; BAO, Pont-

(Continued on page 158)

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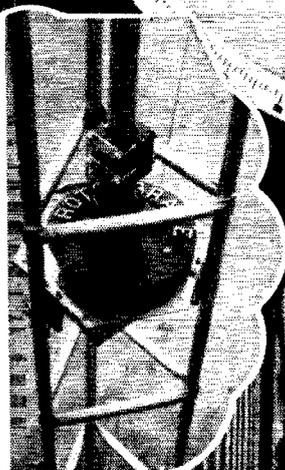
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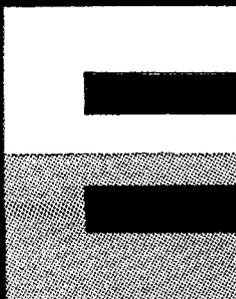
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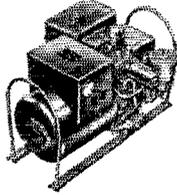
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Hi-power design. 4 bands in 60 ft. over all. Will handle 2 KW of well over-modulated AM carrier.

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All antennas have

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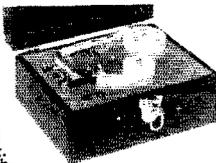
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THE hump (around 8 words) is the thing that tells you you have wasted your time by starting out wrong. Thirty years ago when we started teaching Code our students too ran head-on into the hump. We went to work to find out why. TWO-PHASE, STEP BY STEP instruction is the perfect answer. In this method dotdash is not A. The SOUND resulting from dotdash is A. There is also the important factor of correct timing. If the signals are not timed correctly the resulting sound will not be correct. There are many, many things connected with proper Code instruction, many of them so small they seem inconsequential. Others are so technical that many so-called experts fail to understand them. It's a long story but I have it all written up and will be glad to send it to you. A postcard will bring you the full story.



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Viau; JI, Mont Joli; AVX, St. Lambert, AAG, Shawinigan; AVK, Cape Harrison; SX, Richmond; CX, AXG, AKY, BAX, BAP, TR and BAS, Montreal. BAE is a new ham at Abitibi using an Apache, an NC-109 and a g.p. antenna. GE snuffed out those clix. YA visited England. YF and YZ moved to St. Martin. Welcome back to HR who is operating from a new house at Beaconsfield. IC, ex-LY, is back on the air. AWR is building a new exciter. OR is getting set for his annual trek to the Maritimes. LO will spend a few months in VO-land. YP sports a potent 75-meter phone signal. AIO spotted a panther in the back yard (too many 807s?). JZ constructed a swanky operating desk. JE is enthusiastic about the future prospects of mobile. In general activity among VE2 hams seems on the upswing. ABE now has 91 countries. K2VXT/VE2 applied for CP-25 and has 6-meter CCC. ATL likes the new 2-meter converter, AZT erected an 80-ft. tower. AUH and AJD are contesting to receive the first WAC and WAS in Trois Rivières. XR had a letter on RST published in QST and received favorable comment from many quarters. AGN has acquired an SX-42 receiver and expects to become more active again. Lake Shore Club (probably one of the most informal in the world) is proving popular with "out-of-town" visitors. Traffic: VE2DR 103, EC 37, CP 28, LO 14, AGN 5.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM—PAM: OD. The television station in Red Deer recently played host at a c.d. demonstration with PD operating a ham station in the TV studio. YM acted as M.C. for the show, which worked locals BT and WX, YM, SF and MO are active on 2 meters. TL and XZ are new calls in Edmonton. CE is sporting a triband Mosley trap beam. CE and DJ have been assigned to Arnprior for a c.d. course. Your SCM urges all to put forth an effort on Field Day, be it club or individual participation. This is a very worth while activity. Make plans now to attend the Provincial Hamfest to be held in Calgary Aug. 1 and 2. This is a "must" for your activities calendar. Traffic: VE6HM 232, VE 65, OD 22, TG 11, SP 6, BL 5, SS 5, PV 4, TT 3, BA 2, SF 2, CO 1.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—SEC: KX, RM: TF. My activity was limited during March because of illness and the passing of my father, and I will have to go on the few meager reports I received from the BCEN Manager and the RM. BCEN, on 3650 kc. Mon.-Sat. at 2200 to 2230, gradually is adding stations but still would welcome more. The Trans-Canada C.W. Net, on 40 meters, still is in the making stage but the RM, TF, reports that he has 4 or 5 stations fairly well lined up east of the mountains. The Totem Club has taken an arthritic patient under its wing to help him obtain an amateur license. Incidentally, hope you all renewed your 1959-60 amateur license. Traffic: VE7AAF 195, AMW 33.

MANITOBA—SCM, James A. Elliott, VE4IF. This month's question is will there be a hamfest in Manitoba this year! So far there have been no suggestions. It is likely that there will be some activity of a local nature. Congrats to Bill and Hilda (JW) on the arrival of a daughter. Bill also is a lo-fi fan and has acquired an Edison cylinder phono job! A newcomer to the mobile gang is Peg, PE. Welcome to PE, who has just been issued his ticket. We expect to hear Ethel, CB, on phone. She has just received her Advanced Class ticket. HL is back on mobile after having had some of his gear stolen. Mobiles KP, GG, HC, GC, UR, CX, IF, MJ and JQ have been active on 75 meters. GE and PE have just completed a communications course in c.d. Preparations are underway for June Field Day. There will be lots doing, so let's have more participating. Traffic: (Mar.) VE4GE 37, AI 23, PA 10, EF 9, EG 5, FI 5, JW 4, RB 4, WW 3.

SASKATCHEWAN—SCM, Lionel O'Byrne, VE5LU—BO is a new call from Stewart Valley. Welcome, Ernie. PL moved to Weyburn. SW is on 20-meter phone. Moose Jaw operated club station MA at Crestwynd for 4 days on portable power. Regina's OES, JK, reports no activity on 80 Mc. and higher. Traffic: VE5DS 18, RE 8, FU 7, HS 7, BZ 4, PD 4, CB 2, GO 2, HV 2, IG 2, NR 2, PQ 2, KV 1.

# TOWERS

ALL THE WAY - IT'S EZ WAY.

See Page 130  
 EUGENE G. WILE  
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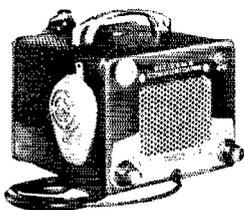
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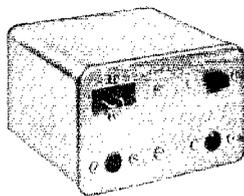
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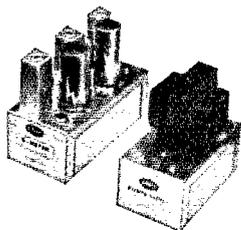
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Tentative price **\$119.00**



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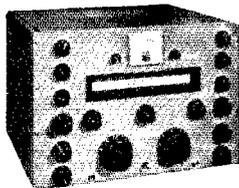
For 6 meter use. Special Pi-net output coil with taps allows any output frequency for hookup to any receiver. Converter comes complete with tubes and crystal for 7-11 mc or 14-18 mc.

Converter: Kit form **\$19.95**

W/T **\$27.50**

Power Supply: Kit form **\$10.50**

W/T **\$11.50**



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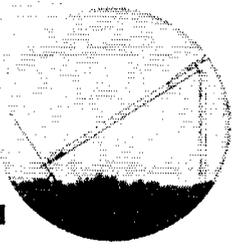
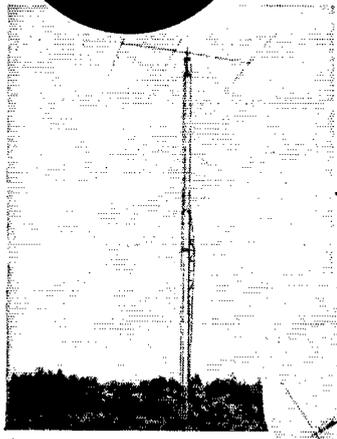
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**The World Above 50 Mc.**

*(Continued from page 82)*

performance curve.) W6NLZ is pushing 222 Mc. because of severe TV receiver oscillator radiation in the Los Angeles area. John has a kilowatt, c.w. or s.s.b., on 222 Mc. and is ready for serious DX skeds.

Anyone near Caldwell, N. J., interested in microwave work? Stan Tyler, W2IBO, 11 Roosevelt Blvd., No. Caldwell, would like to hear from you.

**Curing Microphonic Howl in the Communicator III**

For months your conductor had been putting up with microphonic howling in a Communicator III used for mobile work. At first we blamed this on the installation: the case of the unit was wedged tightly against the dash, so the shock-absorbing qualities of the rubber feet did not come into play. Then we found that others were having similar troubles. Taking the rig out of the car and running it on the bench helped, but was no cure.

Must be a microphonic oscillator tube, we thought, so a new 6CG8 (pentode-triode mixer-oscillator) was tried. Same trouble; with a strong signal tuned in the receiver would start howling again. But here was something strange — it occurred only when signals were being received.

The culprit was uncovered when we fixed another trouble. There had been some noise in tuning through strong signals, so we looked for poor wiper contacts in the capacitor gang. The rear wiper spring was slipped out, cleaned, and replaced, after bending it slightly to give more tension. This and the other wipers were given a drop of *Spra Kleen*. (Use a drop on the tip of a screwdriver, in preference to spraying. Any radio-type cleaner-lubricant will do.)

The cleaning and lubrication fixed the noisy tuning — and the microphonic trouble — all in one operation. Our howling was apparently due to varying contact resistance in the oscillator section of the tuning capacitor. The vibration caused by the response of the speaker to a strong signal caused frequency modulation of the oscillator, and set up acoustic feedback. In this game you can learn something every day!

**OES Notes**

*K1AII, Plymouth, Mass.* — Anyone for tilting-array tests on 50 Mc. during sporadic-E openings this spring and summer? Also interested in c.w. skeds on 220 Mc.

*W1NMQ, Fiskdale, Mass.* — Quinabaug Valley Traffic Net operating on 50.25 Mc. Wednesdays at 1830 and Sundays at 1100.

*K2AZT, Baldwin, L. I.* — Working W2SEU regularly on 220 Mc., but not too many other signals heard.

*W4FNR, Ft. Lauderdale, Fla.* — Using 50-Mc. drift transistor rig built in hearing aid. No trouble in getting 50-Mc. crystal oscillator to work.

*W4FVH, Doraville, Ga.* — Will be operating from Brass Town Bald Mountain, in Northern Georgia, during June V.H.F. Party. Frequencies: 50.002, .008, .030 and .100; 144.030, .045, .110 and .350; 220.05 Mc. Both phone and c.w. will be used.

*K4PKK, Decatur, Ga.* — Resonant cavity very effective in eliminating harmonic TVI from 50-Mc. rig.

*W5KTD, Shreveport, La.* — On recent trip to Monroe, 100 miles to east, took along Communicator and 10-element beam. Erected beam atop a 200-foot tower and aimed west. Shreveport area stations were worked easily, creating considerable 2-meter interest on part of Monroe area amateurs.

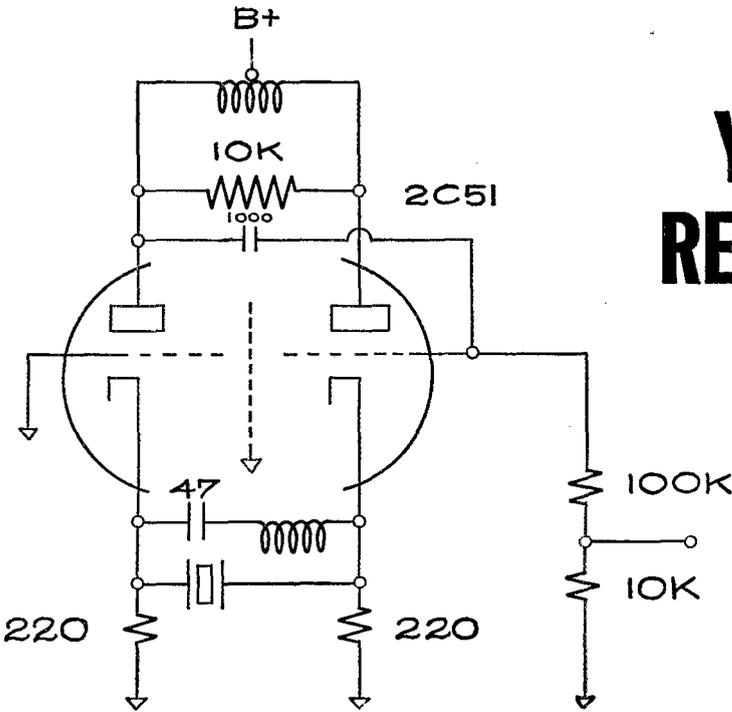
*W5TQP, Albuquerque, N. Mex.* — Would like skeds on 144 Mc. with well-equipped stations in El Paso and other distant points. Now have 800 watts, phone or c.w., 24-foot Yagi and 417A converter working into 75A-4. (Formerly on 2 as W1OAX, Coventry, Conn.)

*K8OKK, Vallejo, Cal.* — Have one station working on 37,250 Mc. Second station in works for attempted two-way communication.

*W9EET, River Grove, Ill.* — Copying bulletins nightly from WIAW and transmitting same on 50 Mc., phone and c.w., 3 nights weekly. Will be operating from Nebraska location June 13 through July 4.

*(Continued on page 162)*

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**MODEL 242 FOR 6 METERS OR 2 METERS — 45 WATTS INPUT — 6146 FINAL.** Complete with mobile connections, A.C. power supply, tubes, xtal. Xtal mike input. Uses 8 mxtals of Lettine VFO. Swinging link matches 52 — 300 ohm antennas. Same cab. as 240. . . . . \$89.95

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Valley Stream, N. Y.

## How's DX?

(Continued from page 38)

acknowledgment at each end. . . . . Halp! W1YIS needs QSL hints on FQ8AG, MP4BBL and P21AR; W4J1 wonders about Z3AU; W5RX requires VS9AQ advice; and W6VUR requests aid re YA2BP. . . . . W6NTR estimates he has reached the "DXCC?" circle with a few cards to spare. . . . . Hemispheric miscellany via DXCSL and WVDXC: VP2VB may follow his VP4DW sojourn with VP3 and/or PZ1 emanations. . . . . LMRE's XE4B Socorro plans apparently were foiled, temporarily at least, by the Revilla Gigedos military command. . . . . A Libyan ship with a Greek crew, an American owner and a British radio-man has been signing 5LWP/mm in the Caribbean. Jeeves wonders if that shouldn't be a United Nations call sign.

**Ten Years Ago in "How's DX?"** — There are hints in your June 1949 column that the new TVI menace is holding down countries totals here and there. But DX booms nonetheless. Among the tastier tidbits on 20 c.w. we find EK1s DI DO GW, FD8RG, FESAB, F18ZZ, FUBAA, HB1EO/HE, HZ1HZ, KC6EA, MDs 1D 4BPC 7RCS, M13AB, MT2A, NY4DD, SV5UN, VK1VU, VS7s NX RA, farflung Ws 3CHH/Iwo 8QH/HS 0HWI/KS6 0MCF/Formosa, debatable YA1AA, YR5W, YT7DD, ZCs 1CL 6PM and ZD9AA. Phone nifties on 14 Mc. include Cs 1DH/C3 1PL 7TY, FQ8SN, HA1KK, HL1BJ, LX1JW, MI3s SC SI, VR3A, Ws 2EJV/PK3 7LZJ/C6, YK1AB, ZCs 1AZ 6XY, ZD3A and Z88A. . . . . Eighty slows up for the summer but PY7WS, VPs 1AA 2LX 5AT and the Oceania lads defy mounting static. . . . . Forty is the band for KM6AK, KV4AA, PZ1WX, SU1CR, VR2AR, W2WMV/C1, Y1SRA, ZD4AB and ZL1CH/VR4. . . . . Ten c.w. features AC4RF and VQ8AD, while 28-Mc. phone fellows favor AP5Z, LU5 1ZA and Z2B. Adjacent 11 contributes EL3A, SP8XA, TA3GVU and YR5A. . . . . KH6VP/VR4 is back home sweating out QSLs for 889 contacts, and VR5PL expects to add s.s.b. to his c.w. and n.f.m. activities. . . . . Jeeves is overrun by a bunch of longhairs, and a picture of ZC6UN's operator staff rounds out the review. QST

## Sixty Cents per Foot

(Continued from page 31)

admired by all who have seen it. The total cost ran to about \$25, which is a pretty reasonable figure for a forty-footer.

After the guys were attached and snugged up with turnbuckles, the structure was very rigid; and we haven't the slightest hesitation in climbing to the top for any work on the beam that may be necessary. After finding out how easily the tower was raised, my only regret is that I didn't make it 50 ft. QST



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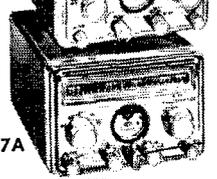
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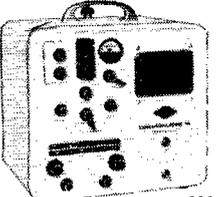
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**G-66B MOBILE RECEIVER.** Covers standard broadcast band and amateur band 160 thru 10 meters. Double conversion. Band width 3.5 kc at 6 db down. 40-to-1 tuning ratio. Sensitivity: 1.5 microvolts; 3 watt audio output; antenna trimmer and automatic noise limiter. 4 1/2"hx6 1/2"wx9" d. Wt. 30 lbs. Less power supply. **209.50**  
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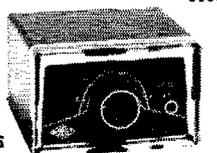


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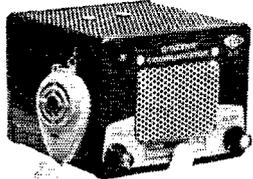


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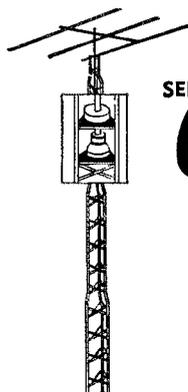
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## Mobile Transceiver

(Continued from page 17)

you might have available.

Different bands can be covered by switching to a different VXO crystal and plugging in a new set of coils. The Command-Set i.f. cans can be easily fitted with an octal plug to allow plug-in arrangements.

Some of you v.h.f. enthusiasts can probably adapt this circuit to 50 or 144 Mc. very easily. In fact, with the same VXO and crystal-filter frequencies that I have used, you can cover a portion of 10 meters ( $2 \times 10 + 8.55 = 28.55$  Mc.) and a portion of 6 meters ( $6 \times 10 - 8.55 = 51.45$ ). If you can keep the unwanted VXO harmonics *inside* the VXO box, this should be a relatively "birdie"-free technique for getting a mobile s.s.b. signal on v.h.f.

### Results

Most articles of this type end up with a few comments on results. We haven't really got any rock-crushing 60 db. over 9 reports from this little rig, but we have had plenty of nice comments on the quality and cleanness of the signal — some S1 but Q5 type reports. The first few evenings with the rig running low plate voltage on the final (18 watts peak output) netted two log pages full of contacts with some 15 different countries.

The carrier suppression is about 50 db., and for a single-tone signal the unwanted sideband is down better than 50 db. With voice inputs the other sideband is only about 30-35 db. down. So far, I haven't been able to decide whether this is caused by intermodulation distortion in the transmitter or in the expensive multiple conversion receiver I was using to check it with.

QST

## V.H.F. QSO Party

(Continued from page 40)

W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchange with *at least* one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multi-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than July 1, 1959, to be eligible for awards. Follow the sample log for correct form, or a message to Headquarters will bring printed blanks for your convenience.

QST

### MEMBERSHIP CHANGES OF ADDRESS

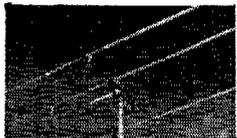
Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of QST without interruption.

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Still small enough to be rotated with the heavy duty TV rotators, this ruggedly built antenna is adjustable over entire 15 meter band. Extremely simple to put up and into operation. Rugged Boom/Mast clamp also used to support the elements. Wt: 30 lbs. Boom length 142"; longest element, 23' 10"

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This heavy duty, full-sized twenty meter array is built to take it. The elements are adjustable over the entire 20 meter band, and they are telescoped three times to minimize element sag. Approximate net weight is 45 lbs. Boom length of 212"; longest element measures 35' 9".

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ALL THE WAY - IT'S EZ WAY

See Page 130

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## Correspondence

(Continued from page 89)

myself, and being 20 I felt still young enough to learn.

So, for three years I had rhombics for breakfast, QSL cards for coffee breaks, transmitters for lunch and receivers for dinner. I couldn't even go to the beach without hearing, "Stay right where you are, that's the antenna direction for Africa." And somehow late on a Saturday night (provided there was no contest to have to win) we'd forever end up the evening on the subject of Don Wallace. I believe I have heard every rule and regulation the FCC has published and probably some they didn't even know they had. If, at any time, I even uttered a word about this annoying obsession, I would receive the reply of, "That's what it will be like married to a ham."

But, with all kidding aside I truthfully never met a nicer bunch of fellows and probably never will. I gained much knowledge from their ways and conversations and will have many opportunities in my life to apply such; and I honestly hope, in the near future, to take the Novice test if for no other reason just to satisfy my own curiosity.

— Deanne Withers

109 Brown Street,  
Sumter, South Carolina

Editor, QST:

Pardon me if my slip seems to be showing but I feel that I just must shoot off my big mouth.

Way back in the dim dark ages before the government regulated the radio field. I played around with Ford spark coils and spark gaps, telegraph keys and code.

Several months ago I scrounged eight 1958 copies of QST and read them from cover to cover. I was so impressed that I felt that I must become a ham, so I bought almost every book the ARRL publishes. Now after seeing the great advances made, the strange names and all the complicated gadgets and schematics that a person must learn to pass the license exam, I'm scared to death that I haven't got what it takes "upstairs" to pass that test. The code doesn't bother me, it's that darn technical stuff.

However, the factor that discourages me most and has me about ready to forget any desire to become a ham is right in your QST correspondence columns. It appears that the big gallon boys want to liquidate the Novice, the Technician, the Generals and all the c.w. fraternity. Even some of the Generals with modest phone equipment are out for the blood of all c.w. fans.

Fellows, remember a famous saying: "Divide and conquer." If you keep up this constant bickering among yourselves, you will be conquered by the ever greedy and grabbing commercial interests and government agencies (and I should know, for I have worked for the government for 20 years). Unless you fellows join forces once again as it was in the past with ham radio, and become as one big happy family of hams without each segment fighting for his own peculiar interests, then my friends you will go the way of the Dodo Bird and the Passenger Pigeon.

My highest regards to those "true hams" who even though they have attained the heights of glory with all ham privileges, still have sympathy and understanding for the Novice and the c. w. man.

— C. K. Rodgers

THANKS, OM.

118 Beach Street  
Westerly, Rhode Island

Editor, QST:

I would like to compliment George E. Deneke, W1IGU, for the very fine business letter published in April QST, on "Love of the Sport." Not being a W1 very long I know a little of what the Novices go through. I think that they are trying very hard to become Generals or as some say, "drop the old N." I myself try to help them as much as I can and I think that if some of us Generals got on with them they would appreciate it. I know that the Novices are the future of amateur radio and I am going to give them encouragement and congratulations on their work.

— William L. Kenneth, W1LQJ

825-37th Avenue  
Winona, Minnesota

Editor, QST:

My heartiest congratulations go to W1IGU, who wrote that very good letter on the Novice operator. I am a Novice operator myself and I agree with W1IGU very definitely.

(Continued on page 168)

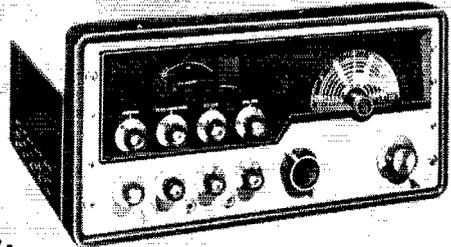
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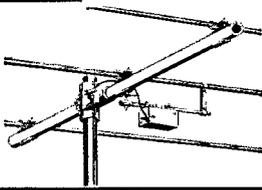
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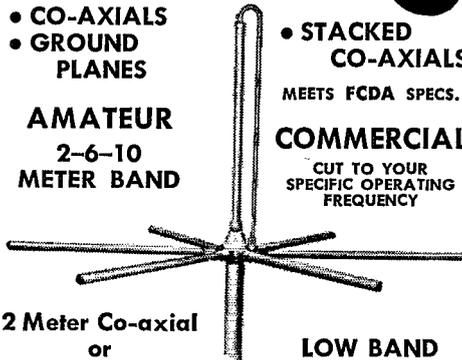
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LIST



We amateurs classed as Novices have a very definite problem unlike that of the General Class amateur. We have such skimpy band segments allocated to us that it is almost impossible for us to carry on good solid two-way communication. I don't want it to sound like I'm complaining because I am very grateful to have the bands I now have. Ham radio is a very wonderful hobby and why should we have these very few who spoil it for the rest of us?

These Generals who complain about the Novice operator should go back to time when they were starting out in amateur radio. They would probably find that they had some of the same characteristics as we Novices have. You have to give the Novice a chance to learn good operating procedures. It takes time to gain these operating skills — so, Mister General, let's lay off the Novice awhile.

— Scott Baudhuin, KN0Q1/G

215 Knollwood Avenue  
Cranston 10, Rhode Island

Editor, *QST*:

I have just finished reading WIGU's letter in the April issue and would like to thank him for his kind recognition of the Novice hams. I hope that someday I QSO him.

— Anthony L. George II, KN1KDI

## THAT DERN FORM 405, AGAIN!

709 Russell Place  
Plainfield, New Jersey

Editor, *QST*:

There is a statement on the back of Section 2 of renewal form 405-A which is not exactly clear to me and I wonder if you could clarify it.

The statement reads: "If the application is received by the Commission before expiration of the license, the applicant may continue operation until notified by the Commission of action on his application. Upon expiration, he must post a statement certifying that he has mailed or filed a renewal application, before expiration, specifying the date of mailing or filing."

Does this mean that if I do not hear from the Commission before expiration date I must file the above statement with the Commission, or that I must merely post the statement in my operating room? Of course, I will make an entry in my log showing date on which I mail renewal application to the Commission . . .

— William S. Hill, K2EZ

*Editor's Note:* In the Commission's instructions on the back of Form 405-A, the word "post" refers to a display in your station rather than sending a notice by mail. Actually, it is meant to apply primarily to commercial stations (405-A is used by a number of services in addition to amateur). In the amateur service, a simple notation in your log book adequately fulfills the requirement.

## TRUE HAM SPIRIT

48 Prospect Avenue,  
Westwood, New Jersey

Editor, *QST*:

This little story points out ever so forcefully the true ham spirit and why this is such a wonderful hobby with no other that can even begin to compare.

Several months ago I sent away to the *Union Belge des Amateurs-Emetteurs* for one of their certificates. They addressed the certificate this way: "Charles M. O'Brien, 48 Prospect Avenue, New Jersey, N. Y., United States!"

I finally received it — it seems that WA2BNF, a post-office employee, spotted the certificate in the Dead Letter office, looked up my address, and sent the award along, with a pleasant little note. Incidentally, WA2BNF also mentioned that he forwarded 1205 dead-letter QSLs in the period January 1, 1958 through March 28, 1959!

I wonder how many hams fully appreciate that which fellow hams who work with the Post Office do for us.

— Charles M. O'Brien, W2EQS

## FIRST SS

Max-Woelm Strasse 9  
Escwege, Germany

Editor, *QST*:

I want to congratulate James Flynn, K8MRS, on his very cleverly written and interesting account of his first SS which appeared in the March issue. He brought to my attention, that, be we youngsters or old-timers, we are very

(Continued on page 170)

## QST BINDERS

As *QST*s get older, they become more valuable. Are your 1959 copies scattered sloppily about the shack? If so, why not file them neatly. The best way to accomplish this is to place them in sturdy, good-looking *QST* Binders.

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See Page 130  
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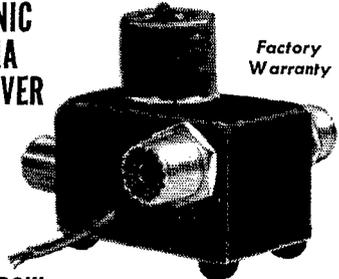
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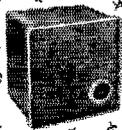
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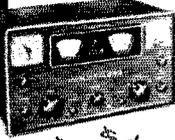
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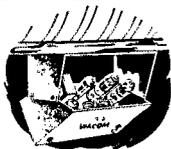
ALL THE WAY - IT'S EZ WAY

See Page 130  
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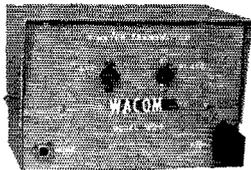
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much the same when it comes to participating in and enjoying contests.

I also want to thank QST for continually showing equal respect for the younger members of the ham clan as well as the oldsters by publishing such worthy articles as that by KØMRS.

— J. Paul Alexander, DJØCG/K5LZT

### EXTRA

3053 Marmion Street  
Winston-Salem, North Carolina

Editor, QST:

ARRL favors those operators using low power in SS contest work with a point bonus. Why not a point bonus for Amateur Extra Class operators as a means of stimulating interest in this license and also to show that the ARRL is in favor of the amateur being progressive? Let's bring the contest rules up to date and at the same time stir up some ambition on the part of the ham fraternity. A point-and-a-half multiplier for an Amateur Extra Class ticket would be worth the effort for the many, many hams interested in contest work. While the standards have been lowered in recent years, ARRL can do a lot to raise the average level by promoting the higher class of license.

— Richard A. Genaille, K4ZGM

### APPRECIATION

2520 Balboa  
Colorado Springs, Colorado

Editor, QST:

This is strictly a letter of appreciation, and one long overdue from this amateur.

I was a Novice a year ago at this time, worked 47 states e.w. after getting the KN ticket, took the General Class license exam at FCC in November after 7 months, and passed (1) but only with the outstanding help of your *License Manual* and *Handbook*. I sincerely feel that without the ARRL there would not be anywhere near the number of hams on the air today that there is, and I for one am very grateful and appreciative to the ARRL for pointing the way to me in the form of study material and questions. I made a very definite effort in the form of self-study, of course, but where would I have been without the "course texts?"

— Quentin Rand, KØOXII

## S. S. Results

(Continued from page 58)

### PACIFIC DIVISION

*Hawaii*  
KH6JL ..... 31,578- 277-57-B-10

*Nevada*  
W7ZCA ..... 139,495- 660-70-A-36  
K7PEM ..... 97,440- 516-64-A-38

*Santa Clara Valley*  
K6ERV ..... 105,468- 521-68-A-38  
K6QHE ..... 41,496- 248-56-A-21  
K6VGW ..... 32,675- 208-53-A-27

*East Bay*  
W6PQW ..... 188,100- 960-68-A-40  
W6QJW ..... 1178- 31-19-B-2  
W6AGU ..... 1026- 20-18-A-17  
K6PZY ..... 975- 26-18-A-17  
K6QHC ..... 48- 6-4-B- -  
K6TBQ ..... 2- 1-1-B- -  
W6KG (2 ops) ..... 91,980- 630-73-B-40

*San Francisco*  
K6HIP ..... 43,173- 279-54-A-27  
K6EIE ..... 30,951- 181-57-A-25  
W6YEJ ..... 13,869- 102-46-A-15

*Sacramento Valley*  
K6QND/6 ..... 82,628- 307-68-A-25  
W6QIV/6 ..... 30,753- 201-51-A-16

*San Joaquin Valley*  
K6OOV ..... 103,740- 535-65-A-32  
W6TZN ..... 38,145- 329-59-A-26

### ROANOKE DIVISION

*North Carolina*  
K4IEK ..... 98,579- 441-73-A-26  
K4BZJ ..... 77,745- 365-71-A-40  
K4KXT ..... 77,211- 376-69-A-40  
K4ZGM ..... 45,210- 344-68-B-40  
W4HUW ..... 11,531- 109-53-B-11

*Virginia*  
K4HUT ..... 90,405- 433-70-A-38  
W4DRL ..... 34,713- 200-58-A-26  
K4LPR ..... 25,704- 209-69-B-19  
K4PUC ..... 22,005- 164-45-A-19  
K4OJE ..... 15,870- 115-46-A-18  
K4RZJ ..... 15,600- 131-40-A-16  
W4KMS ..... 14,235- 73-45-A-15  
K4ASM ..... 13,818- 99-47-A-16  
W4ZV ..... 12,840- 108-40-A-11  
K4SQP ..... 4620- 73-22-A-16  
W4TIO ..... 2652- 34-26-A-6  
K4PRO ..... 2394- 42-19-A-5  
W4MPT ..... 330- 15-11-B-1  
W4TNT ..... 105- 8-7-B- -  
W4WSP ..... 54- 6-3-A-1  
K4DHS (K48 CND DHS) ..... 28,859- 185-53-A-24  
W4MZR (K48 MIQ MZR) ..... 651- 31-7-A-4

*West Virginia*  
KRKLL ..... 102,165- 475-72-A-10  
W8MLX ..... 94- 11-8-A-2  
K8GWT ..... 3- 1-1-A-1

### ROCKY MOUNTAIN DIVISION

*Colorado*  
WØCYT ..... 132,057- 603-73-A-38  
WØHEM ..... 100,500- 603-67-A-38  
WØBVI ..... 98,160- 321-71-A-36  
KØJGF ..... 40,248- 264-52-A-19  
KØRYB ..... 38,075- 325-37-A-19  
KØDCW ..... 28,656- 200-48-A-14  
KØFCJ ..... 26,208- 182-48-A-27  
WØECX ..... 21,900- 221-50-B-20  
KØKTA ..... 15,180- 115-44-A-10  
WØVDY ..... 2142- 34-21-A-8  
KØGAS ..... 864- 24-12-A-3  
KØHFL (KØ8 HFL PNC) ..... 40,365- 307-45-A-24

(Continued on page 172)

# COMPLETE TRANSMITTER AND CONVERTER

## TRA-6 ONLY \$74.50 TRA-10

6 METERS MODELS FOR 6 TO 80 METERS AND 27MC CITIZENS BAND 10 METERS

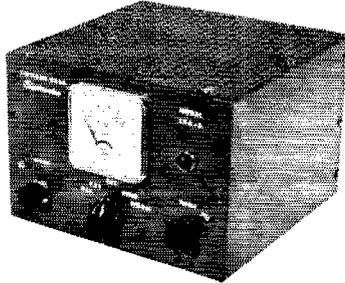
10 watts rated output  
2 position crystal switch

Converter is crystal controlled  
TUNE to MAXIMUM meter  
reading simplifies output  
tuning

Powered from your receiver or  
separate supply

Transmitter fully plate-mod-  
ulated for real punch with  
high gain speech

Size: 7" x 7" x 5" in height  
Use same set on 6 or 12 V  
a.c. or d.c. filament supply



Tube lineup: Converter: 6B07-  
cascode R.F., 6U8 mixer in  
TRA-6. 6AU6 R.F., 6U8  
mixer in TRA-10 thru  
TRA-80

Transmitter: 6U8 osc. buffer-  
multiplier, 5763 output,  
6AQ5 modulator, 6AU6  
speech in TRA-10 thru  
to-talk units

Converter available in any us-  
able output to work with  
communication receivers or  
car radio mobile

Comes wired and tested, ready  
to go

**PUSH-TO-TALK MODELS—TRA-6 TO 80 PRICE: \$87.00**

### TRANSISTOR POWER SUPPLIES

30 watts at 275 VDC continuous duty  
Ideal for use with TRA units or similar  
requirements.

Available for 6 or 12 volt inputs

Size overall: 5½" long x 2¼" high x 3" wide **PRICE \$3150**

### CRYSTAL CONTROLLED CONVERTER

Broadband crystal controlled converters as used  
in TRA units. Any amateur band 2 to 80 meters.  
Any usable I.F. output. Includes Citizens  
27 Mc. band. Complete ready to go. In  
cabinet chassis 3" x 2" x 4½" long. Low  
noise level. Fast delivery. **PRICE \$2150**

### STANDARD TIME PAYMENTS

**J. WILBUR BABB ELECTRONICS** Dept. QST-6. 202 W. SEMINOLE  
McALESTER, OKLA.

# 3,086,540!

See page 174

# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130  
AMATEUR RADIO CENTER  
BALTIMORE, MD.



## TELEWRITER CONVERTER FOR RECEIVING RADIO TELETYPE

To receive amateur or commercial tele-  
typed messages by radio, you need only  
the following equipment: 1. Good com-  
munications receiver. 2. TELEWRITER  
CONVERTER which is connected to  
your receiver at the speaker terminals.  
3. Polar Relay. 4. Teletype Printer,  
which is an electric typewriter designed  
to be remotely controlled by an electro-  
magnet. Teletype equipment obtainable from us is priced at \$75.00  
and up for a used machine in good working condition. Telewriter  
Converter, Model "H", \$99.00; Polar Relay, \$14.75. Selector Mag-  
net power supply built into Converter cabinet with milliammeter on  
front panel, \$35.00. For additional information, write: Tom, W1AFN.

**ALLTRONICS-HOWARD CO.** Box 19, Boston 1, Mass.  
Tel. Richmond 2-0048

*Available  
Soon*

**NEW  
PARAMETRIC  
AMPLIFIER**

for  
432-436 M.C.  
¾ METER BAND

by  
**TAPETONE**

**TAPETONE, Inc.**  
10 ARDLOCK PLACE, WEBSTER, MASS.

# Cut Warm-up Drift on SSB—

## End Dampness Failures with

# DAMPP-CHASER

CHASSIS DEHUMIDIFYING HEATER®

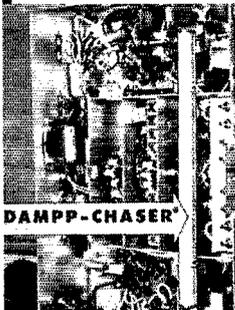
End leaky condensers — protects Xformers — even in basements. Automatic — never needs attention!

Model 1E 12½" Long, 8 Watts, 117V  
Model 3E 18½" Long, 12 Watts, 117V

Two sizes fit any RX, TX or Electronic Equipment. 24" attached cord solders to power SW terminals. Mounting clips and simple instructions included.

Original equipment in Hallicrafters SX-101 and over 12 leading Electronic Organs.

Money back if not satisfied after 30 days trial. PLUS 5 Year Written Guarantee.



**NET \$4.95**

**POSTPAID**  
Anywhere in the world.

Airmail order today—we ship tomorrow. State models required. Sorry—no C.O.D.'s. Send \$4.95 each: Check or M.O. to:

**DAMPP-CHASER, INC.**  
P. O. BOX 520  
HENDERSOINVILLE, N. C.

Over a decade of quality manufacturing.

### DAMPP-CHASER JOBBER INQUIRIES INVITED

CANADIANS! We have large stocks of nationally advertised Ham parts. Write for Free Bulletin.

## THE CRAWFORD RADIO

P.O. BOX 617

VE3YR 119-121 JOHN ST., N. VE3JU  
"Geo" HAMILTON, ONT. "Bill"

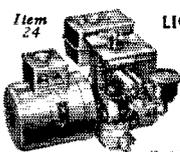
# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130  
**CENTRONICS OF FLORIDA, INC.**  
TAMPA, FLORIDA

**BUY DIRECT**  
FROM-FACTORY

**SAVE**  
MIDDLEMAN PROFITS



### MASTER MECHANIC PORTABLE LIGHT PLANTS, PUSH BUTTON START

A.C. Plant 700 Watts — 115 v. 60 cyc. Powered by a rugged 2.2 hp. easy starting Briggs gas engine. No wiring necessary; just plug in and operate. Plenty of current for receivers, transmitters, antenna motors, emergency lights, etc. which require up to 700 Watts. Ideal for radio amateurs, Civil Defense, trailers and camps. Complete with Voltmeter and built-in winding to charge 6 v. auto batteries. Both engine and generator fully radio shielded. Hams report less hash than on commercial powerline.

- Item 24, Wt. 75 lbs. Be prepared if war or storms knock out power lines. **\$143.50**
- 800 Watt Plant (Item 44) same as above but with larger engine and greater capacity. **\$169.95**
- 1200 Watt Plant (Item 45) same as Item 24 but with larger generator and engine — 50% greater output **\$199.50**

We make all sizes up to 25,000 Watts. Write for information. Send 10¢ for Big News Catalog. Free with order. Prices f.o.b. factory. Money back guarantee. Send check or M.O. Master Mechanic Mfg. Co., Dept. 1-69, Burlington, Wis.

*Utah*  
W7DTB...100,232- 748-67-B-34  
W7QWH...56,950- 425-67-B-28  
K7YBE...25,679- 30-42-A-28  
W7JQU...3549- 69-27-A-3  
W7ZOR...1620- 30-18-A-4  
W7GDD (W7s BGB GDD,  
K7BGE)...25,680- 218-40-A-23

*New Mexico*  
W5MYL...126,735- 605-70-A-40  
W5ZHL...88,622- 607-73-B-34  
W4PFL...65,070- 369-42-A-30  
K5OWK...29,625- 200-50-A-22  
K5DJU...22,874- 200-39-A-10  
K5KCN...14,681- 139-53-B-14  
W5KEL...6042- 80-38-P-14  
W5NET...5774- 80-24-A-6

*Wyoming*  
W78ZZ...50,3244- 321-53-A-25

### SOUTHEASTERN DIVISION

*Alabama*  
K4LNU...42,036- 226-62-A-11  
W4WLM...23,976- 150-54-A-24  
W4PFL...65,070- 369-42-A-30  
W4ZGE...22,800- 164-70-B-32  
W4WFL...15,705- 109-58-A-13  
K4UFN...6,705- 75-30-A-13  
K4LEX...5993- 56-37-A-19  
W4LEN...2601- 51-17-A-5  
K4PKI...257- 10-9-A-1

*Eastern Florida*  
K4SXX...137,423- 640-73-A-36  
W4ZPO...56,700- 319-60-A-31  
K4BUN...53,196- 288-62-A-25  
K4KXX...40,563- 263-53-A-12  
W4PFL...65,070- 369-42-A-30  
W4WYR...16,092- 151-36-A-8  
W4DTJ...3588- 47-26-A-4  
W4LVV...27- 3-3-A-1  
W4JO...3- 1-1-A-1  
K4RNL (K4s OTN RNL SNY)  
37,328- 200-63-A-1

*Western Florida*  
K4CFE...27,300- 182-50-A-13  
K4UKG...10,962- 103-36-A-11

*Georgia*  
W4FGH...120,258- 590-68-A-37  
W4MOB...41,118- 314-66-B-37  
K4QYQ...11,100- 100-37-A-7  
K4GRR...34,964- 13-13-A-6  
W4IG (W4IG, K4s OTN  
QYQ)...2970- 56-18-A-17

*West Indies*  
CO3HD...7410- 95-39-B-14  
KP4CGB...1210- 30-22-B-2

*Canal Zone*  
KZ3GT...53,543- 325-55-A-16

### SOUTHWESTERN DIVISION

*Los Angeles*  
K6EVR...212,321- 976-73-A-40  
W6LNW...174,312- 809-72-A-40  
K6DDO...123,270- 584-70-A-31  
K6SQL...65,512- 389-36-A-23  
K6LNU...50,706- 317-51-A-20  
W5YAX/6...38,173- 327-59-B-23  
K6ICQ...27,300- 165-56-A-24  
K6HGF...16,077- 117-46-A-17  
K6CML...14,964- 117-46-A-17  
K6TJG...11,592- 92-42-A-38  
K6SUW...11,067- 110-34-A-7  
K6UKX...6300- 60-35-A-9  
K6ELX...6850- 65-30-A-12  
K6PZN...5644- 166-17-B-25  
K6VLD...4104- 36-24-A-11  
W6PFE...3198- 41-26-A-8  
K6CEO/6...3016- 52-29-B-2  
K6IDA...2730- 46-30-B-3

K6LXT...1302- 31-14-A-8  
K6QIP...63- 21-1-A-2  
W6BVT...48- 4-4-A-1  
K6YNT...42- 4-4-A-1  
K61CS (K6s ICQ ICS)  
27,030-174-53-A-14

*Arizona*  
W7ENA...71,760- 368-65-A-29  
W7WUC...66,510- 370-60-A-40  
W7CAF...55,056- 298-62-A-18  
W7ZVG/7...35,925- 241-50-A-12  
K7BHQ...25,725- 178-49-A-28  
W7WPO...11,931- 97-41-A-10

*San Diego*  
W6WDL...3785- 58-29-A-11

*Santa Barbara*  
K6SDE...9556- 91-35-A-3

### WEST GULF DIVISION

*Northern Texas*  
W5TUP...92,616- 457-68-A-37  
W5JRE...80,160- 418-64-A-39  
K5HAY...69,087- 551-63-B-36  
W5KFF...66,556- 301-49-A-23  
K5LHD...30,983- 204-51-A-26  
K5IID...27,636- 197-17-A-20  
K5LFL...25,327- 154-55-A-13  
W5S01J...13,802- 108-43-A-22  
W5MOY...8400- 70-10-A-14

*Oklahoma*  
W51WL...104,216- 503-72-A-39  
K5MID...52,948- 433-62-B-32  
K5BBA...38,006- 282-64-A-33  
K5OCY...36,656- 316-58-A-35  
K51WK...2,029- 124-33-A-19  
W5OXL/5...2670- 45-20-A-5  
K5MXV...36- 4-3-A-1

*Southern Texas*  
K5EDM...15,605- 559-70-A-32  
K5JCC...75,888- 410-62-A-34  
K5JWK...37,800- 258-50-A-18  
W5ZAL...26,730- 165-54-A-12  
K5LLM...26,015- 256-55-P-31  
W5OXL/5...11,876- 103-39-A-18  
W5D1D...9,765- 85-21-A-10  
K5PFF...5445- 55-33-A-9  
W1PVF/5...1104- 23-16-A-3  
W5N1Y...702- 18-13-A-1

### CANADIAN DIVISION

*Maritime*  
K8LTZ/VOI...22,343- 167-45-A-30  
W2ZRX/VOI3036- 44-23-A-3

*Quebec*  
VE2AZI...45,266- 243-63-A-29  
VE2PZ...6642- 62-36-A-12

*Ontario*  
VE3DRL...11,280- 119-32-A-14  
VE3RM...7110- 80-30-A-8  
VE3DKH...4415- 58-27-A-16  
VE3DQL...3645- 46-27-A-6  
VE3RIT/3 (VOIDS, VE3s  
BOU CKA CKW)  
16,317- 112-49-A-23

*Saskatchewan*  
VE5FN...26,871- 170-53-A-20

*Uberta*  
VE6TP...54,251- 322-59-A-23  
VE6WL...48,792- 293-56-A-18  
VE6IN...8991- 126-37-B-16  
W7P5O/VE6...75- 5-5-A-1

*British Columbia*  
VE7CE...53,213- 325-55-A-25

*Yukon-N. W. T.*  
VE8FO...27,094- 220-62-B-16

1 Technician Award Winner. 2 K3AGV, opr. Hq. staff, not eligible for award. 3 K3DMW, opr. 4 K4PXY, opr.  
ARRL thanks the following amateurs for submitting their logs for checking purposes: W1BAN/1, W5PGG, W6TER.

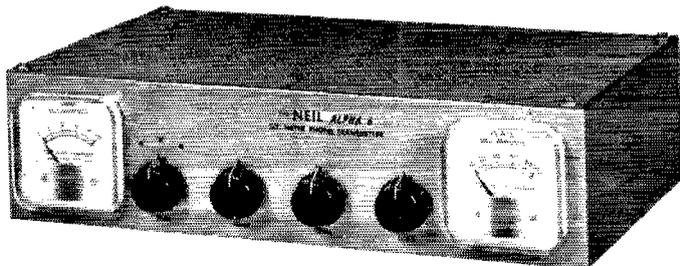
## Mobiling in Mexico

(Continued from page 68)

drinking. And do not be timid about asking if water is purified. Also mineral water, *agua mineral*, can be bought throughout Mexico. In addition, Coca Cola and Pepsi Cola are as popular in Mexico as in the U. S. and are available everywhere, even at roadside stands along the highways. Also, excellent beer is practically the national drink.

(Continued on page 174)

# THE NEIL ALPHA 6 Six Meter Phone Transmitter



**NOW AVAILABLE IN KIT FORM . . . \$58<sup>50</sup>**

**MOST PARTS PRE-MOUNTED!**

**AVAILABLE FOR 6 OR 12 VOLTS!**

- Only 3 inches high, all enclosed, ideal for mobile or fixed station.
- Two tuning meters eliminate meter switching, ideal when operating mobile, or to give rapid performance checks when you QSY.
- Built-in crystal switching for rapid QSY, socket for 3 crystals.
- Uses 8mc crystals, no expensive high frequency crystals needed.
- No frequency multiplication in final amplifier for highest efficiency.
- All tuning is done from front panel.
- Input to final approximately 20 watts.
- Pi antenna coupler, coaxial output.
- Low distortion, push-pull modulator.

TRANSMITTER KIT - with all tubes, crystal, and step by step construction manual .....	\$58.50
TRANSMITTER - completely wired and tested .....	78.50
POWER SUPPLY FOR FIXED STATION (300v @ 200ma - 6.3v @ 3.65a) .....	39.95

This power supply is completely wired, with tube, connecting cable, separate ON-OFF switch and SEND-RECEIVE switch, 2 indicator lamps, and a switched 110 volt outlet for connection to antenna relay.

Order From: **THE NEIL CO.** • Box 5001 (River Campus Station) ROCHESTER 20, N. Y.

For those "better-than-average" requirements . . .

## CLAROSTAT C-LINE POTENTIOMETERS

**W**HEN requirements for performance and dependability cannot be met by the usual "volume control" quality pots, the Clarostat C-Line models fill the bill. Available in 2-watt carbon, 2-watt wire-wound, 3-watt wire-wound and 4-watt wire-wound models, C-Line pots offer a wide variety of resistance ranges.

Get the complete story on C-Line potentiometers. Write for your free copy of the complete Clarostat Catalog No. 58 or ask your Clarostat distributor.

**CLAROSTAT MFG. CO., INC.**  
DOVER, NEW HAMPSHIRE

## ALPAR ALUMINUM CRANK-UP TOWERS



*Lightweight! Strong!*  
*Guy-as-you-go procedure . . . Exclusive!*

Aluminum tower outer sections crank up first permitting each section to be guyed as it locks automatically into position . . . can't get out of control . . . one man can handle safely.

Crankup feature allows tower to be raised or lowered as needed.

Protect against sudden adverse weather . . . adjust antennas without climbing tower.

SAFE! Stands 100 mph winds and tower loading to 100 pounds when properly guyed.

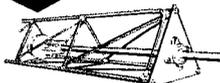
Rust-proof, corrosion resistant won't streak building . . . no painting.

M90-4-56 tower, 56' with winch and feet,

**224.00** fob factory.

CRANK-UP TOWER ACCESSORY KIT. Rotator plate, top plate, thrust bearing, 500' guy wire, (Rotator not included)

45.00 fob factory.



WRITE FOR COMPLETE INFORMATION

**ALPAR MANUFACTURING CORP.**  
220 DEMETER STREET, PALO ALTO, CALIF. DA 6-8105



**Our disheveled character has uncovered lots of prime-quality used equipment.**

We are sure that the hams who have traded with us have been pleased with the trade-in allowances made on new equipment. Is your equipment above average? Do you want to trade for top dollar? If so, ask for our complete trade-in "kit" or send trade-in details on a post card to me, Art Brown, W9IHZ. Of course, we offer terms and fast service on the principal ham lines.

**BROWN ELECTRONICS Inc.**

1032 Broadway • Fort Wayne, Indiana

**3,086,540**

Oops ...

**3,092,796!**

See page 114

**TOWERS**

**ALL THE WAY - IT'S EZ WAY**

See Page 130

**AMATEUR ELECTRONIC SUPPLY  
FOND DU LAC-MILWAUKEE, WISCONSIN**

**SSB** Now More Exciting than Ever with the

**Sensational New**

**100V TRANSMITTER  
IN PRODUCTION**

Output: 100w SSB, PEP; CW; 40w AM

Also the Complete **CENTRAL ELECTRONICS SSB line**

**GOOL** LINEAR AMPLIFIER — *Powerful, Silky Smooth No Tuning* — Pat'd Broadband Input & Output ckt's. As good as a separate amplifier on every band.

**MM2** scope with adapter — tells all about your and the other fellow's signals.

● 10B, 20A Exciters, VFO's, Slicers, Kits or W&T  
● National Receivers, Telxex Beams, CDR Rotators  
**SAVE MONEY BY MAIL:** Write for Bulletin "Getting Started" and "Stepping Up" in SSB. Give call letters.  
*Order from W9ADN at*

**ORGANS & ELECTRONICS** Box 117, Lockport, Ill.

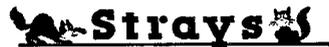
An extra precaution which I would advise for all American Tourists is to obtain a supply of *Entero Vioforma* tablets, manufactured by CIBA. I took one tablet after every meal. If any symptoms of alimentary disorder appear, more may be taken. They are inexpensive and may be bought at any pharmacy in the U. S. or Mexico. I ate practically anywhere I wanted of any kind of food and suffered no ill effects whatever.

The matter of highways is also much misunderstood. Generally all the major highways in Mexico are fine asphalt pavement, wide, with white center lines. They are just about as well marked as most in the States. Do not let the grades in the mountain sections give you any concern whatever. All the roads I travelled are high gear, high speed highways, as well engineered as those in the U. S. But avoid driving at night if possible. And be on the alert for cattle and burros, the same as you would in unfenced cattle country in the U. S.

Gasoline, however, is a different matter. There are three grades of gas in Mexico, all controlled by the government. The best is 90 octane and is called *Gasolmer*. It costs one peso (8c) per liter. This grade is not available at all service stations; sometimes it is, sometimes it is not; there does not seem to be any set pattern. The next grade is 80 octane and is called *Super*, and is cheaper. The third and lowest grade is 70 octane and is called *Mexolina*, and is still cheaper. To me there did not seem to be much difference in mileage between the three grades. I did two things to my car before leaving; removed the thermostat in the radiator; and set the timing for the lower grades of gas. The car ran perfectly; no trouble on the entire trip, but some ping on the hills on the 70-octane gas. Car service is no problem in Mexico. In every city I visited there were modern automobile agencies with good service department and factory trained mechanics — for all makes of American cars. Be sure your tires are good. If you have to buy a tire in Mexico, the cost will be very high.

By far, the best and most complete guide book I have seen is *Mexico by Motor*, published by the American Automobile Association. It is not for sale, but is available to members of all affiliated Auto Clubs. To me, this book is a must! Practically everything you need to know is in it, including strip maps, history, points of interest, accommodations, rates, restaurants, do's and don'ts, some basic Spanish, customs regulations — everything. But many of the fine new motels are not listed in the 1957-1958 edition.

It is hoped that many of my ham friends in the United States will avail themselves of the hospitality of our good neighbors to the south. To them I say, "Good mobiling in Mexico?" **QST**



Another case of long-distance TVI. K3DCP was heard on a TV set in Ft. Worth, Texas.

—K5MRK.



Navigation Systems

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## CAREER OPPORTUNITIES

With a company making premium grade electronic equipment for aircraft for over 30 years. Located in the beautiful lake region of Northern New Jersey, less than 35 miles from New York City.

- TRANSISTOR CIRCUIT ENGINEER
- TACAN ENGINEERS
- RECEIVER ENGINEERS
- TRANSMITTER ENGINEERS (VHF & UHF FREQUENCIES)
- NAVIGATION EQUIPMENT
- ANTENNA DESIGN ENGINEER
- TECHNICAL WRITERS • TEST LAB. ENGINEERS

Enjoy the pleasure of working in a new laboratory in a company whose products are known as the highest quality in the industry.

Write or call collect: Personnel Manager

## AIRCRAFT RADIO CORPORATION

Boonton, N. J.

DE 4-1800—Ext. 238

# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130  
ARCBY ELECTRONICS, INC.  
LOUISVILLE, KENTUCKY

## RADIO COURSES

Radio Operating • Code •  
Radio Servicing • Television Servicing •

Preparation for Civilian, Maritime,  
Army and Navy License requirements

Write for information on these courses to:

**BROOKLYN Y.M.C.A. TRADE SCHOOL**

1115-1119 Bedford Ave., Brooklyn 16, New York

## LEARN CODE!

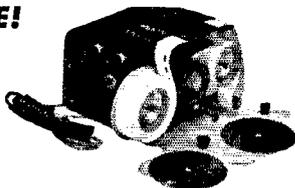
SPEED UP Your  
RECEIVING  
with G-C

Automatic Sender

Type S

\$28.00 Postpaid in

U. S. A.



Housed in Aluminum Case, Black Instrument Finished. Small—Compact—Quiet induction type motor. 110 Volts—60 Cycles A.C.

Adjustable speed control, maintains constant speed at any Setting. Complete with ten rolls of double perforated tape. A wide variety of other practice tapes available at 50c per roll.

**GARDINER & COMPANY**

STRATFORD

NEW JERSEY

## NEW PALCO BANTAM B-65A



The smallest, most compact Mobile Transmitter with 65 watts phone . . . 90 watts c.w.

The PALCO B-65A is only 4" high, 8" wide and 8 3/4" deep. It can be mounted right at your finger tips, leaving lots of leg room. Companion modulator is only 4" x 4" x 9", can be mounted alongside RF unit or tucked away under the dashboard. Exclusive new tuneup meter designed with highway safety in mind. No stooping — no squinting with this one.

New Super Stable VFO. Provisions for two crystals. Complete bandswitching 10 thru 80 meters. Efficient wide range pi-network output. Panels are bright chrome, with contrasting grey knobs. Push-to-talk phone. Power requirements: either 6 or 12 volt AC or DC filament supply, 450-500V DC at 250 Ma. Tubes: 6BH6 VFO, 6BH6 buffer, 5763 buff-dblr, 6146 ampl., OA2 reg., 6AQ5 clamper, 12AX7 audio amp-driver, two 1614 mods. Makes an ideal Novice xmtr when operated at 75 watts input.

Amateur Net: inc. mntg. bracket, RF and Mod. units, w/tubes and interconnecting cables . . . . . **\$179.50**  
and pur. input cable socket. . . . .

At Your Dealer or WRITE DIRECT

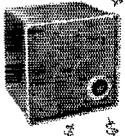
**PALCO ENGINEERING COMPANY**

355 N. Columbia

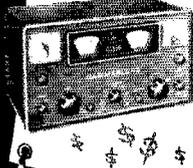
Frankfort, Ind.

# HAMMARLUND DOLLAR DAYS

MAY 15th to JUNE 30th



**HQ-110 DEAL**  
Buy a famous, current best-seller HQ-110 (Amateur coverage) receiver at regular price of \$249.00. Add \$1.00 more and get clock-timer (\$10 value) and 8-100 speaker (\$14.95). **EVERYTHING ONLY \$250.00**



**HQ-100 DEAL**  
Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only **\$190.00**

**\$100 GETS YOU \$249.5!**

## GIL SEVERNS

1340 East Florida Hemet, California

## YL News

(Continued from page 78)

No. of Sections			No. of Sections				
Call	Contacts	Worked	Call	Contacts	Worked		
W5DRI	...301	70	70,098*	W8NDS	...343	44	15,092
K5BNQ	...660	64	52,800*	K8ITF	...164	22	4,510*
W5ERH	...568	67	47,570*	W8HWX	...70	27	2,363*
W5HWK	...488	53	32,330*	W8OTK	...35	15	656*
K5CRH	...491	49	28,074*	W8KLZ	...34	13	553*
W5EGD	...364	45	20,475*	W8LGY	...33	6	248*
K5JXD	...281	44	15,455*				
K5LIU	...230	40	11,500*	K9AMD	...154	30	5,775*
K5PFF	...154	32	6,100*	K9BMP	...134	23	4,600*
K5JGC	...102	24	3,060*	W9VNG	...100	21	3,000*
K0MET/5	...105	20	2,625*	K9BAMQ	...69	23	1,981*
K5EGB	...108	18	2,430*				
K5MLZ	...57	25	1,881*	K0EPE	...699	56	39,144
				K5KUC/0	...471	49	23,079
K6EXQ	...701	67	46,967	W0PSP	...336	47	19,740*
W6QGX	...605	56	33,880	K0BFS	...302	51	19,253*
K6TQO	...307	48	18,420*	K0IGU	...375	45	16,875
W6JZA	...320	46	18,400*	W0ZWL	...235	45	13,219*
W6WDL	...219	41	11,224*	K0HEU	...262	39	12,773*
W6AAOE	...185	34	7,820*	K0IKL	...219	38	10,402*
K6KCK	...135	37	6,244*	K0GIC	...260	28	9,100*
K6YOA	...89	30	3,338*	W0WIE	...156	37	7,215*
K6PWH	...132	18	2,870*	W0LYV	...135	30	5,063*
K6KUP	...45	23	1,204*	K0LGW	...22	10	275*
K6UHI	...40	15	600				
K6H0I	...93	5	581*	KA2HA	...36	15	675*
				KA2YL	...68	26	1,768
W7DRU	...326	44	17,930*	K2YV	...583	63	44,336*
K7ADI	...169	37	7,816*	K6QPG/			
W7GGV	...167	31	6,471*	KW6	...66	25	2,063*
W7HXE	...137	33	4,521	VE3DDA	...35	16	700*
W7AKX	...110	28	3,850*	KX3CM	...243	49	11,907
W7DIF	...95	30	3,562*	ZL2JO	...66	20	1,650*
W7FDE	...81	27	2,734*	ZS5OB	...59	20	1,475*
W7HHH	...40	21	840	ZS6APG	...106	30	3,975*
W7GXI	...27	5	169*				

## OM PHONE

W1BAB	...64	21	1,680*	W3IAN	...10	7	89*
K1HTK	...56	22	1,540*	K4JQR	...59	30	2,213*
K1EFI	...53	19	1,259*	K4DLC	...44	31	1,705*
W1LKG	...50	21	1,050	K4TEX	...50	25	1,563*
W1LQ	...40	21	1,050*	K4ASI	...49	21	1,286*
W1LQQ	...48	15	900	K4DR0	...34	21	893*
K1ADH	...19	11	2,61*	W4WLM	...35	16	700*
W1HOZ	...22	11	242*	W4SIB	...30	18	675*
W1NJL	...11	7	96*	K4MOF	...26	18	585*
W100S	...12	8	96*	K4WCZ/			
W1VOE	...9	6	68*	W4JFJ	...27	12	405*
W1MIW	...9	5	56*	K4MLE	...22	14	385*
				K4EHF	...18	16	360*
K2DSW	...71	31	2,751*	W4KMS	...23	13	286*
W2GBX	...71	29	2,059	W4JUJ	...13	10	163*
K2DBB	...62	26	2,015*				
W2COB	...49	22	1,348*	W5KEA	...65	29	2,356*
K2PTU	...41	18	738	K5HCL	...58	28	2,030*
K2EIU	...28	19	665*	W5ZAL	...51	27	1,719*
W2QCT	...43	11	591*	W5GYP	...42	26	1,365*
W2PEV	...24	12	360*	K5BBA	...47	20	1,175*
W2CVW	...20	15	300*	K5JCC	...45	24	1,080
K2UZJ	...21	9	270*	W5KLB	...45	21	1,080
W2IFI	...20	8	200*	K5OCX	...33	20	1,075*
W2GIX	...13	8	130*	W5VZU	...38	20	950*
K2UT	...13	7	114*	W5NXP	...30	20	600
W2MEO	...11	6	83*	K5BQS	...28	12	420*
W2LGK	...11	4	55*	K5INK	...22	10	400*
				W5AWT	...13	10	130
W3BVL	...77	33	3,176*				
W3FOX	...84	30	2,520	K6SXA	...103	43	5,536*
K3DMO	...63	26	2,048*	K6TXR	...88	37	4,070*
W3ARK	...66	27	1,782	W6VA	...85	33	3,506*
W3QLW	...44	27	1,485*	W6PVD	...59	26	1,918*
W3EIV	...49	24	1,470*	K6QYO	...63	29	1,827
W3MDO	...29	15	544*	K6ETE	...52	25	1,625*
W3KQD	...22	13	358*				

(Continued on page 178)

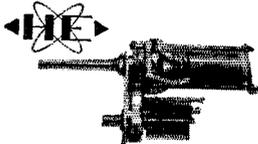
### CODE-SENDING-RECEIVING-SPEED

Be a Radio Ham or Commercial Operator. Pass FCC code test in few weeks, fascinating hobby. Good pay, interesting work in Commercial field. Same system used by radiotelegraph specialists. FREE book explains how Amateurs and Operators learn code and develop amazing skill and speed. Candler System Co., Dept. 4-G, Box 9226, Denver 20, Colo., U.S.A. and 52b, Abingdon Rd., Kensington High St., London W.8, England

## INEXPENSIVE

50/70 Ohm Link Input Ceramic Grid Tank for 80-40-20-15-10 Meters

GP-20L—\$7.95



7 or use in tetrode grid circuits up to single 4-250A. Voltage breakdown over 600 volts D.C. Size 1 1/2" x 2 1/2" x 3 1/2" deep. Immediate delivery from stock. **MONEY BACK GUARANTEE.** Prices include US postage and insurance. Other models available.

GP-20 (No link, interstage or pi-net plate) \$6.95  
GP-50 100 AM, 150 watt SSB/CW—\$13.95  
GP-25L Push-pull model with link input—\$14.95

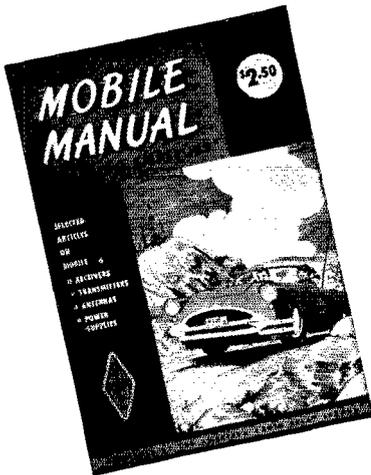
HARRINGTON ELECTRONICS Box 189 Topsfield, Mass.

# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130

HARRISON RADIO CORPORATION  
NYC-JAMAICA, L.I., N.Y.



**\$2.50**

U.S.A. Proper  
\$3.00 Elsewhere

**American Radio Relay League, Inc.**

WEST HARTFORD 7  
CONNECTICUT

**L**IKE your radio "on the move"? Then don't be without this useful and informative guide to mobile operation. It is a collection of many articles on tried and tested equipment, presented in an orderly fashion for easy reading and reference.

**C**ONTENTS include a section on receiving, with valuable information on automotive noise suppression; a group of articles describing over 30 different mobile transmitters; sections on mobile antennas and power supplies; and excerpts from FCC's regulations governing mobile operation. The Mobile Manual for Radio Amateurs should be on the bookshelf of everyone interested in the installation, maintenance and operation of mobile stations.

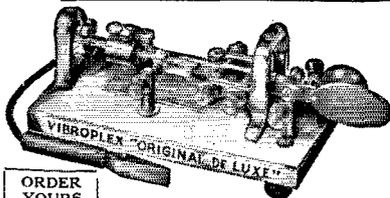
# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130  
ADIRONDACK RADIO SUPPLY  
AMSTERDAM, N. Y.

Now enjoy Sending at its  
Easiest and Best  
with the EASY, SEMI-AUTOMATIC

## VIBROPLEX



Never tires  
the arm

Never  
upsets the  
nerves

ORDER  
YOURS  
TODAY!

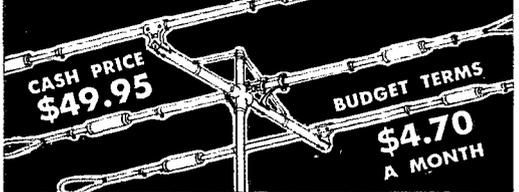
Sending can be very tiresome and often injurious to the arm and nerves, but never when you send with a Vibroplex. Its semi-automatic action does the work for you. No special skill necessary. Suits any hand. Let's you send the way you like best, at the speed you desire. Never tires the arm, never upsets the nerves. Vibroplex is the choice of experts and hams the world over. Try it and see for yourself why so many use and recommend it to you. Smart styling, precision machined, trouble-proof, adjustable to any speed, built for rough usage and long life. Five models, standard or deluxe, priced from \$15.95 to \$29.95. Get your new Vibroplex today, for the easiest and best sending of your life. At dealers or direct.

**THE VIBROPLEX CO., INC.**

833 Broadway

New York 3, N. Y.

TRY THE TB-500 BEFORE  
YOU BUY IT!



THREE BANDS — 10 — 15 — 20 meters  
SINGLE 52 ohm coax transmission line.  
Weight 29 pounds. Turning radius 14'. 11".  
Handles 500 W. (transmitter input, 100% am  
modulated.) ELEMENTS: 6061-T6 Aluminum  
tubing 1" tapering to 3/4".

Cast aluminum fittings used throughout.  
PRE-TUNED and easy to install. Uses Hornets'  
exclusive weather-sealed trap design\*.

The TB-600 with larger diameter boom and  
slightly heavier castings weighs 35 lbs. This  
is the heavy-duty model for greater wind  
and ice-loading conditions. Budget-terms \$5.50  
a month or \$59.75 cash.

HORNET antennas are so easy to own—and  
so satisfying to use.

WRITE FOR  
FREE  
ILLUSTRATED  
CATALOG

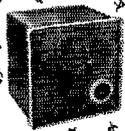
THE BEAM WITH A STING  
**HORNET**  
Antenna Products Co.

\*Pat. pend. P.O. BOX 808 • DUNCAN, OKLA.

10 DAYS FREE TRIAL

# HAMMARLUND DOLLAR DAYS

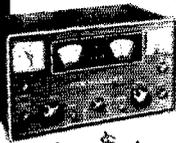
MAY 15th to JUNE 30th



### HQ-110 DEAL

Buy a famous, current best-seller HQ-110 (Amateur coverage) receiver at regular price of \$249.00. Add \$1.00 more and get clock-timer (\$10 value) and S-100 speaker (\$14.95). EVERYTHING ONLY

**\$250.00**



### HQ-100 DEAL

Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only

**\$190.00**

**\$1.00 GETS YOU \$24.95!**

**ROCHESTER RADIO SUPPLY CO., INC.**

600 Main Street East  
Rochester, New York

## YL News

(Continued from page 176)

W6OIL....32	21	672	W9YT/		
K6GLS....30	19	570	W9SZR...55	25	1,375
K6ICS....15	12	225*	W9VCH...35	18	788*
K6CJF....11	10	138*	W9RKP...30	20	750*
K6SXX....11	7	96*	W9NLF...30	19	713*
			W9GWO...33	17	701*
			W9RYL...31	13	403
W7SFK...80	35	2,800	W9QLK...3	3	30*
W5GVP/7..42	26	1,365*			
W7UGQ...38	24	1,140*	K0LRS....56	25	1,750*
W7YKQ...40	26	1,040	W0LLU...47	21	1,234*
W7BCE...39	19	926*	W0SZZ...40	21	950*
K7CLS....33	22	908*	K0IDV...31	24	930*
W7ESN...36	18	810*	K0IGO...42	20	840
W7EVU...30	18	675*	W0QMS...37	16	740*
W7KOH...25	16	500	K0AJR...29	20	725*
K7BSR...30	12	300*	K0LZJ...34	17	723*
K7GQM...13	11	143	W0AQE...29	19	689*
			W0EQN...32	17	680*
W8AJW...108	37	4,905	K0KKN...30	18	675*
W8AYV...64	29	2,320*	K0ESH...15	21	394*
W8TNC...51	25	1,594*	W0CDL...15	14	263*
W8WT...34	19	808*	W0GAX/0..16	9	180*
W8JIN...31	17	527*			
W8HNI...29	14	406	HP1AC...15	12	225*
W8DEZ...16	9	180*	KP4KD...51	28	1,785*
W8KKV...9	8	90*	VE1DB...12	10	120
			VE8AJU...35	13	569*
K9ALP...125	45	7,031*	VE8AZK...32	20	800*
W9LNQ...64	30	2,400*	VE7VJ...22	13	286*
K9HJS...48	23	1,380*	VO2NA...3	3	9*

**QST**

## Simplified Break-in Control

(Continued from page 25)

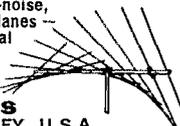
The jack marked "S.B. Exciter" is to allow the transmitter keying lead from a single-side-band exciter to be plugged in in parallel with the key. This control unit may be used to silence the receiver on s.s.b. as well as c.w. through this jack, and if the keying circuit in the transmitter is keyed on a.m. also, the unit may be used on a.m.

This unit has now been in use for several months, including the 1958 Sweepstakes contest, when it really proved itself. With an average junk box and a few good friends to help donate parts, the unit here, including t.r. switch, was built for about \$5 to \$10, most of which went into the t.r. switch. If all the parts were purchased new, it could probably be built for about \$25 or less, and it sure is worth it!

**QST**

## New! Telrex "Spiralray"

Extremely high-gain, high signal-to-noise, practically no fade, all radiation planes—horizontal, vertical or oblique! Ideal for scatter-wave, satellite, mobile or point to point work! 50, 108 and 144 megacycle models available



**TELREX LABORATORIES**

ASBURY PARK 40, NEW JERSEY, U.S.A.

# TOWERS

**ALL THE WAY - IT'S EZ WAY**

See Page 130

**HENRY RADIO STORES**  
BUTLER, MO.-LOS ANGELES, CALIF.

## EASY TO LEARN CODE

It is easy and pleasant to learn or increase speed the modern way — with an Instructograph Code Teacher. Excellent for the beginner or advanced student. A quick, practical and dependable method. Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 3 to 40 WPM. Always ready, no QRM, beats having someone send to you.

**ENDORSED BY THOUSANDS!**

The Instructograph Code Teacher literally takes the place of an operator-instructor and enables anyone to learn and master code without further assistance. Thousands of successful operators have "acquired the code" with the Instructograph System. Write today for full particulars and convenient rental plans.



## INSTRUCTOGRAPH COMPANY

4789 SHERIDAN ROAD, CHICAGO 40, ILLINOIS  
357 West Manchester Ave., Los Angeles 3, California

## Quist Quiz Correspondence

P. O. Box 687  
Lawrence, Mass.

Quist Quiz Editor, **QST**:

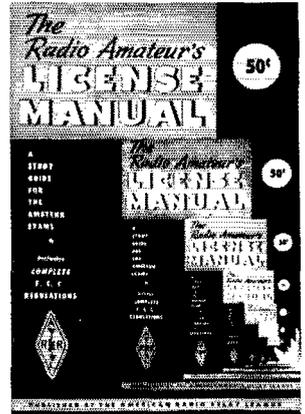
When looking over the answer submitted by John Hondema, K8EVW, for the solution of his Quist Quiz problem for March 1959, I discovered there is a much easier solution than finding the surface area.

It can be solved in two easy steps. First find the average circumference. This is done by determining the average radius and multiplying by two pi. Next find the number of turns. This can be done by dividing the thickness of the roll by the thickness of an individual strand. Now the answer is easily arrived at; simply multiply the number of turns times the average circumference. This gives the exact answer much quicker than is possible by the surface method.

— Ronald Blackburn, K0GVO

# UP TO DATE . . .

THE 42nd edition of the Radio Amateur's LICENSE MANUAL is complete, up to date and revised to include latest information on amateur licensing. Contains information on questions included in FCC amateur exams, all the dope on frequency privileges for the various classes of amateur licenses, the full text of RACES regs, details of the U.S.-Canada Reciprocal Operating Agreement and code-practice schedules, and the current FCC examination schedule. A useful manual for all, newcomer and oldtimer alike.



Order YOUR copy today

PRICE **50¢** POSTPAID

All the dope between two covers . . . complete and easy to understand.

- NOVICE • CONDITIONAL
- TECHNICIAN • GENERAL
- EXTRA-CLASS

## The AMERICAN RADIO RELAY LEAGUE, Inc.

WEST HARTFORD 7, CONN.

### UNUSUAL OPPORTUNITY

for inexperienced man who wants on-the-job training in TV transmitter operation. First phone required.

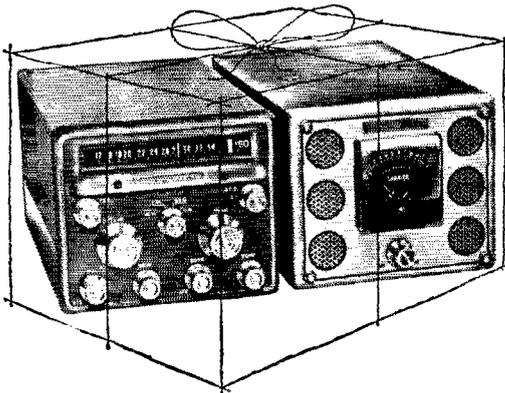
BOX 185, QST

## TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130

ACK RADIO SUPPLY COMPANY  
ATLANTA, GEORGIA-BIRMINGHAM, ALA.

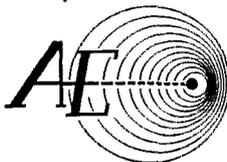


*Packaged  
Precision!*

### ...THE AMAZING KE-93

The KE-93 is a precision 12-tube all-band communications receiver for fixed station or mobile and portable use. A miracle of engineering and "packaging," the KE-93 features sensitivity and stability usually found only in large table-top receivers. AM, SSB and CW on all bands, 10 thru 160 meters, plus broadcast band!

Write today  
for brochure  
and complete  
specifications.

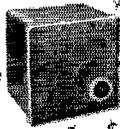


**AUTOMATION ELECTRONICS, INC.**

1500 WEST VERDUGO AVENUE • BURBANK, CALIFORNIA

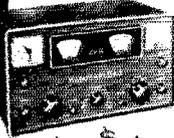
# HAMMARLUND DOLLAR DAYS

MAY 15th to JUNE 30th



## HQ-110 DEAL

Buy a famous, current best-seller HQ-110 (Amateur coverage) receiver at regular price of \$249.00. Add \$1.00 more and get clock-timer (\$10 value) and 5-100 speaker (\$14.95). **EVERYTHING ONLY \$250.00**



## HQ-100 DEAL

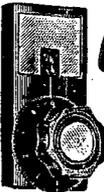
Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only **\$190.00**

**\$1.00 GETS YOU \$24.95!**

### TYDINGS COMPANY

933 LIBERTY AVE.,  
WE WILL TRADE!

PITTSBURGH 22, PA.  
TERMS EXTENDED



**Groth**

### TURN COUNT DIAL

Registers Fractions to 99.9 Turns

FOR roller inductances, INDUCTUNERS, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2" x 4". Shaft: 1/4" x 3". TC 2 has 2 1/2" dial — 1 3/4" knob. TC 3 has 3" dial — 2 3/4" knob. Black bakelite.  
TC 2 \$4.20 — TC 3 \$4.75 — Spinner Handle 75c extra  
Add 8c for Parcel Post

**R. W. GROTH MFG. CO.**

10009 Franklin Ave. Franklin Pk., Illinois

## CUBICAL QUADS

SUPERIOR IN PERFORMANCE

- 8 db gain on 20
- 10 db gain on 10-15
- Better than 20 db F/B ratio
- Small—Only 17 ft. wide
- Light—Only 25 pounds
- Less torque—TV rotor handles
- Less wind resistance
- Cast aluminum alloy spiders for neat appearance.

Write For Free Brochure **AND THE PRICE IS LOW — only \$54.95**

**SKYLANE PRODUCTS**

5320 Nebraska  
Tampa 3, Florida

# TOWERS

ALL THE WAY — IT'S EZ WAY

See Page 130  
**PIONEER ELECTRIC SUPPLY**  
CLEVELAND, OHIO

## 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 QST cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4 1/4 by 9 1/2 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.

W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.

W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.

W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.

W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.

W6, K6 — Horace R. Greer, W6TI, 414 Fairmount Avenue, Oakland, Calif.

W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.

W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.

W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.

W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.

VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.

VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Point Claire, Montreal 33, Que.

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.

VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.

VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

VE6 — W. R. Savage, VE6EO, 833 10th St., North Lethbridge, Alta.

VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.

VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.

VO2 — Douglas B. Ritecy, Dept. of Transport, Goose Bay, Labrador.

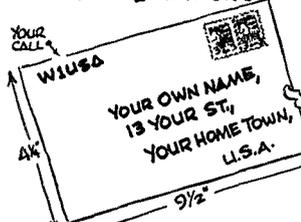
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.

KH6 — Andy H. Fuchikami, KH6BA, 2543 Namanu Dr., Honolulu, T. H.

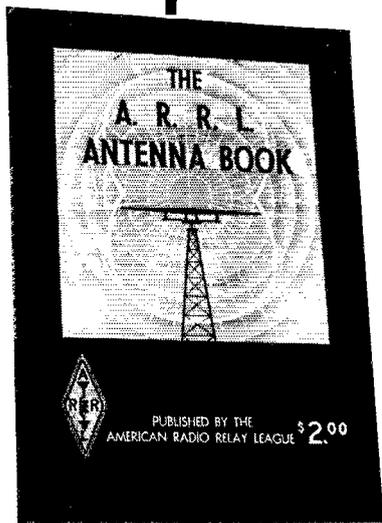
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

## IS YOURS ON FILE WITH YOUR QSL MGR?



# Summer Time is Antenna Time . . .



. . . and you'll have an easier time erecting that new skywire this summer if you get your dope from the Eighth Edition of the ever-useful ARRL Antenna Book!

Planning an elaborate beam to snag those rare DX stations? Looking for information on mobile whips? From basic theory to how to build 'em, horizontals, verticals, rotaries, fixed beams, transmission lines, v.h.f., u.h.f., together with dimensions, photos, drawings, radiation patterns, you'll find details in the information-packed ARRL Antenna Book. Better pick up your copy now.

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## FREE COIL BULLETIN

Technical data on coils specified in QST and Handbook. Standard coil series ideal for experimenters and designers.

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**DISTRIBUTORS** { Harrison Radio Corp., New York, N. Y.  
Radio Shack Corp., Boston, Mass.  
Zack Radio Supply Co., Palo Alto, Calif.

# TOWERS

**ALL THE WAY - IT'S EZ WAY**

See Page 130

**A. G. RADIO PARTS COMPANY**  
ELKINS PARK, PENNA.

## DIFFERENTIAL VACUUM TUBE KEYS

### MODEL VTK-2A

Here is something needed by a good many amateurs. Rid your transmitter of key clicks, thumps, and oscillator chirps. Can be used with any small or medium sized transmitter with cathode keying up to 250 mils. Ideal for kit-built transmitters. Supplies negative bias voltage for grid block keying of crystal or VFO oscillator as well as cathode keying for higher stages. Complete, ready to use. Supplied with adaptor connection kit and instruction manual. A useful accessory for old timer and novice alike.

Overall size 4" x 5" x 7"; uses 110 V. AC; no other power connections required. Send for descriptive literature or send \$18.50 plus 50¢ postage for complete unit. State type of transmitter used. *Calif. amateurs add 3% state sales tax*

**BARJE ELECTRONICS** 1813 NOEMI DRIVE  
CONCORD, CALIF.

# NOW! BIGGER "SURPRISE" TRADE-IN ALLOWANCES FROM WALTER ASHE!

**What do you have? What do you need?  
You'll never make a better deal!**

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Walter Ashe specializes in supplying amateur needs—including all parts to build or modify transmitters, receivers and ham equipment. Deal with the amateur's one-stop radio supply house!

Walter Ashe needs your used gear . . . and we're trading higher than ever before to get it. Write today; tell us what you want and what you have to trade. Be prepared for a real "Surprise" allowance! We have all the new gear in stock ready for prompt shipment. Easy Time Plan if desired. Write today!



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The complete buyer's guide for hams, experimenters and schools. Offers the largest selections of new and replacement equipment for all your needs. Rush coupon for your FREE copy today!

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1125 PINE STREET, ST. LOUIS 17, MO.

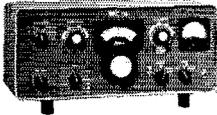


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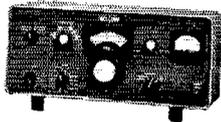
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30 years selling to hams. Easy terms, big trade-ins. Largest stock of all amateur radio transmitters and receivers in the two Carolinas. Try us first — Write Tenny Freck, W4WL

**32S-1 TRANSMITTER** — operates on all amateur bands between 3.5–29.7 mc, nominal 100 watts output. Features: Mechanical Filter SSB generation; stable, permeability-tuned VFO; and RF inverse feedback. **\$590.00.**



**75S-1 RECEIVER** — provides SSB, CW and AM reception on all amateur bands between 3.5–29.7 mc. Features: Excellent AVC characteristics for SSB reception — full RF gain; stable, permeability-tuned VFO; Mechanical Filter; silicon diodes; RF amplifier; and self contained power supply.



**\$495.00**

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# TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130  
ELECTRONIC SUPPLY  
MIAMI-MELBOURNE, FLORIDA

Now . . . Pass FCC Amateur and Commercial Exams EASILY

## LEARN CODE and Theory

50¢  
UP



SIMPLE,  
FAST, HOME STUDY

78, 45 or 33 1/4 r.p.m. Unbreakable Phonograph Records & Easy-To-Understand Books PASS COMMERCIAL AND AMATEUR CODE EXAMS, AMATEUR THEORY EXAMS, FOR YOUR FCC LICENSE!

### 4 AMECO Courses Available:

- No. 1 — NOVICE CODE COURSE.** You get and keep 10 recordings (alphabet through 8 W.P.M.). Includes typical FCC type code exams. Free instruction book on learning how to send and receive code the simplest, fastest way; plus charts to check your receiving accuracy; plus an album; all for the low price of only: 45 r.p.m. **\$5.95** 33 1/4 r.p.m. **\$4.95** 78 r.p.m. **\$6.95**
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- No. 3 — NEW ADVANCED COURSE.** Prepares Novice operators for the amateur general class and second class commercial license tests. Contains 12 recordings (8 through 18 W.P.M.) PLUS the complete code book — PLUS typical F.C.C. code examinations for general and commercial tests. ALL for only: 45 r.p.m. **\$4.95** 33 1/4 r.p.m. **\$4.95** 78 r.p.m. **\$5.95**
- No. 4 — COMPLETE AMATEUR RADIO THEORY COURSE.** A complete, simplified home study theory course in radio covering the Novice, Technician, Conditional and General classes — all under one cover — with nearly four hundred typical FCC type questions to prepare you for license exam. No technical background required. You also get, FREE, a guide to setting up your own Ham station. All for the amazing low, low price of **\$3.95**

**No. 5 — RADIO AMATEUR QUESTIONS & ANSWERS LICENSE GUIDE.** A "must" if preparing for Novice, Technician or general class exams. Approx. 200 questions & answers (most multiple choice type) similar to ones given on F.C.C. exams. Has 2 typical F.C.C. type exams. Other 50¢ questions by subjects, easier to study. Low, low price of

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Sold at leading distributors  
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1203 Bryant Ave., New York 59, N.Y.

## Look! No Hands MOBILIER'S Drive Safely!

USE THIS NEW, RUGGED, LIGHT WEIGHT "SAFETY-MIKE" AND KEEP BOTH HANDS ON THE WHEEL.

HERE IS YOUR KEY TO SAFE, PLEASANT, AND EFFICIENT MOBILE OPERATION . . . ALSO IDEAL FOR FIXED STATION NET OPERATION, AM AND SSB.

Stainless steel and aluminum construction for ruggedness and light weight . . . less than four oz.

All units shipped with 7 ft. cord.  
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Mobilier controlled reluctance safety-mike, response 400 to 3,000 cps. Resists heat, humidity, shock and vibration. **Net \$17.50**

Mobilier type safety-mike with crystal unit designed primarily for fixed station use. AM and SSB. Response 100 to 6,000 cps. **Net \$15.00**

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PHONE MA 2-3731

# 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 (4) 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 non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.

(8) No advertiser may use more than 100 words in any one issue nor more than an 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 communications equipment bought and sold W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

**WANTED:** Cash or trade, fixed frequency receivers 28/42 Mc. W9Y1Y, Troy, Ill.

**WANTED:** Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

**KWM-** wanted. Also few high plate dissipation tubes, radios BC348, ARN14, ARN30, AR3, 51 Series Gear 51J, 51R, communication receivers, transmitters, Dames, W2KUW, 308 Hickory, Arlington, N. J.

**ATTENTION** Mobilcast! Leuce-Neville 6 volt 100 amp. system alternator, regulator & rectifier, \$45.00. Also Leuce-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, Hallcrafters, Hammarlund, Johnson, Lyco Master, UY206 tubes for electrical test. Buy or borrow. H & H Electronic Supply, Inc. 506 Kishwaukee St., Rockford, Ill.

**RECEIVERS:** Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallcrafters, Hammarlund, National. Our twenty-second year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

**SAN FRANCISCO** and vicinity. Communication receivers repaired and realigned. Guaranteed work, factory methods. Special problem, invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

**TRANSFORMERS** (3) W2EWL Special, \$5.00 postpaid. SSB, latest diagram, template, 3 xfmr's, disc ceramic Emtca condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 QST), \$10.95 postpaid. Vitale, W2EWL, Denville, N. J.

**COAXIAL** Cable. New surplus RG-54/U, 58 ohms impedance—30 ft., prepaid, \$1.00. Radio magazines, buy, sell, trade, R. Farmer, 3009 N. Columbia, Plainview, Texas.

**KNOX** Electronic Supply, Inc. "Where your Trade-In is always worth more!" 67 N. Cherry St., Galesburg, Ill.

**ANTENNA** 80-40-20-15-10, \$21.95. Patented. Latin, W4JRW, Box 44, Owensboro, Ky.

**HALICRAFTERS**, Drake Central Electronics, Gonset, Ham gear, Jerry W8EPI, Swartzlander Radio Limited, 1220 Stillwell Avenue, Fremont, Ohio.

**FIFTH** Annual Syracuse VHF Roundup, October 10, 1959

**WANTED:** Battery receivers of 1920s, Eria, Acme, Radiola, Grebe, etc. Also UV199 thru UV206 tubes for electrical test. Buy or borrow. Grote Reber, Green Bank, West Virginia.

**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.

**AUTHORIZED** factory distributors for Adjutantovolt, B&W, Elmac, Gelo, General Electronics, Glas-Line, Gonset, Hammarlund, Hexacon, Johnson, National, Penta, TMC, Tobé & Vocaline & Westinghouse. Wanted: xmttr, and special-purpose tubes and lab equipment. Trade-ins accepted. Open Monday through Saturday. Barry Electronics Corp., 51 Broadway, N. Y. 12, N. Y. Phone WAlker 5-7000.

**QSLs?** Rainbow maps? State maps? Mobiles? Samples 25¢ (refunded); Callbooks (summer), \$5.00 postpaid. Religious QSL samples 25¢. "Rus" Sakkers, W8JED, P.O. Box 218, Holland, Michigan. Request free folder. "Your Best Contact."

**QSLs** of rare excellence. Samples 10¢. Dave, 601 East Maude, Sunnyvale, Calif.

**QSLs?** SWLs? In '59 try mine! Samples 25¢ deductible. C. Fritz, 1213 Briargate, Joliet, Ill.

**DELUXE** QSLs. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

**QSLs** "Brownie," W3CJL, 3110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue, 25¢.

**QSL-SWLs**, 100, \$2.85 up. Samples 10¢. Griffith, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

**QSL-SWLs**, Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

**QSLs:** Twenty exclusive designs in 3 colors. Rush \$3.85 for 100 (ten different kinds) or \$6.25 for 200 (20 different kinds) and get surprise of your life. Satisfaction guaranteed. Five days service. Constantine Press, Bladensburg, Maryland.

**QSL Special!** \$1.75 per 100 cards, postpaid U. S. only. Glossy stock, red call-letters, name and address. Green QSO Informs, et al. All orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

**QSLs**, Samples, dime. Printer, Corwith, Iowa.

**COLOR** Glamor, scenic & nature. Custom sketch and photo. Samples 25¢ refunded. K4LFZ QSLs, Summerville, Fla.

**QSLs-SWLs**, Samples free. W4BK Press, McKenzie, Tenn.

**QSLs**, Reasonable, 10 days delivery. Catalog dime (coin), Dick Crawford, K6GJM, Box 607, Whitfrier, Calif.

**SCENIC** QSLs, New, beautiful, samples 10¢. Camas Press, 3005-VX, North Hollywood, Calif.

**200** QSLs, \$3.00. Samples free, Bolles, 7701 Tisdale, Austin 5, Texas.

**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., KN5ZMT, Creative Printing, P.O. Box 1064-C, Atascadero, Calif.

**QSL** Samples, 10¢. Refundable. Also Net Award Certificates and Membership cards. W3KJP Press, 1806 Water St., Westleyville, Penna.

**QSL** Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo

**QSLs**, Outstanding. Original. Fast service. Reasonable prices. Samples 10¢. Super Quality, 25¢, refundable. VYS QSLs, 1704Q Hale, Ft. Wayne, Ind.

**QSL-SWLs**, High quality, reasonable prices. Samples, Bob Teachout, W1FVS, 204 Adams St., Rutland, Vt.

**QSLs**, Glossy 4-colors, 100 for \$3.50. Samples, 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

**QSLs**, Speedy delivery. Samples, 10¢. Don, K50WT, 738 Gardemia Ada, Okla.

**QSLs, SWLs** VHF'S SYL-OM's. (Sample assortment approximately 95¢). Covering designing, planning, printing, arranging, mailing, eye-catching, comic, scute, fabulous DX-attracting, protypal, snazzy, unparagoned, cards, Rogers, K6AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!)

**QSLs**, Get the best from DX, samples 25¢, 2 Kulik Street, Clifton, N. J. Shop telephone GRegory 3-4778. Residence, GRegory, I-7885.

**QSLs:** Fast service. Send stamp for samples. Koster, K2UAX Press, 2941 Ewell Place, Wantagh, L. I., N. Y.

**QSL-SWLs**, 100 \$2.50. Samples 10¢. QSO File cards, \$1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

**QSLs**, Taprint, Union, Miss.

**SUPERIOR** QSLs, samples 10¢, Ham Specialties, Box 3023, Bell-aire, Texas.

**QSL-SWL** samples free. Bartinoski W2CWE Press, Williamstown, New Jersey.

**QSL-SWLs** that are different. Colored, embossed card stock and "Kromekote." Samples 10¢. K8AIA, Turner, Box 953, Hamilton, Ohio.

**QSLs:** Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., No. Hollywood, Calif.

**QSLs** Atlas Missile, 100 Glossy 4-color, \$4.00. Paye, W4ZKk, 821 Avondale, Cocoa, Fla.

**QSLs**, 3-color glossy, 100—\$4.50. Rutgers Var-Typing Service, 7 Fairfield Rd., New Brunswick, N. J.

**QUALITY** QSLs—Best deal around. Samples and prices, 5¢. Savory Press, 172 Roosevelt Road, Weymouth, Mass.

**QSLs** samples, quarter. Spicer, 4615 Rosedale, Austin 5, Texas.

**QSLs**, High gloss, 2 colors, samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

**QSLs:** Cartoons, colors, something different. Samples, 25¢. Chris W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

**QSLs, SWLs**, Citizen's band. Samples 10¢. Onondaga Press, Onondaga, Mich.

**QSLs**, Stamp brings samples. Eddie W. Scott, W3CBX, Fairplay, Md.

**QSLs**, 100 for \$3.00, glossy, samples free. R. A. Larson, 32 Midland Ave., Stamford, Conn.

**QSLs**, Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

**QSLs**, Lapel pins, samples dime. Kephart W2SPV, 4309 Willis, Merchantville, N. J.

**QSLs** Near, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

**HARRIS** Press QSLs-SWLs. Free samples. 518 Milton St., Richmond, Va.

**RUBBER** Stamps: Why wait for cards? QSL with rubber stamps. Stamp impressions, immediate delivery. Kay, K2TKQ, Blanchet Rubber Stamp Co., 21 Lincoln Ave., Orange, N. J.

PICTURE QSL Cards for your shack, home, etc. Made from your photograph. 1000, \$12.00. Raumm's 4154 Fifth St., Philadelphia 40, Penna.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 5422 North 93, Milwaukee, Wis.

4X150A tubes. \$6.00 each, postpaid. New, surplus, and guaranteed. H & C Sales, 343 Keenmount Ave., Pittsburgh 16 Penna. Phone LOeust 3-1602.

PRINTED Circuit transistorized mobile VFO, \$24.95; Multi-Band VFO and exciter, \$44.95; Send for list and prices. Kits wired and tested 35% of cost. K2KHZ, Dave Corsair, Praved Specialties, 180 Monroe St., Passaic, N. J.

TREASURE. Privateer Jean LaFitte buried his treasure on Galveston Island south of the Republic of Texas. Treasure hunters will gather on June 19. Data and information available Box 73, Rte 1, Galveston.

NEW Boats, Mercury outboards. Will take ham gear on trade. Write: Boyd Reter, KOIMO, Boyd's Marine Shop, Clinton, Iowa.

SAVE time. Save Money! DX QSL's forwarded 2¢ each after membership. Free flyer "DX QSL Co-op," Box 5938, Kansas City 11, Mo.

COMPLETE File QST's, 1915-1951 for sale. Lauda, Clayton 2, Georgia.

HAM TV Equipment bought, sold, traded. Al Denson, WBYX, Rockville, Conn.

HIGH Fidelity components at rock-bottom prices. Brand new, fully guaranteed. All ma or makes. Amplifiers, tuners, speakers, etc. Our prices can't be beat! Write for quotations. The Ham's Exchange, 228 Stephen St., Levittown, N. Y.

MOBILE Hams! Battery troubles? Les Hay, W7JWD, Rt. 1, Winlock Washington, has the answer to your battery troubles. This is genuine. No gimmick!

\$8.8. Xfrmr's, exact set of 3 (hermetically sealed) for W2EWL Special, brand new, \$3.00 postpaid. New compact G-E 100-watt modulation xfrmr, multi-impedance (10 lbs), \$6.25; new Elmac vacuum condenser, 12  $\mu$ fd at 32 kilovolts, \$5.50; G-E Pyranols, 20  $\mu$ fd at 1000 v.d.c. (330 vac) plus min. 4 for \$7.50; 6  $\mu$ fd at 2000 v.d.c. (660 vac)-min. 4 for \$5.50; 4  $\mu$ fd at 1000 v.d.c. (330 vac)-min. 4 for \$3.50. Please include postage, no c.o.d.'s. S. Tucker, W2ELT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

SELL, Tapetone 6-M Converter, 6PR-90 matching spkr. Both perfect, \$400 or separately. Make offer. K2JNS, Box 41, Beach Haven Crest, N. J.

HAMFEST June 7th Southwest from Ottawa, Illinois on Illinois Route 71 at the LaSalle County 4-H Home and Picnic Area. Same place as last year. Advance registrations accepted. If in thousands before May 28th. Advance registration \$1.00, at the gate, \$1.50. A nice all-day affair for Midwest hams and their families sponsored by the Starved Rock Radio Club. Contact W9MKS, G. E. Keith, Secretary, RFD #1, Box 171, Oelstey, Ill.

CLEARANCE Sale: All must go — fixing to move! Send for picture and list of hundreds of items. Terrific discount. Brand new, never used: Conset Tri-Band 320 Beam, Launda modulation monitor, tape recorder (\$55.00); used equipment: all-band kilowatt, two finals, 10 panel meters, Elmac P&Z-V, AC pwr supp. PCA-2T-200 Panadaptor, Millen R9er, HF 10-20 converter, etc., surplus equipment: BC-221 frequency meter, never touched, ARC5 receivers and transmitters, tubes 304T1's, 832s, 810s, etc. Send for complete list with prices and kilowatt picture. Make your bid — all must go! W2EJE, Box 48, Lewisburg, Tenn.

DESK Call plates, plastic black or in colors, 1 1/2" x 8", only \$1.00 postpaid. Polished brass name plates, 1" x 3 1/2", only \$1. postpaid Bill Clinchard, 120 Ellis Ave., Jackson 9, Miss.

DX35, DX40 or similar rig wanted. Ted Dames, W2KUW, 64 Grand Place, Arlington, N. J.

10B For sale. Very late model, \$99. Conset 6 meter linear, \$99; P & H 600A, \$25. All P.O.B. Larry Houstean, W8IHL, 139 Park Ave., Youngstown 4, Ohio.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Harrington, Ill.

FOR Sale: NC-88 and 636 6-meter converter, \$80. Also Globe Scout 680, \$80. Bill Meyer, K9DGC, 211 North Third Ave., Cedarburg, Wis.

HEATH Kits assembled, fifty percent of the cost of kit plus postage. Send kit or money for kit. I'll bill assembly charge. Robert Sisson, Route 2, Hartford, Mich.

SELL or swap: Dumont oscilloscope 208 perfect, \$35, Globe Scout 680 factory-wired xmitr, 80-6 meters, \$75; ART-13 and RAL schematics, 50¢. W3IHD, 4005 Roanoke Dr., Washington 21, D. C.

COURIER for sale! Factory-wired E. F. Johnson Viking Courier about eight months old. \$15 cash. No trade-ins. L. A. Morrow, W1VQ, 99 Benwood Rd., Hartford 7, Conn. Tel. Adams 2-2073.

HQ-110C like new, \$200. Norman Mische, Phone PO 6-3510, K6TZ, 11693 Picturesque Drive, Studio City, Calif.

FOR Sale: Collins KWM-1, 12V DC and 110V AC supplies, mobile mounting tray and cable; Mark Tri-Band Helwip. Condition excellent. Will sell complete only. \$1100. R. H. Rotham, 710 Elm Grove Ave., Providence, R. I.

MILLEN 90881, like new, with filament xfrmr and coils, \$65. Consider teletype equipment in trade. W3BNE, 423 Lafayette, Palmerston, Penna.

WANTED: Good homebrew LA, running KW, with or without power. Must be capable of drive from HT-32, all bands. TVI support. No junk! W1LWV, 99 Water, Millinocket, Me.

FOR Sale, BC348R, 115AC, instrux book, 10 and 15 meter xtal converter, \$60; Leeco-Neville 12 volt alternator, rectifier and regulator, new, \$55; Hallcrafters #20R revr, \$35. QST 6 meter xmitr with plate modulator, pwr supply, Cush-Craft 5-c. beam, mast, etc.; FCY-2 converter, set & drive unit, BC-455, converted, \$15; DM35 dynamotor, \$5; power xfrmr 1900V CT, 350 MA, choke, capacitor and filament xfrmr, \$15; Harvey-Wells R9A with spkr, \$70. Jesse Bryant, 85 Central Ave., Poquonock Bridge, Conn.

SELL: Best offer — 75A4 Serial 3673; Drake 1A Serial 349, Tennabot Tri-Band beam, brand new, W9IQW.

SALE: NC-173 revr, speaker and manual, guaranteed gud condx, sleek iron grey finish, Bargain, \$125. R. A. Brown, 2551 Gentry Drive, Wehita, Kansas, K/LEB.

FOR Sale: Best offer, excellent NC98, push-pull 813s, RF amp., pair Johnson 100, 61D30, Johnson dual 50  $\mu$ fd 9000 volts, power supply 2200 volts DC 1/2 amp., 1/2 amp. splatter choke, K51PK, 2224 47th, Los Alamos, New Mexico.

MUST Sell: TX-1 Apache xmitr, Heath factory-tested, 20 hrs. operation. Best offer over \$250. W2PGC, Sam, 40 E. Main St., Marcellus, N. Y.

REST Offer: Elmac 304TL, 4-65A, pair 3C24s, Thordarson, 2000V transformer; Weston Triplet milliammeters; General Radio powerstat; BC459A VFO; 600V power supply; B&W low pass filter; relays; etc. Arthur Lukach, W2DDP, 35 East 84th St., New York 28, N. Y.

NC-300 \$269. SP-600 540 KC-54 MC, 395. BC-794-B 1.25-400 MC \$169. NC-183-D \$249. Collins 51J3 500KC-30.5 MC \$575. T8-173 \$75. BC-312 \$29. N1-98 \$89. R-9 \$75. PRO-310 540KC-30MC \$295. 75A-3 \$325. Rochme Keyer \$95. Wheatstone Perforator \$175. \$X-100 \$195. Teletype printers, converters, Repetitors. All types transmitters, receivers, test equipment taken in trade for NEW Johnson, Hallcrafters, Hammarlund, National, Fisher HIFI, Bell Recorders, Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Richmond 2-0048.

ARMY TG-34 code machine, tapes, \$25; BC-1268 Panadaptor, \$38; Collins ART-15 transmitter, \$60; SCR-522 two meter transceiver, A. B. Power supply, ideal for ham or C.A.P. \$29. ARC-5 receivers 6-9-1, \$3; ARC-5 transmitters, 3-4, 4-5, 5-3, 5-7, \$6.50 each; receiver tuning knobs, \$1.00, MD-7 modulator, \$5.50 tubes, brand new, boxed 4D32, \$22.50, 4-400A, \$10; 4X250B, \$3.50; 4X150A, \$10; 5830/80 7W, \$1.00; 5894, \$10; 810, \$9.00; 813, \$3.50; 815, \$3.50; 829B, \$1.50; 829C, \$1.75. RK-22, \$1.50. Write for other tubes. C.O.S.D. Bill, Box 17, Ellettsville, Ind.

CRYSTALS, Almahled: New crystals Novice, Net, converter, MA8S, etc. FT-243 custom finished to .01% any frequency 1700 to 8700 — 99¢. Hermetic \$1.95. FT-243, other frequencies 1700 to 21,500 \$1.95. Hermetics \$2.50. Airmailing 9¢ per crystal. "SRP Package" June 1958 QST — Fundamental mixer crystal sets, FT-243 \$8.95, Hermetic \$11.95. Matched filter sets, 7 crystals \$6.90. C.O.S.D. these 7 crystals for sale. Write for list. Crystals since 1933. C-W Crystals, Box 206552, El Monte, Calif.

HEATHKIT AR-3 receiver, excellent condition. Guaranteed. Best offer. Jon Bartow, K4OCZ, 2504 Edgewood, Anderson, S.C.

SURPLUS (cleaning house) have a few dual 100  $\mu$ fd variables, 200  $\mu$ fd postpaid (same as #P-100). Also have tripler, ranging \$5 to \$65.2, 60C variables, \$2.75 postpaid (1000V AC rated). Xfrmr's: 117V AC 60C YC Imp. Output: 740V CT at 200 mls, 5V at 3 amps. Weight: 12 lbs. \$4.25 postpaid. Schauwecker, 505-45th St., Vienna, W. Va.

WILL sell SX-99, #125; SX-100, #240; HT-20, #260; Communicator II 2M-6V, #160; TR-75-TV, #30; Heathkits #70, #19.50; VOX, #32.95; Kite assembled, tested, Wehcor Royal Coronet, #27. Hi-Fi tape recorder, cost \$239.95 now \$185. All equipment is in exc. condx. Interested in used KWM-1. Address all correspondence to K2JXU, 88 Huntington Rd., Huntington, N. Y.

FOR Sale: Parts for modern KW Amplifier with pair of 4/125As, \$60; W2EWL, 88B, \$40; Cardwell dual 50-7V KV, \$6.00, dual 100 KV \$5.00 dual 50 KV \$5.00 (2) each; Triplet 3-in. square 50 MA., \$4.00. A-1 TVI suppressed all-band KW amp. with 4/400A and all power supplies in 28" rack. Write for pix and diagrams. RB, NC173 and matching speaker, #135; 10-15-20 Preselector with supply built-in, \$20. W4NWV, Jennings, 112 Beverly Place, Greensboro, N. C. 124 HOUR Dial for late model Hammarlund receiver clocks, 50¢. Ben Walker, K0AEU, 10621 East 87th St., Kansas City 33, Mo.

NAMEPLATES! Your call letters. Photoc engraved, raised letters with black background, 2" x 11/16" x .025" brass plates, for rigs, test equipment, tool boxes, doorbells, etc. Three of same plate, \$1.50. Postpaid. Taxpaid. Evert Laboratories, 235 E. Jackson, Lansing 6, Mich.

NC-98 for sale, \$75 takes it. K2LZF, Box 291, R.D. #1, Greenfield Center, N. Y.

FOR Sale: 700 watt phone, 850 watts c.w., all-band transmitter. Pair 4-125As final. National 300-watt modulator with CHT Multi-Matched transformers, 2200 volt, 500 mill, 1250 volt, 500 mill power supplies including control circuits, screen and bias supplies. Mounted in 6 ft. cabinet. Commercial appearance and construction. Does not include exciter or speech amplifier. Price, \$175. No shipping, sorry. W3GUF, 308 Woodridge Lane, Media, Penna. Tel. Lowell 6-7164.

WILL Swap a limited number of 416Bs, used but in gud condx, for what have you. Ray, K5BSR, 1214 North Mars, Amarillo, Texas.

FOR Sale or swap: 4/25 amplifier with H.V. pwr. supp. and modulator. Rack mounted, fully metered; also other parts. Need good quality revr. HRO, Collins class. J. Bruscella, W2LEC, 14 Glorney St., Shrewsbury, N. J.

WANTED: Complete printed circuit or second use coil for Harvey Wells R9A. K6BNP, 5631 Eucalyptus Drive, Bakersfield, Calif.

SELL: 75A3 (one of the last manufactured) with calibration and 800 cycle filter, \$375; DX100 perfect, \$150; Hallcrafters #20R, \$40; Meissner Signal Shifter Mod. EX, \$20; Alliance Generator, \$10; Telrex rotor, R100S, \$75; AR22 (new gears), \$10; filter choke 30 henry, 1 amp. Sry, can't ship, \$20. Want: Vy late 75A4. W0WAM.

TRADE: Kodak Medalist, filter, sunshade, Everready case. Light meter and case, large camera, base & 250 binoculars with case. All 3 like-new condx. Want: RME 4350A revr or Mod. 126 converter or HC-10. W1DKR, Grella, RD #3, Providence 17, R. I.

REGENCY AT-C converter. First check for \$55.00 postpaid. W9UJC, Bill Gibson, 5253 N. Long, Chicago, Ill.

SELL: HRO-50T, calibrator, NBFM adaptor; Meissner 150-B; DX-40; VF-1; DSB-100 in factory carton. For details drop a card to K1GK/P or K1H8K.

WANTED: Free ham equipment for high school radio club. Richard Smith, K2TBS, 1002 Eton Way, Neptune, N. J. Tel. PR 4-5081.

SEND Your favorite photo to a brother ham as a photostamp pasted on your letterhead. Send photo and \$2.00 for 100 3/4 x 1 1/4 or 50 1 x 1 1/4 stamps. Photo returned. Clyde Kellogg, Dutch Flat, Calif.

**HALLICRAFTERS** 8-85 receiver for sale. Absolutely new condition. Used only two hours. With plastic cover and Heath Q-Multiplier. Only \$85. Winchester Model 308 rifle; Winchester factory oil, \$85 value each. Will consider trade for good transmitter. Edward Blwin, 107 Hamilton St., Dorchester, Mass. Tel. CE 8-5009.

**SELL:** HQ100 with clock timer; like new. \$160. Mason Karon Edwards, 112 Cannon St., Greer, South Carolina.

**GLOBE KING** 600B, in exc. cond. Modulator section hardly used. First check for \$400 gets it! Goling SSB, Charles Arbetman, W9RVN, 931 N. Marion, Oak Park, Ill.

**FOR Sale:** Hallcrafters HT32, BC221A freq. meter, Heath Q multiplier, Millen RFR, VHF 152A, Mellessor Signal Shifter, other items. Send postcard for list and prices. George A. Diehl, W2IHA, Wilson Ave., Chatham, N. J.

**WANTED:** Lysoe Mod. 50 ant. coupler. Must be in A-1 condx with no modifications. Also Model 50 antennacoupler. Must be reasonable. K1INM, 1633 Williston Rd., South Burlington, Vt.

**CANADIANS!** Harvey-Wells Bandmaster TBS-50C w/A. C. pwr. supp and VFO, \$150; 12V mobile power supply 50 DV at 250 mls, \$15; 6V G-E pwr supp, 450V at 250 mls, \$15; Eddystone 750 revr, \$250 or your best offer. F. W. Lovsin, VE2AVN, 1171 Sullivan Rd., Val D'Or, Quebec P., Canada.

**TRADE:** Johnson Viking Mobile, Gonset Super Six, Electro-Voice 210KK carbon mike, Gonset Noise Clipper, 60-watt dynamotor power supply for SSB exciter or gud revr. Above plus cash on top quality revr. W5VDG, 116 North Ave. L. Crowley, La.

**6 METER** Ampex. See description in July QST. New, never used. Make me an offer. George Sperry, W4UKA, 108 Oak Hill, Portsmouth, Va.

**SELL** SX99 with xtal calibrator and DB23 Prescaler. All in perfect condx. for \$165. F. O. B. Forest Hills, L. I., N. Y. K2YGN, Leonard Friedman, 108-43 63 Road.

**HAMMARLUND** HQ-150, Hammarlund speaker, Brush headphones. Used only a few hours. Original case. I am not a ham operator but bought this wonderful set just to listen to the Sputniks. Satisfaction guaranteed. Price \$210. Dr. Norman P. Sholar, Box 180, Mooresville, N. C.

**HEATH** DX40 transmitter for sale. 1959 model, professional wiring, \$60. H. J. Stinger, K3GUN, Mendalland, Penna.

**WANTED:** VLF receiver, 15 to 600 Kcs. RBA, RBL, BC-969, R212/SR, R215/SR. P. H. Lee, 6606 Hillandale, Chevy Chase, Md.

**WANTED:** Gonset Super Six converter. State price and condition. For sale: Heath AT-1 transmitter. Best offer! W2IHA, 77 Wetherbee Rd., Waltham 54, Mass.

**SACRIFICED:** NC-109, \$179.95; NC-66 with RDP-66 loop, \$148.50; both brand new, factory sealed cartons. Full factory guarantee. E. O. B. NYC, Don Miller, W2MQB, Springs RFD, East Hampton, N. Y.

**FOR Sale:** Super excellent Heath DX-100, Heath SWR bridge, 1 KW Johnson low-pass filter, 100 ft. Amphenol RG-59U, Serry, will not ship. K2YBI, Joel Narod, 80 Clarkson Ave., Brooklyn 26, N. Y. BU 7-3919.

**MUST** Sell new Elenco Commander linear amplifier. Never was on the air. Complete with tube and chimney. Will ship collect in U.S.A. \$300 cash. No less. C. G. Clarke, K5HRJ, Box 835, Knox City, Texas.

**FOR Sale:** 20A, QTI, VFO, MM2, 100 watt linear, d-104 mike with stand, coax relay, Johnson Matchbox, complete set of spare tubes, 30 meter Cusherat ground plane and spare VFO, \$350. Also 80 and 30 meter mobile or fixed 100 watt EWL SSB xmitter, \$50. W2MHL, 147 Farview Ave., Paramus, N. J.

**CANADIANS!** Selling Collins 32V-75A3 including 35C low-pass filter, \$775; not selling separately. Package deal only! C. L. Skelding, VE2BAZ, 106 St. Louis, Lakeside Heights, Montreal 2, Canada.

**DRAKE** I-A Sideband receiver. Hardly used. Will deliver up to 100 miles. \$220 or your best offer. J. DuBovy, 205 Nelson Ave., Pecksill, N. Y.

**FOR Sale:** B&W TR switch, \$14.00; Jap mike, \$4.00. Both in like new condx. Prepaid in U.S.A. W6NZ.

**TRADE:** Hallcrafters SX62 for a good Communications receiver with adequate band spread coverage. J. G. Schenck, W3SIW, 223 Hillcock Lane, Pittsburgh 36, Penna.

**FOR Sale:** Collins 75A2 with calibrator, speaker and vernier knob, \$290; 32V1 with new D-104 microphone and TVI-suppressed, both in excellent condition. W1LOP, 71 Hilldale, W. Hld., Conn.

**FOR Sale:** Adventurer transmitter, \$35; NC-88 revr, \$75; Bug, \$6; 40 mtr ant. and coax, \$6.00. All guaranteed. Tommy Howell, 2228 Vaughan St., South Boston, Va.

**SELL-Trade:** Must dispose of 6 mobile fone transmitters, complete in beautiful A-1 condx. Two bandswitching xmitters for 160-75-40, 25 watts input, for 12 volt cars, dynamotor compactly built-in with xmitter, \$55 each; four miniature xmitters small enough to fit in glove compartment, two each for 75 and 40 meters, for 6 and 12 volt cars, \$25 each. Following included with each xmitter: mike, xtal, dynamotor, Vibrationack, 30 ft. of new coax cable and connectors. Stan, W8QKU, 2748 Meade St., Detroit 12, Mich.

**SELL:** Viking II, SX-96, good condition, W1YOD, Roger Strickland, Strickland St., Portland, Conn.

**COLLINS** 75A1 for sale. In excellent condition: \$250 or your best offer! K4OHR, 3900 Sunset Ave., Paducah, Ky.

**COLLINS** KWS-1, under 200 hours logged in 2 1/2 years. Mechanically and electrically perfect; none clearer. Unbeatable buy at \$1295, crating and shipping extra. Write or phone W2PIE, Robert N. Lewin, 28 Fenimore, Harrison, N. Y. Tel. Rye 7-3733.

**FOR Sale:** QSTS, 1920 to 1936. Gepapa, North Grosvenordale, Conn.

**SELLING** SX-71 revr. Used very little, fine condition. Best offer over \$100. Donald Uber, 132 Woodbridge St., South Hadley, Mass.

**C. E. 10-B** exciter with VFO, Lampkin 105-B frequency meter; Elco VTM, RCA WR67A sign. gen. BF90 CD and Heath CT-1 capac. test. W8PFG.

**FOR Sale:** HRO-80 like new condx. 80, 40, 20, 10, 15 coils, speaker: \$425. Dotherow, K4AOZ, Rte. 1, Box 256, Adger, Alabama.

**SELL:** LM freq. meter, \$15; BC-453 revr exc., \$10; new BC-459 xmitter, \$10; new ARC-5 xtr, 3-4 Mcs., \$3; ARC-5/R28 revr 100-156 Mcs. exc., \$15; New 7.5 amp. Superior Varie, type 116U, \$15; new UTR trans., 40, \$12; New UTR choke \$27, \$10; new UTR choke \$-88, \$10; 4 new G-E Pyranol capacitors, 2 std at 4000 volts, \$20; new Chicago pilot. trans. 2790/2350 volts at 2500 mls, \$20; used Stancor plate trans., P-8004, 1250/1500 at 350 mls, \$15; 2 BC-610 Tech. manuals, 1 new TU, 1 fixed vac. cond., \$10; K2CIP, L. W. Schubert, 44 Stanwix St., Brooklyn 6, N. Y.

**TRILREX** 4-element 15-meter beam, AR-22 rotor, Viking II and VFO, DX-35, miscellaneous gear. Make an offer. Dan Barr, 7582 East Greenlake Seattle, Washington. Tel. LA 4-0033.

**WANTED:** High quality military or commercial test equipment, receivers, transmitters, tubes, etc. Will pay cash or swap. Electroncraft, Box 399, Mt. Kisco, N. Y.

**WANT:** Pair of 2" diameter selsyn motors, also have used meters at \$3.00 each. George J. Pollock, W3KOW.

**TRADE:** Exacta VX11A with f2.8 automatic lens, case, 3 close-up lenses, for Communications receiver. Preferably NC-183D or possibly 8X-62A.

**NC-125** w/spkr, \$120; 75 w. c.w. xmitter (QST Jan. '57), clean, should be seen. \$50; International Crystal PCV-1 2-meter converter, \$8. Bob Syversen, KNZUTW, 1119 Bromley Ave., Teaneck, N. J.

**WESTERN** Electric network and impedance matching transformer, 12 terminals. Will match transmitter-receiver to line. Supplies anti-side tone. Cost government \$11.20. Your cost, new, 2 for \$1.00 postpaid. Ralph Villers, Box 1, Steubenville, Ohio.

**SELL:** G-E plate voltage xtrm, 2400 volts each side of center tap, 605 mls with 120 volts input. In steel case. Boxed for shipment, \$25; Thordarson plate voltage xtrm, 1555 volts each side c. t. w/ 110 volts inpt., 520 watts capacity. Has tapped input winding. Boxed for shipment, \$17; Thordarson filament transformer, 110/110/110/110/110 volts output 50 watts, \$2.00; Thordarson filament xtrm, 105/110/115 volts inpt., 10 volts out, 65 watts, \$3.00; G-E mercury arc rectifier tube, 30 amps, at 100 volts (antique tube), \$5.00. Earl H. Brockway, 524 E. Third St., Flint, Mich. Phone CE 2-3636.

**GLOBE** Chief, 90A, for sale, \$50; Heath VFO, \$20; SM-90 mod., \$10. All for \$75. K9QCU, 1928 ave. 7, Kearney, Nebr.

**TAPE** TONE 2 or 220 417A converter (XC-144 or TC-220) in factory sealed carton (was won in contest, Specify IF). Best offer over \$60. K2IUV, SP-9-6425, 19 Standish, Yonkers, N. Y.

**DX-100.** Built-in sequence keying and speech clipper. Dow T-R switch, Bud lossless filter. Heath reflector power meter. Vibropack bug and dynamic mike, \$200; SX-42 receiver, modified cascade front end, squeal, hang AVC, etc.; Heath Q-multiplier, \$75. Heath signal generator, \$10. All aluminum quad frame (10 and 15 m) \$25. Lovelock, K2ICF, 21 Oak Hill Rd., Chappaqua, N. Y.

**KWS-1** guaranteed, all modifications including automatic ALC, \$1365. Will install locally. W6QJV.

**FOR Sale:** SX-71 receiver, 10-15 meter converter, both in perfect condx, for \$125. K6GQF, Mike Geller, 4932 Marie Tobin Drive, El Paso, Texas.

**AMATEUR** Paradise vacation spot. Livingstone Lodge and log cabins, Masonia Lake, Euclid, N. H. For couples and family groups, 100 acres, eleven buildings, main lodge, line sand, swim beach, boats, sports, Dartmouth golf and tennis courts, churches, La Salette shrine nearby, fishing, 30th year. Amateur rig in lobby. Light house-keeping cabins. European plan. \$20 per week up. Children half price. Literature. Al Q. Livingstone, W2QPN, 12-01 Ellis Ave., Fair Lawn, N. J.

**FOR Sale:** Collins 310-B3, excellent, \$185; 10-B exciter and QT-1, excellent, \$125; MM-1 analyzer, new, \$35; Heath GDU and Antenna-scope, excellent, both for \$25; 458 VFO in c.c. case, \$35; B&W 380-B R switch, excellent, \$5; Kenyon transformer, 15V, \$20V, c. t. at 700 ma., new, \$45, power supply 2000V. dc. at 500 Ma., new, components, \$70, Vibrationack, 6V/250V DC at 90 Ma., new, \$10; Microphone D-104, new, \$10. Astatic grip-to-talk stand for D-104, excellent, \$5. Jas. W. Craig, Jr., 62 N. Huntington, Peru, Ind.

**SECOND** Class R/TP w/2 1/2 yrs towards BS in physics and no experience, wants beginning in electronics, radio and/or radar operation or maintenance, anywhere. Write: W1MVL, Central Street, North Reading, Mass.

**FOR Sale:** Collins 32V2 transmitter, A-1 shape. Best cash offer over \$325.00 takes. A-54 mobile transmitter, \$60.00; Hallcrafters 3-8RD, \$32.50; Kenyon T652-2080V @ 450 ma., \$25.00; Kenyon T521 60/500 ma. choke, \$10.00; T176 choke 50/400 ma., \$6.00; meters, tube and parts. Send for list. Unloading. Excess. W3BBV, P.O. Box 722, York, Pa. Ph. 26037.

**FOR Sale:** B&W 5100-B transmitter \$350; B&W 651 Matchmaster, \$30; Electro-Voice 664 microphone with 419 stand, \$40; Viking adventurer, \$30; Hammarlund HQ-140X receiver with crystal calibrator and speaker, \$195; Panadapter and scope TD-60/AFA-10 with power supply for 1.5 VA 80 cycle \$200. All in brand new condx and with instrux books. Robert B. Hupper, K2PLD, 47 Willits Rd., Glen Cove, N. Y.

**FOR Sale:** Simpson Model 303, \$25; Simpson Model 260, \$27; Elco Bar Generator Model 352, \$10; Elco Bar Generator Model 425, \$30; Elco Signal Generator, Model 315, \$30; RMC Model D122A, \$38.50; George Ulrich, K9D8S, 308 So. 15th, Mt. Vernon, Ill.

**SELL** Eldeo SSB Jr Exciter, ideal for portable or Field Day use on 75 'phone, \$49.80. Also have Johnson 250 watt Matchbox, \$35. K2PDN, Marcellus Drive, Westfield, N. J.

**20A** with QTI and Deluxe 458 VFO, 160 through 10 meters, all factory-wired. Guaranteed factory new condition. Gray hammertone or gray crackle rackpanel or deduct \$7.50 and purchase your choice from factory. Complete, \$235.00. Shipped in original factory box with manual. Advance coax relay, 115V AC coil, \$6.50; Advance Relay twin-lead ant. relay 115V AC coil, \$6.75; Hy-Gain 5BDC all-bands doublet traps, \$6.75 with manual; three DM35 dynamotors, input 12 V DC, outp. 625 VDC at 225 Ma., \$7.50 each or three for \$20. Check or money order accepted. No C.o.d. Clyde Herrington, K4BMC, 4401 Charleswood, Memphis, Tenn.

FOR Sale — Sacrifice! Johnson Viking II and Heath VFO. \$130; HQ-140X, \$170; Bud low-pass filter, \$10; CDR rotor with 100 ft. cable, \$20; 15 meter beam, \$20; speaker and cabinet, \$10; total \$360.00. Will sell separately or the first \$325 takes all. Jeffery Lehman, K2GQL, 25 Salem Road, Roslyn Heights, L. I., N. Y. Tel. Mayfair 1-2303.

IBM Electric mill (see p. 452 Montgomery Ward catalog), \$100 or all-hand revr. Also FB85 100 watts 6 meters, \$45; Alora 12V \$19; AVT-112 xmtr and pwr supply, \$20; 3-watt 40 meter xmtr 60 cps, \$15; Juke box amp, \$15; Q5er, \$8; Leece-Neville 6V gen., \$25; puise gen, 60 cps, \$15; 30471, 4-125, 1.5 KVA xmtr. Deliver 500 or more in North Ill. Wilson, W9RNL, 3113 S. Main, Rockford, Ill.

WANTED: Clean Johnson Matchbox and Signal Sentry. WIDY, Box 297, South Yarmouth, Mass.

SELL: NC-88 & QF-1, \$90. F.o.b. Porzah, K9CMT, 2342 Thor, Racine, Wis.

WANTED: HQ110, in gud condx. with spkr, manual, K. E. Mitchell, Box 95, Lafayette, W. Va.

SACRIFICE! NC-88 revr. Better than better condx. \$75. W1FGF, 7/8 ARRLL, W. Hfd. 7, Conn.

WYOMING Hamfest July 25-26. Ham vacation in beautiful Big Horn Mountains. Information, W7QPP.

DELUXE Call Letters; engraved polished black phenolic laminate. 2 1/2" white letters on 3 1/2" x 14" x 1/8" beveled blank. \$1.75 P.P. J. Midge, W8LWV, 3701 Germaine, Cleveland 9, Ohio.

ANY Guns wanted! Will trade ARC-58, radio control airplanes, drafting instrument, slide rule, stanon clock, A8-22, 12V CTR, 200 mill pwr supply, 100' RG/8U, BC-375 parts and tubers, antenna tubers, hundreds of tubes and parts. Send for list, Oscar Bailey, Box 374, Milford, Delaware.

DX-100, \$175; HQ-100, \$125, both guaranteed excellent. New AR-22, \$20. Oscar Bailey, Box 374, Milford, Delaware.

HAMMARLUND HQ-150 and speaker, duomatic keyer AKS-7, Hy-Gain A4 vertical and two other antennas, 52-75 ohm low-pass, Moore SWR Bridge and meter, B&W balun unit, xtals, relays, BC455 AC monitor, Morse sounder in resonator. Send for list, W9QBO, 823 Nevada, San Jose 25, Calif.

SELL: Elmac mobile station, 12 volt AB77, PAR6A, PSR-12A power supply, relays, push-to-talk, \$175; Hallcrafters SX-29, rack mounted, \$49.00; National NC-300, alt callibrator, six and two meter converters, \$290. New BC620M FM transceiver, \$6.00. Dr. Alan York, 35 Main St., East Hampton, L. I., N. Y. EA 4-1024.

NEW Custom xmtr, 120/240/1000 to 2500 in 250 volt steps DC at 1 amp. Make offer. Trades considered. W8DMC, 7541 Winding Way, Brecksville, Ohio.

SELL: Gonset G-66 with 12-120 V power supply \$175; PE-103 less base, \$12.50; Viking II, \$185; WRL VPO, \$35; R-388 Collins 51J2, best offer over \$550 by the 15th; EC-610E finished, \$200; BC-610G finished and shielded new tubes, \$80-40-20. All accept trade but prefer pick-up. Motorola FM 30-40 Mc ree, trans, \$25. All F.o.b. Lexington, Ky. W4NQC, 540 Dover Rd., Lexington, Kentucky.

150 Watt all band lone c.w. transmitter, \$40; sonar 6 and 10 meter mobile transmitter, \$15; 6 volt power supply, fitted, 600 watt at 180 mills, \$15; Bud gimix, \$5; antenna coupler, \$5; Command transmitters, \$5 each; Tenna rotorand control, \$5; 10 watt P. A. amplifier, \$7. You pay postage. Gilkeson, W0ERQ, 1210 West 31st St., Topeka, Kansas.

SELL: DX 100B, \$185; HT-32, \$550; new 4CX100A and Elmac SX600 socket, \$150; parts for compact AB75 KW 4C1000A, Nov. 1957 QST, 12V 582 and 850 coils, \$25 each; 20-675 10 kv. variable vacuum condenser, \$25; Cardwell 1500  $\mu$ fd variable, \$10; GG kv amplifier (April 1957 QST) with 4-250A5, \$100; Elmac 4-250A, \$20; 1500V, 500 Ma. pwr supply, \$35; 2500V, 1 amp. power supply in new Bud 31 1/4" cabinet, \$100; many 3" meters, \$5.00 ea. New 872 tubes, \$2.00 ea. many ill. transformers and condensers. Joe Shank, Jr., W8KBT, Box 148, Huntington, W. Va.

SSB: Central Electronics Model "R" Sideband slicer and Model "AP-1" 156 Kc. I.F., \$50. C. L. Ray, 1019 Sussex, New Haven, Ind.

SSB Lattice FT-241A crystals, 10 $\mu$  each. Guaranteed available channels 0 to 39 — 53 to 69 —. Minimum order, \$5.00. Postpaid, U.S.A. Quaker Electronics, 1040 West Main St., Plymouth, Penna.

67 ft. commercial heavy galvanized hinge base tower, 10 ft. sections, suitable for heaviest beams, accommodate prop-pitch motor. Complete with galvanized guys and insulators. F.o.b. my QTH. Will ship anywhere. Highest offer buys. W3ITW, 39 High St., Pottstown, Penna.

COMMAND Set: 2 meter 10 tube Superhet. Surplus receiver for sale; used condx, but never used by me; complete with all tubes; \$13.95. Will ship if you will pay the postage. J. Reifer, WA2BQB, 162 Woodcrest Blvd., Kenmore 23, N. Y.

WANTED: Collins 75A1, in any condx. Paul Elliott, W5GCV, Rte. 2, Bishop, Texas.

FOR Sale: HQ-110C/spkr, mint condx, \$225; Viking wanger, Gud shape, \$210. F.o.b. your QTH. Mike Deal, KN7GCK, 8405 So. 118th St., Seattle, Wash.

SELL: BC610E, complete for \$125.00 with coils and speech amplifier and spare set of tubes, converted for 10 meters, or will trade for gud revr or what have you. Make offer. E. R. Arms, W9PBL, Harrisburg, Ill. Rt 1.

BEST Offer! Parts from Revr shown in "How to Become a Radio Amateur". Transformer, tubes, chokes, etc. Cost \$50 originally. Kathy Blume, Sauk Trail, Matteson, Ill.

DX-10 and VF-1, in excellent physical and electrical condx. only \$80. K0DKP, Roa, 1230 S. Gever, Kirkwood 22, Mo.

CANNON 35 MM camera, with 11.9 lens for NoVice gear or what have you? M. Grossman, 443-B Orange Grove Circle, Calif.

DX-20, \$30. Made General. Allen Marks, 732 East 250th St., Euclid 32, Ohio.

SALE! Moving to new QTH, 10M beam with rotator, 20M beam with stub tower, "A" mast, 30 ft. and 50 ft. towers. Fred Kloepper, W0FON, Lawrence, Kans.

RANGER Transmitter with crystal mike and SX-99 receiver, all in A-1 condx, for 250 dollars. W21YR.

SELL: Heath SB-10, SSB adapter, \$85. Postpaid anywhere in U. S. KG5AG, Clyde Robbins, Box 41, Navy #115, FPO, New York, N. Y.

FOR Sale; Morrow MBR-5 receiver, MB-560 xmtr, RVP-250 pwr supply. For \$300. Will ship express collect. Contact K9EHJ, 126 S. Chase Ave., Lombard, Ill.

FOR Sale: Central Electronics 20-A with or without amplifier. Preston Barrett, 600 Sias, Sweetwater, Texas.

CANADIANS. KWS-1 complete commercial grade power supply, \$1250. VE2JSS, Millar, 78 Daniale Ave., Dorval, Quebec, Can.

JOHNSON KW with desk, in exc. condx, \$1095. Lewis West, W9AIO, Wichita, Kansas.

LATE 1958 Viking Ranger. On air less than 25 hours. Going straight c.w. or possibly SSB. Direct your offer to P. O. Box 346, Beatrice, Nebraska.

WANTED: McMurdo Silver 703 bandpass & B&W 504 frequency multiplier or similar. W0BBA, Bird Island, Minn.

SELL: Gonset Commander II xmtr, 6V dual vibr. supply, 110V supply, coils 160M thru 6M, in exc. condx, \$120 f.o.b. K8LAR, 306 West St., Three Rivers, Mich.

FOR Sale: DX-40, \$55; Super Six, \$30; 10M Hellwhip with base mount, \$10; Bud code oscillator, \$8. W8OPF, 304-5 N. Roosevelt Ave., Columbus 9, Ohio.

WANT: six meter mobile transmitter. Best offer takes 5' on litoscope and Eico signal tracer. Will consider six meter gear in trade. Bernie Nickles, 316 Hampton Ct., Lexington, Ky. K4BPY.

VIKING Ranger, 2 years old, barely used; first body to show \$160 cash takes it. Am tired of waiting for friends. Merton Cron, 130 Hicks St., Brooklyn, N. Y.

SELL: Heathkit Mohawk KC-1 receiver w/speaker and 100 Kc callibrator, perfect condx, \$250. K6LXY, 44626 N. Rodin Ave., Lancaster, Calif.

FOR Sale: Gonset Super Six, \$35 postpaid. Arnold Nemmers, Dell Rapids, South Dakota.

SELL: Globe Champion, factory-wired, \$350 and SX-100, \$200 or best offer. WIDBA, Route 3, Box 23, North Scituate, R. I.

FOR Sale or Trade: 800W c.w. 400W A.m. 1250 W PEP, GG final with built-in pwr supply using four 837s and four 866A tubes — \$90; New Heath Mod. transformer, \$4; new WXL power attun., \$150; 500 tubes, \$37 tube set, Will sell or swap for gud used revr or low antenna tuner, K4MUR, Doyle Owens, Box 175, Eyre, Ala.

FOR Sale: Gonset Communicator 11B, two meters, six volts, with Gonset VFO, \$190; A-1 with AC-1, \$25; VF-1, \$17; Gonset Longjohn beam, \$18. Wayne Stahnke, K6BEA, Box 243, Cloverdale, Calif.

RECONDITIONED Equipment: New Guarantee! Mobile the inexpensive WRL way! Super-8 \$39.50 G-66 \$149.00 Communicators \$125.00 up; T85 50's (specially low or high impedance microphone) \$67.50; Viking mobile \$79.50; MBR-5 \$159.00; MB560 \$159.00, 354E \$85.00, A877 \$139.00, PMR6A \$79.00; PMR7 \$119.00, ATC-1 \$59.50, MC-55 \$38.50, SRT-120 \$99.00; power supplies \$5.00 up. Tons of fixed station equipment! DX35 \$52.50; VF-1 \$19.95; Q multiplier \$8.95; Pacemaker \$385.00, 6N2 \$129.50; Scout 65A \$89.00; Scout 60K \$84.50; Chief 90 \$44.50; Champion 300A \$399.00; King 500 \$425.00; 755VFO \$44.50; King 500B \$599.00; plus hundreds of receivers. Terms, trials, trades. LEO-W0GFC, WRL, Box 811, Council Bluffs, Iowa.

BARGAINS: Reconditioned and fully guaranteed, HQ-100 \$139.00, HQ-129X \$158.95; HT-33 new Demo, \$550.00; Heath Q Multiplier \$8.49; NC-300 \$279.00; KWM-1 75A1 75A2 NC-183D \$289.00; Globe Chief 90 \$44.00; Super Pro \$94.50; Globe Scout 680 \$89.95; HT-18 \$39.95; RME-84 \$59.95; Lyco 600 \$59.50; Knight 50 Watt \$29.50; National SW-54 \$34.95; AF 67 \$139.00; PMR 6A \$79.95; Harvey Wells T-90 \$128.95; Globe King 275 \$179.00; Central Electronics \$189.00; A877 side Band slicers \$59.00; Heath AT-1 \$22.95; Hallcrafters S-53 \$49.00; KWS-1 Morrow MBR-5 \$159.00; MB560 \$159.50; DX-20 \$29.95; NC-173 \$129.95; NC-125 \$139.50; NC-88 \$89.95; 32V3 \$450.00, 32V2 \$349.00; Globe King 500A \$425.00; HQ-140XA \$189.95; NC-109 \$179.95. We trade new and used. Write Ken-Ris Radio Supply, 428 Central Ave., Fort Dodge, Iowa, or 128-31 Street, Cedar Rapids, Iowa.

HEARING Aid, "Radioear" transistor, eyeglass model, 800 stereo, perfect used six months. Trade for xmting gear. What have you? W9KZD, Ashland, Ill.

SELL: Viking II, factory-wired. Equipped with push-to-talk, \$200. F.o.b. WIMJ, 58 Felch Rd., Natick, Mass.

WANTED to buy: 4-5 or 6 element 20 meter Telrex beam. Tony Craig, 1653 Taylor Ave., Racine, Wis.

COLORADO Ham Directory. Over 2000 amateurs cross indexed by call, name, QTH with phone numbers, 84 pages, \$1.00 postpaid. Denver Radio Club, Box 356, Denver 1, Colo.

KITS Wired — Repaired. Quality work, low cost. Smith, W4NBV, 4305 Landon Drive, Knoxville, Tenn.

WANTED: RME DB20 Preselctor, Clint Molltor, W7ITK, Box 551, Edmonds, Wash.

HQ-100 w/c and speaker, \$135; Knight 50 watt xmtrtr, \$30. Both are in exc. condx. James Stmons, Jr., 908 N. Royal Ave., Florence, Alabama.

CAPACITORS: 120  $\mu$ d, 3000V oil-filled, used OK, \$35. W8LTF, 831 Antoine St., Wyandotte, Mich.

FIRE Extinguishers, 20 year guarantee, \$5.00 each. Erwood, K9AAU, 2823 Lyndale, Chicago 47, Ill.

GLOBE-KING 500B R.F. section 4-400 final, \$350.00. VE5VL, Sub #1, Saskatoon, Sask, P., Canada.

SELL: Hallcrafters S-88, gud condx, \$20; New RK-4D32, \$20; Have 2 each of the following: 829-B, \$6; 895, \$4; 6146, \$4; 9003, \$1.50; 5070, \$1.75; 2E26, \$2.00; used, 4-125A, \$5. Earl Stodden, K3ICM, 5495 Liberty Road, Bethel Park, Penna.

"PIG-IN-A-POKE" Not if you visit Ham Headquarters, USA and see and choose from the hundreds of "Like-New" bargains in the world-famous Harrison "Trade-In" Center. More for your money, because tremendous turnover makes lower overhead! Terms, trades. Send postcard for mouth-watering photograph and price list Q-6. For the best in all new and used equipment, it pays to come to "Ham Headquarters, USA" at BCNU, 73, Bil Harrison, W2AVA, 225 Greenwich St., New York City, N. Y.

COLLINS KWM-1 brand new! Used less than 10 hours with AC pwr. supply and matching speaker, \$750.00. Dan Keefe, W2MFS, 37 Highridge Rd., Hartsdale, N. Y. Tel. 8CARDS 3-5149.

FOR Sale: Perfect HQ-150 revr with speaker. Guaranteed, \$200. Gary Tighe, 2909 W. Oak St., Slouss Falls, S. D.

DX-20, year old, in excellent condition, \$33.00 postpaid; Gotham V-80 antenna, \$11.00. Money-order or bank check, Robert Fowles, KIDMO, 154 Field Ave., Auburn, Me.

W4NHV Selling out; Ranger, \$175; Deluxe P.P. 701-A ph/w/ssh, KW final, \$150; 2 Kw plus pwr supplies, \$75 and \$95; Prop-rotor rotator w/xfrm, relay, selsyn, converted, complete, \$35; 3-el. Telrex 20M, \$100; KW 810 modulator, \$95; 40 ft. Winchener tower, \$79.7 ft. enclosed rack, \$50. Many more items. CDR R. T. 2-2, Globe Scout \$60; tubes, chokes, meters, mlkes, oil condensers, xfrms, etc. Stamp appreciated for list, 4305 Landon Drive, Knoxville, Tenn.

SELL: Viking Adventurer with Simpson plate and screen meter. Also Heath VFO — both for \$65. W1JKS, 25 Jackson Ave., West Hartford 10, Conn.

HI-FI, Knight kit FM tuner, \$30; Preamp, \$30; Wehoor 4-speed changer w/base, G-E cartridge, diamond needle, \$55. F.o.b. 218 Rodman Road, Norfolk 3, Va.

SELL: Millen 500w amp, new 811s, \$55; Sonar Amp 50 807 amplifier, \$35; Sonar VFX80 VFO exciter, N13M, \$45; Hallcrafters HT-9, xmttr w/ gud, \$115; Hallcrafters S-76 revr, \$120; complete moude 12v rig, Elmec A-54 Gonset converter and Superceiver PL-103 dynamotor, all \$150. Noble F. Doyle W28CL, 2510 Third Ave., East Meadow, N. Y.

VIKING I transmitter with 829-B in final 120W, input, being used on 10 or 15 meters, \$130. Will deliver within 25 miles of NYC. 3-el. 10M Hy-Lite beam, less the boom, \$10. Jules Ppyrt, W2ODH, 192 Norman Way, Paramus, N. J.

SELL: RME-4350, 30 ft. tower, CDR rotator, 15m, beam, all in gud condx, best offer. K4JRA, 305 Woods Dr., Columbia, Tenn.

GLOBE chief 90, factory-wired. In exc. condx. \$85 or best offer. F.o.b. Worcester, Louis Kuchinsky, 25 Puritan Ave., Worcester 4, Mass.

SELL: NC-98 in orig. carton. Instrux book and schematic: \$110. D. Lathrop, 80 Town St., Norwich, Conn.

SSB 20A exciter, Central Electronics VFO, plus large amplifier, 4 each 6146 in parallel about 500 watts, neat construction with built-in scope, \$400 package deal. DX 100 superbly constructed by exacting radio engineer. Mechanically and electrically perfect. Well worth \$185. HQ-170 revr w/clock. New condx. In exc. condx: \$310. Revr BC-348 AC. Nice condx. \$50. Sry, cannot ship any equipment. George Mahland, W2JMH, 23 Locust Ave., Eastontown, N. J. Tel. LI 2-2166.

SELL: S-38D, clean, gud condx, \$33. Brant, Box 1016, Hayden, Ariz.

SACRIFICIE Saie! Must sell; 20 meter Gonset bantam beam w/ 10 meter element and CDR rotator. Mod. AR-22. Used only 1 month. The first \$79 takes it. F.o.b. QTH. Del Krause, K0MYI, Bentley, N. Dak.

SELL or swap for SSB. Write for list. Selling hi-power AM gear. Kilowatt modulation, tubes, condensers, cabinets, etc. Harry Cook, W5HTQ, Dell, Arkansas.

SELL: Tape recorder, \$75, ICA code osciator, \$10. K3DPE, 147 Quarry St., Mt. Pleasant, Penna.

PENETROX eliminates power-wasting corrosion from aluminum beams. Only \$1.50 postpaid. Culbertson, W6TFY, 2515 Novato, Palos Verdes Estates, Calif.

COLLINS 8 line 7581-3281 with matching power supply, used very little, in original cartons. Make offer. Hobe Withers, 119 Clark Orchard St., Somerset, Ky.

FOR Sale! Viking II with 122 VFO and coax relay, \$180, HQ-140A with matching speaker, \$150, Central Electronics 10A SSB exciter with deluxe 458 VFO and Q1-1, \$100. Priced f.o.b. John Moore, W5UUM, 4706 Chedder Drive, San Antonio 1, Texas.

OFFER \$50 for original complete May 1916 QST or swap January 1916 for May 1916 or sell January 1916 for \$50. Wayne Nelson, W4AA, Box 72, Concord, N. C.

FOR Sale: NC-300 with sprk and calibrator, new condx. Not a scratch. Only 5 months old: \$295. J. E. Bright, W2BOW, 131 Nugent St., New Hyde Park, L. I., N. Y. Tel. PL 2-0088.

CAN Offer in Trade for 12 volt mobile rig: Kodak Retina, 3.5 lens, leather case, value \$20, Volkender Reflex 3.5 lens, 4 filters, built-in w/flash, leather case, value \$50, G-E, brand-new light meter, value \$15. Prefer local deal. Call NY 3-7773, Seymour Kaftan, 65 E. 52nd St., Brooklyn, N. Y.

ALUMINUM for every Ham need. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet and complete beam kits.

HAMMARLUND PRO-310, factory reconditioned. Make an offer! Will consider as part payment on good 32V3. Douglas Stowe, W6QWJ, 2553 Nipomo, Long Beach 15, Calif.

SELL: Like new, factory-wired, Globe Linear 1A-1, 420W, P.E.P., \$95; PE-103, \$15. Harry Taubin, W2GCW, 731 Gerard Ave., Bronx 51, N. Y.

BARGAINS! No reasonable offer refused. National NC-173 revr, Heath AT-1 transmitter, Heath AC-1 antenna coupler, Heath ARV revr, Mosley 1040 Line Beam, 20 ft. tower, all in A-1 condition. You make an offer and see if we don't take you up on it. Russel Weissman, 14 Solar Lane, Clearington, N. Y., Tel. MAJfair 1-1809. Rus Weissman, W2BRN.

GOING DSB. Must sell DX-100. Eleven months old, operates and looks like new. Used very little, \$160. W6WEB, Box 594, Sonora, Calif.

SELL: DX-35, push-to-talk relay, wired in. Complete set of spare tubes. WRL 755 VFO. Best offer over \$65. Ray Edwards, 51 Beverly Rd., Wethersfield, Conn.

HQ-140XA, speaker, like new condx, \$200; 20-A, deluxe VFO, Q1-1, extra tubes, \$225. W9WAMK, Route 4, Box 321A, Greeley, Colorado.

IF YOU have a background in electronics, but are having trouble passing commercial FCC phone exams, my 12 years' experience as chief instructor of electronics school can help you over the hump. Not a course. Write me personally for free information. Wallace Cook, 1614F Morson Rd., Jackson 9, Miss.

BARBER & Williamson 5100-B, excellent, \$325; BC-348N, speaker, yd, gud, \$50. WIPNM, Glen Cove, Maine.

FOR Sale: NC-300 and calibrator, \$300. Ranger, \$165. K5AHEK, Box 516, Monahans, Texas.

GONSET Communicator II Deluxe 2-meter used 3 hours; Truetone antenna, \$160; Gonset 10M converter, \$12; Weston 931 0-200 Microamp meter, \$20; Variac \$11; ARC-4 100-156 Mc transmitter/receiver with 12 volt dynamotor, \$19; new 301 Weston meters, \$6.50 each, Small blower 115V 60 cycles, \$12; 6 or 12 volt vibrator supply, \$7; condensers, tubes, transformers, cleaning house, W2WZT, Williams, Chilton Road, Hewitt, N. J.

LOCAL Sale: Homebrew revr 10-tube superhit with Heath Q multiplier and speaker, \$38; 2" oscilloscope and modulation monitor, \$13, new telephone set, \$8; meter 3' 0-5 Ma. \$2. Will not ship. John R. Yurik, K2EMF, 510 Conklin Place, Linden, N. J.

JOHNSON Rotator and indicator, \$179; Millen grid dip oscillator, \$44; Jones MicroMatch, \$27; HRO-60 E, F coils, \$17 each; Viking II, \$179; \$40, \$59; \$71, \$139; N7-125, \$119; NC185D, \$279; HRO-50P, \$199; HRO-60, \$379; RME-435A, \$187; 75A4, \$547. Completely reconditioned and guaranteed. F.o.b. Chicago 35, Tregger, W9IVJ, 2023 N. Harlem Ave. We pay cash for receivers and transmitters. See you at the Starved Rock Hamfest.

COMPLETE Station in perfect condition, HQ-129X receiver, \$150; Globe Scout A, \$60; F.o.b. Elgin, Illinois. Remit by money order or by certified check. Rev. Everett Battin, W9OWD, 616 Glenwood Ave., Elgin, Ill.

COLLECTOR'S Item: Radiola III, R-1, 220-550 mtrs., make an offer. Also Elmec A-54, all band, good, \$95; SCR-522 xmttr, most tubes, \$48; BC-676 condx, TV-1 suppressed, exc., \$20; new August 1949 CQ Urg. F.o.b. Knoxville, Iowa, H. W. Clark, W0RJV, 717 E. Marston St.

SUPER-PRO BC-779 guaranteed to perform, \$74.50. Gizmos & Such, Still River, Mass.

HAMS, Calculus lessons, first four, \$1.00. Easy, practical. Mathco, 4256-2 Minmor, Cincinnati 17, Ohio.

FOR Sale: DX-100, excellent, \$170. H. Magnusson, K6DWH, Rt. 1, Box 601-B, Alpine, Calif.

SELL: DX-100 one year old good condition with Bud LP filter and push-to-talk relays, \$200; BC-348 with instrux book, pwr supp., sprk, Q5er and Lester 3-tube converter for 10 and 15 meters, \$100. N. B. Flechtner, W8KZK, R.D. 2, Cortland, Ohio.

NON-SURPLUS Rack model Super Pro, \$4-20 Mc. with pwr supp., \$75; 100V DC at 500 Ma. Hy pwr supp., \$75. Wild Bill, W7EZA, 4800 South 434th West, Kearns, Utah.

TELEX Rotator, big heavy duty type R-200. Cost \$225. Bargain price \$125. W6KJ, P.O. Box 3125, Lamada, Calif.

HALLICRAFTERS \$20R (earlier version of S-40); 560Kc-43 Mc. \$37; new \$29B tube, \$5; Hallcrafters SC-27, long carriage Royal med, \$40; new 12" coaxial speaker, \$7. Want: 152-172 Mc revr. W9WFT, 2029 Bradley, Chicago 18, Ill.

SELL: Heath DX-40 and VF-1 (VFO), \$75; Heath AR-3 revr, \$20; Heath RF Signal Generator, \$15; Heath Isolation transformer, \$12. Walt Wernsing, K2ZJF, 62 Hurley Ave., Wyckoff, N. J.

COLLINS 32V1 — B&W 51-SB, VI just reconditioned by Collins, new P.T.O., new tubes. New, unused B&W 51 SB and adapter kit for V-1. Guarantee condition to be as represented, \$500. Will consider separate offer. Details on request. Charles Freeman, Jr., M.D. K4HAD, 136 Druid Park Ave., Augusta, Ga.

FOR Sale: Elmec AF-67 and Gonset G-66H with 12 volt pwr supp. \$300 takes all. Will ship prepaid. K5JQC, 404 E. Hale St., Lake Charles, La.

SX-100 receiver. For sale. In gud condx, \$210. K9LQK, Bob McEwan, 5134 W. Addison St., Chicago 41, Ill.

SELL: SX-96 revr, \$175, in exc. condx. Donald G. Fuller, 210 Utica St., Tonawanda, N. Y.

MOBILE — at a reasonable cost. Subrao 15 watt, 10 meter transmitter, push-to-talk, all circuits metered. Companion Subrao dynamotor 6V input, 400V 175 Ma. output, Gonset Triband converter. All in exc. condx. \$75 takes all. Wm. H. Bossert, W2FWX, 72-10 1st Ave., Woodside 77, L. I., N. Y.

FOR Sale: Collins 75A2, just realigned, brand new, matching sprk, \$275. DX-100 in gud condx, \$125; SX-100 in gud condx, sprk, \$195. Don Cordray, 6803 Armoste Ave., Van Nuys, Calif. Tel. DiCKens 4-1736.

FOR Sale: Viking Adventurer with Eldico AM-40 modulator. Best offer. Gibson Anderson, K5BTF, Rt. 3, Box 178-A, Pine Bluff, Arkansas.

WANTED: KW8-1 transmitter without power supply. State price, condx and serial number. For sale: Two 4-400 v tubes, unused, \$25 ea. Three condensers, 1 aft, 6000 volts, used, \$2 each. Ronald White, W6IMC, 210 Alden Rd., Hayward, Calif.

BC-1158 6-meter converted, \$45; Johnson SWR bridge, new, \$5; pair BC-645, 420 Mc., converted, \$35 ea.; Eleco #625 tube tester, \$25. No trades, please. Will ship. Richard W. Baker, W8QYG, 126 Herrick Ave., West, Wellington, Ohio.

FOR Sale: Pair Walkie-Talkie HC611E, 3885 Kc. One set batteries and service manual. Guaranteed excellent condx, \$75.00 pair WJJSK, 855 Woodworth Rd., Jackson, Mich.

HRO-M all coils, speaker, \$70, in mint condx. Well-built 750W amplifier w/KW power supplies, \$90; Millen 90711 VFO, \$26.50; 15M 3-el. beam, \$15; selsyns, \$6.50; 10M Preselector, \$5; 400W tapped modulation transformer, \$12.50. Misc. list, S.A.S.E. Chuck Jagger, K2RBD, 5753 S.W. Burna Road, Lake Grove, Oregon. Tel. NE 6-2684.

WANTED: Late model DX-100 in gud condx. Will pay cash. Write full particulars to W7AQX, W. E. Brownfield, 2424 SW Sheffield St., Portland 1, Oregon.

SELL: Heath antenna impedance meter AM-1, \$12.50; Deluxe 6 ft. Bud rack (no door), \$30; 6 ft. open rack, \$15. All postpaid. R. E. Neal, 425 South Edgemont Circle, Huntsville, Ala.

FREE!!! Electronic Surplus Samples! GTH flooded with successful Signal Depot bids! Hams, SWLS! Send card with dime for handling, postage. W6DIE, 833 7th Ave., Sacramento 18, Calif.

CRYSTALS for Citizens Band Class D Service. Third overtone calibrated  $\pm$  .005% with 32  $\mu$ f load capacity, .05" pins spaced .186. Guaranteed, \$2.75 each, Pan Electronics Corporation, Griffin, Ga.

SELL: Heathkit AR-3, cabinet, \$25. Used 2 months. In exc. condx. Ira W. Cotton, 831 Virginia Ave., N. Bellmore, N. Y.

FOR Sale: Heathkit DX40, \$60. Like new condx. Going mobile. Gardner, K9EFC, Box 314, Illipolis, Ill.

PROSPEROUS, well established marine electronics business, sales and service now at peak. Located in fast-growing Northwest Florida, serving some 300 boats. Your chance to move to Sunny Florida. Selling only because of illness. Wonderful opportunity for man with funds and some cash. James Electronics, 308 West 6th St., Panama City, Florida.

COMPLETE SSB station: 75A4 guaranteed perfect, \$510; CE20A with QT-1 and Deluxe VFO, not a scratch, \$200; Globe LA-1 in warranty, \$95, Signal Saver, \$12; Y-Gain 15-M beam, \$20, or \$300 complete. W2GIM, 455 Oakridge Drive, Rochester 17, N. Y.

HANDIE-TALKIES, four BC-611 Handie-talkies on 3885 Kc with unusual \$75 a pair or best offer. W4UX1, 6228 Melbourne Rd., Raleigh, N. C.

SELL: HQ-110, used several months, exc. condx, \$170. Johnnie Svatek, 305 West Hamby, Midland, Texas.

SELLING OUT: NC-300 with xtal. and spkr. CE model A slicer with 80 Kc IF adaptor, \$325; 20A and BC455 VFO with 10 meters, n deluxe case, factory wired and tested, \$235, 600L amplifier, \$335, subject to offer. Contact C. F. Forst, 10042 N. Mariene Dr., St. Louis 23, Mo. K01ZL

AMERICAN Jurisprudence for transmitting gear swap. Expect it hot soon and need everything except receiver. Books unmarked and in near-new condition. Want cost equivalent in any or all components necessary to get on the air. Robert Breidenthal, 4792 Dover-dell Dr., Pittsburgh 36, Penna.

COMPLETE station for sale: Hallcrafters SX-101 mark 3 rcvcr. with speaker matching, \$310.00. Hallcrafters HT-32 xmt with 110 volt coax ant. relay, \$565.00. RME DB-23 preselector, \$30.00. Vibroplex \$10.00. Rcver. used one year, all other gear less than 6 months. Write or call, Charles E. Crab, W9VDB, 1111 J Street, Boulder, Colo. Phone HI 2-3445. F.o.b. continental U. S. A.

CRYSTAL Calibrator: 100 Kc. Write to Elanem Company, 1116 Inwood Place, Plainfield, N. J.

SELL: KW9-1, \$1550; 75A-4, \$525; both together, \$2000. Little used, both perfect. Herb Hollister, W9DRD, Box 17, Boulder, Colorado.

CRYSTALS: Meters, transformers, tubes; wide selection, reasonable. Send stamp for catalog. Rljor Products, Box 81, Rego Park, N. Y.

HAM Gear exchange information free. Your big or smallest offers, wants, catalogued, filed; mailed to those requesting them. New York World-Ham Electronic Center, A non-profit. Hundreds of items filed, creatively trading. Send self-addressed stamped envelope for valuable information. Write to Vergne, K2KGU, 420 Riverside Drive (5-D), New York 25, N. Y.

SELL: Complete CIKE Master (course, in excellent condx. Bart Bonney, 2310 Baynard Blvd., Wilmington 2, Del.

RECEIVERS (used), NC-188, NC-200, \$100 each, (new) all Hallcrafters, Hammarlund, etc. We'll trade. Stout, 4640 York Rd., Baltimore, Md.

NC-300, speaker, Calibrator, converters in cabinet, VFO 62, BC312 all brand new, at used prices. W9MAQ, Housholder, 5609 Russett, Madison, Wisconsin.

COLLINS 32V1, complete unmodified, excellent condition, with two spare 4D32's (one unused), \$280 firm, locally. Will not ship. Second owner. Lew Bonn, K6POY, 559 Harvard St., Santa Monica, Calif.

SX-99 Immaculate, \$105; Gonsset Triband converter, \$20; Lightning bug, \$12; 4-250A, \$20; new choke, plate xfmr for 750V 250 mill pwr supp., \$20; W3WTR, 432 Market St., Williamsport, Penna.

SELL HQ-129X with spkr and xtal calibrator, \$125; HC-10 SSB/CW clear, \$129; SX-99 with AC supply and calibration book, \$50; Gonsset 10 meter converter, \$10; Chambers 6-band 813 xmttr, \$85; 2000 volt supply, \$35; 400 volt supply, \$10. Six ft. Bud cabinet \$20. Will deliver within 125 miles. Phone AC 4-1450. E. Titcomb, 927 Runnymede Lane, San Diego, Calif.

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Q8TS: May 1924 to Nov. 1927; and Nov. 1934 to Dec. 1958. Send your best offer. Glen Haupp, 213 Belocda Dr., Rochester 17, N. Y.

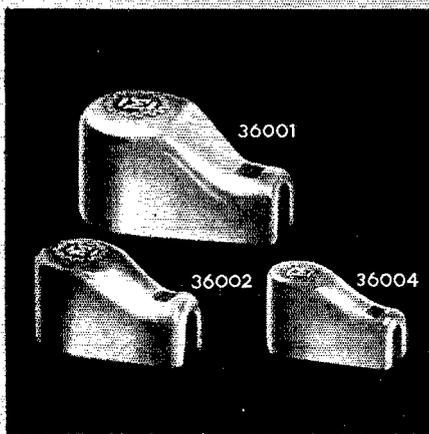
COLLINS 75A2 and speaker, Viking II and VFO, plus crystal mike, coax relay, relay, low pass filter, balun coil, and manuals, all in gud condx. or better. Offer \$1000.00. Check. Will ship collect. David Barlin, 135 East Indiana St., Rapid City, So. Dak.

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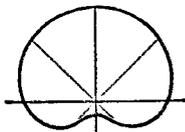
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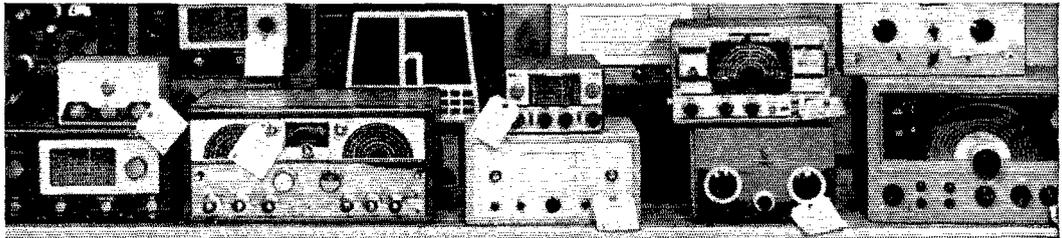
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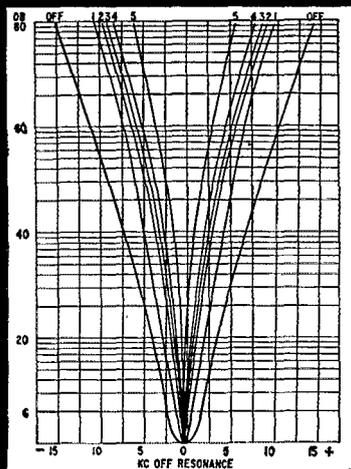
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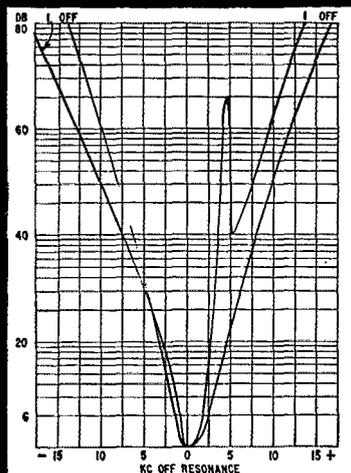
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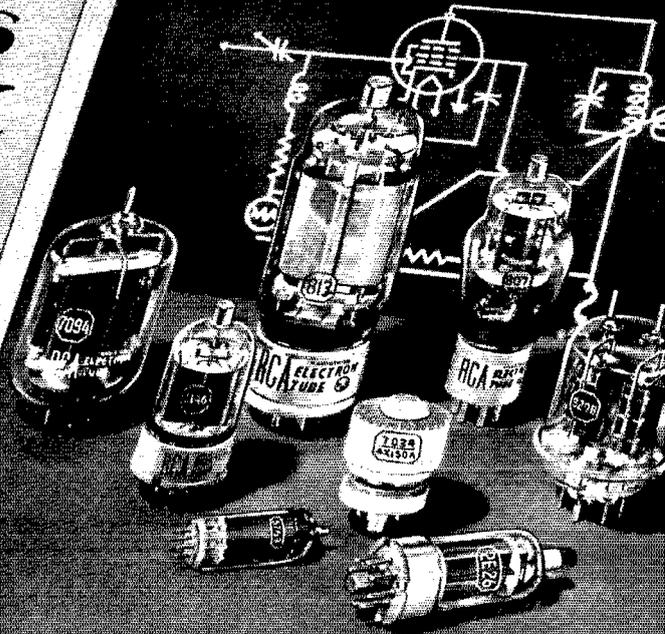
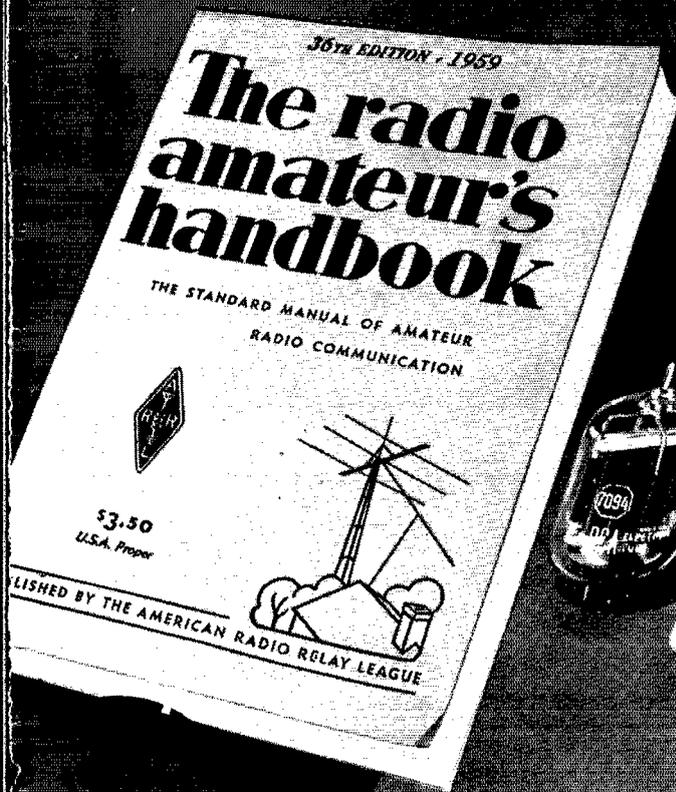


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